Duke Energy® Gas Transmission
Algonquin Gas Transmission Company

Islander East Pipeline Company

ISLANDER EAST PIPELINE PROJECT

AMENDMENT TO THE SECTION 401 WATER QUALITY CERTIFICATE APPLICATION – CONSTRUCTION INSTALLATION MODIFICATIONS

February 19, 2003

ISLANDER EAST PIPELINE PROJECT
AMENDMENT TO THE
SECTION 401 WATER QUALITY CERTIFICATE APPLICATION –
CONSTRUCTION INSTALLATION MODIFICATIONS

Subsequent to the filing of its 401 Water Quality Certificate application, Islander East Pipeline Company, L.L.C. ("Islander East") investigated alternative means of installing the pipe in nearshore Connecticut to further reduce environmental impacts. Islander East reviewed its existing data and the technical feasibility of other installation options and has selected three modifications to its proposed construction installation procedures. Algonquin Gas Transmission Company ("AGT") and Islander East are providing amendments to its pending Section 401 Water Quality Certificate application to the Connecticut Department of Environmental Protection ("CTDEP") for Islander East's offshore facilities. As described in the multi-agency meeting on February 3, 2003, Islander East is proposing to modify its offshore construction techniques. These modifications, which avoid sidecasting spoil on the seafloor between mileposts 10.9 and 12.0 (the horizontal directional drill exit area and dredged trench section) and reduce the number of barge passes from four to three for the plow section, will significantly reduce sediment dispersion, and further minimize benthic impacts and seafloor disturbance. A description of the proposed modifications is provided below.

Dredged Material Handling – <u>Original Application</u>

Islander East's pipeline installation as originally proposed required excavation of the horizontal directional drill ("HDD") exit hole using a clamshell or bucket dredge and sidecasting the dredged material from the HDD exit hole onto the seafloor adjacent to the basin. The dredged material would form a continuous mound, approximately 9 feet high and 65 feet wide (at the base) along the basin perimeter. Islander East proposed to refill the basin following installation of the pipeline with native spoil. Following sedimentation modeling, it was determined that direct and indirect impacts from this activity would result in approximately 23.8 acres of seafloor disturbance.

South of the HDD exit hole, in waters less than 20 feet deep, Islander East originally proposed to install the pipeline using the clamshell or bucket dredge method. The trench would be 10 feet wide at the bottom and 8 feet deep with assumed 3 to 1 side slopes. The dredged material would be placed as a continuous mound 9 feet high and 60 feet wide (at the base) along the east side of the trench. Following sedimentation modeling, it was determined that direct and indirect impacts from the trenching activity would result in approximately 115 acres of seafloor disturbance.

Dredged Material Handling – <u>Modified Construction Technique</u>

To reduce direct and indirect seafloor disturbance, Islander East is modifying its construction technique by placing the dredged spoil from the HDD exit hole and dredge section on barges. The placement of the dredge material on barges will significantly reduce the area directly disturbed by dredging of the HDD exit hole and the dredge section from milepost 10.9 to milepost 12.0, since the spoil will not be placed on the seafloor. Sedimentation modeling conducted for the proposed change determined that direct and indirect impacts from this change in handling of the dredged material would result in approximately 8.4 acre disturbance near the HDD exit hole and approximately 5.6

acre disturbance along the dredge section. This would reduce the overall area of seabed disturbance resulting from pipeline construction by approximately 90 percent.

In addition to placing the dredged material on barges, Islander East plans to reduce the depth of cover over the pipeline in the area of the dredged installation from 3 feet to 18 inches. This reduction in depth of cover will allow for installation of the pipeline using a narrower trench and would reduce the direct area disturbed during excavation activities.

A comparison of the originally proposed construction techniques to the modified construction techniques is provided in the following table.

ISLANDER EAST PIPELINE PROJECT

Acreage Comparison between Seafloor Storage of Dredged Material and Barge Storage of Dredged Material

Construction Technique as Stated in the Final Environmental Impact Statement ("EIS")	Final EIS Connecticut (acres)	Proposed Amendment Barge Spoil (acres)
HDD Exit Hole Direct & Indirect Impacts	23.8	8.4
Dredge Section Direct & Indirect Impacts	115	5.6
Total Acreage	**138.8**	**14.0**
Change in Acreage	***N/A***	***-124.8 (90%)***

Islander East's placement of the excavated spoil on barges will eliminate the area disturbed by the spoil mounds and eliminate the secondary impact of sedimentation transport from storm generated wave action and tidal currents. A model simulation of the modified construction technique using SSFATE (a US COE approved model that predicts the transport, dispersion, and settling of suspended sediments released to the water column as a result of dredging operations) indicates that in using these modified spoil handling methods, no area in the dredge section or HDD exit hole area of the project will experience sediment depositions greater than about 3 millimeters in thickness under the 18-inch depth of cover scenario. The maximum depositional thickness of sediment will be approximately 2 to 3 millimeters adjacent to the HDD exit hole and 1 to 2 millimeters adjacent to the dredge section. The report describing the modeling results was prepared by Applied Science Associates and is included in Attachment A.

To further support its effort to reduce environmental impacts, Islander East completed an evaluation of benthic impacts associated with Islander East's Modified Offshore Construction Techniques. This evaluation is included in Attachment B. Dr. Roman Zajac, an independent marine biologist consulting on the Islander East project, reviewed the modeling results for the modified construction methods. Dr. Zajac notes:

> *"There will be no burial and smothering of sea floor areas adjacent to the transition basin and dredge portion of the pipeline with the dredge spoil, reducing the overall area of direct, severe impact. The removal of dredge spoils will eliminate winnowing of sediment on a continual basis to surrounding habitat, and more critically, the*

potential for severe erosion in the case of a storm event during the construction period."

In addition, the predicted pattern of deposition indicates that suspended sediments will be deposited on the seafloor in a patchy manner, following the oscillations of the tide. This will result in areas adjacent to the trench receiving 1 millimeter or less of deposited sediments. No mortality would be expected in the areas adjacent to the trench with these levels of deposition.

Islander East is currently consulting with federal and state agencies on whether to dispose of the dredged material offsite and/or return the material to the trench. If offsite disposal is selected, Islander East will consider placing engineered backfill over the pipeline in the HDD exit hole and dredge section.

Anchoring Operations – *Original Application vs. Modified Construction Technique*

Islander East has proposed to use the subsea plow construction technique to install the pipeline in Long Island Sound waters greater than 20 feet deep (from MPs 12.0 to 32.1). The subsea plow would be pulled using an anchored barge, and midline anchor buoys would be used to reduce the amount of anchor cable contact with the seafloor.

Islander East originally estimated that four passes of the anchored barge(s) used for pipelay and burial would be necessary to install the pipe with three feet of cover: one pipelay pass, two trench passes, and one backfill pass. Based on this estimation of four passes, Islander East's Final EIS calculated impacts to be 9.7 acres from anchor strikes, 2,807 acres from anchor cable sweep, and 183 acres from plowing and burial.

Based on consultations with experienced offshore pipeline installation contractors and their analysis of the Long Island Sound soil composition, Islander East has determined that it would be feasible to reduce the number of anchored barge passes from four passes to three passes. The top of the pipe could be sufficiently buried with three passes of the anchored barge(s): one pipelay pass, one trench pass, and one backfill pass.

This decrease in the number of anchored barge passes will reduce the anchor strike impact in Long Island Sound from 9.7 acres to 7.3 acres and reduce the anchor cable sweep impact from 2,807 acres to 2,307 acres. Specifically in the Connecticut waters of Long Island Sound, anchor strike impact will be reduced from 4.3 acres to 3.2 acres and anchor cable sweep impact will be reduced from 1,245 acres to 1,023 acres. In addition to reducing acreage impacts, it is expected that the three pass construction method will reduce the duration of construction by eliminating one pass of the barge. The following table provides the acreage impact comparison between the two construction techniques.

ISLANDER EAST PIPELINE PROJECT

Acreage Comparison between Four Subsea Plow Passes and Three Subsea Plow Passes for Long Island Sound and the Connecticut Waters of Long Island Sound

Construction Technique as Stated in the Final EIS	Final EIS All Waters (acres)	Reduced Plow Passes All Waters (acres)	Final EIS CT Waters (acres)	Reduced Plow Passes CT Waters (acres)
Anchor Strikes	9.7	7.3	4.3	3.2
Anchor Cable Sweep	2,807	2,307	1,245	1,023
Plowing/Burial	183	183	81.2	81.2
Total Acreage	**3,000**	**2,497**	**1,331**	**1,107**
Change in Acreage	***N/A***	***-503***	***N/A***	***-224***

Iroquois Gas Transmission System, L.P. – Eastern Long Island Project

On February 3, 2003, Iroquois Gas Transmission System, L.P. ("Iroquois") provided the Federal Energy Regulatory Commission ("FERC") a status report on its Eastern Long Island ("ELI") Project and indicated that it was withdrawing its application for a Certificate of Public Convenience and Necessity. A copy of the status report and Notice of Withdrawal is included in Attachment C.

The table below provides a comparison of impacts associated with Islander East's original construction techniques, Islander East's modified construction techniques, and the ELI Project formerly proposed by Iroquois.

ISLANDER EAST PIPELINE PROJECT

Comparison of Offshore Impacts

	Islander East Final EIS (Acres)	Islander East Modified Construction Technique (Acres)	Iroquois ELI Draft EIS (Acres)
Anchor Strikes	9.7	7.3	10.2
Anchor Cable Sweep	2,807	2,307	2,700
Dredging	121[1,2]	11.5[1,4]	40
Plowing/Burial	183	183	190
HDD Exit Hole	25.9[1,3]	10.5[1,5]	0
Pipeline Stabilization	0.4	0.4	0.4
Subsea Tap[6]	0	0	1.4
Total Acreage	**3,147**	**2,520**	**2,942**

[1]Information developed subsequent to Final EIS.
[2]Connecticut Impact of approximately 115 acres, as stated in the Final EIS. New York Impact of approximately 5.9 acres.
[3]Connecticut impact of approximately 23.8 acres, as stated in the Final EIS. New York impact of approximately 2.1 acres.
[4]Connecticut impact of approximately 5.6 acres for modified construction technique. New York impact of approximately 5.9 acres.
[5]Connecticut impact of approximately 8.4 acre for modified construction technique. New York impact of approximately 2.1 acres.
[6]ELI project includes installation of a subsea tap to allow internal inspection of the ELI pipeline. The subsea tap is sited within a designated shellfish bed and would be accessed and exposed every 7-10 years to allow for inspections.

Islander East's modified construction techniques reduce impact in Long Island Sound by approximately 627 acres over Islander East's original proposal and by approximately 422 acres over Iroquois' ELI Project.

While it is clear that Islander East's modified construction techniques will reduce impacts on the offshore environment compared to Iroquois' ELI Project, the impacts associated with the ELI Project may be understated. Islander East has committed to using the subsea plow in water depths greater than 20 feet deep. In contrast, the Draft EIS prepared for the ELI Project indicated that Iroquois may use the jetting installation method. Jetting, if it were used, would increase the impact of the Iroquois pipeline installation and would result in greater impact than is assumed in the Draft EIS.

In addition, the Draft EIS understates the impact of the subsea tie-in on commercial shellfish beds. The ELI Project would involve the installation of a domed facility at the tie-in point for the offshore pipeline. The domed facility would allow for internal inspection of the ELI Project and would be accessed every 7 to 10 years for a period of one week. The tie-in facility is sited within an active commercial shellfish bed. Construction of the tie-in would impact approximately 60,000 square feet and, following construction, would occupy approximately 5,625 square feet. After construction, the tie-in facility would be disturbed on a regular and ongoing basis to conduct internal pipeline inspections. These inspection activities would result in both long-term and chronic impacts within at least a portion of the 60,000 square feet of seafloor that would be used to construct the facility.

Attachment A

Results Of SSFATE Model Simulations, Nearshore Connecticut, Long Island Sound

February 2003

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Results of SSFATE Model Simulations, Nearshore Connecticut, Long Island Sound

ASA Project 02-036
February 2003

Report

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This document involves pipeline location information and is not available at this Internet site due to homeland security-related considerations. This portion of the Islander East consistency appeal administrative record may be reviewed at NOAA's Office of General Counsel for Ocean Services, 1305 East-West Highway, Silver Spring, Maryland.

The SSFATE Model

This report presents the results of SSFATE model simulations of the dredging operations required to excavate the transition basin and the pipeline trench. SSFATE (Suspended Sediment FATE) computes suspended sediment distributions resulting from both dredging and jetting operations. SSFATE is a versatile computer modeling system containing the following features:

- Ambient currents can either be imported from a numerical hydrodynamic model or drawn graphically using interpolation of limited field data,
- Computational model predicts the transport, dispersion, and settling of suspended dredged material released to the water column using a random walk procedure,
- The model simulates sediment source strength and vertical distribution from cutterhead, hopper, or clamshell type dredges,
- Multiple sediment types or fractions can be simulated simultaneously,
- Model outputs consist of concentration contours in both horizontal and vertical planes, time series plots of suspended sediment concentrations, and the spatial distribution of sediment deposited on the sea floor,
- Sediment particle movement and concentration evolution can be animated over Geographic Information System (GIS) layers depicting sensitive environmental resources and areas.

The Hydrodynamic Model

The SSFATE model simulations were run using tidal currents generated using a hydrodynamic model (HYDROMAP) developed by ASA. HYDROMAP is a globally relocatable hydrodynamic model (Isaji, et al., 2001a, 2001b) capable of simulating complex circulation patterns due to tidal forcing, wind stress and fresh water flows quickly and efficiently anywhere on the globe. HYDROMAP employs a novel step-wise-continuous-variable-rectangular gridding strategy with up to six levels of resolution. The term step-wise continuous implies that the boundaries between successively smaller and larger grids are managed in a consistent integer step. HYDROMAP has been applied in particle transport studies in Indonesia, Malaysia, Singapore and the northeast coast of the US. The numerical solution methodology follows that of Davies (1977) and Owen (1980). The interested reader is directed to Isaji, et al. (2001a, 2001b), and Isaji and Spaulding (1984) for a detailed description of the model.

Tides are the predominant forcing in Long Island Sound and were used for generating the current field used in this study. The wind events generating currents and waves capable of sediment transport occur infrequently and it is assumed that dredging operations will not occur under these conditions, and so tidal current forcing is used exclusively. Tidal currents in the Long Island Sound region are predominantly semidiurnal. The M2 amplitude is greater than the second largest constituent by a factor of 4.5 and the currents generated by the hydrodynamic model contain only the M2 constituent. The M2 tidal constituent also represents the most typical current velocity on a daily basis.

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input parameters and results from the SSFATE simulation of the 27,840 yd^3 of total dredge material associated with the 18 inch pipeline cover option.

Table 1. Summary of the model parameters and results for the 27,840 yd^3 option.

Loss from Dredge (percent)	Loss from Barge (percent)	Area Covered by Greater Than 1mm from the Transition Basin (Acres)	Area Covered by Greater Than 1mm from the Trench (Acres)	Total Area Covered by Greater Than 1mm (Acres)	Area Covered by Greater Than 3mm (Acres)
3	1	8.4	5.6	14.0	0.0

Figure 3 shows the sediment deposit from the 27,840 yd^3 dredging operation corresponding to the 18 inches of cover over the pipeline. The sediment deposit oscillates to either side of the trench due to the tidal current reversals that occur over the 58-hour dredging operation. As shown in table 1 and depicted in figure 3 in red and pink colors, 14.0 acres are covered by sediment with a thickness greater than 1mm. Sediment from the transition basin results in 8.4 acres of deposition greater than 1 mm. It should be noted that this area (8.4 acres) of greater than 1mm of sediment thickness entirely contains the area of excavation for the transition basin. Sediment from the trench results in an area of 5.6 acres with greater than 1 mm sediment accumulation. The maximum thickness seen in the "low volume" option is between 2 and 3mm.

Table 2 summarizes the input parameters and results from the SSFATE simulation of the 55,000 yd^3 of total dredge material associated with the 3 ft pipeline cover option.

Table 2. Summary of the model parameters and results for the 55,000 yd^3 option.

Loss from Dredge (percent)	Loss from Barge (percent)	Area Covered by Greater Than 1mm from the Transition Basin (Acres)	Area Covered by Greater Than 1mm from the Trench (Acres)	Total Area Covered by Greater Than 1mm (Acres)	Area Covered by Greater Than 3mm (Acres)
3	1	34.8	3.8	38.6	4.0

Figure 4 shows the sediment deposit from the 55,000 yd^3 dredging operation corresponding to 3 feet of cover over the pipeline. The sediment deposit from this option shows an oscillation to either side of the trench due to the tidal current reversals that occur over the 114-hour dredging operation. As shown in table 2 and depicted in Figure 4, an area of 38.6 acres is covered by sediment with a thickness greater than 1mm. An area of 4.0 acres is covered with sediment greater than 3mm thick. It should be noted that the area of greater than 1mm of sediment thickness entirely contains the area of excavation for the transition basin. The maximum thickness seen in the "high volume" option is between 5 and 7mm.

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Attachment B

Evaluation of Benthic Impacts Associated with Islander East's Modified Offshore Construction Techniques

February 2003

Evaluation of Benthic Impacts Associated with Islander East's Modified Offshore Construction Techniques

Islander East Pipeline Project

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February 17, 2003

TABLE OF CONTENTS

1.0 INTRODUCTION

The Islander East Pipeline Project will involve actions by two separate pipeline companies: Algonquin Gas Transmission Company ("Algonquin") and Islander East Pipeline Company, L.L.C. ("Islander East"). Algonquin proposes to construct a new compressor station in Cheshire, Connecticut and upgrade existing interstate natural gas pipeline facilities in Cheshire, Wallingford, and North Haven, Connecticut. Upgrades will consist of launcher removal, pipeline retests and anomaly investigations at designated areas along the existing pipeline. Islander East proposes to lease pipeline capacity on facilities owned by Algonquin and construct new interstate natural gas pipeline facilities in North Haven, East Haven, North Branford, and Branford, Connecticut. These facilities will include a new meter station in North Haven, Connecticut, aboveground mainline valves in North Branford and Branford, Connecticut, and a 24-inch-diameter natural gas pipeline between North Haven and Branford, Connecticut. In Branford, the pipeline will enter Long Island Sound where it will cross to Suffolk County, New York.

1.1 Original Construction Methods

As initially proposed in state and federal permit applications, Islander East will install its pipeline under the Connecticut shoreline using the horizontal directional drilling construction technique. The drill entry point will be located in an upland area approximately 700 feet from the shoreline. The length of the drill will be approximately 4,200 feet, and will avoid sensitive aquatic resources including tidal wetlands, rocky shorefronts, intertidal flats, islands, and shellfish beds under the jurisdiction of the Town of Branford. The horizontal directional drill ("HDD") exit point will be dredged with conventional bucket dredge equipment to accommodate pipeline installation. In its original proposal, Islander East planned on temporarily sidecasting dredged spoil from the transition trench and exit hole on the seabed. The pipeline would then be installed for approximately 1.1 miles by dredging a trench, sidecasting spoil, installing the pipeline, and then backfilling the trench using the sidecast spoil. Beyond the dredge section the pipeline would be fabricated and lowered to the seafloor and then plowed into the seafloor with two passes of a subsea plow, followed by a single backfill plow pass.

Several environmental and engineering investigations were conducted to determine the pipeline route, preferred installation methods, sensitive habitats, and adverse impacts associated with the proposed project. These investigations included marine geophysical and geotechnical investigations, ecological investigations, a planimetric survey, and an environmental sampling survey. The marine geophysical and geotechnical investigations included a hydrographic survey, side scan sonar survey, sub-bottom profiling, jet probing, magnetometer survey, vibratory coring and rotary coring. Ecological investigations included a benthic survey, wetland delineations, and vegetative surveys to determine the presence of reported threatened and endangered species. The environmental sampling survey consisted of surface water and sediment sampling and analysis. A series of sediment transport studies have been completed to determine the nature of potential sedimentation associated with the proposed pipeline installation.

Alternative Construction Methods

Islander East is continuing the process of obtaining permits for the construction and operation of the Islander East Pipeline. As part of this effort, Islander East continues to evaluate potential construction methods, both from an engineering feasibility and environmental standpoint. Several of the alternative construction methods/approaches have been investigated, including: placement of dredged spoil from the exit hole and Connecticut dredge section into barges for temporary storage or off-site disposal rather than sidecasting; burial of the pipeline to provide 1.5 feet of cover; and backfilling the Connecticut dredged trench with engineered backfill. As discussed below, sediment transport and deposition analyses were conducted for these to identify the extent and thickness of sediment deposition resulting from the alternative construction methods. Following the new sediment modeling results is a discussion of the marine biological resource impact changes that result from use of these revised methods compared to the originally proposed methods.

REVISED SEDIMENT MODELING RESULTS

In the spring and summer of 2002, Dr. Frank Bohlen of the University of Connecticut and Applied Science Associates, Inc ("ASA") performed sediment transport and deposition modeling and analyses related to the proposed construction methods that had been presented in the Federal Energy Regulatory Commission ("FERC"), Connecticut Department of Environmental Protection Office of Long Island Sound Programs, Connecticut Siting Council, and United States Army Corps of Engineers applications. These analyses included depth of sediment deposition and areal extent of sediment deposition resulting from dredging and spoil erosion along the HDD exit hole as well as the trench dredging. The sediment deposition modeling indicated that sediment deposition could occur in an area around the HDD exit hole up to 90 mm thickness at about 70 feet and rapidly thinning out to 30 mm thickness within 400 feet (ASA, 2002a). For the dredged trench, the ASA modeling indicated that within 50 feet of the trench/spoil the maximum deposited sediment thickness could reach 30 mm.

In Fall 2002, ASA performed additional sediment transport and deposition analyses of several potential changes in construction procedures to assist in the determination of benefits to the environment if the construction changes are adopted. These results indicated a substantial decrease in area of sediment deposition and depth of deposited sediments (ASA, 2002b) for both 3-feet and 1.5-feet depth of cover scenarios with storage of spoil in material barges (Table 1).

Table 1: Summary of February 2003 Modeling Results					
Depth of Cover Scenario	Total Dredge Volume (cubic yards)	Loss from Dredge (percent)	Loss from Barge (percent)	Area Covered by Greater Than 1 mm (acres)	Area Covered by Greater Than 3mm (acres)
3 feet	+/-55,000	3	1	38.6	4.0
1.5 feet	+/-27,840	3	1	14.0	0.0

BENTHIC HABITAT IMPACT CHARACTERIZATION

3.1 Existing Benthic Community

Several efforts were undertaken to characterize the benthic habitat and communities associated with the pipeline corridor in Long Island Sound. A brief summary of the results of diver observations, grab sampling and underwater video used to obtain information, in the Connecticut nearshore waters (*i.e.*, in waters less than 20 feet deep), is presented below.

HDD Exit Hole Area

Based on side scan sonar and geotechnical data, the sea floor in the HDD exit area is comprised of fine-grained sediments (fine sand, silt, clay, shells and shell fragments), with several rocky outcrops in the vicinity. This is consistent with the diver observations which found sandy/silt in the exit point area. Sediment grain-size analyses from the vibracore sample taken at the exit point indicate that the sediments are comprised of 90 percent silts and clays by weight and have a high water content of about 77 percent.

Soft sediment communities in the HDD exit area are dominated by several burrowing and tube building. polychaetes, including *Clymenella torquata* and *Nephtys incisa*, and several bivalve species including *Mulinia lateralis, Pitar morhuanna* and *Nucula annulata.* Other studies show that these species are common in the nearshore habitats of Long Island Sound (McCall 1977, 1978, Swanson 1977, Hoehn and Morris 1977, Rhoads et al 1978, Rhoads and Germano 1982, 1987).

No hard clams (*Mercenaria mercenaria*) were found in any of the quantitative bottom grab samples taken in this area. Diver samples indicated that there were no live hard clams or live oysters or oyster shells at sampling stations located near the HDD exit area. No live individuals of shellfish resource species (hard clams and oysters) were found in the samples, suggesting that, at best, low density populations occupy this area.

There are several rocky outcrops that occur within 1000 feet of the HDD exit hole, primarily in a northerly direction, toward the shore. Based on the side scan sonar survey, medium and coarse-grained sediments are found adjacent to these rocky outcrops. The benthic community at one rocky outcrop sampled in the HDD vicinity was characterized by abundant macroalgal growth, various hard substrate invertebrates such as sponges and bryozoans, as well as a population of blue mussels (*Mytilus edulis*). The other rocky outcrops in the vicinity likely support similar

hard substrate communities. The video survey indicated that rocky subtidal areas in this vicinity were silted.

The video survey results for the HDD exit hole area indicate that the predominant habitat was a soft, bioturbated mud. Overall, the survey data indicates that the sea floor in the vicinity of the HDD exit is comprised predominantly of mud with some rocky habitat, which contain a typical assemblage of benthic plants and animals that are commonly found in other nearshore areas of Long Island Sound.

3.1.2 Connecticut Dredged Trench Area

From the HDD exit hole, a trench is proposed to be excavated for the pipeline from about MP 10.9 to MP 12.0, using a bucket or clamshell dredge. This relatively short section of the pipeline corridor traverses an area that is primarily fine-grained sediments (fine sand, silt, clay, shells and shell fragments). Sediment grain size analyses indicate that the sediments are comprised of silts and clays (90% - 95% by weight) and have high water content. Information from diver observations and grab samples taken along this portion of the corridor are consistent with the side scan interpretations and vibracore analyses. Grab samples indicate the sediments are fine gray and brown muds with shell hash. In some areas the mud is black and sticky, consistent with anaerobic conditions.

Based on quantitative grab samples, the soft-sediment benthic community in this section of the pipeline corridor is spatially similar and dominated by several species of polychaetes, including *Nephtys incisa* and *Euclymene sp.*, the gastropod *Retusa canicualta*, several smaller bivalve species including *Nucula annulata*, and in some areas, *Yoldia limatula* and *Tellina agilis*. Based on samples taken by divers, no live hard clams or oysters were found at most of the stations. However, hard clams (*Mercenaria mercenaria*) at densities of approximately one individual per 0.25 square meter, were found at two stations located 1,750 feet and 1,000 feet to the west of the proposed pipeline corridor. Diver observations also corroborate the grab sample data, indicating that the benthic communities along this section of the pipeline corridor are characterized by several larger and deeper dwelling polychaete and bivalve species.

Results of several video transects across the pipeline corridor in the dredged trench section indicate mostly mud habitat, with some areas of amphipod tube mats, shell hash, and areas of polychaete and burrowing anemone tubes. One transect crossed an area of what appeared to be tracks indicative of anchor drag marks. Some oysters and algae were observed in areas of shell hash.

3.2 Revised Impact Analysis

Using the benthic community and habitat characterization information summarized above, along with the sediment transport modeling results presented in Section 2, the following sections present the revised evaluation of the potential impacts from the exit hole and trench dredging activities near the Connecticut Shore of the pipeline corridor.

Impact Area

Under the revised construction concepts, there is a drastic reduction in the area directly disturbed by dredging the exit hole since the spoil will not be placed on the seafloor. Using data included in the FERC Final Environmental Impact Statement ("FEIS"), it is likely that the impact area will drop from slightly less than 24 acres to approximately 8.4 acres. Under the revised construction concepts, the area directly disturbed by dredging the trench between the exit hole and the start of the plow section, a distance of about 1.1 miles, will be greatly reduced. With consideration given to the 1.5-feet depth of cover scenario, which will result in a narrower trench, and using data included in the FERC FEIS, it is likely that the impact area associated with the dredged trench will decrease from around 115 acres to approximately 5.6 acres.

When requested to provide an initial review of the modeling results for the modified construction methods, Dr. Zajac, an independent marine biologist consulting on the project, wrote:

> "There will be no burial and smothering of sea floor areas adjacent to the HDD exit area and dredge trench portion of the pipeline with the dredge spoil, reducing the overall area of direct, severe impact. The removal of dredge spoils will eliminate winnowing of sediment on a continual basis to surrounding habitats, and more critically, the potential for severe erosion in the case of a storm event during the construction period" (Zajac, 2003).

If the trench is dug shallower, to accommodate the 1.5-feet depth of cover scenario, there may be even fewer direct impacts, as the trench will be narrower (shorter horizontal width with a decrease in vertical depth based on the ultimate resting state of the side slopes) and there likely will be less slumping of the sides of the trench, and therefore less disturbance to habitats and communities along the trench. Fewer organisms within these slumped sediments will be affected during pipelay and backfill.

Sediment Deposition

In regards to sediment deposition, the amount of sediment which is predicted to be deposited onto the sea floor is considerably less than in the originally proposed construction scenarios. In the new scenarios, it is predicated that no areas will have deposits greater than about 5 mm in thickness, and in the 1.5-feet depth of cover scenario it is predicted that no areas will have sediment deposition greater than 3 mm in thickness. Again, Dr. Zajac writes, "Considering only the maximums, and if the predictions are correct, this degree of sediment deposition onto the sea floor should have little impact on sea floor habitats and communities, and may approach background/natural levels of sediment resuspension and deposition in the area".

There are a number of factors associated with the revised construction scenarios that result in this negligible level of impact. Because construction will be occurring in winter months, most benthic species will not be recruiting during this time and as such there should be little burial of the more sensitive newly settled individuals. Many adult infaunal organisms can adjust their living position within sediments. With deposited sediment thickness estimates at less than 5 mm for the 3 feet depth of cover scenario and less than 3 mm for the 1.5-feet depth of cover scenario,

there will be little to no stress effects on infauna. Mobile epibenthic forms may either move away from the depositional areas or be little affected by the relatively short duration and localized increases in suspended sediments. Reversing tidal currents and dredge movement along the pipeline corridor limit sediment plume exposure to organisms at any one location to around 6 hours.

Further, based on the ASA sediment deposition modeling (ASA, 2002b), the predicted pattern of deposition indicates that suspended sediments will be deposited on the sea floor in a patchy manner, following the oscillations of the tide. In the 3-feet depth of cover scenario, although there is a continuous band of deposited sediments along the pipeline trench, there are areas where the deposition is minimal (<1 mm) and narrows toward the trench. These narrow and minimal deposition areas may be impacted very little and may act as a source of colonists to the trench area. In the 1.5-feet depth of cover scenario, sediment deposition is predicted to be even patchier, with deposition thickness of 2 to 3 mm limited to the HDD exit hole area. Under this scenario, with nearly all of the dredged pipeline trench adjacent areas receiving 1 mm or less of deposited sediments, no mortality is expected and stress factors will be minimal.

3.2.3 Engineered Backfill

As an option to placing the dredged spoil back in the exit hole and dredged trench, Islander East is considering the use of engineered backfill. Given the volume of material involved, this scenario is only being contemplated in the event of the 1.5-feet depth of cover scenario. Rock or gravel of less than 4 inches in diameter is being considered because of its cost, ease of handling, benefits as cover for the pipeline, and potential habitat benefits. Engineered backfill has value as hard substrate for attachment of organisms and plants, which could promote habitat diversity. The conversion of mud substrates to a more rocky material will have minimal impacts on soft sediment species populations because it represents a very minor percent decrease in availability of mud substrates that will not affect Long Island Sound organisms at the population level.

Furthermore, given the depositional nature and nephloid layer movement in the area, depending upon tide currents, frequency and magnitude of storm events, and local bottom topography, fine sediments may start to fill in the interstices of the engineered backfill, with the potential for some areas to become entirely covered with silty sediments over time. In time, the rock backfill area along the length of the pipeline trench will become a mosaic of several substrate type combinations. This substrate mosaic has the potential to increase habitat diversity, supporting greater species richness than a single substrate type.

4.0 CONCLUSIONS

In an effort to reduce environmental impacts, Islander East developed and is evaluating several modifications or revisions to the Connecticut nearshore Long Island Sound construction procedures. As discussed above, these revisions will result in substantial reduction in both area of seafloor directly affected by bucket dredging and spoil sidecasting and area of seafloor indirectly affected by sediment transport and deposition.

The barging of spoil with the 1.5-feet depth of cover scenario will reduce the disturbed area from approximately 139 acres to 14 acres in the Connecticut nearshore waters less than 20-feet-deep. Further, with the 1.5-feet depth of cover scenario, the use of engineered backfill may increase biological diversity, and has the potential to improve conditions for two valuable commercial species, oyster and lobster. In summary, Islander East continues to work with resource agencies to refine the project to maximize its overall benefits to the environment and the citizens of Connecticut and New York.

5.0 REFERENCES

ASA, 2002a. Dredged Material Mound Dispersion Analysis Using LTFATE. Report prepared July 2002 for Natural Resource Group, Inc. Seven pages.

ASA, 2002b. Results of SSFATE Model Simulations, Nearshore Connecticut, Long Island Sound. Report prepared February 2003 for Natural Resource Group, Inc. Eight pages.

Zajac, Roman. 2003. Memorandum submitted January 26, 2003 to Paul Martin, TRC Environmental Corporation. Two pages.

Attachment C

Status Report of Iroquois Gas Transmission System, LP on the Eastern Long Island Project

ORIGINAL

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Iroquois Gas Transmission System, L.P.) Docket No. CP02-52-000

STATUS REPORT OF IROQUOIS GAS TRANSMISSION SYSTEM, L.P.

Pursuant to the letter order issued to Iroquois Gas Transmission System, L.P. ("Iroquois") in this proceeding on January 24, 2003,[1] Iroquois respectfully submits this Status Report on the Eastern Long Island Project ("ELI Project"), which is presently pending review by the Federal Energy Regulatory Commission ("Commission") of Iroquois' application for a certificate of public convenience and necessity pursuant to Section 7(c) of the Natural Gas Act. As discussed herein, Iroquois has determined not to proceed with the ELI Project and, accordingly, in conjunction with the filing of this Status Report, Iroquois is filing with the Commission in this proceeding a Notice of Withdrawal of Certificate Application.

I. Background

On December 14, 2001, Iroquois filed an application, pursuant to Section 7(c) of the Natural Gas Act and Part 157 of the Commission's regulations, for a certificate of public convenience and necessity to construct, own and operate the ELI Project. This project would consist, among other things, of new pipeline and compressor facilities to

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[1] *See Iroquois Gas Transmission System, L.P.*, Docket No. CP02-52-000, Letter of J. Mark Robinson, Director, Office of Energy Projects, Federal Energy Regulatory Commission, to Jeffrey A. Bruner, Vice President, General Counsel and Secretary, Iroquois Pipeline Operating Company, extending deadline for submission of status report from January 31, 2003 to February 14, 2003.

provide approximately 175,000 dekatherms per day ("dth/day") of new firm transportation service to eastern Long Island, New York. With its application, Iroquois filed copies of executed precedent agreements with five prospective shippers:

Shipper	Volume Requested
Consolidated Edison Energy, Inc.	10,000 dth/day
Engage Energy America, LLC	50,000 dth/day
Long Island Power Authority	160,000 dth/day
Mirant Americas, Inc.	80,000 dth/day
New York Power Authority	40,000 dth/day

Iroquois indicated that, as the capacity requested in the precedent agreements exceeded the capacity of the proposed new ELI Project facilities, it might be necessary for Iroquois to pro-rate the new capacity among its shippers, and that it would make a decision on any such pro-ration no later than March 1, 2003.

Subsequent to the filing of its application, Iroquois filed a motion to consolidate its ELI Project certificate application proceeding with another then-pending pipeline certificate application, filed by Islander East Pipeline Company, L.L.C. ("Islander East") and Algonquin Gas Transmission Company ("Algonquin") in Docket Nos. CP01-384-000, *et al.*, to construct, own, and operate and lease pipeline and compression facilities to provide 260,000 dth/day of firm transportation service to Long Island, New York ("Islander East Project").[2] In its motion, Iroquois contended that a comparative hearing should be held with respect to the ELI and Islander East Projects, given, among other things, the two projects' similarity, the fact that they would serve essentially the same market area, and that that market is not sufficient to support both projects.

Islander East Pipeline Company, L.L.C., et al., Docket Nos. CP01-384-000, *et al.*, "Motion of Iroquois Gas Transmission System, L.P. to Consolidate Proceedings and for Comparative Evidentiary Hearing," filed April 8, 2002.

On September 19, 2002, the Commission issued a "Preliminary Determination on Non-Environmental Issues" for the ELI Project.[3] The Commission simultaneously issued an "Order on Rehearing and Issuing Certificates" in the Islander East Project certificate proceeding.[4] In the Islander East Project certificate order, the Commission denied motions by Iroquois and others to consolidate the Islander East Project and the ELI Project proceedings given its determination that the two projects were not mutually exclusive and did not require the conduct of a comparative hearing pursuant to the doctrine established in *Ashbacker Radio Corp. v. FCC*, 326 U.S. 327 (1945).

Following the issuance of the Commission's September 19, 2002 orders in the ELI Project and Islander East Project proceedings, Iroquois, on October 4, 2002, moved the Commission for a deferral of further consideration of the ELI Project certificate application. Iroquois urged that the Commission defer further action on the ELI Project proceeding in order to allow the Commission and its staff, state and local governmental entities, interested private stakeholders, and Iroquois to conserve valuable time and resources while the relevant market participants were considering the implications of the Commission's order issued in the Islander East matter. Iroquois indicated that it would provide the Commission with an update on the status of the ELI Project in early 2003.

In a Letter Order dated October 10, 2002,[5] the Commission's Director of the Office of Energy Projects, J. Mark Robinson, acting pursuant to delegated authority,

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3 *Iroquois Gas Transmission System, L.P.*, 100 FERC ¶ 61,275 (2002).

4 *Islander East Pipeline Co., L.L.C., et al.*, 100 FERC ¶ 61,276 (2002).

5 *Iroquois Gas Transmission System, L.P.*, Docket No. CP02-52-000, Letter Order from J. Mark Robinson, Director, Office of Energy Projects, Federal Energy Regulatory Commission, to Jeffrey A. Bruner, Vice President, General Counsel and Secretary, Iroquois Pipeline Operating Company, dated October 10, 2002 ("October 10, 2002 Letter Order").

extended the deadline for filing comments on the ELI Project Draft Environmental Impact Statement and instructed Iroquois to submit, by January 31, 2003, a status report on its plans to proceed with the ELI Project. Pursuant to further motion by Iroquois,[6] the status report deadline was extended until February 14, 2003, at which time Iroquois was instructed to submit "a status report on its plans to proceed" with the ELI Project which report "must give a clear indication of Iroquois' intent."[7]

II. Discussion of Iroquois' Determination
Not to Proceed With the ELI Project.

As indicated in its January 17, 2003 Motion, following the Commission's October 10, 2002 Letter Order, Iroquois has pursued discussions with the prospective ELI Project customers concerning their intentions with respect to this project. During the course of these discussions, several of the customers indicated orally to Iroquois their intention not to continue participating in the ELI Project.

In early January, Iroquois sent all customers a written request for confirmation, in writing, of their position with respect to further participation in the ELI Project. In response to its request, Iroquois received written notices from three customers, Consolidated Edison Energy, Inc., Mirant New York, Inc., and Engage Energy America LLC, of the exercise of their rights to terminate their Precedent Agreements to Contract for Firm Transportation Service. A fourth customer, the New York Power Authority

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6 *Iroquois Gas Transmission System, L.P.*, Docket No. CP02-52-000, "Motion of Iroquois Gas Transmission System, L.P. for Extension of Status Report and DEIS Comment Deadlines and Request for Expedited Action," filed January 17, 2003 ("January 17, 2003 Motion").

7 *Iroquois Gas Transmission System, L.P.*, Docket No. CP02-52-000, "Notice of Extension of Public Comment Period for the Draft Environmental Impact Statement for the Proposed Eastern Long Island Extension Project" (January 24, 2003) and Letter Order from J. Mark Robinson, Director, Office of Energy Projects, Federal Energy Regulatory Commission, to Jeffrey A. Bruner, Vice President, General Counsel and Secretary, Iroquois Pipeline Operating Company, dated January 24, 2003.

("NYPA"), did not withdraw from the project, but indicated in a written response that it was unable at that time to confirm its intention to proceed with the ELI Project.

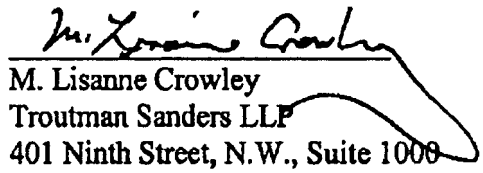
Given the extent of customer withdrawals from the ELI Project, Iroquois' management determined that it was not willing to proceed with the project unless it had more definitive, binding commitments from the remaining customers. Iroquois communicated this position to the two remaining prospective customers, NYPA and the Long Island Power Authority ("LIPA"), by letters dated and delivered January 17, 2003. In those letters, Iroquois indicated that if it did not receive a positive response to its request for a more definitive commitment by January 31, 2003, it would terminate its prosecution of the ELI Project certificate application. Iroquois has had no response to its letters from either customer.

In light of the lack of continued customer support for this project, Iroquois hereby informs the Commission that it has determined not to proceed with the development of the ELI Project. A formal notice of Iroquois' withdrawal of its certificate application is being filed simultaneously with this Status Report.

In closing, Iroquois wishes to express its deep appreciation to the Commission Staff and to all other active participants in this proceeding for their time and effort in connection with the processing of the ELI Project certificate application. Iroquois further confirms that it stands ready to undertake the development of new construction projects

wherever there is a definitive expression of market need and where it determines that such project would be economically supportable.

Respectfully submitted,



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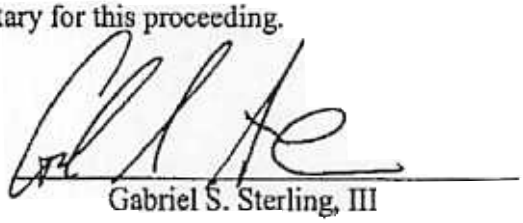
February 7, 2003
Washington, D.C.

CERTIFICATE OF SERVICE

On this, the 7th day of February, 2003, I hereby certify that a true and correct copy of the foregoing Status Report of Iroquois Gas Transmission System, L.P. was served, first class mail, postage prepaid, upon all parties listed on the official service list compiled by the Office of the Secretary for this proceeding.



Gabriel S. Sterling, III

ORIGINAL

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Iroquois Gas Transmission System, L.P.) Docket No. CP02-52-000

Notice of Withdrawal of Certificate Application

Pursuant to Rule 216 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission, 18 C.F.R. § 385.216 (2002), Iroquois Gas Transmission System, L.P. ("Iroquois") hereby notifies the Commission and parties to this proceeding of the withdrawal of its Application for a Certificate of Public Convenience and Necessity for the Eastern Long Island Project ("ELI Project") which was filed on December 14, 2001 in the captioned docket. Iroquois is withdrawing the ELI Project certificate application for the reasons set forth in the Status Report being filed by Iroquois contemporaneously with this Notice in this proceeding.

Respectfully submitted,

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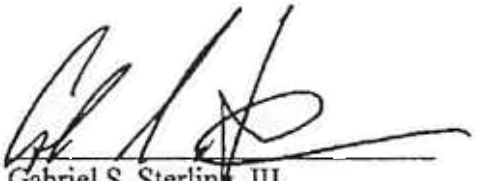
February 7, 2003
Washington, D.C.

CERTIFICATE OF SERVICE

I HEREBY CERTIFIY that I have this, the 7th day of February, 2003, served the foregoing Notice of Withdrawal of Certificate Application on the persons listed on the official service list compiled by the Secretary in the instant proceedings.



Gabriel S. Sterling, III