Sound Update

LONG ISLAND SOUND STUDY
A Partnership to Restore and Protect the Sound

Message from the Director

A proposal to moor a Liquefied Natural Gas (LNG) import terminal in the middle of Long Island Sound has people talking, and rightly so. Coming as it does on the heels of the recent Cross Sound electric cable crossing controversy, the proposal touches a few nerves already rubbed raw. Rather than tell you the project is wrong or right for the region, I want to explore some of the issues involved and explain the role of the Long Island Sound Study partnership.

LNG carriers would dock at the proposed Floating Storage and Regasification Unit (FSRU) and offload the LNG as depicted in this artist's redering. Courtesy of BroadwaterEnergy.com.

According to the US Department of Energy, domestic consumption of natural gas is increasing at a faster rate than production. Making up the difference means importing more natural gas, either through gas pipelines from continental sources or in ships carrying LNG from far-away sources. Another option is cutting consumption through conservation or alternative sources of energy. Broadwater, a joint venture of TransCanada and Shell, proposes to make up some of the difference by importing LNG to feed the high-demand area of New York and Connecticut.

Faced with the daunting task of locating an import terminal in a post 9/11 world, Broadwater and other energy companies are looking offshore to defuse safety concerns. Offshore siting has the added advantage of avoiding population centers, eliminating land-based environmental concerns and those associated with dredging port channels to accommodate deep-hulled LNG tankers. Broadwater proposes to place its terminal in the deep-water center of the Sound. The location, certainly not by coincidence, is in New York waters. It would also allow the terminal to connect, after burying 25 miles of new pipeline beneath the Sound's seabed, to the existing Iroquois gas pipeline that supplies natural gas to the region.

While the offshore location deftly side steps the most contentious issues associated with an onshore location, it creates new ones. One that will be scrutinized is the loss of access to a portion of the Sound. Because of safety requirements, a zone of exclusion around the terminal would be established by the US Coast Guard. While the size of the safety zone has not been established, the Coast Guard established a 500 meter safety zone around the LNG import terminal in Cove Point, Maryland, located in the Chesapeake Bay. Applying this safety zone to the terminal in Long Island Sound would result in a one square mile boundary. Cordoning off an area of that size in the Sound for what amounts to industrial use is unprecedented. An interesting side effect of the exclusion zone would be the establishment of a de facto marine reserve where all other recreational and commercial uses, including fishing, would be prohibited.

Obviously, all the environmental and social issues associated with this project can't be given justice here. Agencies charged with carrying out the public trust will evaluate the project based on the studies and analyses still to be performed. The Federal Energy Regulatory Commission (FERC) has primary authority over the design, construction, and operation of the project. FERC will serve as the lead agency in complying with the National Environmental Policy Act (NEPA) and will oversee preparation of an

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Liquefied Natural Gas the CAC's View

By Nancy Seligson

In the fall of 2004, the public started to read about a liquefied natural gas (LNG) facility proposed for Long Island Sound. The proposal raised many questions and concerns about the safety, environmental impacts, security, and navigational impacts of the facility, as well as potential dredging activities, the permitting process, and alternatives–not to mention the need–for the project.

Broadwater proposes a ship-like LNG facility moored in Long Island Sound. The location would be in New York State waters about 9 miles off the New York Long Island shoreline off Wading River, and about 11 miles off the Connecticut shoreline from Branford. The facility would be approximately 1,200 feet long and 180 feet wide–about the size of the Queen Mary II. The facility would receive and store LNG from tankers before converting it to gas. LNG is natural gas that has been cooled to -260 degrees Fahrenheit, which shrinks its volume allowing it to be more efficiently stored and transported.

The Long Island Sound Study (LISS) Citizens Advisory Committee (CAC) immediately initiated action to analyze the impacts of the LNG proposal. The CAC invited Broadwater and Federal officials to attend LISS CAC meetings and present the LNG proposal and the review process in more detail.

The CAC has formed an ad hoc subcommittee to address the LNG facility questions and issues. Some of the key questions include:

- Water quality impacts of the facility. Intake and discharge volume, velocity and temperature and its effect on fish.
- Siting of the facility.
- Environmental impacts of construction of the pipeline.
- Implications of precedent of industrial use of Long Island Sound.
- Navigational hazards and exemptions.
- Risk of leaks, spillage and catastrophic failure.

Several organizations and groups have taken stands on the proposal. The LISS, however, is a coordinating body for the federal, state, and local governments as well as the nongovernmental organizations, academic institutions, and nonprofit organizations studying and working to restore and protect Long Island Sound. As such, the LISS itself will not take a stand on the proposal. However, partner organizations will be involved in the Environmental Impact Statement review and on permit decisions.

The CAC recognizes that the Broadwater LNG facility is a very ambitious and untested proposal. Much information gathering, analysis, and testing must be done in order to move forward with the environmental review and permitting timetable. At this time we are still compiling information. Upon analysis and much discussion, the ad hoc subcommittee will help the CAC develop a policy stance in regard to the proposal. This is expected to be formulated over the next several months.

Broadwater has a Web site at www.broadwaterenergy.com and can be reached at (800)798-6379 for more information from the company. Connecticut Fund for the Environment/Save the Sound has a position at www.savethesound.org and (203)354-0036.

Nancy Seligson is the New York Co-Chair for the Long Island Sound Study Citizens Advisory Committee.

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Environmental Impact Statement (EIS) identifying potential impacts of the project, as well as alternatives to it. The U.S. Coast Guard is the lead on operational safety and security. EPA and other federal agencies will comment on the environmental impacts and alternatives discussed in the EIS. State and federal agencies will also need to give permits, licenses, and approvals to activities affecting land use, water, air, and fisheries. Through the NEPA and permitting process, light will be shed on all the issues associated with the proposed project.

The Long Island Sound Study (LISS) partnership will also provide a forum to discuss issues and improve communication about the project. For example, the LISS Citizens Advisory Committee recently hosted a presentation by Broadwater on its proposal and presentations by FERC and the Coast Guard on their lead-agency responsibilities. Just as importantly, the LISS partnership will not take a position on the project itself, leaving participating agencies and organizations to meet their individual mandates, but with a fuller understanding of the implications.

Looking ahead, the LISS can also coordinate regional efforts to improve our ability to assess environmental impacts, too often limited by a lack of data and information. Understanding and mapping the Sound can help identify habitat types and locations that are important for fish, shellfish and other sea life. This information, in turn, would inform resource management decisions to avoid use conflicts and protect sensitive resources. There are examples to consider. Just this past March, Massachusetts' Ocean Management Task Force called for the Commonwealth to map the seafloor of the State's coastal waters. The task force recommended establishing an inventory of the uses and resources of state waters as a first step in a longer process to set rules governing competing uses of the sea and to identify critical areas such as fish spawning regions. This is something the Long Island Sound community needs to think about.

Mark Tedesco

Mark Tedesco works for the US Environmental Protection Agency and is the Long Island Sound Study Program Director.

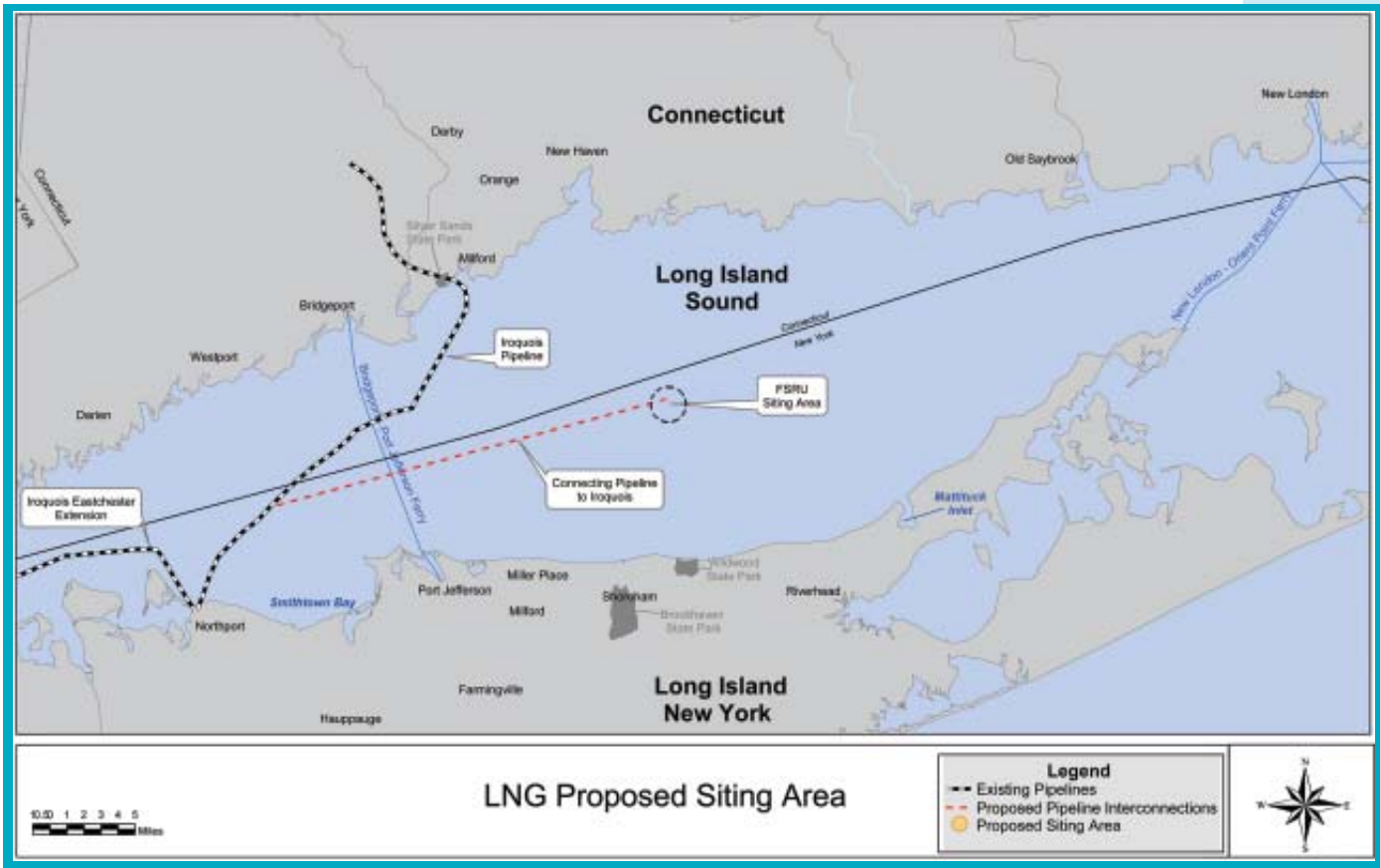
LNG Facts:

• First LNG plant began operation in 1917 in West Virginia.

• 1959 World's first LNG tanker.

• LNG facilities in the US: 113.

• Cooled LNG is like shrinking a 13 inch beach ball down to a ping-pong ball.



The proposed LNG area is within New York waters about nine miles from the closest New York shoreline. Courtesy of BroadwaterEnergy.com

Long Island Sound Inspires Artists

By Robert Burg

Why do some places, such as the Long Island Sound coast, inspire artists? Retired University of Connecticut physicist David Madacsi believes that the interaction between light and the environment in these regions matters as much as beautiful scenery and the artist's own muse.

"In those places in the world that have this reputation for artists, I believe there is something special about the light," said Madacsi, 61, who studies the connection between visual art, place, and light. "Artists really are using the pigment on canvas to manipulate light. Is there something special about the light in these places? And if so, what is it?"

Two looks at Williams Cove: *The visual effects of particle scattering within the atmosphere change how we see seascapes, including these two early morning pictures of Williams Cove in Mystic Harbor taken by Madacsi: Morning Vapors and Prelude.*

The Sound's reputation dates to the late 19th century when it became the center of the American Impressionist movement. Madacsi believes that, at least for the Sound and other inspirational places near bodies of water such as Venice, the Hamptons, and the Hudson River Valley, water and moisture reflect, refract, and scatter light in an exceptional variety of ways to enhance the landscape and seascape. This optical diversity is documented in his own photographs of the Sound taken from sunrise to moonlight. To the human eye, these scenes reveal a Sound that appears to constantly change its color and vibrancy in response to the changes in the reflection, refraction, and scattering of light.

Madacsi contrasts these special places with a lunar landscape, whose optical qualities are limited to only absorption of light and diffuse reflection. A twinkling star seen in the sky through the earth's

atmosphere, for example, would appear only as a point of light in the moon's atmosphere-free sky.

"Overall, the lunar environment is characterized by a visual poverty dominated by a black, cloudless sky, which hosts no twilight separation of colors at dusk and dawn, no painted sunsets, no rainbows, sun dogs or auroras, no light pollution," he told participants at the International Conference on the Inspiration of Astronomical Phenomena in Palermo, Italy in 2002. "There is no reflected image from the surface of a lake or glint of sunlight from a wet blade of grass."

Now a professor emeritus, Madacsi retired in 2003 as a professor of physics at UConn's Avery Point campus in Groton, CT, where he specialized in solid state physics and solar energy, and also served as interim campus director from 1997–1999. He frequently is asked whether he can quantify, using scientific measurements, what makes a seascape special here compared to another special place. He doubts it can be done.

"Colors in a particular environment change moment to moment and day to day," he said. "Since countless colors and hues can be seen in any one place, how am I going to compare Long Island Sound to another place such as Cornwall, England?"

What he can do is document the phenomena together with aspects of their visual aesthetic impact. Last November, he curated an exhibition at the Alexey von Schlippe Gallery of Art in Groton, CT on the interconnection of light, art, and place, which included his photos in one gallery and 10 Connecticut artists whose works are "especially informed by this light" in three adjoining galleries.

In his curator's statement for the exhibition, Madacsi, a co-founder of the gallery in 1992, wrote:

"From Cos Cob to Old Lyme to Mystic, artists have been attracted to work here for more than a century, and as with all these locales, many have worked here at least in part because of reputedly special qualities of the natural light."

Robert Burg is the Communications Coordinator for the Long Island Sound Study.

Van Gogh on the Moon: *With the absence of optical diversity on the moon, a lunar simulation, below, of Van Gogh's famous painting, Starry Night, looks incredibly dull (digital rendering of Starry Lunar Night After Van Gogh by David Madacsi).*

To view more of David Madacsi's photos please visit the Web site www.longislandsoundstudy.net.

Population Studies of the Horseshoe Crab

By Dr. Jennifer Mattei, Associate Professor of Biology, Sacred Heart University

Medical use of Limulus has become a multi-million dollar industry.

Limulus polyphemus, the horseshoe crab, is a "living fossil" unique to the Atlantic Coast of North America. For over 350 million years they have populated Earth's waters, yet in recent years its numbers have begun to decline throughout its range. Causes for decline include harvesting as bait for the fishing industry, collection for biomedical research and the pharmaceutical industry, and habitat degradation. The collection and sale of *Limulus* ameobocyte lysate from the horseshoe crab's blood is used to test vaccines and other products for bacterial contamination and has become a multi-million dollar industry.

Limulus has a unique ecological role in Long Island Sound partially because of the critical importance of its eggs as a food source for migratory shorebird populations. Most of what is known about the ecology of the species is based upon studies conducted in the southern portions of its range. The status of the Long Island Sound population is largely unknown but may be threatened. Because the adult breeding population is harvested in large numbers, the population may decline rapidly before conservation measures can be enacted.

A sonar tagged horseshoe crab being released by Dr. Jennifer Mattei in Long Island Sound at Milford Pt. Photo by Christine DePierro.

In order to examine breeding site fidelity, home range, sex ratio, and general population health, in 2000 I initiated a tagging program called "Project *Limulus,*" conducted at Milford Point, CT with the help of Sacred Heart University undergraduate research assistants and many volunteers.

The intent of this study is to tag and measure as many breeding horseshoe crabs as possible between mid-May and early July on the beaches of Long Island Sound. With the help of the CT Audubon Coastal Center and funding from the CTDEP Long Island Sound License Plate Program, "Project *Limulus*" workshops are held every spring to train science educators on how to involve their students in this community research project. The study area is vast, but with the help of teachers and school children monitoring beaches in Connecticut and New York the project will simultaneously train future conservationists and provide data required for a successful project.

Initial results from four years of tagging show that the *Limulus* population of Long Island Sound ranges extensively throughout the Sound. The population has a skewed sex ratio with more males than females present on breeding beaches. Horseshoe crabs rarely come back to the same beach to spawn in consecutive years. Fewer than one percent of the crabs tagged at Milford Pt. have returned to spawn again. However, nine percent of the horseshoe crabs tagged return to

Undergraduate research assistant, Bill McKensie with student volunteers from Harding High School cinch tagging and measuring horseshoe crabs at Milford Pt., CT. Photo by Dr. Jennifer Mattei.

breed on the same beach more than once in a season.

These results are preliminary and more information is needed. In the future I plan to expand this project along the coasts of New York and Connecticut. Current project partners are The Maritime Aquarium, Connecticut Audubon Coastal Center, the Milford Marine Fisheries Lab of NOAA, SoundWaters, Harding High School, Bridgeport Aquaculture School, New York City Urban Park Rangers, and the Yale Peabody Museum. New participants this spring include The New York Aquarium, The Sound School, Schooner, Inc. and the Wildlife Trust. Ultimately, more volunteers will be required to gather enough data to help in the management and conservation of this important species. To find out how to volunteer contact Dr. Mattei: matteij@sacredheart.edu or call: (203)365-7577.

An example of what a tagged horseshoe crab looks like with the yellow cinch tag on the side and the sonar tag on top. Photo by Dr. Jennifer Mattei.

NY Plans Horseshoe Crab Survey

By Robyn Burgess

The horseshoe crab has been around for millions of years but has recently been thrown into the spotlight along the Atlantic Coast. Concern is growing over the horseshoe crab's declining population and the impact this has on migrating shorebird species, such as the ruddy turnstone and redknot, which depend on horseshoe crab eggs as food for their long migration. In Delaware Bay, the epicenter of concern, the shorebird-horseshoe crab interactions are well documented. During the spawning season, millions of eggs and birds can be found along the beaches of Delaware Bay. Currently, there are information gaps regarding the status of the species and existence of interactions in New York State.

In response to growing concerns, The New York State Department of Environmental Conservation (NYSDEC) has recently lowered its Atlantic States Marine Fisheries Commission mandated quota from 366,272 crabs per year to 150,000. Horseshoe crabs are harvested as bait for the commercial eel and conch fisheries as well as for biomedical purposes. NYSDEC monitors its quota closely to ensure that it will not be exceeded. The department looks forward to meeting with the industry this year in order to discuss the status of the fishery and how to best regulate catch.

In the upcoming years NYSDEC plans on surveying horseshoe crab spawning to more thoroughly understand the New York population. In conjunction with Cornell Cooperative Extension and with funds from State Wildlife Grant, the survey will help determine where and how many horseshoe crabs spawn in Long Island Sound.

If you are interested in volunteering for this survey please contact Robyn Burgess at (631)444-0441 or Matt Sclafani at (631)854-5544.

Robyn Burgess is a Biologist for New York State Department of Environmental Conservation.

...there are information gaps regarding the status of the species...

Science and Technical Advisory Committee meeting June 3 at Stony Brook, NY. Call (203)977-1541 for more details.

New York State Marine Education Association Annual Conference June 3-5 at Dowling College. Visit www.nysmea.org for more details.

CAC meeting June 9, 2005 in Stamford, CT. Call (203)977-1541 for more details.

Ever wonder where all that water goes during a rainfall or when the snow melts?

As the water drains off the land it often picks up pollutants like motor oil, fertilizer, nutrients, sediment, salt and sand, pet waste, and trash. Sometimes the stormwater will enter a storm drain, that metal grate along the road, and flow through the stormwater sewer pipes to a waterbody like Long Island Sound. This polluted stormwater is often called nonpoint source pollution because it does not originate from a single source, but has many sources. The Long Island Sound Study has identified nonpoint source pollution and stormwater runoff, as a significant problem in the Long Island Sound watershed. The US Environmental Protection Agency, through state programs, requires many municipalities and construction site operators to apply for stormwater permits that require them to implement best management practices that reduce stormwater contamination. Generally known as the Phase II stormwater permit program, state environmental agencies in Connecticut and New York are responsible for their implementation.

So, what can individuals do to curb polluted stormwater from entering Long Island Sound? Here are a few simple steps: don't apply fertilizer before a rainstorm; clean up pet waste; have your car cleaned at the car wash; and properly dispose of your trash.

For more information on stormwater and to down load a copy of the new *How to Curb Pollution Guide* visit the new section of the Long Island Sound Study Web site www.longislandsoundstudy.net/runoff. Or for more information on stormwater permitting programs visit New York's www.dec.state.ny.us/website/dow/mainpage.htm, Connecticut's www.dep.state.ct.us/wtr/stormwater/strmwtrman.htm, and the US Environmental Protection Agecny's http://cfpub1.epa.gov/npdes/home.cfm?program_id=6 Web sites.

New Report Available

Last October, the Long Island Sound Study (LISS) released the 2003-2004 Biennial Report. The publication highlights two years of projects undertaken to restore and protect the Sound, and the roles of LISS partners in managing the Sound's cleanup. To obtain a copy of the report visit the Web site at www.longislandsoundstudy.net or call the office.

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