

## OC2 – Citizens Campaign for the Environment

200701235067 Received FERC OSEC 01/23/2007 04:17:00 PM Docket# CP06-54-000



January 23, 2007

Ms. Magalie Salas  
Federal Energy Regulatory Commission  
888 First St., N.E., Room 1a  
Washington, DC 20426

Re: **Comments of Draft Environmental Impact Statement for the Broadwater LNG Project.** Docket No: CP06-054-000, CP06-055-000, CP06-056-000

Dear Ms. Salas,

Citizens Campaign for the Environment (CCE) is an 80,000 member, not-for-profit, non-partisan advocacy organization working for the protection of public health and the natural environment on behalf of its members in New York and Connecticut. The protection of waterways, especially estuaries, is of the utmost importance to CCE. CCE has been working to protect water quality across New York State and throughout the Nation since its inception in 1985. Currently, CCE actively works on protecting many of New York's largest and often most impacted waterways including the Hudson River, the Long Island South Shore Estuary Reserve, the Great Lakes, the Finger Lakes, the Peconic River, and Long Island Sound. Additionally, CCE is an active member of the Long Island Sound Study Citizens Advisory Committee.

The immense value of the Long Island Sound cannot be overstated. The U.S. Environmental Protection Agency has estimated that the Sound generates \$5.5 billion annually to the regional economy. Recreational activities, tourism, boating, fishing, shell fishing and commercial enterprises all affirm that it would be shortsighted to allow the long-term use of such a waterway to be utilized for a liquefied natural gas (LNG) floating storage and regasification unit (FSRU). This move would ultimately change the Sound from an open-water treasure to a closed private-interest waterway.

**CCE has reviewed the Draft Environmental Impact and believe there are several deficiencies in the document that need to be addressed.**

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### Air Quality

In the scoping process, CCE requested, both in writing and verbally at the public hearings, that FERC assess the potential impact on the increase of harmful air pollutants to the surrounding area. Unfortunately, this concern is inadequately addressed in the DEIS. CCE offers the following comments:

OC2-1 [ **1. The DEIS reaches no conclusion on impacts from increased air emissions to the surrounding region.**

It states (page 3-171), "At this time we do not have the necessary information to make a conformity determination." A general conformity analysis is required for pollutant emissions that would occur in a nonattainment area, or an area that does not meet Federal Air Quality standards.

Many counties surrounding the FSRU, in both New York and CT, do not meet several federal air quality standards, and are nonattainment areas for both ozone and fine particulate matter.<sup>1</sup> The General Conformity Rule was designed to require federal agencies, such as FERC, to ensure that proposed projects conform to the applicable State Implementation Plan to ensure that projects were not worsening harmful air quality problems in nonattainment areas.

To correct this inconclusive portion of the DEIS (page 3-172), FERC recommends that "Broadwater provide a full air quality analysis identifying all mitigation requirements required to demonstrate conformity....." FERC goes on to request that Broadwater's analysis "provide a detailed explanation as to whether or not the project would meet each requirement."

OC2-2 [ **CCE is extremely concerned that Broadwater is asked to analyze the air emissions of Broadwater after the DEIS process has been completed.** The analysis NEEDS to be done by an independent party in order to carry validity and said analysis also needs to be subject to public review. CCE is requesting FERC to set up a process that would allow members of the public a chance to review the air analysis and offer comments on the document.

**2. The DEIS does not account for the combined air emissions of the FSRU and the LNG Carriers.**

As CCE stated at the scoping hearings and requested in writing during the public comment period, the project should be evaluated as a whole and not evaluated in sections, in a segmented fashion. The DEIS lists the pollutants of the FSRU and lists the pollutants of the LNG Carriers (only as they are offloading) and the support tugs, but

OC2-3 ↓

<sup>1</sup> <http://www.epa.gov/air/data/enstat.html?US-USA-United%20States>

OC2-1 Please see our response to comment FA2-5. Section 3.9.1.2 of the final EIS concludes that emissions from the FSRU, the LNG carriers, and support vessels would meet regulatory criteria within 500 meters of the FSRU.

OC2-2 Please see our response to comment FA2-5 and OC2-1. All analyses submitted by Broadwater, reviews and comments by other agencies, and FERC's conclusions have been available for public review and comment in FERC's docket. The docket is constantly expanding as new information becomes available. We have repeatedly encouraged and continue to encourage informed comment on the contents of the public docket.

OC2-3 As stated in Section 3.9.1.2 of the final EIS, emissions calculated for the Project include those for the FSRU and LNG carriers. LNG carrier emissions encompass the complete delivery cycle, beginning with the vessel entering U.S. waters, as it travels inbound to the FSRU, unloads LNG at the FSRU, and travels outbound to the boundary of U.S. waters. Tables 3.9.1-12 and 3.9.1-13 include emission summaries for the FSRU and Project vessels including LNG carriers and support tugs.

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OC2-3 lacks a comprehensive review on what effect the combined air pollutants would have. The DEIS also does not evaluate the long-term/combined effects of the air pollutants.

According to the DEIS the combined yearly pollutants would be 288,000 pounds of Carbon Monoxide, 1.1 million pounds of Nitrogen Oxide, 74,000 pounds of Volatile Organic Compounds (VOCs), 1.1 million pounds of Sulfur Dioxide and 166,000 pounds of Fine Particulate Matter. Broadwater estimates the life of the project to be 20 years. In 20 years the facility will have emitted over 5 million pounds of Carbon Monoxide, 20 million pounds of Nitrogen Oxide, over 1 million pounds of VOCs, 20 million pounds of Sulfur Dioxide, and over 3 million pounds of Fine Particulate Matter.

OC2-4 FERC needs to provide an analysis of how these accumulating pollutants will effect the air quality of the surrounding region, including the effect of increased Nitrogen in the water column of the Sound, which has not been evaluated in the DEIS. Air deposition is currently the second leading source of nitrogen contamination in the Sound.

OC2-5 FERC has not done a comprehensive analysis on the effects of the harmful air pollutants that the Broadwater facility will emit. This section needs to be further expanded to be comprehensive, combining the FSRU and the LNG carrier emissions. CCE also believes that any analysis needs to be conducted by an independent entity and available for public review.

**Environmental Impacts**

OC2-6 **1. Geology, Sediments and Soils. The basic characteristics of the geological features of Long Island Sound used outdated and therefore, incorrect literature in the DEIS. A more thorough literature review for more recent and accurate information is needed to assess the potential impacts of the pipeline, the Yoke Mooring System (YMS), and other infrastructure from the Broadwater project.**

For example, Twitchell et al. 1998 is frequently used to reference several Long Island Sound studies. Twitchell et al. 1998 is used as a secondary source for geological characteristics. Using a secondary source of information dilutes the DEIS's ability to evaluate relevant data that may have been acquired by reviewing the original research. Instead of reviewing individual studies for the glacial history of the Sound, which is very pertinent to the discussion of sediment composition, the DEIS relies heavily on Twitchell 1998 to compile this important information. CCE believes this has resulted in an overall poor literature review for ascertaining needed information for the geology, soils and sediments of the Long Island Sound.

OC2-7 CCE finds that decisions based on recommendations such as "Since Broadwater has not yet done the geotechnical surveys necessary to determine the specific liquefaction potential of the site, we recommend that..." prior to construction these investigations and analyses are done (page 3-6) are not sufficient to make a final decision on the

OC2-4 Existing nitrogen loading in Long Island Sound is discussed in Section 3.0 of the final EIS, and potential impacts of the proposed Project associated with nitrogen are discussed in Sections 3.2.1.3 and 3.9.1.2. According to the LISS (2006b), the more than 150,000 pounds of nitrogen discharged each day from wastewater treatment plants results in approximately 40 percent of the total nitrogen that makes its way into the Sound. While efforts to reduce this load have been successful, this source is still the main contributor to nitrogen loading in the waters of the Sound. Nitrous oxides or "NOx" is the collective term for a group of highly reactive gases containing variable amounts of nitrogen and oxygen (e.g., nitric oxide "NO" and nitrogen dioxide "NO<sub>2</sub>") that are produced when fuel is burned at high temperatures. It is estimated that 532 tons of NOx per year would be emitted during operation of the Project, including emissions from the FSRU, support tugs, and LNG carriers. Because natural gas is considered the "cleanest" fossil fuel, the NOx contribution from combustion engines related to operation activities are far outweighed by the benefits of increased "clean" fossil fuel that would be brought to the region by implementation of this Project.

OC2-5 Please see our responses to comments OC2-3 and FA2-2.

OC2-6 Section 3.1.1 of the final EIS has been expanded to provide more detail on the existing geology and seismicity associated with the proposed Project area.

OC2-7 The geological information provided in Section 3.1.1 has been updated based on more definitive details on geologic conditions at the proposed YMS location, including expected depth to bedrock based on information identified by Dr. Lewis. Complete responses regarding Dr. Lewis's specific comments on the EIS are provided in Table 2.2-5 (Appendix N in this final EIS).

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- OC2-7 potential environmental impacts of Broadwater for Long Island Sound. **Analyses should be completed prior to approval and prior to the FEIS being completed.** In regards to seismicity and faulting and soil liquefaction in particular, according to Dr. Ralph Lewis, the former CT State Geologist, the DEIS's understanding of seismicity is lacking and therefore a concern. He states that Broadwater can design for the earthquakes, but the DEIS needs to address the potential for Long Island Sound. Connecticut has averaged two earthquakes per year and therefore earthquakes should be assessed more thoroughly in the DEIS<sup>2</sup>.
- OC2-8 2. The DEIS recommends, "Prior to construction, Broadwater file with the Secretary...the estimated volumes associated with a worst-case spill scenario; an appropriate evaluation of the associated potential impacts to water resources and marine life..." This information is critical for an environmental impact assessment and should be included in the Environmental Impact Statement. The purpose of the DEIS is specifically to evaluate such scenarios and assess environmental and public health damage. **CCF asserts that waiting until after approval to gather this critical information is hazardous to safety and security and to the Sound's health. In addition, not assessing a worst case scenario is counter to the purpose and design of the NEPA law.**
- OC2-9 3. The DEIS states on page 3-9 that both temporary and permanent onshore facilities would be required for a Broadwater-operated support office, warehouse, industrial dock, pipe storage, contractor headquarters, and docking area. These sites have not yet been determined. **The Onshore facility should be evaluated for both possible sites before approval of the project and impacts need to be addressed in detail.**
4. **Invasive Species**
- OC2-10 The DEIS states on page 3-16 "during construction, a total of approximately 7.5 acres of seafloor would be converted from soft bottom sediments to hard substrate...While some of the areas of sediment conversion could naturally become covered with native substrate over time, we considered impacts from sediment conversion to be minor but permanent." This section does not assess the potential impacts from the conversion on invasive species, an already existing chronic and serious stress to the Sound ecosystem. Hard-bottom substrates are "hot spots" for invasive species, such as the compound sea squirt (*Didemnum sp.*). Referred to as fouling organisms, the tunicates attach to rocks, docks, pilings and forms encrusting mats on seafloor, usurping benthic habitat.<sup>3</sup> Ecosystems which have reduced biodiversity or that are stressed by environmental degradation and climate change appear to be more vulnerable to invasions. The "permanent" conversion of the benthic communities from Broadwater would already degrade those directly affected areas, in addition invasive species would take over even larger areas.

<sup>2</sup> Connecticut Department of Environmental Protection. <http://dep.state.ct.us/earthday/edfunweather.htm>

<sup>3</sup> The National Undersea Research Center [5 January 2007]. "Space Invaders: Non-Native Ascidians in the Long Island Sound". <http://www.nure.uconn.edu/about/events/event0014/index.htm>

- OC2-8 The quote in the comment is from Section 3.2.2.1 of the draft EIS, which addressed refueling of marine vessels during construction. On virtually all major construction projects, it is not possible to prepare a detailed SPCC plan prior to contracting with an engineering, procurement, and construction firm and development of detailed construction plans. The information quoted is not complete since this section of the draft EIS also included a recommendation that Broadwater's SPCC plan be filed "with the Secretary [of FERC], for review and written approval by the Director of OEP..." As a result, prior to construction, FERC would review Broadwater's SPCC plan for fueling marine construction equipment and vessels, and would authorize construction only if the plan is properly protective of the Long Island Sound environment. We believe that this approach meets the environmental review requirements of NEPA. FERC's review and approval of construction-related SPCC plans would not change any authority of the EPA to audit SPCC plan contents or enforce SPCC plan implementation.
- OC2-9 Impacts associated with potential use of both of the onshore locations are addressed in Sections 3.5.2.3, 3.7.2.3, and 3.8.5 of the final EIS. As noted in those sections, the onshore facilities would be used to support offshore operations. This would include providing warehouse space for supplies and materials, office space for workers, and docking areas for tugs. By selecting existing facilities for Project-related use that would be similar to current use, we do not anticipate that significant impacts would be associated with use of either of the onshore locations.
- OC2-10 Thank you for your comment. Section 3.3.1.2 of the final EIS has been expanded to describe the potential for invasive species to utilize hard substrate. In addition, the text describes the potential to minimize sediment conversion along the 2 miles of trench where stone replacement was previously proposed.

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- OC2-11 [ Also, it's thought that sea squirts originally arrived in our waters by Asian ship hulls. What other invasive species could potentially be introduced by Broadwater's foreign flagged vessel hulls? The DEIS needs to comprehensively evaluate all potential routes of invasive species due to Broadwater.
- OC2-12 [ **5. Contaminated Sediments (pg. 3-17)**  
There is a contradiction between analysis and map data in the contaminated sediment section. The DEIS states, "site-specific sediment analyses have found that contaminant concentrations in sediment along the pipeline route are below ER-Ls and TOGS standards. Therefore, any impact associated with contaminated sediments, if such sediments are present, would be insignificant and temporary." However, when reading the previous section it's stated that "copper, mercury, and lead were reported at concentrations between their ER-L and ER-M" in the vicinity of the project area... not below as stated on 3-17. The map data of Figure 3.1-2, 3.4 represents contaminated sediment in mid-range. **While the presence isn't overwhelming, an analysis should be conducted of possible dispersion and impacts to the estuary before making a conclusion of "insignificant and temporary".**
- OC2-13 [ **6. Water Quality**  
Section 3.2.1.3. did not adequately address the impacts to water quality of Long Island Sound. The section is divided into water quality parameters: temperature, salinity, dissolved oxygen, and turbidity. When mentioning the anti-fouling paint impacts to these parameters and other biological parameters, the assessment relies on the applicant's report of "resulting copper concentration would be below EPA's ambient water quality criteria". CCE asserts that an independent assessment needs to be completed for the anti-fouling paint impacts. **Relying solely on the information from the applicant compromises the study and leaves much ambiguity in the environmental impacts.**
- OC2-14 [ Also, the Executive Summary of the DEIS states, "Since some water discharges for the LNG carriers would be associated with cooling on-board machinery, water discharged from carriers berthed at the FSRU has been estimated to be an average of 3.6 degrees F warmer than ambient conditions...as a result, the impacts to water quality would be minor but would occur for the life of the Project." Later on in the assessment section the pipeline thermal impacts states "During periods of low gas flow, the temperature of the natural gas within the riser would decrease from 130 degrees F as it exits...to approximately 120 degrees F at the foot of the riser on the seafloor...the water temperature approximately three feet down-current of the exposed pipeline would be elevated to a maximum of three degrees F above ambient temperatures, regardless of season." It goes on to say, "No significant impact to ambient water temperatures in Long Island Sound is expected to be associated with this thermal exchange."  
**No studies are cited in the DEIS to back this statement up for either case. In addition the DEIS gave no consideration for the widely known fact that thermal pollution typically decreases the level of dissolved oxygen in the water. Low**
- OC2-11 Section 3.2.3.2 of the final EIS has been modified to include information regarding potential impacts to Long Island Sound from invasive species transported from foreign waters, although the LNG carriers would not be expected to discharge ballast water in Long Island Sound.
- OC2-12 There is no discrepancy in the two statements. One survey was conducted in the general vicinity of the Project area and one was conducted specifically along the Project route. Metal concentrations along the Project route were below effects range-low and Technical and Operational Guidance. The reported concentrations from the two sampling efforts are within the same order of magnitude, and all are below the effects range-median screening thresholds.
- OC2-13 Rather than use anti-fouling paint that contains copper, we have included a recommendation that Broadwater use silicon paint for the hull of the FSRU and any other structures requiring anti-fouling paint. Section 3.2.3.1 of the final EIS has been updated to reflect this change.
- OC2-14 Section 3.2.3.2 of the final EIS has been updated to provide additional detail on the magnitude and extent of thermal discharges associated with Project operations. As described, the FSRU water discharges would approximate ambient temperature, the LNG carrier discharges would approximate ambient temperature within 75 feet of the discharge point (within 1.5 F), and there would be no impact to water temperatures 4 feet or more from the riser. Additional details on thermal impacts are provided in the FERC docket for the Broadwater LNG Project (Docket No. CP06-54-000, Accession #20060130-4017 and #2006130-5060). It is also important to understand the volume of heated water discharged relative to the volume of water held within the Sound and the volume of fresh ocean water that enters the Sound on a daily basis. Even a cursory review of these parameters confirms that the Project could not possibly influence the overall temperatures in the Sound nor the extent of seasonal oxygen stress.

Organizations and Companies Comments

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- OC2-14 ↑  
dissolved oxygen is already a severe problem for LI Sound with numerous monitoring programs in place on both sides of the Sound, such as the LI Sound Water Quality Monitoring Program, to start remedying this problem. Broadwater may compound the problems associated with low dissolved oxygen and negate years of funding and research for mitigation efforts.
- OC2-15 [ According to the Long Island Sound Study, which was not referenced in this section of the DEIS, low DO in Long Island Sound causes lethality in fishes, juvenile crustaceans, planktonic larvae of crustaceans and crabs, and growth reductions in lobsters and shrimp.<sup>4</sup>
- 7. Biological Resources**
- A diverse ecosystem thrives along the proposed pipeline route and in the general project vicinity. Organisms that inhabit these areas are a variety of bivalves, hydroid, amphipod, spider crab, whelk, shrimp, polychaete species, tunicates, burrowing anemones, lobsters, fish, and other invertebrates. The pipeline would directly disturb a total of 2,235.5 acres of seafloor. **CCE asserts that disturbance of key species of an already threatened estuary is not acceptable, even if impacts would be “short term” and “minor”.**
- OC2-16 [ The primary impacts to fish and other biological resources would be the impingement and entrainment of ichthyoplankton and the subsequent discharge of biocide. Both the FSRU and LNG carriers would annually kill millions of eggs and millions of larvae. The surveys conducted in the project vicinity demonstrate that the fishes most likely affected are: Weakfish/Scup (*Cynoscion regalis/Stenotomus chrysops*), Fourbeard Rockling (*Encheiropus cimbrius*), Tautog (*Tautoga onitis*), Sea Robin (*Chelidonichthys spinosus*), Anchovy (*Anchoa mitchilli*), Smallmouth Flounder (*Eitropus microstomus*), Sand Lance (*Ammodytes dubius*), and Butterfish (*Porontus triacanthus*). Many of the previously listed are representatives of recreationally and commercially fished species of Long Island Sound. **The DEIS needs to evaluate the impacts in more detail to these species and also the impacts that will occur from not only FSRU water intake, but also the screening of water taken into the LNG carriers.**
- OC2-17 [ **8. Fisheries**
- The American lobster is a representative of a recreationally and commercially fished species of the Sound. There has been a dramatic decline of lobster populations since the Fall of 1999. There are many possible factors that could have contributed to declines on an ecosystem-wide basis. These environmental, physiological, and biological stresses include: water quality conditions including elevated temperature and changes in salinity, environmental conditions such as storm events, pollution, lobster crowding, disease-causing organisms, pesticides, and other anthropogenic causes. Broadwater would be yet again, another pressure on our dwindling lobster population and thus loss of our historical lobster industry.

<sup>4</sup> Long Island Sound Study, <http://www.longislandsoundstudy.net/comp/hypox.html>.

- OC2-15 The Long Island Sound Study is referenced multiple times in Section 3.2.1.3 of the final EIS.
- OC2-16 With the implementation of the FERC staff recommendations, seafloor impacts are expected to be 263.6 acres. Section 3.1.2.2 of the final EIS has been expanded to further characterize the extent and magnitude of impacts to the seafloor. As described in Section 3.3 of the final EIS, we anticipate that with active backfilling of the pipeline trench in coordination with federal and state resource agencies, recovery of the disturbed seafloor would be enhanced.
- OC2-17 Thank you for your comment. As discussed in response to comment OC1-135, Section 3.3.2.2 of the final EIS provides the estimated number of ichthyoplankton that would be impinged and entrained as a result of the proposed Project, including berthed LNG carriers. Estimated entrainment and impingement losses for EFH-designated species are provided in the EFH assessment, which was provided as a draft in Appendix E of the draft EIS and is found in Appendix J of the final EIS.

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- OC2-18 The DEIS does not adequately assess the impacts to the American Lobster Industry. For instance, to quote Dr. Stephen Tettelbach of Long Island University, "the DEIS states, without any references, that juvenile or epibenthic phase lobsters are located in shallow water less than 30 feet deep and thus pipeline installation would have little if any effect on lobsters during these stages of their lives. However, Scifani (2001) stated that more juvenile lobsters were expected to occur in deeper than shallower waters [in Long Island Sound]." The DEIS also concludes that installing the pipeline during winter would avoid impacts to a portion of the adult lobster population because they would have migrated offshore. Dr. Tettelbach reminds FERC that "It is well known that lobsters in LI Sound are essentially non-migratory and thus confining pipeline installation to winter months would not be expected to reduce mortality of adult lobsters because they would not have migrated out of the area." **Because much of the lobster impact assessment section is based on misconceptions, CCE asserts the lobster section needs to be re-evaluated with more accurate information.**
- OC2-19 The operation of the FSRU is concluded in the DEIS to have "little or no impact on benthic resources...and no significant changes to plankton populations or lifestages are expected to occur in the areas of the FSRU". **CCE believes this conclusion can not be reached by the information provided in the DEIS, especially since impingement/entrainment of larval life stages of benthic species would be a reality with Broadwater.** Dr. Stephen Tettelbach of Long Island University (whose comments have already been submitted by CCE) stated, "Estimated impacts of impingement/entrainment of plankton, including fish larvae, by the Broadwater operation are probably grossly underestimated...Phytoplankton and zooplankton entrained in the Broadwater intake would not only be lost to the future recruitment of their respective populations, but they would also be lost to the food web which supports the valuable finfish and shellfish populations of the Sound." The DEIS even states that the estimates of FSRU operation are "likely conservative". **This analysis needs to be completed with a low-end estimate and a high-end estimate.**
- OC2-20 The negative impacts to the Sound's planktonic populations not only affect the ecosystem, but also the foundation of the Sound fishing industry. Plankton populations are the beginnings of lobster and finfish industries and because of the already existent declines of these species in the Sound, Broadwater would intensify this situation further. **CCE believes the DEIS needs to re-evaluate the impacts on the Sound's benthic resources and fishing industry with the new information from independent scientists already submitted.**
- OC2-21 Broadwater will not only impact biological species, but also will degrade the Sound's historical maritime culture and the economy. Financially compensating individual fisherman for the loss of prime lobster and fishing grounds may act as an adequate remedy for a few individual lobsterman however, compensating lobsterman and fisherman is not a remedy to preserving this maritime culture and use of the water body. Nor is it a remedy for the overall reduction in lobster numbers. **CCE believes this will contribute to the decline of our region's shellfishing and fin fishing economies that**

- OC2-18 Thank you for your comments. The lobster assessment in Section 3.3.1.1 of the final EIS has been updated with the results of recent field surveys in Long Island Sound.
- OC2-19 Section 3.3.2.2 of the final EIS has been expanded to more fully describe potential impacts to plankton associated with impingement and entrainment. The comment misrepresents the use of the term "conservative" because the quote in the EIS in the impingement section specifically concludes that "these estimates are likely conservative estimates (substantial overestimates) of actual entrainment or impingement." Section 3.3.2.2 of the final EIS explains why we believe the estimates are, in fact, over estimates.
- OC2-20 Thank you for your comment. The final EIS has been expanded to incorporate the results of recent field studies, additional literature, and technical comments provided by federal, state, and local agencies; organizations; academia; the private sector; and the public. As stated in Section 3.1.2.2 of the final EIS, impacts to the benthic habitat would primarily be limited to construction and total less than 0.1 percent of the benthic habitat in the Sound. During operations, the primary impacts would be associated with impingement and entrainment which, assuming homogenous densities of organisms in the horizontal and vertical profile, would total less than 0.1 percent of the plankton community in the central basin of Long Island Sound (see Section 3.3.2.2 of the final EIS).
- OC2-21 Section 3.7.1.4 of the final EIS presents the impacts to commercial fishing and states that the overall impact would be minor. Section 3.6.8.1 addresses the economic impacts and has been updated in the final EIS to present an assessment of impacts to commercial lobstermen from the proposed moving safety and security zones around LNG carriers. Long Island Sound supports about 474 commercial fishermen, and the Sound is only one component of a regional fishery. Any catch reduction attributable to Broadwater would not result in a measurable impact to the region's fishing economies.

Organizations and Companies Comments

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- OC2-21 **annually significantly contribute to the \$5.5 billion per year generated in the Long Island Sound.**
- Section 3.3.3.2. states, "In general, the impacts to commercially and recreationally important species would be comparable to those described" for benthic communities and finfish and "impacts... would be minor but would continue throughout the life of the proposed project". Since it's already been established that the benthic community assessment and finfish assessment were based on questionable information and need to be re-evaluated with the new information about entrainment/impingement of plankton and eggs the fishery conclusion needs to be re-evaluated as well.
- OC2-22
- OC2-23 **9. Impacts to Federally-Listed Threatened and Endangered Species.**
- The DEIS needs to evaluate the potential impact to the Federally-listed as threatened piping plover (*Charadrius melodus*) and the Federally-listed endangered roseate tern (*Sterna dougalli*) from Broadwater's onshore facilities and offshore facilities respectively. **CCE agrees that coordination with the ESA and the National Marine Fisheries Service is required prior to construction.**
- OC2-24 **10. Global Climate Change.**
- Also, **the DEIS does not address how climate change fits into this environmental assessment.** Since Broadwater is a long-term project of between twenty and thirty years, climate change impacts are very real. Broadwater will increase the surrounding water temperature by 3.6 degrees F. This increase of water temperature is already stressful for the surrounding ecology; add to that the water temperature increase from climate change by just a couple of degrees and the effects would be overwhelming. Northeast sea surface temperatures have already increased, according to the 100- year record, almost two degrees since 1970 and are projected to continue increasing. According to Global Climate Models (GCMs) utilized in the U.S. National Assessment of the Potential Consequences of Climate Variability and Change project warming for the New York Metro Region will range from 1.7-3.5 degrees F in the 2020's and 2.6-6.5 degrees F in the 2050's.<sup>5</sup> The DEIS needs to analyze how projected temperature increases from climate change and sea level rise will compound with the impacts of Broadwater including increases in temperatures to surrounding waters, potential increase in invasive species, and others. The CT DEP Commissioner Gina McCarthy recently said, "probably the greatest threat to the ecology of the Sound is climate change." Climate Change is projected to make the Sound more susceptible to invasive species and Broadwater's sediment conversions and temperature increases do the same. The two effects together could have substantial impacts to the Sound ecosystem. Furthermore, the already warming LIS could be partly to blame for the decline in lobster populations and other cold-water species once found in abundance in Long Island Sound.<sup>6</sup> Increasing the occurrence of thermal pollution in Long Island Sound could impact these fisheries further. While Liquefied Natural Gas does emit less greenhouse gases than other fossil fuels; this project may exacerbate the impacts of
- OC2-22 We have expanded the text in Section 3.3 of the final EIS to more fully describe the available literature and field studies associated with these resources, based on additional input from federal and state agencies, academia, non-government organizations, and the public.
- OC2-23 In a letter dated June 8, 2007, FWS concurred with FERC's determination that the Project would not be likely to adversely affect federally listed species. FWS determined that the proposed FSRU is not in the vicinity of likely foraging areas for either listed avian species (shoal areas for roseate terns and intertidal zones for piping plovers) nor is it expected that the location of the FSRU is within major migratory pathways of these species or in the vicinity of migratory stopovers or staging areas.
- OC2-24 As stated in Section 3.2.3.2 of the final EIS, the proposed Project would result in a minor and highly localized impact on water temperatures in the immediate vicinity of the FSRU. It is important to understand the volume of heated water discharged relative to the volume of water held within the Sound and the volume of fresh ocean water that enters the Sound on a daily basis. Even a cursory review of these parameters confirms that the Project could not possibly influence the overall temperatures in the Sound.
- OC2-25 There is simply no technical basis for determining that the proposed Broadwater Project would exacerbate impacts of sea-level rise or global temperature changes.
- OC2-26 No changes to water temperature would be associated with the subsea pipeline or the FSRU operations. Minor and highly localized impacts to temperatures could be associated with the riser (within 4 feet) and the LNG carrier discharges. These minimal and highly localized impacts would not be expected to affect conditions related to hypoxia or lobster die-off that primarily occur in the western basin of Long Island Sound.

<sup>5</sup> Columbia Earth Institute Study, "Climate Change and a Global City", July 2001.

<sup>6</sup> Varelkamp, John. "Warming Sound Has Lobsters in a Pinch". *The Advocate*, 9 April 2006.

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OC2-27 [ climate change in the Long Island Sound. Relocating an LNG terminal out of this estuary of National Significance would be the healthier alternative. **CCE believes Climate Change is a factor when evaluating any long-term project for a water body, particularly and estuary and the DEIS needs to assess potential compounding impacts.**

### 11. Cumulative Impacts.

OC2-28 [ Throughout the environmental assessment portion of the DEIS the probable impacts are broken down into categories and subdivisions. In all sections the conclusions are either "minimal impacts to", "impacts would be minor", "impacts would be minor and temporary", "impacts would be minor and permanent". The cumulative impacts of all these "MINOR" impacts are not addressed adequately in section 3.11.5.

OC2-29 [ It's widely known that in an ecosystem, stress factors, whether minor or major, can change or dramatically alter an ecosystem. For instance, a minor change in temperature in a water body can cause phytoplankton population compositions to change. Broadwater will increase temperature and will also have a water intake system that will kill millions of planktonic species or perhaps billions when the analysis is redone with less conservative estimates. The cumulative effect is not evaluated and currently unknown. The Long Island Sound is a fragile ecosystem and these impacts should not so easily be dismissed.

OC2-30 [ In addition, the chemical synergy of the chlorine, sodium hypochlorite, anti-fouling paint, wastewater effluent, desalination discharge, and other discharges from the FSRU and carriers should be evaluated. Individually they were found to have minor impacts, but together the impacts have the potential to be greater. Additionally, the impacts of sodium hypochlorite needs to be assessed for impacts to lobster and other aquatic organisms. The PAN Pesticides database lists the chemical as having negative growth effects on the American Lobster larvae at concentrations of 150ppb, with larval LC<sub>50</sub> of 2,500-16,300 ppb.<sup>7</sup> This information is not included in the DEIS for evaluation.

OC2-31 [ **The DEIS needs to address comprehensively how these hundreds of "MINOR" impacts will collectively affect Long Island Sound. The DEIS should have looked at the impacts to this water body more holistically, instead of by examining the individual parts. Synergy, the interaction of two or more agents so that their combined effect is greater than the sum of their individual effects, is a crucial element when assessing any new stress to a marine environment especially.**

### Alternatives

The DEIS does not adequately address the alternatives to the Broadwater project. CCE is not opposed to LNG and is not opposed to LNG facilities. CCE opposes Broadwater based primarily on the siting of Broadwater in Long Island Sound, an Estuary of National

<sup>7</sup> Pesticide Action Network (PAN) Pesticide Database (2006).  
[http://www.pesticideinfo.org/List\\_AcquireAll.jsp?Rec\\_Id=PC34390](http://www.pesticideinfo.org/List_AcquireAll.jsp?Rec_Id=PC34390).

OC2-27 As noted in responses to comments OC2-24 and OC2-25, it is not apparent how the proposed Project would affect climate change or be affected by climate change to the degree that there would be a direct link with an impact on Long Island Sound.

OC2-28 Section 3.11.5 of the final EIS describes the cumulative impacts of the Broadwater Project with other recent, current, or reasonably foreseeable projects in the offshore waters of Long Island Sound. The potential environmental impacts of the Broadwater Project are described throughout Section 3.0 in accordance with NEPA.

OC2-29 As discussed in responses to comments OC2-19 and OC1-135, Section 3.3.2 of the final EIS has been updated to describe the potential impacts to phytoplankton and zooplankton associated with water intakes. As with ichthyoplankton, Section 3.3.2.2 of the final EIS concludes that the impact would be negligible (less than 0.1 percent of the standing stock of the central basin of Long Island Sound).

OC2-30 Section 3.3.2.2 of the final EIS has been expanded to more fully describe expected concentrations and potential impacts of sodium hypochlorite in water, specifically as they relate to plankton communities, including lobster larvae. All Project discharges would be conducted in accordance with federal and state regulations and Project-specific SPDES permit requirements.

OC2-31 Holistically, the water quality problems that exist in Long Island Sound are the result of hundreds of years of anthropogenic inputs. Specifically, nitrogen from wastewater treatment plants has been identified as the most significant contributor to hypoxia. The proposed Project is not expected to appreciably aggravate the nitrogen loading problem. Unidentified incremental and synergistic impacts from the Project, if they exist, cannot be expected to register on the holistic scale of an 18-trillion-gallon waterbody. The final EIS assesses the potential impacts of the Broadwater Project based on the available information for the proposed Project as well as the wealth of field studies, modeling, and literature on Long Island Sound. As described in the final EIS, the various impacts of the proposed Project largely would be very limited in extent and magnitude.

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Significance and a national, regional, and local treasure. CCE believes that there are viable alternatives that the DEIS glosses over. CCE does not believe the answer to any given need is in one silver bullet project, rather there several real solutions that will not close off portions of the open waters of LIS to multi-national, multi-billion dollar corporations. CCE offers the following comments:

1. **The DEIS bases its alternatives on the assumption that an additional 1bcf a day is needed to the region, without a comprehensive analysis of whether or not that is a REAL need.**

OC2-32

Nowhere in the DEIS is there a substantiated calculated analysis of what the future need will be. The DEIS points to LIPA's Energy Plan for 2004-2013 as evidence of increasing demand for energy. The DEIS then recognized that the LIPA Energy Plan lays out a comprehensive plan to meet the increasing energy need, which includes a variety of projects. The LIPA plan does not indicate nor discuss the need for a LNG project. It is unclear how the DEIS translates facts such as these into a demonstrated need for an additional 1 bcf a day.

OC2-33

In the alternatives section of the DEIS, many proposed and currently under construction projects appear to only be evaluated at the standard of 1bcf/per day. The projects are not looked at holistically, rather each project is looked at and then eliminated due to the fact that the project will not produce 1 bcf of natural gas per day.

For example the DEIS looks at expanding additional pipelines such as the Algonquin Pipeline that serves the Northeast region. The document reads (page 4-7), "To supply an additional 1.0 bcf per day of natural gas to the region, the Algonquin system would require significant modification and expansion."

OC2-34

The DEIS needs to look at permitted pipeline expansion projects, such as Millennium Pipeline, Iroquois Pipeline, and Islander East, in conjunction with renewable projects, such as the Long Island Offshore Wind Project, in conjunction with the ability to re-power old, antiquated power plants, which is estimated to increase energy efficiency by 50-90%. CCE believes that this comprehensive assessment provides for a more a complete picture and understanding of any true energy need and any alleged lack of supply or proposed infrastructure.

*From a public perspective smaller projects that are less intrusive, less damaging, less dangerous are preferable over one large massive project.*

2. **CCE is concerned with the abundance of permitted, proposed, and planned LNG projects in the Nation, particularly in the Northeast region. CCE believes that the DEIS does not adequately, nor objectively evaluate these viable alternatives.**

OC2-32

As described in Section 1.1 of the final EIS, our analysis of energy and natural gas supply and demand in the region that Broadwater would serve included review of a wide variety of studies. The reports we reviewed were prepared by government agencies, task forces, industry groups, private consulting firms, and utilities such as LIPA that may be concerned about only a portion of the market area. Thus, LIPA's energy plans were considered only as a part of our overall assessment. As indicated in Section 1.1, there is a consensus that the demand for natural gas is expected to increase due to a combination of increasing demand from electrical generators, increasing population, and increasing per capita energy consumption. At the same time, net pipeline imports, primarily from Canada, are expected to decrease substantially, although additional LNG-derived gas could be available in New England if the Algonquin East to West Hubline Expansion Project was approved and constructed.

OC2-33

As described in Section 4.3 of the final EIS, delivery of natural gas from proposed but not yet constructed projects that could deliver incremental supplies of natural gas from Canada or Massachusetts through existing or improved pipeline systems (for example, Algonquin East to West Project) would require infrastructure improvements to transport the gas to New York City and Long Island. Although it would be technically feasible to provide gas through those systems, the infrastructure improvements would result in environmental impacts that would be greater than those of the proposed Broadwater Project.

OC2-34

Section 4.0 of the final EIS evaluates a wide variety of alternatives to the proposed Broadwater Project. The alternatives analyses compared quantitative impacts and concluded that the alternative projects, singly or in concert, could not satisfy the projected natural gas and other energy demands of the New York City, Long Island, and Connecticut markets with less environmental impact than the Broadwater Project. These alternatives encompass energy conservation, renewable energy sources (including wind and tidal power), and other existing and proposed LNG terminal and pipeline projects.

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- OC2-35 [ In 2005 FERC stated that 8-10 LNG terminals would satisfy energy demand in the Nation. Currently 16 out of 17 projects have been approved by FERC. There are currently an additional 40 projects pending review and approval.
- OC2-36 [ In the Northeast region there are projects that have already been approved that will supply an additional 3.2 bcf/d. There are another 3 proposed projects (excluding Broadwater) that would supply an additional 5.2 bcf/d. There are also 9 planned projects that would provide 8.3 bcf. CCE questions the need for 16.7 bcf/d of natural gas to the Northeast region. FERC rules out all of these approved, proposed, and planned projects because they are located to far away from NY/CT markets. It is unclear why FERC would object and outright dismiss the potential for utilizing pipeline infrastructure when FERC, in the past, has always approved such infrastructure. Currently, NY/CT currently receive natural gas and electricity from many of the approved, proposed, and planned location areas.  
  
The approved Bear Head facility in Canada, which would supply 1.5 bcf/d, has been permanently halted because they could not secure LNG sources. In general, the United States used less LNG in 2006 than in 2005 because the demand was so high in other countries and they were willing to pay more for it. Much of the Broadwater LNG supply will come from hostile countries in the Middle East and Russia, making the US more dependent on foreign sources for energy. Today, most of the U.S. natural gas comes from Canada and the Gulf of Mexico.
- OC2-37 [ CCE believes that the DEIS needs to realistically evaluate the alternatives to the Broadwater project.  
  
**3. The DEIS needs to further evaluate a true offshore location**  
  
Broadwater is proposed in a two-shore location, between NY and CT. It is proposed in an Estuary of National Significance, a federally designated Essential Fish Habitat area, a commercial trawl lane, a prime lobster ground, ...yet, the DEIS claims a location in the Atlantic ocean would have greater environmental impacts because the pipeline would have to be longer. This is simply NOT correct.
- OC2-38 [ CCE believes that the DEIS did not adequately evaluate this important alternative. **This project needs to be seriously evaluated outside of the Long Island Sound estuary.**
- OC2-39 [ CCE believes that this option was handily rejected in the DEIS because it would increase the cost to the applicant. FERC, as well as New York State's review, needs to consider the cost of Broadwater to the many and real negative impacts to the estuary's ecosystem, public use and commercial and recreational value and not just infrastructure cost to the applicant.  
  
In addition, the DEIS states that the Atlantic Sea Island Group has proposed an offshore Island that would be capable of storing and re-gasifying LNG. The Island would be 13.5 miles off of New York, in the Atlantic Ocean. The Island would serve the same markets.

- OC2-35 FERC is required to review the applications for LNG terminals that are onshore or in state waters irrespective of the number of applications received, approved, or rejected. For those projects that have been approved, the markets will determine whether they are constructed; and the markets are regional, not national. The Neptune Project and Northeast Gateway Project in Massachusetts have been approved by the Coast Guard, and construction has been initiated on the Northeast Gateway Project. Only a few FERC-approved projects are under construction, and those are in the Gulf of Mexico area. Some of the approved projects have been terminated by the owners prior to construction due to business and market-related issues. This trend is expected to continue in regions with multiple proposals combined with an insufficient market base.
- OC2-36 Section 1.1.5.4 of the final EIS has been revised to address this comment. In summary, regardless of the volume of gas displaced, displacement alone cannot supply significant additional volumes of natural gas to the New York City and Long Island markets. Currently, the 24-inch-diameter IGTS pipeline is the principal transportation route from the north; transporting significantly more natural gas through this pipeline from Connecticut south to Long Island and New York City would require construction of a pipeline "loop" (additional pipe added to the existing system to expand capacity) but would have associated impacts to the Sound. Further, additional onshore or offshore compression would need to be added to transport a larger volume of gas through the IGTS pipeline.
- OC2-37 Please see our response to comment OC2-34.
- OC2-38 As discussed in Sections 4.4.1 and 4.4.2 of the final EIS, siting an LNG terminal in Atlantic waters outside Long Island Sound would not be environmentally superior to the proposed Broadwater Project for a variety of reasons, including environmental impacts to offshore, nearshore, coastal, and onshore resources.
- OC2-39 Please see our response to comment OC2-38. Infrastructure cost was not considered in our evaluation of LNG terminal type and location alternatives.

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OC2-40 [ as Broadwater and be capable of sending out 2 bcf/d, twice the capacity of Broadwater. The DEIS identifies the Atlantic Sea Island as a project that will serve the same market as Broadwater and then side steps this as a potential alternative with erroneous information. The DEIS identifies the pipeline connection for the Atlantic Sea Island as being problematic because of the distance that would be needed for the pipeline to travel to shore. However, when CCE representatives met with Howard Boyers, Chairman of the Atlantic Sea Island Group, he conveyed that the necessary pipeline connection would 14 miles from the island to the existing Transco Pipeline. This is 8 miles LESS than what is needed for the Broadwater connection. It is curious why the DEIS identifies the Atlantic Sea Island pipeline connection as problematic while identifying Broadwater's pipeline, which is a longer pipeline and in an estuary, as having only minimal impacts.

OC2-41 [ In addition, the DEIS sites concerns that the Atlantic Sea Island maybe to close to shipping lanes. This same fact for Broadwater was addressed by declaring that the ships, commercial and recreational boaters will just have to navigate around the structure. Also, according to representatives of the Atlantic Sea Island the location is between shipping lanes as opposed to Broadwater which is directly in the middle of a heavily trafficked shipping lane.

OC2-42 [ The Atlantic Sea Island proposal should be assessed as a real alternative to Broadwater. This alternative may prevent damage to lobster populations and avoid public access concerns in the estuary and in the Race. CCE believes that this is an inadequate assessment and believes that FERC should further analyze this alternative.

#### 4. The DEIS needs to further evaluate a SRV open-ocean facility

OC2-43 [ The SRV is a pipeline that rises up and accepts re-gasified LNG from incoming tankers and then lowers down. Massachusetts recently approved The Bay State Plan, which is 2 offshore SRV's. This plan came out AFTER a FSRU was proposed to the Massachusetts area. It was determined that the SRV, located in the open ocean would have less environmental impacts and require less security by the US Coast Guard, while still being able to supply 1 bcf/d to the region. This option is not adequately evaluated in the DEIS.

OC2-44 [ It is important that energy projects are evaluated on REAL energy needs and REAL energy alternatives and options. The DEIS fails to do this. CCE is requesting FERC do a comprehensive analysis of the alternatives and not ignore the public's opposition and REAL concerns.

OC2-45 [ It is important that energy projects are evaluated on REAL energy needs and REAL energy alternatives and options. The DEIS fails to do this. CCE is requesting FERC do a comprehensive analysis of the alternatives and not ignore the public's opposition and REAL concerns.

OC2-40 Section 4.3.2 of the final EIS has been updated to provide the most recent information on other proposed LNG terminal projects, including the Safe Harbor Project proposed by the Atlantic Sea Island Group. At the time the draft EIS was issued, the Atlantic Sea Island Group pipeline proposal was not yet developed. Only recently has the application to the Coast Guard been accepted. The impacts of pipeline construction are dependent on the sensitivity of the environment that would be disturbed. As described in Section 3.3 of the final EIS, the Broadwater pipeline would be constructed in an offshore area with a soft sediment bottom. To satisfy the objectives of the Broadwater Project, the Safe Harbor pipeline would require onshore and potentially offshore pipeline system improvements possibly including crossing sensitive nearshore and shoreline habitats.

OC2-41 As described in Section 3.7.1.3 of the final EIS, there are no shipping lanes in Long Island Sound, and the FSRU has been located to avoid most commonly used transit routes. There are defined shipping lanes on both sides of the proposed Safe Harbor terminal site and the impacts associated with establishing appropriate safety and security zones around the terminal will need to be evaluated by the Coast Guard. For Broadwater, the Coast Guard has completed this evaluation and determined that, with implementation of the recommended mitigation measures, the impacts would be manageable. Section 4.3.2.1 of the final EIS has been updated to present additional information on the Safe Harbor Energy Project location.

OC2-42 We have conducted an adequate review of the proposed Safe Harbor Project as a potential alternative to the proposed Broadwater Project in the revised Section 4.3.2 of the final EIS. Our conclusion is that this alternative is not environmentally preferable to the proposed Broadwater Project and would not meet the objectives of the Broadwater Project.

OC2-43 We are not aware that an FSRU was at any time proposed for an LNG terminal offshore of Massachusetts. Suez, the applicant for the Neptune LNG Project, did not propose an FSRU at any point in the application process; and Excelerate Energy, the applicant for the Northeast Gateway Deepwater Port Project and the firm that first introduced the SRV system to the U.S. (Gulf Gateway Deepwater Port) does not include an FSRU in its projects.

OC2-44 Please see our response to comment OC2-40.

## Organizations and Companies Comments

## OC2 – Citizens Campaign for the Environment

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CCE believes a Final Environmental Impact Statement (FEIS) on the Broadwater project must be a comprehensive, complete analysis of the proposed project. The FEIS must address the above comments.

Thank you for this opportunity to comment.

Sincerely,

Maureen Dolan Murphy  
Program Coordinator

Kasey Jacobs  
Program Coordinator

CC: Senator Hillary Clinton  
Senator Chuck Schumer  
Congressman Tim Bishop  
Congressman Steve Israel  
Congressman Peter King  
Congresswoman Carolyn McCarthy  
Congressman Gary Ackerman  
Congresswoman Nita Lowey  
Governor Eliot Spitzer  
Secretary of State Lorraine Cortes-Vazquez  
County Executive Steve Levy

OC2-45 Section 1.1 of the final EIS presents our analysis of the energy supply and demand for the region based on a review of technical reports prepared by government agencies, task forces, utility companies, private consulting firms, and others with appropriate expertise. Section 4.0 of the final EIS addresses a wide spectrum of reasonable and very real alternatives and has been prepared in compliance with NEPA regulations and CEQ implementation requirements and guidelines.

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ORIGINAL

MEMORANDUM

January 8, 2007

FOR: Citizens Campaign For The Environment

FROM: Dr. Stephen T. Tettelbach, Ph.D.  
Professor of Biology, C.W. Post Campus of Long Island University

SUBJECT: Comments on the Broadwater LNG Project Draft Environmental Impact Statement

2007 JAN 16 P 4: 16  
CP06-54-0

The overall conclusion reached in the Draft Environmental Impact Statement (DEIS) for the Broadwater LNG Project proposed for Long Island Sound (November 2006 document) is that minimal impacts would result from the construction and operation of the LNG terminal; however, several assumptions upon which these conclusions are based appear to reflect misinterpretations of the scientific literature. In some cases, quantitative data cited in support of conclusions are not provided in the report or attached references. In other cases, potential impacts are summarily dismissed with very little discussion. I will address two areas specifically in my comments: the potential effects of the proposed LNG terminal on marine life of Long Island Sound and the potential effects of the onshore support facilities proposed for Greenport and/or Port Jefferson, New York.

The discussion of the potential impacts of the LNG pipeline on marine life focuses on American lobsters, *Homarus americanus*, and commercially and recreationally important finfish species, but omits some important scientific evidence which is integral to the discussion of these potential impacts. The DEIS states, without providing any references, that juvenile or epibenthic phase lobsters are located in shallow water less than 30 feet deep (pg. 3-45) and thus pipeline installation would have little if any effect on lobsters during these stages of their lives. However, Sclafani (2001) stated that, when planning surveys of distribution of juvenile lobsters in western Long Island Sound, more juvenile lobsters were expected to occur in deeper than shallower waters. The DEIS states (pg. 3-45) that "Installing the pipeline during winter would avoid impacts to a portion of the adult lobster population because they would have migrated offshore." It is well known that lobsters in Long Island Sound are essentially non-migratory (see review in Howell et al., 2005), and thus confining pipeline installation to winter months would not be expected to reduce mortality of adult lobsters because they would not have migrated out of the area. The potential impacts of crossing Stratford Shoal with a 54 ft wide, 4000 ft long trench are dismissed as "negligible" (pg. 3-46 DEIS) due to the timing of planned excavation activities associated with pipeline installation, but again, this is based on the incorrect notion that lobsters will have migrated out of the area. The recent mass mortality of lobsters in Long Island Sound and the poor condition of the remaining stock are well documented; further damage to this important resource can only exacerbate the problem.

In discussion of backfilling of the proposed pipeline trench with rock (pg. 3-44 DEIS), the suggestion is made that this would provide habitat for potential attachment of oysters and mussels. This is an incorrect assumption: oysters (*Crassostrea virginica*) and mussels (*Mytilus edulis*) found in Long Island Sound are known to occur from the intertidal zone to a depth of 10 meters (Abbott and Dance, 1986) which is much shallower than the depth of the proposed trench (~95 ft = 29 meters). One potential impact of backfilling the proposed trench with rock, which is not mentioned in the DEIS, is

IN40-1

IN40-2

IN40-1

Thank you for your comments. Section 3.3.1 of the final EIS has been updated to reflect the results of recent lobster studies in Long Island Sound as they relate to depth distribution and migration.

IN40-2

Section 3.3.1.2 of the final EIS has been updated to identify the species that may utilize hard substrate, including invasive species. As stated in the final EIS, the final backfilling methods would be determined in concert with federal and state resource agencies; and the 2-mile portion of the trench that Broadwater has proposed to backfill with engineered material could be covered with a layer of native substrate, thereby eliminating the conversion to hard bottom substrate and potential invasive species habitat.

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IN40-2 that it may provide better substrate for attachment of larvae of the colonial tunicate *Didemnum*, which has had major impacts on sea scallops and other benthic fauna on George's Bank, and which has been newly reported in eastern Long Island Sound (National Undersea Research Center, 2006). Providing additional hard-bottom substrate in the form of rock lining the pipeline trench might contribute to the spread of this invasive species in Long Island Sound.

IN40-3 Another significant omission in the Draft EIS is the data from the quantitative benthic surveys done by the Broadwater team, which are briefly described on pg. 3-39. Methods and specific results are not provided, and no references are provided either. A general listing is made of benthic invertebrates encountered during video surveys, but without knowing the particular species and the numbers encountered there is no way to judge the potential impacts of the proposed dredging. The invertebrate species mentioned, e.g. amphipods, shrimp, crabs, are very important prey items for the commercially and recreationally important finfish species found in Long Island Sound.

IN40-4 There are several incorrect assumptions and misinterpretations which plague the discussions of potential impacts to marine life from the intake of seawater for normal operations of the FSRU and LNG carrier operations. The intake is proposed from a depth of 40 ft below the water line (pg. 2-8 DEIS). The statement is made that "... phytoplankton and zooplankton communities generally are confined to the top (0-16 ft) of the water column in Long Island Sound during summer and late fall" and the implicit assumption is that since the intake is well below this depth range that impacts to plankton will be greatly reduced. First of all, while some stratification of waters in Long Island Sound does occur during summer months, Conover (1956) showed that the vertical distribution of phytoplankton was fairly uniform from surface to bottom in Long Island Sound. Peterson (1985) studied the vertical distribution of different life stages of the abundant copepod *Temora longicornis* in Long Island Sound and found that while eggs were most abundant in the top 5 m of the water column, each successive life stage (i.e. larvae, juveniles and adults) was found deeper in the water column; adults lived at or near the sediment surface. The latter author is cited as the source for the statement noted above, from pg. 2-8 of the DEIS, so it appears that this information was misconstrued.

IN40-5 Estimated impacts of impingement/entrainment of plankton, including fish larvae, by the Broadwater operation are probably grossly underestimated. Results of the Poletti Ichthyoplankton Program (PBS & J/LMS 2003) and the Broadwater study of plankton are summarized in the Draft EIS, and are used as the basis for calculation of the numbers of larval fish expected to be impinged/entrained by the Broadwater operation. A mesh size of ~0.333 mm (=333µm) is commonly used for such sampling, however, Houde and Lovdal (1984) indicated that only about 10% of fish larvae may be retained by 0.333-mm mesh in inshore areas of Biscayne Bay, Florida. It is stated on pg. 3-58 of the DEIS that seawater intake for the Broadwater LNG terminal will impinge/entrain millions of fish eggs and larvae, but based on the retention efficiency quoted above their estimated mortality rates for fish larvae may be underestimated by a factor of 10. Calculated estimates provided in the Draft EIS of entrainment/impingement mortality due to the estimated intake of 28.2 mgd of seawater (=10.3 billion gallons per year) for normal operations of FSRU and LNG carrier operations speak only of ichthyoplankton and lobster larvae, but say nothing of the myriad species of phytoplankton and zooplankton, which support the Long Island Sound food web. Deevey (1956) reported maximum densities of net zooplankton from Long Island Sound that were higher than 200,000 individuals per cubic meter. Thus, losses of zooplankton and phytoplankton from entrainment/impingement will easily number in the trillions. The proposal is made in the DEIS to use a fine-mesh screen (<0.2 inches) on intake pipes to lower the rate of impingement/entrainment. If, for argument's sake, a screen of 0.1 inches (=2.54 mm) is used, this will exclude virtually no phytoplankton and only the largest invertebrate larvae (Johnson & Allen, 2005). But this is a moot point because the proposed flow rate

IN40-6

IN40-3 As discussed in response to comment SA2-17, Section 3.3.1 of the final EIS has been updated to provide additional detail on the benthic communities documented along the pipeline route, based on Broadwater's field studies. Additional details regarding the benthic studies conducted by Broadwater in April and May 2005 can be found in Resource Report No. 3 – Fish, Vegetation, and Wildlife in FERC's docket for the Broadwater LNG Project (Docket No. CP06-54-000, Accession #20060130-4018). The document describes the protocol and provides detailed results of the video surveys of the seafloor and, more importantly, the collection and laboratory analysis of benthic samples along the proposed pipeline route.

IN40-4 While Peterson (1985) did report that the depth distribution of an individual copepod species varied by lifestage, Peterson (1983) reported that the general phytoplankton and zooplankton community of Long Island Sound was generally confined to the surface waters during summer and fall.

IN40-5 As discussed in our response to OC5-15, the final EIS has been updated to identify the expected impacts to phytoplankton and zooplankton associated with water intakes. As with ichthyoplankton, Section 3.3.2.2 of the final EIS concludes that the impact would be negligible (less than 0.1 percent of the standing stock of the central basin of Long Island Sound). Because the percent of plankton loss was calculated based on the proportion of the volume of central Long Island Sound that would be used by the proposed Project, changes in the density estimates due to net efficiency would not alter the conclusion that the proposed Project would impinge/entrain less than 0.1 percent of the standing stock in central Long Island Sound.

IN40-6 Section 3.3.2.2 of the final EIS has been updated to more clearly describe potential impacts to phytoplankton, although it was never intended to convey that intake screens would prevent phytoplankton entrainment. In fact, entrainment estimates assumed that there were no screens. The comparison of the impacts to water resources for the proposed Broadwater Project to the Port Pelican Project is grossly inappropriate because the Port Pelican Project would use over 100 million gallons of seawater a day to vaporize gas, resulting in reducing the seawater temperature by 20 F as explicitly described by Thompson (2004). The Broadwater Project would not use any seawater to vaporize LNG. Because FSRU water would primarily be used for ballast, the temperature of discharges from the FSRU would approximate ambient water temperatures.

IN40-6 (0.5 ft per second) is well beyond the swimming speeds reported (Johnson & Allen, 2005) for marine zooplankton, including crab and shrimp larvae (0.1 ft/sec), bivalve mollusk larvae (0.01 ft/sec), fish larvae (0.1 ft/sec), and adult copepods (0.005 ft/sec). Thus, the thought that plankton will somehow avoid impingement and/or entrainment in the intake water of the Broadwater facility is nonsense. In a discussion of the Port Pelican Liquid Natural Gas (LNG) processing facility proposed for coastal Louisiana, Thompson (2004) concluded that use of a fine-mesh screen intake (<0.2 inches) and intake flow rate of 0.5 ft/sec (the same as proposed for the Broadwater project) "... would allow most larger organisms to avoid impingement at the intake structures, but water passing through the facility will undergo mechanical, pressure, temperature, and chemical (NaOCl [= chlorine bleach]) shock. Some entrained eggs and larvae may survive any one of these adverse conditions (Cada et al. 1981, Muessig et al. 1988), but the combination of these stresses will be lethal to almost all organisms passing through the facility." She further stated that "[u]ntil shown otherwise, we must assume that all fish and invertebrates will die after entrainment and simultaneous exposure to these four environment stress factors." Thompson (2004) concluded by stating that the Port Pelican Liquid Natural Gas (LNG) processing facility would effectively "sterilize" the entire water column (83 ft. depth) of a large area around the facility.

IN40-7 Phytoplankton and zooplankton entrained in the Broadwater intake would not only be lost to the future recruitment of their respective populations, but they would also be lost to the food web which supports the valuable finfish and shellfish populations of the Sound. These losses of plankton will be exacerbated by the daily discharge of sodium hypochlorite (i.e. chlorine bleach) and wastewater described for normal operations of the Broadwater facility (pg. 3-59 Draft EIS). Lighting of the external areas of the FSRU, which would be visible to a distance of 0.6 miles (pg. 3-59 Draft EIS), would potentially attract marine organisms from an area of ~1.13 square miles; light is known as a powerful cue for the depth regulation of larvae of several species of bivalve mollusks and other marine invertebrates (Levinton, 2001) and thus the process of larval attraction by Broadwater lights might further amplify losses due to e impingement/entrainment in intake water at the FSRU. It should be emphasized that impacts due to entrainment/impingement of plankton will occur on a continual basis while the Broadwater project is in operation.

IN40-8 Potential impacts of onshore support facilities to the villages of Greenport and Port Jefferson are effectively dismissed in the DEIS. But the fact is that, using Greenport as the example, the proposed 15.1 acre operations site would occupy most of the Greenport waterfront. The existing waterfront here includes Mitchell Park, with its carousel and ice skating rink; docks for transient vessels, commercial fishing boats, and the Shelter Island ferries; as well as numerous restaurants and shops. The proposed site plan calls for "... a warehouse for storage and handling of spare parts, tools, and equipment; dock space for berthing four tugs, a workshop for tug maintenance; and a waterfront staging area capable of supporting container transfer cranes, large trucks, and a personnel transfer and boarding area." Large containers would also be stored here. The facility would all be surrounded by a perimeter security fence, which can be estimated to be 3100 ft. (~0.6 miles). The statement that "... use of these onshore facilities as proposed by Broadwater, would not result in land use conversion or impacts" (pg. 3-90 DEIS) is patently absurd. Additional details of the impacts of the activities associated with the land-based facility can be surmised from the mention of "container transfer cranes". This implies that the 4 tugs will be bringing in large containers to the land-based facility, to be carted away by "large trucks". Large containers brought in by water necessitate barges. The movement of tugs with barges in tow through the narrow entrance to Orient Harbor and into Greenport Harbor raises serious concerns about potential navigational hazards to the heavy recreational boat traffic in this area.

IN40-7 Section 3.3.2.2 of the final EIS has been updated to provide additional detail on potential impacts to phytoplankton, and the final EIS concludes that there would be no significant impact to phytoplankton communities associated with water discharges or lighting. Any minor influences of lighting on predator-prey relations and plankton could negligibly affect plankton populations but also could result in a correspondingly beneficial effect on the species that prey upon them.

IN40-8 The commentor has stated that the onshore facilities would be on a 15.1-acre site. We do not know the origin of that number. Broadwater did not state that it would use 15.1 acres onshore, and we did not use that number in the EIS. If the commentor used the borders depicted in Figures 2.4-2 and 2.4-3 to estimate the area of the facilities, the calculation is not appropriate. The borders depicted in those figures indicate the area within which a facility would be selected, not the actual border of the facilities themselves. We have clearly repeatedly, and correctly described that new construction for the offshore facilities would be limited to a security fence and checkpoint. Impacts associated with use of the onshore facilities, including impacts to marine traffic, are addressed in Sections 3.5.2.3, 3.7.2.3, and 3.8.5 of the final EIS. As noted in those sections, Broadwater would use existing onshore facilities to support offshore operations. By using existing facilities for Project-related activities that would be similar to current use of the facilities, we do not anticipate significant additional impacts.

## OC2 – Citizens Campaign for the Environment

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IN40-9

In summary, the potential impacts of the Broadwater LNG facilities proposed for Long Island Sound and the communities of Greenport and Port Jefferson, NY are grossly understated and, as such, do not accurately portray the environmental and social costs of the project.

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IN40-9

The comments provided have enhanced the review of the Project and, had they been provided during the lengthy scoping process, would have enhanced the draft EIS. However, as explained in our previous responses, we have conservatively assessed the impacts of the Project and supported our conclusions with field surveys, scientific literature, and the professional judgment of numerous scientists who have spent the last 2 years carefully understanding and evaluating the project. We appreciate that a document of the size and scope of the draft EIS would contain some mistakes and are thankful for reviewers who pointed out those errors and drew appropriate conclusions based on their magnitude and content.

N-629

Organizations and Companies Comments

BW029929

## OC2 – Citizens Campaign for the Environment

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OC3 – CT Stop the Pipeline

ORIGINAL

**CT STOP THE PIPELINE POST OFFICE BOX 579 BRANFORD CT 06405**

2007 JUN 23 AM 11:24

January 22, 2007

The Honorable Magalie R. Salas, Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, D.C. 20426

Re: Broadwater Energy Company, L.L.C.  
Docket Numbers: CP06-54-000 and CP06-55-000

Dear Ms. Salas:

The following comments address concerns, inaccuracies and further studies raised by the DEIS. Thank you very much for the opportunity to comment on the DEIS.

The comments on the DEIS will be organized according to topic.

**PROJECT NEED**

According to the DEIS, the need for Broadwater is predicated on the assumption that the need for natural gas is rising in the Connecticut, Long Island and New York energy markets. This increased need appears to be primarily related to electric generation's fuel mix moving towards increasing use of natural gas "driven by the cost effectiveness of natural gas generation." (p. 1-7)

OC3-1 However, this is speculative. Natural gas prices have substantially increased recently and the market remains volatile. Furthermore, the design aspect for Broadwater is expected to take three years and is unlikely to be completed before 2010. During this three year period, given the increased price for natural gas and the increased buying power of other countries (e.g. China) the projected increase in natural gas usage and conversion of electric generation to increased use of natural gas may not occur.

OC3-2 In light of these unknowns, FERC should perform a revised natural gas need analysis closer to the date of expected construction, e.g. 2009, in order to gain a more accurate understanding of this region's natural gas demands and costs. We further request that a Final Certificate is withheld from Broadwater until this revised analysis is performed and evaluated. A project of this magnitude should only be built based on timely and valid data. It is a disservice to both ratepayers and those impacted by the project to provide any final approvals several years ahead of the expected installation.

**The Final FERC Certificate should only be issued after a revised analysis of need is completed closer to the time of construction. This revised analysis must indicate that the**

OC3-1 Section 1.1 of the final EIS has been revised to provide a summary of the most up-to-date information on supply and demand for the region from a wide variety sources. We recognize that these estimates will change over time, but as reported in Section 1.1, there is a consensus that demand for natural gas is expected to increase due to a combination of increasing demand from electrical generators, increasing population, and increasing per capita energy consumption. At the same time, net pipeline imports of natural gas, primarily from Canada, are expected to decrease substantially.

OC3-2 The Commission must review applications for proposed LNG and natural gas projects when they are submitted. This includes an analysis of environmental impacts, safety and security, and the Project need. If a company receives authorization to build and operate an LNG terminal or a certificate to construct and operate a natural gas pipeline system, the company then will decide whether to construct the project based on the need in the area to be served at that time. The substantial investment needed to construct LNG terminals and pipeline systems weighs heavily against their deployment in areas that will not provide a supportive market.

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- OC3-2 ↑ **increased demand for natural gas in the specified energy markets is valid. If the projected demand for natural gas has not materialized, then final FERC approvals should be withheld.**
- PROJECT DESIGN**
- Broadwater proposes to begin “detailed engineering and design studies” (p. ES-3) only after it receives all necessary FERC approvals.
- While it is understandable that Broadwater would prefer this arrangement because of obvious cost factors, this arrangement provides no perceivable benefit to the public good:
- OC3-3 [
- There is no opportunity for public comment on or analysis of Broadwater’s final design schema.
  - Both Broadwater’s FSRU and YMS are novel designs that have yet to be developed and more importantly, tested. In fact, Broadwater’s FSRU and YMS would likely be the first of its kind and is therefore in a unique situation in comparison to other tested energy projects. If approvals have already been granted, there is diminished incentive for Broadwater to ensure that their novel designs for the FSRU and YMS are technologically optimized to the best and safest design. After the approval process is complete, it is possible that Broadwater’s primary goal will be to complete the design and construction as quickly as possible in order to gain their market share rather than to spend additional time perfecting their design. Although this is understandable from Broadwater’s perspective, this does not serve the public good.
  - A FERC approval with design conditions will not increase Broadwater’s incentive to perfect their design as much as a withholding of the permit altogether until the design process is complete. There have been instances in which permitting agencies have stipulated specific conditions in their approvals but when these conditions are unable to be met, the permitting agency has granted variances to the conditions (e.g. blasting in Long Island Sound to install the Cross-Sound Cable) when, if the approval had been withheld until further testing was done, the overall design of the project may have been altered and/or the approval may have been withheld.
- OC3-4 [
- OC3-5 [
- OC3-6 [ **Therefore, because the design for Broadwater is novel, unique and untested, FERC’s Final Certificate should not be granted until the detailed engineering design phase has been completed by Broadwater and there has been an opportunity for public scrutiny and comment.**
- PROJECT SCHEDULE**
- Broadwater plans to begin in-water pipeline installation during the winter of 2009 to 2010. However, the YMS would not be installed until after the pipeline, in the fall of 2010. While this may serve Broadwater’s interests, it does not serve the public good.
- OC3-7 ↓ The YMS has yet to be designed. Furthermore, only speculative projections for the depth of glacial lake sediment in the area of the YMS currently exist. The depth of sediment to bedrock is presently unknown and has not been quantified by testing. There is a possibility that, given

- OC3-3 As described in Section 2.0, we believe that the level of engineering detail provided by Broadwater is sufficient to determine the likely Project impacts in the final EIS with a level of certainty consistent with NEPA objectives. Further, Section 5.0 of the final EIS includes many recommendations requiring Broadwater to provide detailed design features.
- OC3-4 FERC, the Coast Guard, and the certifying entity would continue to review the design, construction, and operation of the facility, if it receives all necessary approvals.
- OC3-5 Please see our response to comment OC3-3. Final FERC approval to construct and operate the Project would be contingent upon Broadwater satisfying the requirements included in the Commission Order.
- OC3-6 Thank for your comment. For the reasons given in responses to comments OC3-3 and OC3-5, the final design specifications would not be required before FERC could satisfy its NEPA review requirements.
- OC3-7 Section 3.1.1.1 of the final EIS has been updated to more fully describe geologic conditions at the proposed YMS site including the approximate depth to glacial deposits. In addition, Sections 2.3.1 and 3.2.3.1 of the final EIS provide supplemental information on YMS installation, and there is no geologic evidence that the YMS could not be installed at the proposed site. Those sections describe the standard engineering methods as well as additional information relative to geological conditions at the site. While additional geotechnical investigations would refine YMS installation methods, the refinements would not be expected to increase the magnitude or extent of the potential environmental impacts described in the final EIS.

# OC3 – CT Stop the Pipeline

- OC3-7 conditions unknown at this time, the YMS may not be able to be installed, either in that location or near that location.
- OC3-8 The trenching activities to install the pipeline will disrupt the seafloor habitat and degrade the water column, an essential fish habitat. If the YMS needs to be installed in a different location, then the pipeline will need to be extended, creating additional habitat disruption and degradation. If the YMS cannot be safely installed, then the pipeline will be unnecessary and the entire pipeline installation will have been an unnecessary degradation of Long Island Sound.
- OC3-9 Therefore, please alter Broadwater's project schedule so that construction of the pipeline begins AFTER the installation of the YMS is completed and determined to be safe, operable and feasible.

**ENVIRONMENTAL IMPACTS**

**1. Benthic Community Recovery**

The DEIS states that "the seafloor would begin to recover immediately following construction, and the benthic community should recover within 1 to 2 years." (p. ES-8.)

Broadwater's construction and operation will alter the local sediment as well as change the local geothermal and biochemical environs. The concern here is not only with recovery but with what type of benthic community will develop, if any, in the area of disrupted sediment and altered environs. A different type of benthic community may settle there with either subtle or substantial ramifications for other organisms in Long Island Sound.

For Long Island Sound, there exists an additional important structuring feature on the benthos in addition to those (e.g. sediment characteristics, geomorphology, and hydrodynamics) mentioned by Zajac, et al. (2000). This -- one of the most important structuring feature for soft-sediment communities, especially for temperate urban estuaries like Long Island Sound -- is the geochemical state of the sediments and the water column. Numerous papers have been written stressing the relationship between benthic community types and the geochemistry of an area (Rhoads & Germano, Cuomo,) yet little to no geochemistry has been addressed within the DEIS specifically as it relates to the cycling of organic matter, the development of hypoxic and anoxic sediment pore water and bottom water conditions, its influence on macrobenthic community development, and its relationship to the release of sediment contaminants under changing redox conditions.

Many benthic species, especially the ones in the deeper parts of the Sound, belong to a community that has been defined as being a late stage community (Rhoads, 1978). Such communities develop over the course of many years and only if the conditions are right. These communities are not adapted to frequent disturbance and, as a result, are hard hit by physical disturbance.

OC3-8 As indicated in our response to comment OC3-7, the existing geologic information supports that the proposed YMS site is feasible, and there is no substantial basis for moving the YMS location associated with geologic conditions. Further, Broadwater would be required to provide FERC and the Coast Guard with final design information for the YMS prior to receiving final authorization to initiate construction as described in Section 3.10.2.3 of the final EIS. Therefore, FERC would not authorize construction of the pipeline if the YMS cannot be safely and securely installed in its proposed location.

OC3-9 YMS installation and pipeline installation would both use standard installation methods and existing information supports the feasibility of the proposed construction.

OC3-10 The extent of seafloor impact would total less than 0.1 percent of the seafloor acreage in Long Island Sound and would therefore not be expected to have substantially influence the overall geochemical cycles in the softbottom habitat of Long Island Sound. Because of the physical disturbance that would occur during plowing, it is expected that the benthic community would be physically disrupted and displaced, and would experience a high degree of mortality in the area of plowing. However, recolonization of the plowed area is expected within 1 to 2 years following the disturbance (Newell et. al. 1998). In addition, post-construction monitoring would be conducted by Broadwater to ensure that agency-approved success criteria are met. This discussion has been expanded in Section 3.3.1.2 of the final EIS.

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OC3-11

In LIS, these communities may take anywhere from 3 to 10 years to fully establish themselves (Rhoads and Germano, 1983) under ideal conditions. Late successional stage communities, especially in the deeper areas of LIS, will take as long as 10 years to recover, and even longer if conditions are not ideal. This should not be considered a minor impact.

Recolonization of the pipeline area, even if back-filled, will occur mainly from the water column and not from adjacent areas. Only the extreme margins of this impacted area are likely to be recolonized by migrating adjacent benthic organisms, as the majority of the region will be affected, leaving undisturbed regions a significant distance away from the central trench, even if filled in.

Larval recruitment from the water column will depend on the season of the year and the presence of particular larval species. It is most likely that small polychaetes, like *Capitella* sp., would recruit to the area (Rhoads, McCall, & Yinst, 1978). These organisms are part of a community identified as an early colonizer and do not form a significant part of the later stage community that is normally present. The communities formed by early colonizers are vastly different in their function from later stage communities. *Capitella* are often used as pollution-indicator organisms as they are known to be able to tolerate extremely low levels of oxygen and can exist in the presence of hydrogen sulfide, ammonia, and other reduced end-products of organic matter decomposition.

OC3-12

Furthermore, since the effects of backfilling the trench is “uncertain” according to the DEIS, it is also a possibility that the area will never recover (the benthic community in many areas near the Iroquois pipeline has still not recovered since 1991.)

**A more thorough assessment, including area testing, of the biogeochemical effects of the construction/operation of Broadwater and its pipeline should be required before assumptions regarding benthic community recovery are made. Furthermore, in the FEIS, please clarify how the recovering benthic community might differ from the pre-existing benthic community and how that will impact the water column as well as other Long Island Sound organisms that interface with the benthic community, both directly and indirectly. In addition, how would the number and types of invasive species change because of possible alteration of the original benthic community?**

2. Anchor Scars

OC3-13

In the DEIS, the number/impact of anchor scars created during pipeline construction is unclear. In addition, will how these anchor scars be treated i.e. will they be filled in? This is not addressed in the DEIS.

These anchor scars are physically, chemically and biologically analogous to other anthropogenically created depressions in the floor of LIS, such as borrow pits that exist in other areas in the central and western areas of LIS; both represent new depressions in the seafloor. These new depressions in the floor of LIS have the potential to alter the local hydrodynamics present in the area. For example, borrow pits are known to accumulate fine-grained sediments and organic materials (Swartz & Brinkhuis, 1978). The sediments that

OC3-11

Section 3.3.1.2 of the final EIS has been expanded to more fully discuss benthic habitat recovery estimates based on available and pertinent literature. All available Rhoads and Germano literature was reviewed; specific recovery times were not reported, although at 10 years past, recovery was observed. Section 3.3.1.2 also discusses post-construction monitoring reports and results for several similar linear projects some of which indicate successful recovery of the seafloor within a few months to 2 years after installation. In addition, FERC has included a recommendation that Broadwater file plans describing methods to mechanically backfill the trench (Section 3.1.2.2 of the final EIS). The plan must incorporate interagency coordination to identify the appropriate methods for backfilling and detailed post-construction monitoring criteria to assess recovery success.

OC3-12

As stated in response to comment OC3-11, the discussion of benthic recovery has been updated in the final EIS (Section 3.3.1.2). This discussion specifically documents the available information on the seafloor recovery associated with the IGTS pipeline project. The information indicates that recovery has been problematic in nearshore oyster beds but that offshore areas have largely or completely recovered where a plow comparable to the proposed Broadwater plowing method was used. Federal and state agency representatives would determine appropriate backfilling methods and post-construction monitoring criteria to ensure successful recovery.

OC3-13

Section 3.1.2.2 of the final EIS has been updated to more fully describe the number, size, and potential impacts of anchors based on an expert review of anchoring methods.

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accumulate in borrow pits are usually more organic rich than the surrounding sediment and are typically hypoxic or anoxic; thus they attract a different type of benthic community.

OC3-14 [ The creation of a series of anoxic depressions will significantly alter the normal geochemical environment in the pipeline region, especially in the summer, when areas of the Sound can sometimes experience severe seasonal oxygen depletion. These additional hypoxic and potentially anoxic areas will only add to this seasonal and needs to be addressed further in the FEIS. Furthermore, hypoxic areas, while known to attract bottom-feeding fish because of the abundance of small polychaete worms, like Capitella, are not favored by most macrobenthic organisms, including oysters, lobsters, crabs, hard clams, razor clams, mussels, scallops, and horseshoe crabs.

OC3-15 [ Additionally, long-term exposure to hypoxia is detrimental to most finfish and their larvae. In essence, the anchor scars will create permanent degraded areas within an otherwise stable, healthy community critical to the overall functioning of the deeper parts of LIS. The area might recover to a pre-construction profile if the anchor scar pits are filled immediately with clean fill; leaving the anchor scars unfilled will degrade the overall LIS ecosystem.

The DEIS does mention a "dynamically positioned lay barge" that would eliminate all anchoring impacts and cable sweeps although it might disturb sediments and cause increase turbidity in shallower waters.

OC3-16 [ **If the anchor scars are left unfilled, they will become hypoxic/anoxic areas that will likely be colonized with organisms different from those prior to the laying of the pipeline. Therefore, in the FEIS please include a greater discussion of the number/impact of anchor scars and whether or not they would be filled. Please contrast this with a deeper discussion about the impacts from the alternative construction use of a dynamically positioned lay barge.**

### 3. Ballast and Cooling Water

The volume of Long Island Sound water used for the FSRU ballast and LNG ballast and cooling approaches 10 billion gallons per year and 300 billion gallons for the anticipated life of the project. Most of that water will be treated with a biocide and warmed by 3.6 degrees Fahrenheit above the ambient temperature. The assumption that this will be a minor impact is an untested hypothesis that requires further research. How will an area biocide, even within EPA levels, and increased temperature impact local organisms and influence the growth of invasive species?

OC3-17 [ **Further research and scientific testing should be done to be included in the FEIS in order to determine the actual impacts on native and invasive species of heating approximately 10 billion gallons of seawater annually and treating it with a biocide.**

OC3-14 First, the comparison of minor depressions from anchors to borrow pits is inappropriate. Second, hypoxia affects large continuous areas of the Sound and does not appear sporadically in depressions, as would be necessary to justify the direction of this comment. Sections 3.1.2.2, 3.2.3.1, and 3.3.1.2 of the final EIS have been updated to provide more detail on the potential impacts of anchoring.

OC3-15 Please see our response to comment OC3-14.

OC3-16 Please see our response to comment OC3-13.

OC3-17 Section 3.2.3 of the final EIS has been expanded to discuss concerns regarding water discharge temperatures, biocide, and invasive species.

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4. Seismic Activity

Although the DEIS cites the USGS 2006 survey that no faults run through Long Island Sound, it should be noted that Connecticut has 1 to 2 earthquakes per year and therefore there are active faults in the region; however, these faults are likely subsurface and therefore not available for surveys and cannot be included in the USGS Database. The primary concern, as detailed in the DEIS, has to do with soil liquefaction in the area of the YMS. How would Broadwater mitigate to minimize this risk?

OC3-18

**In the FEIS, please include a discussion of seismic history in Long Island Sound and how that will be mitigated against in both the design and operation of Broadwater.**

OC3-19

5. Contaminant Releases

The DEIS fails to consider the major impact that trenching/plowing will have on the release of contaminants, including heavy metals, from the sediments of LIS.

OC3-20

Although Broadwater did test samples in 2005 along the pipeline route, their sampling technique is not included and their results are not consistent with other scientific sampling studies.

OC3-21

In much of central and western LIS, the organic rich and fine-grained sediment tend to anoxic and hypoxic pore water conditions; these conditions can begin at the LIS floor to 10 cm below the surface (personal communication Cuomo.) Under anoxic conditions, the majority of metals and other contaminants remain bound to particles and are unavailable (Khalid, et al, 1978). When trenching/plowing occurs, the anoxic sediments will come into contact with oxygenated water and result in a release of the bound heavy metals and other contaminants into the water column where they will become biologically available (Khalid, et al., 1978).

These heavy metals have the potential to bioaccumulate in the tissues of the polychaete worms and other small infauna living within these sedimentary pits. These organisms, in turn, are fed upon by demersal fish, such as flounder, which further bioaccumulate the heavy metals and continue to move them up the food chain, potentially reaching humans.

Furthermore, accompanying the release of metals and other contaminants from organic-rich sediments into the water column will be a release of several reduced chemical species, including hydrogen sulfide, ammonia, and methane. Sulfides are known to be toxic to most organisms at varying concentrations. Ammonia has been shown to cause deleterious effects in lobsters at even very low concentrations in the marine environment (McLeese, 1970.)

Sediment resuspension will also lower the level to which PAR (photosynthetically active radiation) can penetrate. Sediment resuspension will also cause problems, such as clogging, for filter-feeding organisms like oysters and other bivalves.

OC3-22

**Any trenching/plowing activities will release heavy metals and other toxic contaminants (sulfides and ammonia) into the water column that will not be "insignificant and**

OC3-18 The potential for liquefaction is a function of both material type and earthquake size. Section 3.1.1.3 of the final EIS includes a recommendation that would require Broadwater to determine the potential for seismic soil liquefaction beneath the YMS, and identify mitigation measures/design features necessary to minimize the potential for damage to the YMS due to liquefaction.

OC3-19 Section 3.1.1.3 of the final EIS provides a discussion of the seismic history of Long Island Sound.

OC3-20 This issue is discussed in Section 3.1.2.1 of the final EIS based on historical sampling in Long Island Sound (Mecray et al. 2000) and Project-specific sampling. The Project-specific sampling protocols conducted by Broadwater were provided to the appropriate federal and state agencies for comment prior to the field effort. The results from this effort also were provided to appropriate agencies for review and comment. Because analytical results from this study were generally below ecological screening thresholds, the existing heavy metal concentrations in sediments would not significantly affect aquatic or benthic resources.

OC3-21 Section 3.1.2.1 of the final EIS has been updated to include additional information about the environmental sampling conducted by Broadwater. The specific sampling protocol and detailed laboratory results are publicly available in the FERC docket for the Broadwater Project (Docket No. CP06-54-000, Accession #20060130-4014). The reported concentrations from both the historical sediment sampling (Mecray et al. 2000) and Project-specific sampling efforts are within the same order of magnitude, and all are below the effects range-median screening thresholds.

OC3-22 Please see our responses to comments OC3-20 and OC3-21. Section 3.1.2 of the final EIS has been updated to include a discussion of ammonia and sulfides in sediments.

## OC3 – CT Stop the Pipeline

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OC3-22 ↑ **temporary;” this significant process needs to be further addressed in the FEIS through further study of the geochemistry of LIS and the creation of a mitigation plan.**

### 6. Lobsters

Lobster populations in LIS have already been significantly depleted for a variety of factors including hypoxic/anoxic conditions and disease. The pipeline construction, through sediment and contaminant release and the FSRU operation, through thermal stress, will add further to lobster morbidity and mortality.

The DEIS states that the project will be located in a “dense lobster fishing area “ (p. 3-65) and that in “fall 1999, a massive die-off of lobsters in Long Island Sound has been attributed to above-average water temperatures and low DO levels near the seafloor” (p. 3-41.) The DEIS states in a qualitative way that lobsters would die during construction (p. 3-45) but the DEIS fails to address the impact of Broadwater on lobsters in a quantitative way, especially through worsening DO levels through pipeline construction and thermal stress due to Broadwater’s thermal impacts during operation.

OC3-23 [ **Please evaluate in the FEIS the impact of additional biochemical and thermal stresses from Broadwater on the lobster population in a quantitative way over the lifetime of the Project.**

### 7. Anti-fouling paint

Anti-fouling paint will not be reapplied for the life of the project. Most of the copper is leached into the water column during the first few years of use. After that, the copper levels decrease and the effectiveness of preventing marine build-up and attachment of organisms presumably lessens as well. Since the FSRU and YMS will be stationary, it is unclear why anti-fouling paint will be necessary at all, especially since there will be a release of copper into the water column.

OC3-24 [ **In the FEIS, please include a discussion about whether the initial use of anti-fouling paint on the FSRU and YMS can be eliminated.**

### ESTUARY OF NATIONAL SIGNIFICANCE

The DEIS notes that Long Island Sound has been designated an Estuary of National Significance by the U.S. Congress (p. 3-107) and that over \$80 million has been invested to restore and improve the health of Long Island Sound. Indeed, there has been a “long-term trend of watershed and water quality degradation” ongoing in LIS. It should be noted that according to the USEPA, the water quality in LIS has undergone significant improvement over the past 15 years and is expected to continue to do so. Anthropogenic point sources of nitrogen have and are in the process of being controlled and there are a number of programs in place that are educating the public about controlling non-point source inputs of pollution to the Sound.

OC3-23 As stated in Section 3.2.3.2 of the final EIS, pipeline construction could result in a highly localized and temporary impact to DO levels at the point of active plowing, and DO levels would return to ambient conditions immediately after plowing. As discussed in response to comment LA 15-6, discharges from the FSRU would primarily be ballast water, and the discharge temperature would approximate ambient conditions. As discussed in Section 3.2.3.2 of the final EIS, discharges from the FSRU would not influence water temperatures. Broadwater estimates that the cooling water discharge from steam-powered LNG carriers would approximate ambient temperature conditions (within 1°F) within 75 feet of the point of discharge from the vessel, which would readily comply with NY SDEC thermal water quality criteria. Impacts to lobster would not be expected because water temperatures would return to within 1 °F of ambient levels within 75 feet of the point of discharge from the vessels. While it seems obvious, it is worth re-stating that the volume of discharged warm water is orders of magnitude less than the volume of the Sound and it cannot possibly influence the overall water temperature. In addition, warm water rises and would not affect the bottom habitats used by lobster.

OC3-24 Section 3.2.3.1 of the final EIS includes a recommendation that Broadwater avoid the use of copper-based anti-fouling paint and use silicone paint for the hull of the FSRU.

OC3 – CT Stop the Pipeline

OC3-25 However, the DEIS states that Broadwater will “not affect DO levels, introduce new toxic contaminants, increase pathogen contamination...or result in net degradation of habitat” (p. 3-108.) This is a false statement and needs to be removed from the FEIS. Broadwater will cause a decrease in DO levels as a result of the construction of the pipeline (via trenching and anchor scars.) Broadwater will introduce new toxic contaminants (the anti-fouling paint.) Broadwater will increase pathogen contamination (the thermal changes and sediment disturbance) and Broadwater will result in net degradation of habitat (benthic communities, lobsters and finfish will be negatively impacted through pipeline and YMS construction and throughout Broadwater’s operation.)

OC3-25 Moreover, the DEIS states that Broadwater is “consistent with the Plan’s stated objective of encouraging environmentally sensitive development and land use planning” is also an inaccurate interpretation of the intent of the Plan and should be removed from the FEIS.

OC3-25 As an aside, it is distorted statements like these that raise the ire of the public and cause citizens to distrust other statements either made by FERC or contained in the DEIS. It would serve FERC better in terms of public trust to cease with the suggestion that Broadwater is consistent with protecting Long Island Sound. This also goes to the several statements throughout the DEIS regarding the issue of “industrialization.” Clearly FERC preparers have misunderstood many of the comments regarding this topic: it is not that Broadwater will contribute to “widespread” industrialization, although that remains a possibility and should not be treated so dismissively in the DEIS; it is that Broadwater IS the industrialization of Long Island Sound. Placing the FSRU in the central basin with the necessary exclusionary zone IS the creation of an industrial zone completely off-limits for other commercial, recreational and naval uses. To reiterate: Broadwater IS the industrialization of Long Island Sound. This is the same as if a structure the size of Broadwater were placed in the Grand Canyon or Yellowstone National Park. When a natural resource is perverted to an industrial use, even in part, there is a loss, even partial, of the overall value as a natural resource and the area affected is, indeed, industrialized.

OC3-26 **Broadwater is not consistent with the goals of protecting Long Island Sound. Please remove false statements to this effect from the FEIS. In addition, please include some acknowledgement that Broadwater –in part because of the creation of the exclusionary zones – creates an industrialized area in Long Island Sound and constitutes, at least in part, the industrialization of Long Island Sound.**

**ALTERNATIVES**

OC3-27 It is not clear from the DEIS whether or not the Safe Harbor Energy Project, a LNG facility planned by the Atlantic Sea Island Group has been included in the list of proposed/planned LNG facilities to be considered as an alternative to Broadwater.

OC3-28 This facility would be located 13 miles offshore and be able to tie into an important pipeline hub in Linden, New Jersey. No interconnecting pipeline would need to be built and this would decrease environmental impacts in comparison to Broadwater. Moreover, this LNG transfer and storage station would not require as extensive and new engineering technology like

OC3-25 Section 3.5.7.3 of the final EIS has been revised to more clearly identify the Project impacts as they relate to the Comprehensive Conservation and Management Plan (CCMP). The CCMP focuses on finding a balance between development and protection of the environment. As such, the proposed Project would be constructed and operated in compliance with dozens of federal and state environmental regulations, as well as many Project-specific federal and state permits that are more protective of the environment than existing federal and state regulations. Therefore, we believe that the Project would be consistent with the CCMP.

OC3-26 Broadwater submitted a coastal consistency certification to NYSDOS and to FERC that contains Broadwater’s analysis of the proposed Project’s consistency with New York State coastal policies, including applicable policies of the Long Island Sound CMP and the Local Waterfront Revitalization Programs adopted by Smithtown, Southold, and Greenport. NYSDOS is responsible for determining whether the Project is consistent with the applicable policies. It is our understanding that NYSDOS will make that decision after the final EIS is issued and will provide FERC its decision.

Section 3.5.2.2 of the final EIS acknowledges that the exclusionary zones represent industrialization of the Sound. Specifically, the EIS states that commercial and industrial structures in or under offshore waters of the Sound include cable crossings, natural gas and petrochemical pipelines, and two petrochemical platforms. However, approval of the Project would result in an industrial/commercial use of the Sound that would differ from most existing industrial or commercial uses for two reasons. First, the Project would be a permanent visible structure as opposed to most current industrial applications conducted on the shoreline, below the surface of the water, or as a transient activity on the surface of the water. Second, it would be farther offshore than the two petrochemical transfer stations currently in operation.

OC3-27 The potential impacts of the Safe Harbor Energy Project are described in Section 4.3.2 of the final EIS based on the available information.

OC3-28 Please see our response to comment OC3-27. Safe Harbor proposes to install a pipeline between the island constructed offshore Long Island to the existing Transco pipeline.

OC3 – CT Stop the Pipeline

OC3-28 ↑ Broadwater (e.g. YMS) and it would not be located in as fragile an area as Long Island Sound, an Estuary of National Significance. The Safe Harbor Energy Project would be able to serve the New York and Connecticut markets through existing pipeline connections

**Please include a discussion of the Safe Harbor Energy Project in your alternatives section in the FEIS.**

**CONCLUSION**

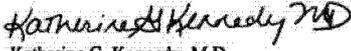
In conclusion, I oppose the construction and operation of Broadwater in Long Island Sound.

In sum, this is because the Sound is still too fragile to support the intrusion of an energy project that has yet to be engineered and tested and exists nowhere else on earth. There are too many unknowns to risk devastating a water body as delicately balanced and important as Long Island Sound. Millions of people use the Sound for a million different reasons. No one use trumps anyone else's use; Broadwater would. Moreover, today's volatile energy market raises questions about the future of natural gas in terms of cost, availability and demand. Developments in alternative fuel sources, including clean coal and fuel cell technologies, make the assumption of an increase in use of natural gas uncertain. Finally, alternatives to Broadwater need to be more fully considered.

OC3-29 [ I disagree with FERC's assessment in the DEIS that the environmental impacts of Broadwater are essentially minimal. I urge FERC to reassess their environmental analysis using additional quantitative studies and to consider the suggestions discussed in my comments. Furthermore, I urge FERC to delay any approvals for Broadwater until after the design is fully engineered and available for another round of public comment. In addition, I urge FERC to perform a revised needs analysis closer to the time of installation to obtain a more valid understanding of the need for Broadwater and to withhold any final approvals until that need is established.

OC3-30 [ OC3-31 [ OC3-32 [ If Broadwater is constructed, then I urge FERC to consider the dynamically positioned lay barge to minimize seafloor disturbance and to install the pipeline only after the YMS has been successfully constructed. Furthermore, Broadwater should be required to take out a bond for the life of the Project to cover the costs of any incidents that cause property and environmental damage or to compensate for loss of life.

Again, thank you very much for the opportunity to comment on the DEIS. Please do not hesitate to contact me for further information or questions regarding my comments. I can most easily be reached by phone at my office: 203-772-2090 or by writing to the following address.

Sincerely yours,  
  
 Katherine G. Kennedy, M.D.  
 Post Office Box 578  
 Branford, CT 06405

OC3-29 The final EIS has been updated to provide additional information on the environmental setting of Long Island Sound and additional detail on potential impacts. As described throughout Section 3.0 of the final EIS, construction and operation would result in minor impacts to the environment because of incorporating Project siting, design, and mitigation measures; our recommendations specified in the final EIS; and constructing and operating the proposed Project in compliance with all federal and state regulations and permitting requirements.

OC3-30 Section 2.5 of the final EIS has been updated to provide additional information on the engineering design that is pertinent to understanding potential environmental impacts associated with the proposed Project. In addition, Section 1.1 of the final EIS has been updated to describe the energy needs of the target market at the time the final EIS was prepared.

OC3-31 In Section 3.1.2.2 of the final EIS, FERC includes a recommendation that either mid-line buoys or a dynamically positioned lay barge be used to minimize the anchoring impacts to the seafloor during construction. As described in our responses to comments OC3-7, OC3-8, and OC3-9, YMS installation is readily feasible based on specific geological information, and there is no valid technical rationale for scheduling YMS installation before pipeline installation based on geologic conditions.

OC3-32 It is not FERC's practice to require posting of performance bonds as conditions in the EIS process. However, other regulatory bodies at the federal, state, and local levels could, if deemed necessary and appropriate, include performance bonds as conditions to their permits.

## OC3 – CT Stop the Pipeline

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OC4 - Cross Sound Ferry Services, Inc.

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ORIGINAL

**Cross Sound Ferry Services, Inc.**

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January 22, 2007

Magalie R. Salas, Secretary  
Federal Energy Regulatory Commission  
888 First Street NE, Room 1A  
Washington, DC 20426

RE: Docket No. CP06-54

FILED  
OFFICE OF THE  
SECRETARY  
2007 JAN 23 A 11:28  
FEDERAL ENERGY  
REGULATORY COMMISSION

Dear FERC:

We are writing to comment on the Draft Environmental Impact Statement, dated November 2006, for the Broadwater LNG Project in Long Island Sound.

Cross Sound Ferry Services is a privately owned and operated passenger and vehicle ferry service operating between New London, CT and Orient Point, Long Island, New York. We own and operate eight vessels, seven of which carry cars, trucks, and passengers, and one high speed-passenger-only vessel. We also own and operate the ferry terminal facilities which serve these vessels (terminal buildings, parking lots, docks and ramps, etc.). Additionally, we own a subsidiary company, Block Island Ferry Services, which operates one high-speed ferry seasonally from New London to Block Island, RI. These operations carried over 500,000 vehicles and over 1.4 million passengers last year.

The potential impact of the Broadwater LNG project on ferry transportation between New London, Orient Point, and Block Island will be determined by the frequency and timing of the LNG carrier transits, the size of the safety/security zone that is established around those LNG carriers, and whether commercial ferries will be permitted to travel within the safety and security zones. Our vessels will cross the intended route of the LNG carriers up to 68 times per day between the hours of 0600 and 2400. Due to the time sensitive nature of our operation, any deviation from our vessels' normal routes to accommodate LNG carriers will cause delays, potentially disrupting an entire day's schedule. Our ferry schedule is precisely structured based on the maximum speed of our vessels, public demand, and the limited availability of docking facilities. The delay of one vessel has a snowball effect on the entire fleet, negatively impacting thousands of travelers and interstate commerce in general.

Our high-speed ferry service from New London to Block Island will be especially susceptible to delays. Our ferry, JESSICA W, transits "the Race", the entrance to Long Island Sound, 8 to 10 times per day from May through October. The intended route of the LNG carriers will also transit the Race. As represented in the Draft EIS, the Race is a navigational choke point where LNG

## OC4 - Cross Sound Ferry Services, Inc.

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OC4-1 carrier transits may cause delays of other traffic. The Draft EIS concludes that "if vessels are delayed, the wait could be approximately 30 minutes. As a result, delays to commercial traffic in the Race are not expected to be significant." (p.3-145). We strongly disagree with this conclusion. Any delay, and especially a delay of 30 minutes, would have a very significant negative impact on our high-speed service to Block Island. Elsewhere in the Draft EIS, a "worst-case delay of 15 minutes applies" (p. 3-150) to our high-speed Block Island ferry. These delay estimates seem to conflict. Regardless of whether the delay is 15 minutes or 30 minutes, our high-speed ferry does not have reserve power (speed) to make up for lost time and its schedule does not allow for delays. This ferry serves thousands of people per day and frequently operates at maximum capacity (530 passengers per trip). Delaying this ferry 15 or 30 minutes would disrupt an entire day's schedule, negatively affecting thousands of passengers' experiences. Our passengers pay a premium for high-speed ferry service. They expect to save time by using our service. If we cannot guarantee our high-speed schedule, we will lose our customers to other alternative modes of transportation such as the less expensive slow speed ferry operators, or the airlines. This would be financially detrimental to our business and could ultimately lead to its default.

OC4-2 "Impacts on Ferry Systems" are discussed beginning on page 3-149 of the Draft EIS. In the discussion, estimates are made for the likelihood of potential conflicts between existing ferry routes and the proposed LNG carriers' routes. We agree that "the probability for delays due to ferry and LNG carrier schedule conflict was found to be greatest for Cross Sound's Orient Point-New London route..." (p. 3-150) However, we strongly disagree with the methodology used to compute the likelihood of conflict. First, in calculating transit frequency from New London to Orient Point, 46 crossings per day were used. This number does not include 12 additional crossings on the same route by our high-speed ferry, SEA JET. Through our own calculations, we estimate that during peak season, at least one of our vessels will occupy some portion of a 3-mile long section of the proposed transit track of the LNG carrier's safety and security zone roughly 75% of the time during daylight hours. We also estimate that there would rarely be a greater than a 10-minute interval, during which at least one of our vessels did not occupy some portion of the 3-mile section. Assuming each LNG carrier would need at least 15 minutes to transit the 3-mile section, during peak season at least one of our vessels would have to deviate course to avoid the safety and security zone for every LNG carrier transit. Based on the assumption that the LNG carriers would transit Long Island Sound once a day during daylight hours, six times per week (incoming and outgoing) (p. 3-150), we would anticipate that the proposed LNG carrier safety and security zone would delay our service 6 days per week or roughly 85% of the time during peak season. The Draft EIS estimates the probability of conflict as "less than 0.2%". In reality the percentage will probably fall somewhere in between. We present our methodology to emphasize that the presentation of a skewed analysis in the Draft EIS does not adequately represent the significant impact that the proposed LNG project could have on ferry operations.

OC4-3 The conclusion of the Draft EIS's discussion of "Impacts on Ferry Systems" states "The potential impacts of LNG carrier traffic to ferry operations would range from no effect to periodic minor impacts that would occur over the life of the Project." As a "ferry operator", we estimate the potential impacts of LNG carrier traffic to range from periodic minor impacts to frequent major impacts over the life of the Project. Many of our customers are repeat customers and much of our growth is influenced by word of mouth. Delays in our service will produce dissatisfied customers, who will choose alternative means of travel in the future. Our service competes directly with

OC4-1 In response to the concerns expressed by Cross Sound Ferry, the assessment of impacts to ferry operations has been revised in Section 3.7.1.4 of the final EIS.

The 30-minute delay includes the estimated time required for a slow-speed vessel to move from the path of an LNG carrier, wait approximately 15 minutes for the LNG carrier to pass, and then return to its previous position. The 30-minute delay is a worst-case estimate for slow-moving vessels in the Race. It does not apply to ferries in the open waters of Long Island Sound or Block Island Sound, or to high-speed ferries transiting the Race.

OC4-2 In response to the concerns expressed by Cross Sound Ferry, the assessment of impacts to ferry operations has been revised in the final EIS. The draft EIS presented an assessment of the combined probability, over the course of a week, of a conflict between a ferry and an LNG carrier. In the final EIS, we addressed the impact of an LNG carrier that arrives during ferry operating hours to assess the likelihood of conflict.

OC4-3 As noted in the response immediately above, the assessment of impacts to ferry operations has been revised in the final EIS. The final EIS reflects a potentially higher impact of LNG transits to Cross Sound Ferry than was presented in the draft EIS.

## OC4 - Cross Sound Ferry Services, Inc.

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OC4-3 another ferry service, which does not cross the proposed LNG carrier route. Bridges, trains, and planes also offer reasonable alternatives to our service. Certainly if the proposed Project is built and is successful, LNG carrier traffic could increase above 6 transits per week, further impacting our service. With each LNG carrier transit potentially delaying our service, we estimate that the impact on our operation could be severe. As with our Block Island Ferry Service, this potential delay could be financially detrimental to our business and ultimately lead to its default.

OC4-4 We are cautiously optimistic that our concerns will be addressed if the Coast Guard permits commercial ferry transit within the LNG safety and security zones. This possibility is stated with varying language repeatedly in the Draft EIS:  
"Commercial ferries **may be allowed** within an LNG carrier safety and security zone under certain conditions" (p. 3-122)  
"As noted in the WSR (Appendix D), the Coast Guard **could allow** regularly scheduled ferries inside the LNG carriers' safety and security zones, assuming that the specific safety and security conditions at the time of passage are acceptable to the Coast Guard." (p. 3-149)  
"To alleviate potential ferry and LNG carrier schedule conflicts in the Race and elsewhere along the LNG carrier routes, the Coast Guard **generally would allow** ferry operation within the LNG carrier safety and security zone." (p. 3-150)  
"The potential impacts of LNG carrier traffic to ferry operations would range from no effect to periodic minor impacts that would occur over the life of the Project. **By allowing** conditional ferry transit of LNG carrier safety and security zones, the Coast Guard would reduce the potential impact to the ferry systems to the lowest level possible." (p. 3-150)

We are advocating that a stronger position be taken by the Coast Guard which would guarantee commercial ferries, regulated under 33CFR104, be allowed to transit within an LNG carrier's safety and security zone at MARSEC 1 (Maritime Security Level 1). The current language in the Draft EIS does not commit to an exception for ferries, but states it as a possibility. We respect that the security environment is fluid and that circumstances may be different in 2010. However, Federal Regulations created different security postures based on threat levels when they created the MARSEC system. We believe that allowing commercial ferries to transit LNG carrier safety and security zones at MARSEC 1 will limit potential negative impact to ferry operations, while preserving the safety and security of the LNG carriers.

Thank you for the opportunity to comment on the Draft Environmental Impact Statement.

Sincerely,



Adam Wronowski  
Vice President, Cross Sound Ferry Services, Inc.  
Owner, Block Island Ferry Services, LLC

Cc: Commander, USCG Sector Long Island Sound

OC4-4 Although the Coast Guard would generally consider allowing ferries to pass through the safety and security zones around the LNG carriers, it cannot commit to a formal agreement to allow that activity. If the Project is approved for operation and if the threat environment of the waterway remains at its current level, the Coast Guard would permit ferries to transit through the proposed moving safety and security zone around the LNG carriers. The Coast Guard would discuss the specifics of such transits with Cross Sound Ferry. As discussed in Section 5 of the WSR (Appendix C of the final EIS), the threat environment is dynamic. Therefore, as the threat environment changes, the Coast Guard would re-evaluate the specifics of the transits by the ferries and communicate any required operational revisions to the ferry company. The Coast Guard may also re-evaluate allowing ferries to transit the safety and security zone based on changes to MARSEC levels. In addition, if authorized, it is expected that Coast Guard would require Broadwater to schedule LNG carrier transits to minimize impact to other waterway users, to the extent practical, as recommended by the Coast Guard in Section 8.4 of the WSR (Appendix C of the final EIS).

## OC5 - The Nature Conservancy

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22 January 2007

Magalie R. Salas, Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE, Room 1A  
Washington, DC 20426

RE: FERC Nos. CP06-54-000, CP06-55-000

Dear Ms. Salas:

With this letter, The Nature Conservancy hereby expresses its serious concerns regarding the proposed placement of a floating storage and regasification unit ("FSRU") attached to a yoke mooring system (YMS) in Long Island Sound, only miles from the densely populated coasts of Connecticut and Long Island, in a waterbody of significant biological, economic and recreational importance.

As one of the world's leading conservation organizations, with a mission of protecting the land and waters on which biodiversity depends, The Nature Conservancy will limit its comments to the environmental issues raised by the proposed Broadwater project as discussed in the draft Environmental Impact Statement (EIS). Please note that as a conservation organization committed to forging cooperative partnerships that preserve ecologically significant habitats, The Nature Conservancy does not often take positions on specific development proposals in the areas where we work. However, the potential severity of the ecological threats posed by the proposed Broadwater project, and the inadequacies of the draft EIS, compel us to articulate our views at this time.

Two broad sets of effects of this proposed project must be addressed in more detail in the final EIS:

- What effects will construction and operation of the FSRU have on the Long Island Sound estuary as a whole, and
- What are the likely environmental consequences if something goes wrong, such as a fire, leak, explosion, or failure of the YMS, whether due to negligence, intentional human acts, or acts of nature?

### I. Construction and Operation of the FSRU and YMS May Pose Significant Environmental Harm

Broadwater Energy, a partnership between Shell and the TransCanada Corporation, proposes a \$700 million floating storage and regasification unit. This variant of a liquid natural gas terminal, involving cold storage of natural gas to reduce storage and transportation costs, would be the first of its kind. The design is a ship-like vessel attached to a YMS that is an extension of other floating production vessels used in the energy industry. In Long Island Sound, Broadwater proposes the FSRU to be

## OC5 - The Nature Conservancy

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approximately 9 miles from the Town of Riverhead to the south and 11 miles from New Haven, CT to the north. Only about 30 such floating platforms exist in the world (Axtman 2005).

OC5-1

We have reviewed the Draft Environmental Impact Statement and we have found that it raises many more questions than it has answered. Perhaps most importantly, why would FERC even consider siting an FSRU in a location as biologically diverse and productive as Long Island Sound, when the effects of the project – at best – will run counter to the efforts of numerous federal agencies and their partners,<sup>1</sup> which have invested years of work and taxpayer dollars to maintain and improve the Sound's chemical and biological viability?

In 1987, the United States EPA identified Long Island Sound as one of 28 estuaries of national significance as part of the National Estuary Program (NEP). The NEP focuses on improving water quality in an estuary and maintaining the integrity of the whole system – its chemical, physical, and biological properties, as well as its economic, recreational and aesthetic values (US EPA 2001). Nothing since the designation has diminished the Sound's importance. To the contrary, in 1994 a plan to manage the Sound for the region's benefit emerged from the Long Island Sound Study ("LISS"), and more than \$500 million in tax dollars have been allocated to implement the LISS plan to preserve healthy biological aspects of the Sound and abate primary threats. In September 2006, federal legislation was passed by the House and Senate creating the Long Island Sound Stewardship Act. This act authorizes \$25 million annually in federal funds under the auspices of the EPA to protect key coastal sites along the Long Island and Connecticut shore in an effort to save the Sound.

Successful efforts include reductions in nitrogen discharges to the Sound<sup>2</sup>, the extent and duration of hypoxia (lack of oxygen), and toxic releases to surface waters<sup>3</sup>. Efforts are underway to restore tidal wetland habitat and approximately 35 miles of river migratory corridors for anadromous fish passage by installing fish ladders and removing dams (LISS 2001).

Like other estuaries, Long Island Sound is an important and productive ecosystem that supports significant abundance and diversity of organisms.<sup>4</sup> Marine life and birds inhabit the Sound for all or part of their lives for feeding, nesting and nursery

<sup>1</sup> The federal agencies and partners include EPA New England, Connecticut Department of Environmental Protection, New York Department of Environmental Conservation, New York Department of State, New York City Department of Environmental Protection, USDA/NRCS, New York Sea Grant, Connecticut Sea Grant, Long Island Sound Watershed Alliance, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, U.S. Geological Survey, University of Connecticut, University of Connecticut Cooperative Extension System, SUNY Stony Brook, New England Interstate Water Pollution Control Commission, and the Interstate Environmental Commission.

<sup>2</sup> Approximately 47,000 fewer pounds of nitrogen are entering Long Island Sound each day compared to 1994 (LISS 2006).

<sup>3</sup> Since 1998, toxic chemical discharges directly into the Sound and its tributaries have decreased by 88 percent (LISS 2006).

<sup>4</sup> To be sure, the Sound is not without its problems. There are still water quality concerns and die-offs of lobsters, devastating a local commercial fishery.

OC5-1

To clarify, the proposed location for the FSRU was developed by the applicant with input from agencies and stakeholders. As part of our regulatory responsibility, we have reviewed and analyzed the impacts of the proposed Project. A great deal of effort and resources have been expended to restore Long Island Sound. Notable is the attempt to limit nitrogen inputs from sewage treatment facilities. Our review indicates that the Project would contribute minimally to the existing overall nitrogen inputs to the Sound. As stated in Sections 3.2.3 (water resources), 3.3.1.2 (benthic resources), 3.3.2.2 (fisheries), 3.3.3 (fisheries of special concern), 3.3.4.2 (marine mammals), 3.3.5.2 (avian species), and 3.4 (threatened and endangered species) of the final EIS, construction and operation of the Project as proposed by Broadwater would result in a limited environmental impact. Impacts to resources would be avoided or further minimized with incorporation of the recommendations we have identified throughout the final EIS.

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areas as well as for shelter, which is supplied by the Sound's diverse habitats including extensive tidal wetlands, rocky intertidal areas, beaches, dunes, bluffs, seagrass, kelp beds and other types of submerged aquatic vegetation, shellfish beds and reefs and islands (Strieb 1993). Commercial and recreational fishing activities result in an annual economic benefit of more than \$1.2 billion to the region and overall economic benefit of \$5 billion from recreational uses (LISS 2004). The marshes of the system help filter water, and absorb storm impacts.<sup>5</sup>

### Benthic Communities

The project involves construction of an underwater pipeline to connect the FSRU to the existing subsea Iroquois Gas Transmission System pipeline in the Long Island Sound. The FSRU pipeline will be approximately 30 inches wide and 22 miles long. The pipeline will be concrete-coated and installed beneath the seabed using a slow-speed, low-energy subsea plow and allowed to backfill naturally, although if the recommendation in the DEIS is followed, the trench will be back-filled following construction. In areas where this method is not possible, a trench will be dredged and then backfilled with imported "clean material." In "vulnerable" locations, additional protection of the pipeline may be needed and will be covered with concrete matting or armor stone.

The moorings of the FSRU would be connected to a permanent tower attached to the seafloor by four legs. The tower would have a footprint of approximately 13,000 square feet and would secure the FSRU in place and be a support structure for the connecting pipeline.

Excavation of the sea floor for the connector pipe and mooring tower will severely affect benthic habitat and create sediment plumes and stir up contaminants and particulates that can result in a series of temporary threats including detrimental impacts to phytoplankton (shading), filter-feeders (clogging), planktivorous fish and other animals. The full effect could disrupt the local food web for an undetermined length of time.

In section 3.3.1.1 of the DEIS, it states that Broadwater conducted studies of benthic communities in April and May 2005 but no details of how these studies were conducted are provided except that they included videography of the sea floor to assess the infaunal community. As was pointed out in testimony given by Drs. Roman Zajac and Peter Auster on 7 December 2006 at a hearing of the Connecticut State Senate's Long Island Liquid Natural Gas Task Force, assessing and quantifying the composition and structure of benthic communities by use of videography is extremely difficult as most species that live in the sediment are difficult to see and identify.

<sup>5</sup> Despite their importance to humans and other species, such coastal areas are experiencing some of the most dramatic changes of any type of ecosystem worldwide due to development-related loss of habitats and services. (Over 40 percent of the world's population lives within 60 miles of a coast) (Agardy *et al.* 2005).

OC5-2

Impacts associated with the temporary turbidity plumes during active construction are discussed in Section 3.2.3.1 of the final EIS. The turbidity concentrations associated with subsea plowing would be largely assimilated into Long Island Sound within 12 hours of sediment disturbance. A review of scientific literature indicated that the lowest suspended sediment concentration and duration combination that caused sublethal effects in estuarine fish was 650 mg/L for 5 days (Wilber and Clarke 2001). The maximum estimated concentrations during active plowing for the Broadwater Project do not approach the range at which sublethal effects have been demonstrated to occur in estuarine fish. Based on the relatively small size and short duration of the turbidity plume, construction would not result in any significant impact to water quality or marine resources; any temporary impact would exist during and immediately following active construction.

OC5-3

Details regarding the benthic studies conducted by Broadwater in April and May 2005 can be found in Resource Report No. 3 – Fish, Vegetation, and Wildlife in FERC's docket for the Broadwater LNG Project (Docket No. CP06-54-000, Accession #20060130-4018). Neither the text in the draft EIS nor in the final EIS characterizes the benthic community based on video surveys. Benthic community characterizations also included benthic grab samples at 27 sites along the proposed pipeline route. However, Section 3.3.1.2 of the final EIS has been expanded to more fully describe the benthic communities.

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OC5-4	[	The DEIS provides some sweeping generalities regarding the benthic communities that are largely based on gross differences in sediment types and the distribution of these sediments in Long Island Sound (Section 3.3.1.1). The DEIS provides no quantitative assessment of the benthic communities present along the route of the proposed pipelines or at the YMS.	OC5-4	Please see our response to comment OC5-3.
OC5-5	[	<i>How are we to know that the benthic communities have recovered following construction of the pipeline and the YMS if we don't have any data on the biological characteristics of the benthic communities prior to construction?</i>	OC5-5	Please see our response to comment OC5-3.
OC5-6	[	Questions linger over the ability of benthic communities to recover from disturbances associated with the construction of pipelines, in large part because data are difficult to obtain. Subtle differences in topography or grain size of the sediment at these sites may affect species composition. Exposing new, uninhabited substrates to colonization by benthic organisms could result in a change in community composition and structure or provide opportunities for the establishment of non-native invasive species.	OC5-6	Potential impacts to benthic habitat are discussed in Section 3.3.1.2 of the final EIS. This section also discusses post-construction monitoring reports and results for several similar pipeline projects. The findings of several post-construction monitoring reports in the region are described, including some areas where recovery appears to have occurred successfully. In addition, FERC has included a recommendation that Broadwater file plans describing methods to successfully mechanically backfill the trench (Section 3.1.2.2 of the final EIS). The plan must incorporate interagency coordination to identify the appropriate methods for backfilling and detailed post-construction monitoring criteria to assess backfilling success.
OC5-7	[	<i>We strongly encourage a renewed effort to quantitatively characterize the benthic communities at the YMS site and along the route of the proposed pipeline. We also ask the applicant to conduct a more detailed review of the literature as it relates to the recovery of benthic communities from pipeline installations.</i>	OC5-7	Thank you for your comment. Please see our responses to comments OC5-3 and OC5-6.
		<p><u>Tanker Traffic</u></p> <p>Beginning in 2010 the FSRU would receive two to three LNG shipments per week from ocean-going carriers, increasing the amount of traffic in the Long Island Sound by approximately 150 large vessels per year or 21% above levels for tank ships and freighters recorded in 2004 (DEIS Table 3.7.1-4). Each large vessel typically carries approximately 140,000m<sup>3</sup> of LNG.</p>	OC5-7	Thank you for your comment. Please see our responses to comments OC5-3 and OC5-6.
OC5-8	[	Any additional tanker traffic into Long Island Sound poses the threat of bringing marine invasive species (via ballast water and detachment from gear/hulls) into the Sound and neighboring waters. Even fully-loaded tankers coming from foreign ports typically have a small amount of ballast water, which could contain invasive species (Stiles 2006). The DEIS suggests that most ballast water would be exchanged in international waters (200 nautical miles offshore; Section 3.2.3.2) some ballast water would be released in Long Island Sound.	OC5-8	The final EIS has been updated to include the draft Water Quality Monitoring Plan (as Appendix I) that was designed to monitor discharges from the FSRU and LNG carriers (while berthed to the FSRU). LNG carriers are not expected to discharge ballast water into Long Island Sound because they would arrive in Long Island Sound full of cargo (see Section 3.2.3.2 of the final EIS). In the unlikely event that a carrier did discharge ballast water, the discharge would be conducted in accordance with federal and international regulations. These regulations would include EPA's pending ballast water measures for foreign vessels, to be enacted in 2008, that is intended to minimize potential impacts of invasive species.
OC5-9	[	<i>What safeguards exist if a tanker arrives from U.S. waters from more southern latitude within 200 nautical miles?</i>		
OC5-10	[	The DEIS also suggest that more stringent standards to protect against the introduction of invasive species through ballast water exchanges are up for adoption by the International Maritime Organization, but these standards have not been ratified and we should not count on than occurring as part of this review.		

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- OC5-9 Please see our response to comment OC5-8. All potential sources of LNG would be obtained at least 200 nautical miles from the U.S. coastline.
- OC5-10 Section 3.2.3 of the final EIS identifies the current status of regulations being considered by EPA and the IMO. All Project-related vessels would be required to adhere to all applicable state, federal, and international regulations and conventions designed to prevent operational or accidental pollution of the marine environment by ships. As is regulated for all international shipping traffic in Long Island Sound, vessels associated with the Project would be required to comply with applicable federal and international regulations, including the International Convention for the Prevention of Marine Pollution from Ships (MARPOL).

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- OC5-11 [ Invasive species may also attach to gear and hulls of boats. The FSRU and YMS provide stable sites in the center of Long Island Sound for potential alien species to colonize, become established, and disperse to other sites within Long Island Sound.  
  
As discussed in the DEIS, tankers will pass through important habitat occupied at certain times of the year by rare and endangered whales and sea turtles; collisions between tankers and these animals can be lethal. In addition to the tankers, support traffic providing protection and assistance to tankers will have to travel out to meet tankers, and guide tankers to the FSRU and back out to sea. Although the amount of tanker traffic has been quantified, a thorough assessment of additional support boat traffic has not.
- OC5-12 [ *This additional boat traffic and how it is conducted poses an additional risk to these rare and endangered species; this should be quantified to assess the risk to these species.*
- OC5-13 [ Normal leakage of fuels from such LNG vessels will introduce pollutants in direct contravention of the careful efforts to decrease toxins in the Sound.  
  
Entrainment  
  
The frozen gas would be stored within the hull of the FSRU in specially designed tanks, warmed into gas, and then sent to the pipeline. The warming, to be accomplished through a submerged combustion vaporization process, would send LNG through tubes in a water bath heated by burning natural gas. The intention would be to retain the heated water within a closed loop system to avoid discharge into the Sound.
- OC5-14 [ The FSRU and tankers are expected to use about 28.2 mgd of seawater; most of the water is associated with the vaporization process but it also includes cooling water for the tankers while moored at the FSRU as well as water associated with a small wastewater treatment plant.
- OC5-15 [ The section on entrainment deals only with entrainment of ichthyoplankton but does not discuss at all the effects of entrainment of phytoplankton or zooplankton. We believe this is a gross oversight as the densities of these other plankton far exceed the densities of ichthyoplankton and they serve as the base of the food web for all of Long Island Sound and adjoining marine systems. During much of the year, the waters of Long Island Sound are not stratified, and phytoplankton and zooplankton will be abundant in the water column where entrainment can occur. *The potential entrainment of all plankton should be estimated to determine the potential effects of FSRU operations.*  
  
We also believe that using the estimated volume of water in the central basin of Long Island Sound as a way of assessing the relative effect of entrainment on an individual

- OC5-11 Section 3.2.3.2 of the final EIS has been expanded to address potential concerns with invasive species. LNG carriers are not expected to discharge ballast water into Long Island Sound since they would arrive in Long Island Sound full of cargo. In the unlikely event that a carrier did discharge ballast water, the discharge would be conducted in accordance with federal and international regulations. These regulations include EPA's pending ballast water measures for foreign vessels, to be enacted in 2008, that are intended to minimize potential impacts of invasive species. In addition, we have included a recommendation in Section 3.2.3.1 of the final EIS, requiring Broadwater to use a non-toxic silicon-based anti-fouling paint on the hull of the proposed FSRU and any other structures requiring anti-fouling paint. According to Broadwater, the proposed FSRU may require surface cleaning of the hull which would be conducted no more than once per year.
- OC5-12 We have consulted with NMFS – Protected Resources Division about potential impacts. Section 3.4 of the final EIS has been updated with additional information regarding the potential impacts on threatened or endangered marine species associated with operation of Project-related vessels including mitigation measures to minimize potential impacts.
- OC5-13 As is regulated for all international shipping traffic in Long Island Sound, vessels associated with the Project would be required to comply with applicable federal and international regulations, including the International Convention for the Prevention of Marine Pollution from Ships (MARPOL).

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- OC5-14 LNG carriers would withdraw water for cooling. Virtually every boat with an engine in Long Island Sound takes up and discharges cooling water. The cooling water requirements for LNG carriers are relatively large but are similar to those of other large diesel- and steam-powered commercial vessels currently using the Sound. The intake and discharge of cooling water would be episodic, coinciding with transit and offloading operations. The average daily seawater intake by LNG carriers for cooling would be about 22.7 mgd. For context, the Sound holds about 18 trillion gallons and receives new daily inflows of about 444,000 mgd. Therefore, Broadwater's intake would be 0.005 percent of the daily inflow. The next generation of carriers will be larger, but will likely be diesel-powered requiring less cooling water. As explained in detail in Section 3.2.3.2 of the final EIS, the large majority of the water intake by the FSRU and LNG carriers would be associated with ballast water. No seawater would be directly required for the vaporization process. Section 2.1.1.4 of the final EIS describes the regasification process.
- OC5-15 As discussed in response to comment OC2-19, Section 3.3.2.2 of the final EIS has been updated to identify the expected impacts to phytoplankton and zooplankton associated with water intakes. As with ichthyoplankton, the impact would be negligible (less than 0.1 percent of the standing stock of the central basin of Long Island Sound).

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species such as lobster in Long Island Sound may not be appropriate (Section 3.3.2.2, pg 58).

OC5-16

*Alternatively, we suggest that Broadwater estimate the effects that entrainment will have on the abundance of all phytoplankton, zooplankton and ichthyoplankton with 1, 3, and 5 mile radii of the FSRU. This type of assessment would also aid in an understanding on how operations of the FSRU might affect, invertebrate, fish, piscivorous bird, and sea turtle distribution around the FSRU.*

OC5-16 Please see our response to comment OC5-15.

OC5-17

*Finally, the FSRU and YMS will have lighting associated with the infrastructure and no detailed assessment of how this lighting might affect the distribution of plankton around the site or affect the probability of entrainment at different times of the year. This should be assessed.*

OC5-17 Section 3.3.2 of the final EIS discusses potential lighting impacts to marine resources (including phytoplankton).

Sound

OC5-18

The sections on noise in the Broadwater DEIS focus primarily on levels that are either lethal or damaging to fish or mammals. The DEIS reports that pile driving during construction of the YMS may cause sound waves that are potentially damaging to marine mammals and they suggest that measures, such as ramping up this construction activity will cause marine mammals to avoid the area. Of greater concern to us is the average level of operating noise estimated to range from 120 dB within 0.6 miles and 108 dB within 1.9 miles of the FSRU. No discussion is provided as to how this might affect the behavior/foraging of fish, marine turtles, or marine mammals that occur within these proximities of the FSRU. *We ask the applicant to address this concern and identify how its affects might be mitigated.*

OC5-18 Potential impacts of underwater noise on various marine resources are discussed in Sections 3.3.2.2 (fish), 3.3.4.2 (marine mammals), and 3.4.1 (threatened and endangered species) of the final EIS. In addition, FERC has included a recommendation that Broadwater coordinate with NMFS to identify proper noise thresholds and any appropriate mitigation to avoid and minimize potential impacts to marine resources.

Lighting

OC5-19

As mentioned above, the FSRU and YMS will have fixed lighting associated with these structures. During migration, birds may be attracted to and disoriented by lighted structures, especially on nights with low cloud cover and/or fog. They may end up striking the structures or become weakened from circling around the structure and eventually fall onto the deck or into the sea and die. *No discussion is provided in the DEIS to assess the effects of the proposed lighting on migratory birds or measures that could be taken to mitigate these effects. This important issue should be addressed in the final EIS.*

OC5-19 Section 3.3.5 of the final EIS discusses potential lighting impacts to migratory birds. In regard to federally listed birds, FWS concurred with FERC's determination that collisions with the proposed FSRU would not be likely to adversely affect federally listed species.

Roseate Terns

OC5-20

A colony of the Federally Endangered Roseate Tern is located on Falkner Island approximately 12 miles south of the FSRU. This tern regularly forages along the north shore of Long Island yet no mention is made of the possible effects of the FSRU operations on the tern's flights to its regularly used foraging sites or its use of the region around the FSRU as foraging habitat. *We ask that the applicant conduct an assessment of how daily operations at the FSRU might affect the flight paths of Roseate Terns between their colony site and feeding sites.*

OC5-20 Section 3.4.1 of the final EIS has been updated based on available input from FWS regarding federally listed avian species. In a letter dated June 8, 2007, FWS concurred with FERC's determination that collisions with the proposed FSRU would not be likely to adversely affect federally listed species.

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### Combination of threats to adjacent and nearby waterbodies

While Long Island is densely settled on the western parts of the Sound, the Town of Riverhead includes much undeveloped land and shoreline, and a Wild and Scenic River (the Peconic River). The relatively natural state of Riverhead is one of the reasons that monitoring results show that the Sound is healthier to the east than the west, yet it is in the eastern healthy portion of the estuary that Broadwater proposes to locate its facility. Increased traffic to shore, increased development along the coast, and increased shore-hardening structures would be detrimental to the health of the Sound—and are likely to cause adverse impacts on the nearby Peconic Estuary, also an estuary of national significance.

Broadwater proposes a large project, entirely out of scale with its surroundings. The FSRU would be approximately 1,200 feet long, 200 feet wide and rise 75 to 100 feet above sea level, estimated to be about the size of the Queen Mary II. The LNG terminal would consist of LNG storage and vaporization facilities, LNG receiving facilities, power generation, ballasting system, crew accommodations, command and control facilities and safety systems. LNG terminals typically require additional infrastructure that can degrade or destroy habitat and/or potentially degrade air and water quality (including ground water). For example, there will likely be new/expanded well heads, roads (impervious surfaces), pipelines, power lines, water wells, disposal wells, evaporation ponds, and compressor stations (Stiles 2006). In addition, LNG is an energy intensive process that releases CO<sub>2</sub>. (Anti-Broadwater Commission undated). The release of such admissions into the estuary can be expected to have negative consequences which should be fully evaluated.

In conclusion, it seems misguided at best for the federal government to finance the Long Island Sound Study, use hundreds of millions of taxpayer dollars to implement the study's recommendations, and then place into the ecosystem a novel energy platform of enormous proportions whose impacts have not been adequately studied. At the very least, the parties that conducted the LISS should be engaged to assess the impact of Broadwater, and FERC should adhere to their recommendations. Further, as this facility is the first of its kind, Broadwater should be required to refute each and every one of the points above showing why construction and operation will not have a negative effect on the estuary.

### II. The Environmental Threat of a Potential Mishap is Significant

The comments in section I set forth likely impacts of the project if all goes according to plan and no mishaps occur. Such stability cannot be presumed. Broadwater (2004) contends that it chose the location in Long Island Sound because of consistent safe water and weather conditions year-round and its proximity to the Iroquois pipeline. Available storm data rebuts this claim. According to the US Landfalling Hurricane Probability Project (Gray 2006), there is a **99 percent probability** that the geographic area of Long Island, including the Sound will be hit with a tropical storm or hurricane in the next 50 years. There is a **26 percent probability** that Long Island will be hit

OC5-21 The proposed Project would primarily be located within the open waters of Long Island Sound. Broadwater proposes to utilize existing onshore facilities in New York for construction and maintenance operations for the proposed Project. The only development along the coast or shoreline would be limited to a guardhouse and a fence. The Peconic Estuary is more than 30 miles from the proposed FSRU. Therefore, we know of no basis for suggesting that the proposed Project would affect the Peconic Estuary.

OC5-22 Section 2.0 of the final EIS describes all facilities and improvements that would be included as part of the proposed Broadwater LNG Project. The proposed Project has been developed, in part, to minimize the potential for additional infrastructure; there is no technical basis to suggest that additional wells, power lines, roads, ponds, or compressor stations would be required for the Project.

OC5-23 Please see our response to comment OC1-64.

OC5-24 In developing the final EIS, we carefully considered the findings and recommendations of the LISS, and we have concluded that the proposed Project is compatible with those recommendations. In addition, many of the organizations involved in development of the LISS have been consulted and have provided comments as part of our review of the Broadwater Project. We believe that we have provided sufficient detail in this final EIS to assess the type and magnitude of potential impacts, and appropriate measures to avoid and minimize potential impacts in accordance with NEPA requirements.

OC5-25 Please see our response to comment OC5-24.

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with a major hurricane (category 3 or more) in the next 50 years. Hurricanes over the last two years resulted in significant damage and destruction to the petroleum infrastructure in the Gulf of Mexico (Table 1). Based on the most recent storm predictions, major casualty insurers such as Allstate have stopped writing insurance in the very area where Broadwater seeks to insert its multi-ton gas project.

OC5-26 [ Surely, if this FSRU is the first of its kind, it cannot be known how the proposed floating LNG terminal would withstand the effects of a hurricane, but the statistics concerning its precursors raise concerns. Thunder Horse in the Gulf of Mexico, for example, listed 20 percent after hurricane Dennis, and it was attached to the sea floor by 16 mooring lines – not the four proposed for Broadwater (Axtman 2005).

Table 1. Damage and destruction of petroleum infrastructure in the Gulf of Mexico by hurricanes during 2004-2006.

	Destroyed	Extensively	
		Damaged	Total
Oil platforms	118	72	190
Drilling rigs	9	23	32
Pipelines		146	146
<b>Total</b>	<b>127</b>	<b>241</b>	<b>368</b>

Source: EEA 2005

Though it is difficult to undertake a complete threats analysis given the information void, anticipated threats include the following:

OC5-27 [ 1. Fire/explosions – Fires and explosions could occur as the cold, liquefied gas is warmed into a gaseous form and then sent to the pipeline. Pool fires could also occur from an LNG spill. The liquefied gas would float to the surface of the water and vaporize. If it encounters a spark or flame the vapors may ignite and form a “pool fire” over the water, which cannot be controlled on open water and stops only when all the fuel is burned. A fire from a LNG tanker could melt steel from 1,300 ft and cause second-degree burns from a mile away. According to a LNG case study in California, the minimum safe distance from a worst-case scenario tanker explosion is seven miles. LNG tanker routes through The Race in the eastern part of the Sound could bring them within a mile of the North Fork (Dolan 2006). Such fires would kill all living organisms on the surface and deprive the system of needed oxygen.

OC5-28 [ 2. Spills – Other threats posed by the LNG facility include spills from either the tankers or the facility during transport or offloading. Even if they do not ignite, spills have the potential to kill marine life. According to Hightower *et al.* (2004), “No equivalent set of standards or guidance exists for the evaluation of the safety or consequences from LNG spills over water.” The Institute for Energy Law & Enterprise at the University of Houston Law Center compiled LNG data threats and found there have been 15 significant spills or leaks at terminals since 1965, including two explosive and deadly fires (Maryland in 1979 and Algeria in 2004).

In conclusion, we make the following recommendations:

OC5-26 Section 3.10.2 of the final EIS describes design standards for the YMS as they relate to hurricanes and other significant storm events. As indicated in Section 5, FERC requires that the YMS be designed to withstand a Category 5 hurricane. The largest hurricane reported in Long Island Sound in the past 150 years was a Category 3. The YMS would be attached to the seafloor by four piles driven over 100 feet into the substrate, not mooring lines as suggested by the commentor.

OC5-27 The comment that the “minimum safe distance from a worst-case scenario tanker explosion is seven miles” is likely referring to the proposed Cabrillo Port project. We have revised Section 3.10.3 of the final EIS to compare the Cabrillo Port analysis to the risk analyses conducted for the proposed Broadwater FSRU. In summary, due to project-specific differences, which include tank sizes, spill sizes, and operating environments, the consequence analysis specific to the Cabrillo FSRU is not applicable to the proposed Broadwater FSRU.

OC5-28 The causes of historical LNG facility incidents have been accounted for in the current design standards for LNG terminals and regasification facilities. For example, the Maryland incident referred to by The Nature Conservancy resulted in FERC making specific code changes. The Algerian incident is not directly applicable to consideration of issues related to Broadwater because that incident occurred at an LNG processing facility, not a regasification terminal. Nevertheless, the incident was investigated by FERC staff to assess the applicability of the causes of the incident and the applicability of corrective actions for regasification facilities. These incidents are also discussed in Section 3.10 of the final EIS.

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- OC5-29 [  A publicly available baseline inventory of benthic and pelagic flora and fauna within the project area must be undertaken;
- OC5-30 [  FERC must consider all environmental threats associated with the LNG terminal and related infrastructure including potential impacts from hurricanes; and
- OC5-31 [  FERC should use modeling to assess the threat from the construction and operation of the overall facility including various scenarios that consider spills, fires, natural disasters, etc.
- OC5-32 [  FERC should make available to the public all studies or other information that the applicant has presented, or which FERC has conducted, related to the potential environmental impacts of the proposed FSRU.
- OC5-33 [ Further, we also recommend FERC take a more regional approach to siting FSRU facilities, as recommended by the US Ocean Commission. As this facility is the first of its kind in the U.S., Broadwater should be required to show why this location is most appropriate in a regional context and that the construction and operation will not have a negative effect on the estuary.

Thank you for the opportunity to express our concerns. We appreciate your consideration of the above points and stand ready to assist in the review of the project in any manner that FERC believes would be useful. A list of references reviewed in preparation of this letter is attached.

Sincerely,

Nancy Kelley  
Executive Director, Long Island

Lise Hanners  
State Director, Connecticut

### References

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OC5-29 Thank you for your comment. Please see our response to comment OC5-3.

OC5-30 We have assumed that the comment refers to environmental threats that would harm the FSRU and the related infrastructure. In Sections 4 and 5 of the WSR (Appendix C of the final EIS), the Coast Guard has addressed potential threats to the FSRU, including environmental threats. Our response to comment OC5-26 addresses the threat of a hurricane, which we consider a worst-case environmental threat.

OC5-31 Section 3.10.3 of the final EIS addresses the consequence modeling that was conducted for the Project. This includes evaluation of worst-case scenarios that could result from an accidental or intentional release of LNG from the FSRU or from an LNG carrier.

OC5-32 All Project-related information that is not considered Critical Energy Infrastructure Information (CEII) or Sensitive Security Information (SSI) is available to the public in FERC's electronic docket for the Project (Docket Nos. CP06-54-000 and CP06-55-000). Individuals can obtain the CEII information by signing a confidentiality agreement. Appendix B of the final EIS lists reference information for the publicly available studies that we reviewed during preparation of the final EIS.

OC5-33 As a regulatory agency, FERC's responsibility is to review applications as they are filed. Section 313(c) of EPA act of 2005 also directs FERC to establish a schedule for the regulatory review that ensures an "expeditious completion" of the proceeding. If the New England states complete a regional siting study, FERC would take the conclusions into consideration during its review of subsequent regional applications for LNG projects. However, FERC does not believe that a regional siting study needs to be concluded prior to conducting the site-specific review of proposed projects. Such a review, if not completed before an application was filed before FERC, would surely conflict with the "expeditious completion" directive from EPA act.

The "siting" component of FERC's review is addressed through a multidisciplinary and cross-agency review of (1) the suitability of the location proposed by the applicant; and (2) the environmental impact of the proposed locations versus other locations that could achieve the same objectives. When FERC reviews a proposed project, it evaluates a range of alternative sites. These alternative sites are by necessity based in the same region as the proposed site.

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## OC5-33 (Continued)

As stated in Sections 2.1.1.1, 2.3.1.1, 3.10.2.1, and 3.10.2.2 of the final EIS, federal regulations, industry standards, and classification society rules would govern the safe design, construction, and operation of the FSRU. Section 3.0 of the final EIS indicates that impacts to the estuary would be minor, and Section 4.4.2 provides information on alternative terminal locations.