Because the Project has no alternate fuel, it will either purchase 365-day firm capacity or will be an interruptible customer. If gas supply to the Project is interrupted, Brookhaven Energy will cease to take deliveries. By so doing, the Project will comply with the PSC Interruptible Gas Service Order.

9.3 Gas Upgrade Environmental Assessment

This section addresses Stipulation 4, Clause 3, which requires an assessment of environmental impacts of any upgrades as specified in other stipulations and preamble.

As stated above, the only gas reinforcement that is not already in Keyspan Energy's construction plan is a 2.3-mile-long, 24"-diameter gas pipeline upgrade main under Commercial Avenue near Garden City, Nassau County, within the Town of Hempstead (Figure 9-3). There is presently a 20"-diameter pipeline in this corridor. Since this upgrade is not a Project interconnection as defined in the stipulations (it is not for the Project's exclusive use *and* it creates no new rights-of-way), it is outside of the agreed-upon scope of the Application. However, in order to address impacts as completely as possible, its environmental impact is presented here.

Refer to the attached aerial photograph (Figure 9-4), which illustrates the types of land use that exist near the pipeline upgrade route. The upgrade begins just west of the intersection of Oak Street and Commercial Avenue and follows Commercial Avenue east to Quentin Roosevelt Boulevard. Land use in this section is industrial/commercial with commercial businesses on the south side of Commercial Avenue and railroad tracks and industrial uses on the north side of Commercial Avenue. After crossing Quentin Roosevelt Boulevard, the pipeline would continue eastward along the edge of a railroad right-of-way and passing adjacent to the Mitchel Complex (military housing) and commercial office buildings to the north. After passing by the Mitchel Complex, the pipeline would cross Endo Boulevard, traverse parking lots associated with commercial buildings and then cross under the Meadowbrook Parkway. The pipeline would terminate at Merrick Ave, east of the Meadowbrook Parkway. On the basis of standard practices in the pipeline industry Brookhaven Energy is able to qualitatively describe the following environmental impacts from the proposed 2.3-mile gas upgrade:

Air

The pipeline upgrade will not require additional compression and thus air impacts are not expected. Airborne dust from construction work will be minimal as construction is expected to be a brief process and will be restricted to excavation and backfilling of a narrow trench.

Cultural/Historical

The pipeline will be placed under streets and in a previously disturbed railroad right-of-way. As such, the pipeline will not affect cultural or historical resources.

Land Use

The upgrade will constitute no new land use and will require no additional land area. The duration of construction is expected to last only a few weeks, thereby minimizing inconvenience to abutters. Once installed, the upgraded pipeline will not affect existing residential, commercial and industrial uses in the area.

Land uses within a mile of the upgrade include several institutions and large commercial complexes, and public areas. These include the Roosevelt Mall, the old Roosevelt Raceway, the American Ref-Fuel waste-to-energy plant, the Nassau Coliseum, Hofstra University, and Nassau Community College. Eisenhower Park and residential areas of Garden City are also within a mile of the upgrade (on the east and west ends, respectively). None of these more distant land uses would be pressed to make changes in land use patterns because of this upgrade, and thus would not be affected in an adverse way.

Noise

Noise associated with construction vehicles and tools will be of a short duration. Construction work will only occur during hours that are in accordance with Keyspan Energy's standard practices for pipeline maintenance and construction. Once installed, there will be no noise impact. Note that much of the area already has relatively high ambient noise levels associated with high volumes of traffic on the Meadowbrook Parkway as well as traffic on other streets in the area including Commercial Avenue and Stuart Avenue. Relatively high ambient noise levels are also a result of industrial uses along Commercial Avenue.

Safety

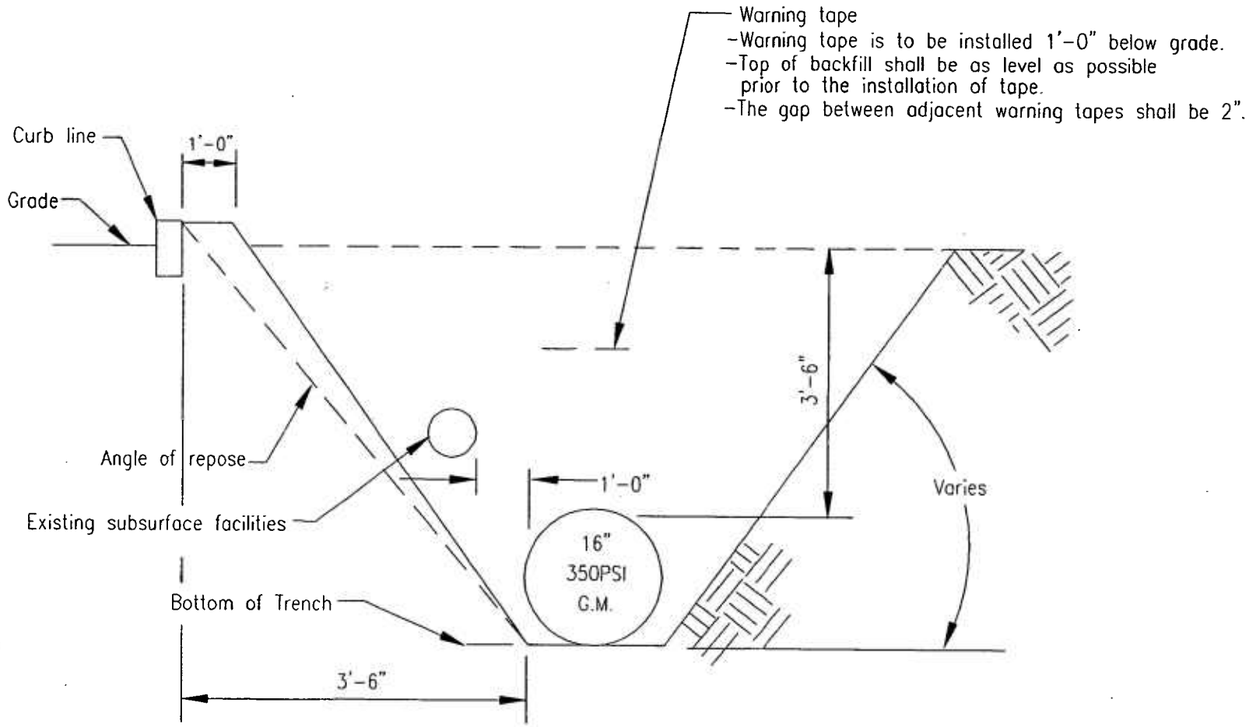
Appropriate safety measures will be taken during pipeline construction, consistent with Keyspan Energy standard practices for pipeline maintenance and construction.

Solid Waste

Any bituminous roadway material and other excavated materials that need to be removed as part of the work will be disposed of at an approved disposal site.

Terrestrial Ecology

The upgrade consists of installing a new pipeline that would follow under a paved street. No tree clearing or other removal of vegetation is anticipated. Thus, no impact to plant or wildlife habitat areas is anticipated.



NOTES: -For 3'-6" deep trenches, a minimum of 3'-6" shall be maintained from the trench wall to the paving, curb, etc. If cave-ins threaten the adjacent paving, curb, etc. tight sheeting per OSHA standards shall be required. Threat is defined as loss of one foot (1') of dirt behind back of curb.

-Use bales of hay or dirt bags if necessary to maintain exist. catch basins, spillways, gutters, etc. as well as for erosion control.

DETAIL "A"

Trench cross-section, 16" gas main
for protection of N.Y.S. curbs, paving & structures

BROOKHAVEN ENERGY LP
65 BOSTON POST ROAD WEST, SUITE 300
MARLBOROUGH, MA 01752
TEL 508-786-7200 FAX 508-786-7201

PREPARED:	CHECKED:	APPROVED:	STD.CHECKED:
DERIVED FROM:	SUPERSEDES:	SUPERSEDED BY:	

Title

FIGURE 9-2

REPRESENTATIVE NATURAL GAS PIPELINE DESIGN

Scale	Cadd File No.
Format B	Ports List - Yes / No; Separate ☐ ☐
	Dept. Resp. / Takeover Dept.
Language	Sheet No. / No. Sheets
Drawing No. I:\E_CAD\29581(BROOKHAVEN)\DESIGN\TRENCH	Rev.

ALSTOM
ALSTOM POWER INC.

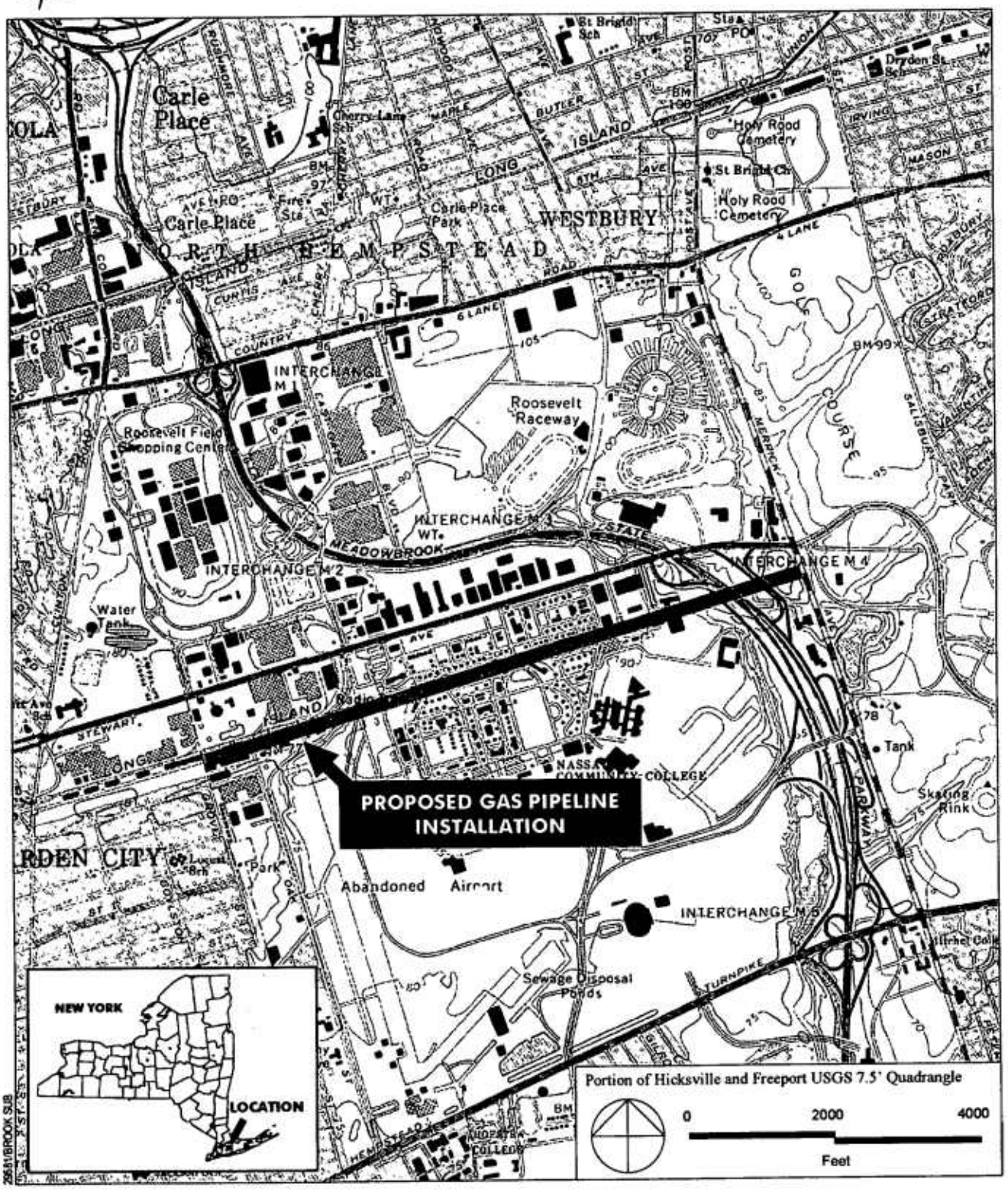
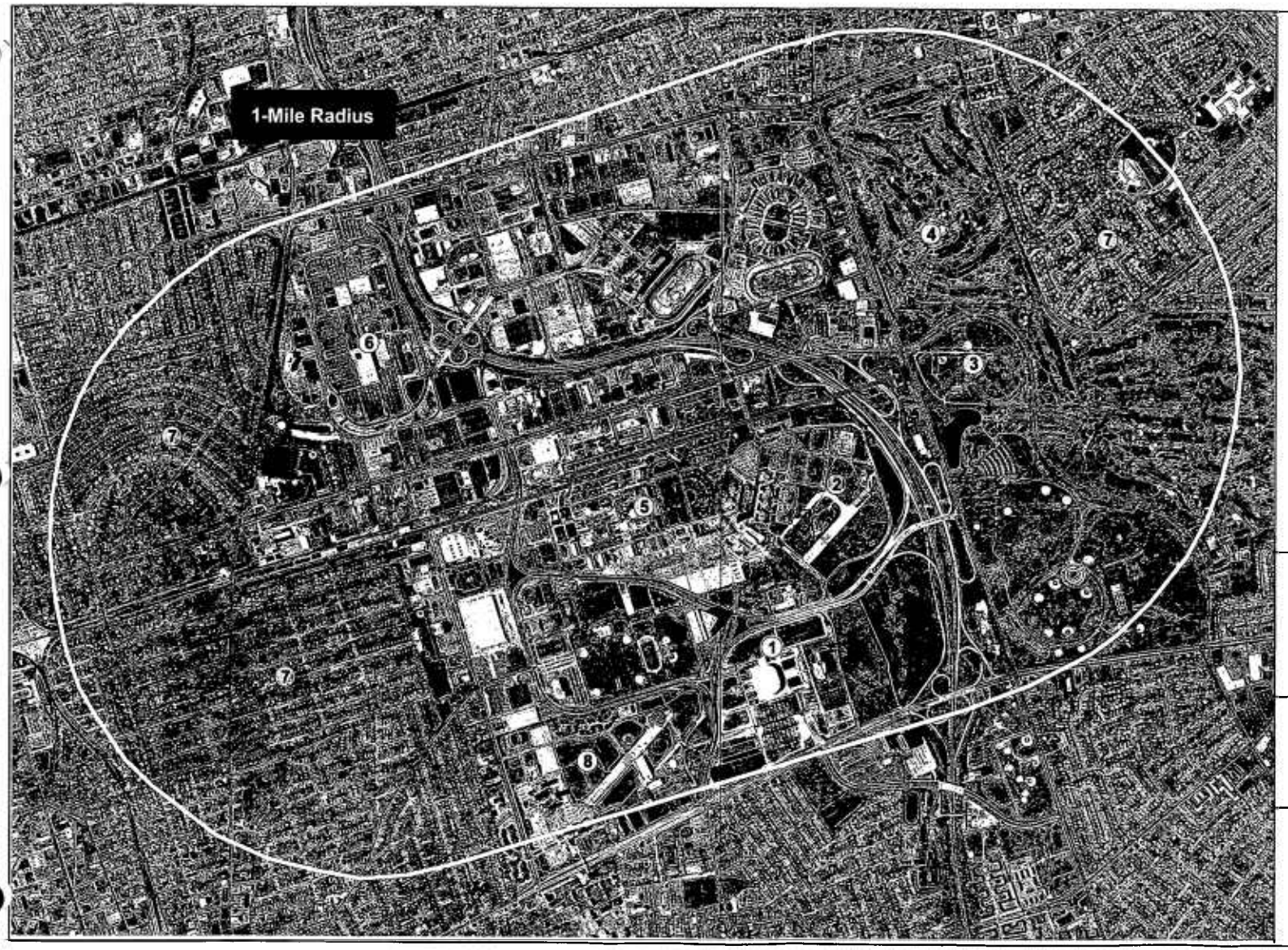


Figure 9-3
Location of Gas Reinforcement Upgrade



Brookhaven Energy LP

Approximate Location of KeySpan Energy's Gas System Reinforcement

1. Nassau County Veterans Memorial Coliseum
2. Nassau Community College
3. Eisenhower Park
4. Nassau County Park Public Golf Links
5. Mitchell Complex- Military Housing
6. Roosevelt Field Shopping Center
7. Residential Areas
8. Hofstra University

FIGURE 9-4
LAND USE NEAR GAS REINFORCEMENT UPGRADE
Garden City, New York

Base Map Provided by New York State GIS Sharing Cooperative
(available online at http://www.nysgis.state.ny.us)
Geospatial Data Presentation Form: Remote Sensing Image
Date of Flyover: April 4, 1994

500 0 500 1000 Feet

c:/gis/gardencity/proj1.apr

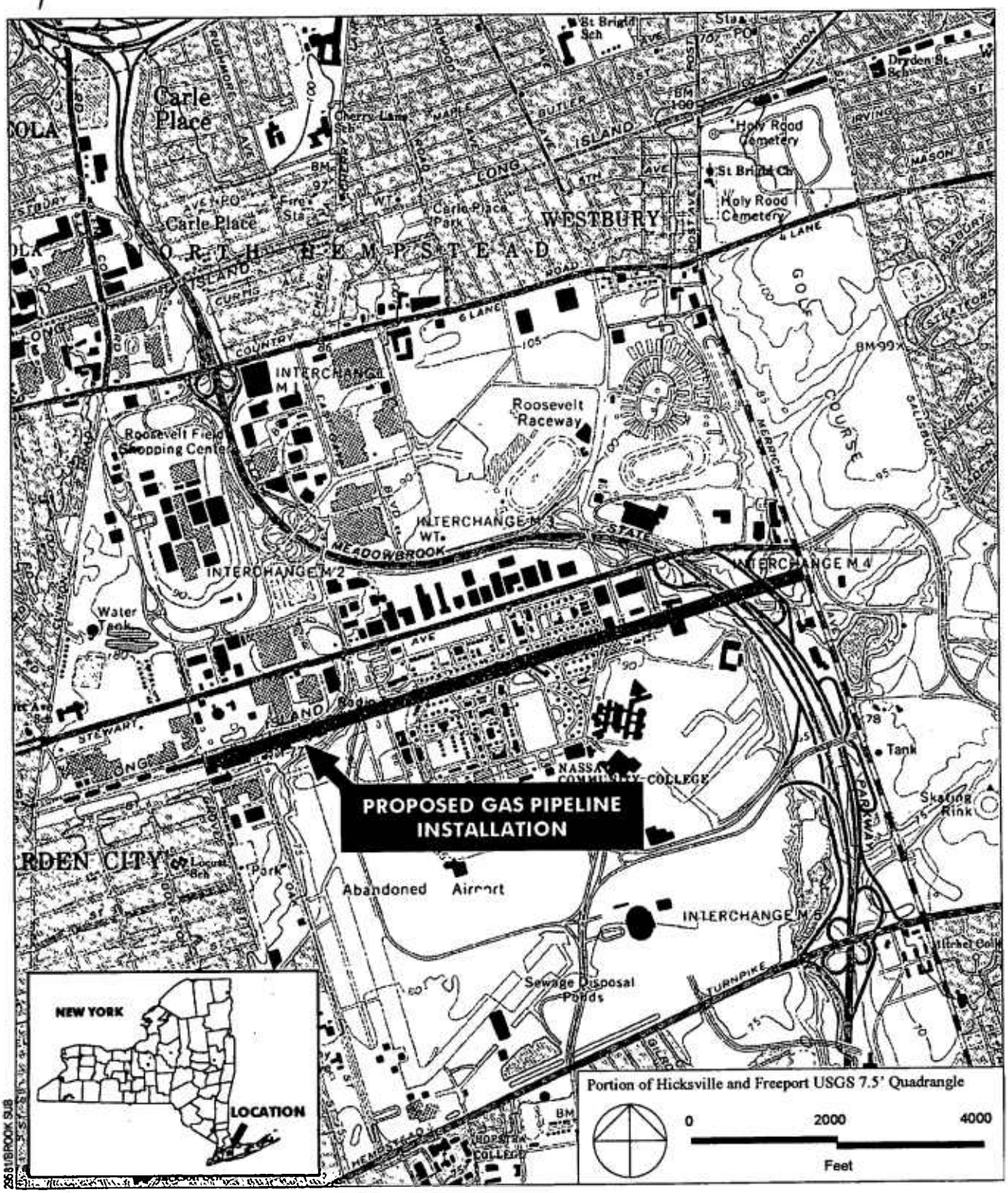


Figure 9-3
Location of Gas Reinforcement Upgrade

Traffic and Transportation

The upgrade will require closure of a lane or lanes within the roadway. This work will be managed in accordance with Keyspan Energy's standard procedures for lane closure during pipeline maintenance and construction. Once installed, there will be no traffic impact.

Visual

The pipeline will be located entirely underground in streets and along an existing railroad ROW and thus will not result in visual impacts. The construction area will be resurfaced as appropriate.

Groundwater, Water Supply and Wastewater

If hydrostatic testing of the pipe is performed, it is expected that approximately 290,000 gallons would be necessary during the single testing event. It is anticipated that the water would be procured from a nearby water district and discharged under standard hydrostatic test discharge authorizations that are typical of such maintenance and construction.

Surface Waters and Wetlands

The section of Commercial Street and other areas where the upgrade would occur is not located in or near wetlands, and thus the upgrade does not appear to affect any surface waters or wetlands.

Conclusion

In conclusion, the proposed 2.3-mile upgrade to Keyspan Energy's local natural gas distribution system in Garden City, Nassau County, constitutes a minimal environmental impact of temporary duration, while providing lasting benefits by way of ensuring adequate gas supply to the Project and thus helping to lower Long Island's air emissions.

Note that the above assessment does not address the natural gas interconnection for the Project – the approximately 1,700-foot lateral between the Long Island Expressway South Service Road and the Project. That interconnection is assessed in greater detail together with the Project, its laydown area, and other interconnections, as applicable, within Sections 6 through 17.

9.4 Storage of Fuel Oil for Emergencies

This section addresses Stipulation 4, Clause 2. Clause 2 was developed in response to the Project's proposal – since eliminated – to store, transport, and use backup fuel oil. In the Preliminary Scoping Statement, one million gallons of oil storage were proposed. Prior to finalizing the stipulations and filing its air permit applications, Brookhaven Energy informed the agencies involved as signatories to the stipulations process, as well as local officials and interested parties, that backup fuel oil has been eliminated as a feature of the Project. Thus, this section addresses Stipulation 4, Clause 2 only to the extent it relates to the storage of minimal amounts of fuel oil for emergency generators and backup fire pump.

9.4.1 Use and Replenishment

Clause 2(a), (c), (d) and (e) required, respectively, the following.

(a) *An estimate of the rate of fuel oil consumption at full power output.* This is no longer applicable.

(c) *An estimate of the maximum period that the plant could burn oil without refueling.* This is no longer applicable.

(d) *A description of the proposed method of oil delivery and on site oil delivery infrastructure or offsite interconnects and an estimate of the maximum rate of delivery, given the transportation methods and facilities proposed.* This is no longer applicable. Delivery of diesel for emergency equipment will occur approximately twice a year. Deliveries will be made by a private local oil vendor.

(e) *An estimate of the expected frequency and duration of oil firing of the facility and a discussion of the assumptions and analysis used to arrive at this estimate.* This is no longer applicable.

9.4.2 Storage and Handling

Clause 2(b) addresses the storage capacity of any tanks, a description of secondary containment structures, and measures proposed to prevent, contain or clean up oil spills. Furthermore, Clause 2(f) requires Brookhaven Energy to submit a Spill Prevention, Countermeasures and Control (SPCC) Plan, per 40 CFR 112. Finally, Clause 2(g) requires applications for the appropriate state permits related to bulk fuel oil storage.

The only fuel oil storage at the Project will be small aboveground tanks associated with emergency diesel equipment: a backup diesel fire pump (to be operated in case power from the grid to the firewater pumping system is not available during a firefighting event) and two emergency diesel generators (which are designed to operate only in order to ensure safe shutdown of the plant in case power from the grid is not available; and during testing). Total on-site storage will be approximately 1,700 gallons. This fuel storage will include secondary containment in the form of 110% rupture basins for both the emergency diesel generators and the fire pump storage tanks.

Fuel delivery for the emergency diesel engines is expected to occur very infrequently because these units are only operated during emergencies and for testing. The emergency generator fuel tanks rest on concrete foundations, with the fuel filling connections being housed within the engine enclosure. The emergency fire pump fuel tank will be housed within a building with a concrete floor.

In order to comply with the requirements of Stipulation 4, Clause 2(f), Brookhaven Energy has included a draft SPCC plan in Appendix Z.

Stipulation 4, Clause 2(g) is applicable only if the Project includes storage of 400,000 gallons of fuel oil or more. In that case, the Project would be subject to Article 12 of the Navigation Law, Section 174 (licenses), 17 NYCRR 30 (Oil Spill Prevention and Control -- Licensing of Major

Facilities), 6 NYCRR 610 (Certification of Onshore Major Facilities), and 6 NYCRR 612 through 614 (Petroleum Bulk Storage Regulations).

By eliminating backup oil storage, the Project is no longer subject to some of these permitting programs. Specifically, it is not a major onshore facility and is not governed by the Navigation Law, NYSDOT's regulatory authority under 17 NYCRR 30 or NYSDEC's program under 6 NYCRR 610. However, because the total storage of fuel oil in day tanks associated with auxiliary equipment is 1,700 gallons (falling within a regulatory range between a minimum of 1,100 gallons and a maximum of 400,000 gallons), the Project's oil storage will be subject to NYSDEC's bulk fuel oil registration requirements, pursuant to ECL §17-1009, and the implementing regulations in 6 NYCRR 612 through 614. Key provisions of these statutes and regulations are as follows:

- Tanks must be made of steel and, if sited on-ground, underlain by impermeable barriers, with a leak monitoring system and cathodic protection for the bottom of the tank or equivalent;

- Exterior surfaces of all new aboveground storage tanks must be protected by a primer coat, a bond coat and two or more final coats of paint, or equivalent;

- All new underground piping systems must be made of steel or iron that is cathodically protected, fiberglass reinforced plastic or equivalent. However, all fuel oil storage day tanks will be directly connected to the emergency generating equipment, and no underground piping is expected.

It also should be noted that Articles 7 and 12 of the Suffolk County Sanitary Code include detailed permitting programs related to various types of hazardous materials, including all petroleum distillate oils. They are addressed in Section 10.4 (Compliance with Local Laws). According to the Suffolk County Department of Health Services, the County has, through appropriate NYSDEC filings pursuant to ECL §17-1017, obtained approval to enforce the Sanitary Code as a local law that provides "environmental protection equal to or greater than" the protection accorded through the above-described regulations. For that reason, this local law is not pre-empted by the state law.

10. LAND USES AND LOCAL LAWS

10.1 Applicable Regulatory Requirements

This section addresses several types of issues, all covered in Stipulation 5: compatibility with local laws, existing land uses, zoning, and land use planning. Land use analysis studies the patterns of local human settlement and life. The standard by which land use compatibility is generally assessed is through analysis of land uses within the immediately surrounding area, quality-of-life impacts on those activities, future viability of those activities, local zoning and other laws established as community planning tools, and long-range planning documents. The Siting Board regulations explicitly require an analysis of land uses and zoning districts. 16 NYCRR 1001.3(b)1(i). Decommissioning and restoration of the Project site are also addressed in this section, as this is an issue pertaining to the site's future land use.

The analysis of local laws is included in this section because most local laws are generally related to land use. However, in Brookhaven and in Suffolk County, there are other types of local laws, including noise, tree preservation, and a notable body of regulations related to groundwater protection. These are also included in this section and in the tables of compliance with local laws (Table 10-15 for Town laws, Table 10-16 for County laws). The Public Service Law requires the Siting Board to issue a Certificate only if it finds that the Project "is designed to operate in compliance with applicable state and local laws and regulations." PSL §168.2(d). However, in the case of local requirements the Siting Board has discretion to grant relief from such provisions if it finds that they are "unreasonably restrictive in view of the existing technology."

10.2 Existing and Planned Land Use

This section addresses both generally and specifically the requirements of Stipulation 5, Clause 1(a), calling for a map of all existing land uses within a 2-mile radius of the Project site, expanded as necessary to include the Southaven County Park.

10.2.1 Existing Land Use Profile

10.2.1.1 Land Use Categories

A land use inventory was conducted in February 2000 and updated in February 2001 to identify existing land uses within a 2-mile radius of the Project site, expanded as necessary to include identification of major land uses outside that radius, particularly the Southaven County Park. The data collection effort employed a windshield survey methodology with general land use characteristics assigned and annotated on a USGS-based map of the study area. Due to the magnitude of the area contained within the 2-mile radius, individual parcels were not assessed, and characterization of some backland area (area beyond the view from the roadway) relied on aerial photography. Sections 10.2.1.3 and 10.2.1.4 describe the land uses in narrative form. In order to distill that information through mapping, land use categories were identified, as listed in Table 10-1. All land uses within the study are shown in Figure 10-3.

Table 10-1: Land Use Categories

Designation	Description
Residential	All private residential housing
Government Facilities, Infrastructure	Wide rights-of-way, maintenance facilities, fire and police buildings, water and sewer service infrastructure, communication towers, landfill.
Open Space/Institutional	Includes public parks and recreational facilities, churches, cemeteries, schools.
Agriculture	Active or recent farmland.
Retail, Commercial, Office Complex	Village commercial buildings, shopping plazas, office buildings near retail centers.
Industrial	Manufacturing, junkyards, soil operations, industrial parks (some with commercial uses).
Vacant	Land not under any active use.

10.2.1.2 Adjacent Properties, Access and Title Information

This section addresses Stipulation 5, Clause 1(b), which calls for a list of land uses, tax map parcel numbers, and owners of record of parcels within 1000 feet of the Project.

The proposed Project site is a vacant forested area located near the geographic center of the Town of Brookhaven, at Exit 66 of the LIE. The parcels within 1000 feet of the proposed site are vacant with the exception of infrastructure uses: LIE, Sills Road, Old Town Road, the Long Island Railroad, and the LIPA right-of-way. A listing of parcels within 1000 feet of the site, including the landowner of each parcel, the landowner's address and the type of land use is provided in Table 10-2. The parcel locations are shown in Figure 10-1. The assessors' data is current as of August 15, 2000. In the left column of Table 10-2, the "Reference no." is a key linking the assessors' data to the simple numeration used in Figure 10-1. This was done to eliminate unnecessary detail in the figure, while still keeping true to the meaning and letter of the stipulation clause.

Because of past subdivisions, the Project site consists of 18 parcels (4 principal parcels and 14 that are remnants of past subdivisions), totaling 28 acres in all. The site is bisected by two 69 kV transmission lines – one on the dirt driveway that follows down the center of the site (east to west), and one along the dirt driveway in the south of the site, paralleling the Long Island Railroad. An underground telecommunications line is also buried under the central driveway. As described in Section 3.2.7.5, these utilities will need to be relocated within the site for the construction effort and thereafter. Keyspan personnel have been involved in a "working group" with Brookhaven Energy to coordinate the relocation of the lines. The Site Development Plan, Sheet 14, shows a proposed relocation to the south, whereby both 69 kV lines and the telecommunications line follow the south driveway. The final relocation design will be submitted through a Compliance Filing. The relocated utilities will stay within the Project site, and no additional real estate will be required. Outages will be coordinated with Keyspan and any other applicable owners or system users. No relocation of the recently installed Level III fiberoptic line (east side of Sills Road) is expected for either the Project or the gas interconnection.

Table 10-2: Land Uses and Property Owners Within 1000 Feet of Project Site

Ref #	Sec-Blk-Lot				Owner of record	Address of owner	City	State	ZIP	Land Use
A	704	2	1	1	Gazza, J; McGahey, J; Sears, R	PO Box 969	Quogue	NY	11959	Vacant
B	704	2	2		Sills Road Associates	c/o Mark S Rose, 72 West Ave	Patchogue	NY	11772	Vacant
C	663	3	1		Sills Road Associates	66 Medford Rd	Patchogue	NY	11772	Vacant
C	704	4	1		Sills Road Associates	66 Medford Rd	Patchogue	NY	11772	Vacant
C	704	4	2		Sills Road Associates	66 Medford Rd	Patchogue	NY	11772	Vacant
C	704	5	1		Sills Road Associates	66 Medford Rd	Patchogue	NY	11772	Vacant
C	704	5	2		Sills Road Associates	66 Medford Rd	Patchogue	NY	11772	Vacant
D	663	3	27	1	Brookhaven Energy LP	65 Boston Post Rd West, Rm 300	Marlborough	MA	01752	Vacant
D	663	3	27	2	Brookhaven Energy LP	65 Boston Post Rd West, Rm 300	Marlborough	MA	01752	Vacant
D	663	3	27	3	Brookhaven Energy LP	65 Boston Post Rd West, Rm 300	Marlborough	MA	01752	Vacant
D	663	3	27	4	Brookhaven Energy LP	65 Boston Post Rd West, Rm 300	Marlborough	MA	01752	Vacant
D	704	2	30		Brookhaven Energy LP	65 Boston Post Rd West, Rm 300	Marlborough	MA	01752	Vacant
D	704	2	31		Brookhaven Energy LP	65 Boston Post Rd West, Rm 300	Marlborough	MA	01752	Vacant
D	704	2	32		Brookhaven Energy LP	65 Boston Post Rd West, Rm 300	Marlborough	MA	01752	Vacant
D	704	2	33		Brookhaven Energy LP	65 Boston Post Rd West, Rm 300	Marlborough	MA	01752	Vacant
D	704	2	34		Brookhaven Energy LP	65 Boston Post Rd West, Rm 300	Marlborough	MA	01752	Vacant
D	704	2	35		Brookhaven Energy LP	65 Boston Post Rd West, Rm 300	Marlborough	MA	01752	Vacant
D	704	2	36		Brookhaven Energy LP	65 Boston Post Rd West, Rm 300	Marlborough	MA	01752	Vacant
NA	704	2	4		Metropolitan Transportation Authority (Long Island Railroad)					Rail Road
NA	NA				Long Island Expressway					Interstate Highway
NA	NA				Sills Road					County Highway
NA	NA				Long Island Avenue					Town Highway
NA	NA				State Street (Old Town Road)					Town Highway
1	663	1	2		Pheasant LCC	Long Island Ave.	Bellport	NY	11713	Vacant
2	663	1	3	5	Brookhaven IDA	3233 Rte. 112	Medford	NY	11763	Vacant
3	663	1	12		Brookhaven IDA	3233 Rte. 112	Medford	NY	11763	Vacant

Notes: Letter references are parts of the Project site. "NA" references are untaxed public property without a designation. Numbered properties are all remaining parcels within 1000 feet of Project site boundary.

Table 10-2: Land Uses and Property Owners Within 1000 Feet of Project Site (continued)

Ref #	Sec-Blk-Lot				Owner of record	Address of owner	City	State	ZIP	Land Use
4	663	1	11		Brookhaven IDA	3233 Rte. 112	Medford	NY	11763	Vacant
4	663	1	10		Brookhaven IDA	3233 Rte. 112	Medford	NY	11763	Vacant
5	663	1	17	2	Brookhaven IDA	3233 Rte. 112	Medford	NY	11763	Vacant
6	663	1	4		Brookhaven IDA	3233 Rte. 112	Medford	NY	11763	Vacant
7	663	1	19	3	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
7	663	1	19	4	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
7	663	1	19	5	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
7	663	1	19	7	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
7	663	1	19	8	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
7	663	1	19	9	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
8	663	1	5		Motiva Enterprises LLC	Patchogue-Yaphank Rd	Yaphank	NY	11980	T-line
9	663	4	28		Chun, Connie	PO Box 27918	Fresno	CA	93729	Vacant
9	663	4	30	1	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
9	663	4	30	2	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
9	663	4	30	3	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
10	663	4	32	2	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
10	663	4	32	3	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
10	663	4	4		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
10	663	4	5		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
10	663	4	6		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
11	663	3	30	1	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
11	663	3	30	2	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
11	663	3	30	3	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
11	663	3	30	4	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
11	704	2	15		Long Island Lighting Company					Vacant
11	704	2	23		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
12	663	3	31	1	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
12	663	3	31	2	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
12	663	3	31	3	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
12	663	3	31	4	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant

Table 10-2: Land Uses and Property Owners Within 1000 Feet of Project Site (continued)

Ref #	Sec-Blk-Lot				Owner of record	Address of owner	City	State	ZIP	Land Use
13	663	3	3		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
13	663	3	5		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
13	663	3	6		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
13	663	3	7		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
13	663	3	8		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
13	663	3	9		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
13	663	3	10		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
14	663	3	4		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
14	663	3	23		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
14	663	3	21		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
14	663	3	19		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
14	663	3	20		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
14	663	3	22		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
15	663	3	31	5	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
15	704	2	24		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
16	663	3	11		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
16	663	3	12	4	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
16	663	3	12	6	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
16	663	3	12	5	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
16	663	3	12	1	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
16	704	3	1		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
17	663	3	17		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
17	663	3	16		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
17	663	3	13		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
17	663	3	14		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
17	663	3	15		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
17	663	3	18		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
17	704	3	33		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
17	704	3	34		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
17	704	3	35		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant

Table 10-2: Land Uses and Property Owners Within 1000 Feet of Project Site (continued)

Ref #	Sec-Blk-Lot				Owner of record	Address of owner	City	State	ZIP	Land Use
17	704	3	36		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
18	704	2	25		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
18	704	2	26		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
19	704	3	2		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
19	704	3	3		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
19	704	3	4		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
19	704	3	5		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
19	704	3	6		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
20	704	3	23		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
20	704	3	24		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
20	704	3	25		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
20	704	3	26		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
20	704	3	27		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
20	704	3	28		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
20	704	3	29		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
20	704	3	30		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
20	704	3	31		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
20	704	3	32		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
21	704	2	27		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
21	704	2	28		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
21	704	2	29		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
22	704	3	7		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
22	704	3	8		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
22	704	3	9		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
23	704	3	13		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
23	704	3	14		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
23	704	3	15		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
23	704	3	16		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
23	704	3	17		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
23	704	3	18		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant

Table 10-2: Land Uses and Property Owners Within 1000 Feet of Project Site (continued)

Ref #	Sec-Blk-Lot				Owner of record	Address of owner	City	State	ZIP	Land Use
23	704	3	19		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
23	704	3	20		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
23	704	3	21		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
23	704	3	22		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
24	704	2	16		Long Island Lighting Company					Vacant
24	704	3	10		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
24	704	3	11		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
25	704	3	12		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
26	663	3	29	1	Sills Expressway Associates	608 Union Ave	Holtsville	NY	11742	Vacant
27	663	3	28		Long Island Lighting Company					T-line
28	741	1	1		RDR Goldberg Associates	1161 Meadowbrook Rd	North Merrick	NY	11566	Vacant
29	704	2	20		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
30	704	2	20		Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
31	740	4	14	1	County of Suffolk					Vacant
32	740	4	4		Musillo Jas J & Teresa	4119 Bayberry La	Seaford	NY	11783	Vacant
33	740	4	3		Musillo Jas J & Teresa	4119 Bayberry La	Seaford	NY	11783	Vacant
34	740	4	2		Wine Services	1129 Cross River Dr	Riverhead	NY	11901	Vacant
35	704	2	14	1	Zucker, Donald	101 West 55th St	New York	NY	10019	Vacant
36	704	2	39		Laurelle Associates, Inc.	375 North Bayport Ave	Bayport	NY	11705	Vacant
37	704	2	38		Laurelle Associates, Inc.	375 North Bayport Ave	Bayport	NY	11705	Vacant
39	740	4	1		Coraci, Anthony	550 William Floyd Parkway	Shirley	NY	11967	Vacant
40	704	2	13		Long Island Lighting Company					T-line
41	704	2	41		Sills Road Associates	775 Park Ave	Huntington	NY	11743	Vacant
42	704	2	40		Sills Road Associates	775 Park Ave	Huntington	NY	11743	Vacant
43	740	3	1	3	Sills Road Associates	PO Box 267	Smithtown	NY	11787	Vacant
44	740	3	3		Long Island Lighting Company					T-line
45	740	3	1	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
46	740	3	3		Long Island Lighting Company					T-line
47	814	2	30		County of Suffolk					Vacant
48	704	2	5		Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant

Table 10-2: Land Uses and Property Owners Within 1000 Feet of Project Site (continued)

Ref #	Sec-Blk-Lot				Owner of record	Address of owner	City	State	ZIP	Land Use
48	704	2	6	3	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
48	704	2	6	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
48	704	2	6	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
48	704	2	7	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
48	704	2	7	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
48	704	2	8	10	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
48	704	2	8	9	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
48	704	2	8	8	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
48	704	2	8	7	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
48	704	2	8	6	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
48	704	2	8	5	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
48	704	2	8	4	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
48	704	2	8	3	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
48	704	2	8	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
48	704	2	8	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
49	704	2	9	10	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
49	704	2	9	9	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
49	704	2	9	8	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
49	704	2	9	7	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
49	704	2	9	6	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
49	704	2	9	5	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
49	704	2	9	4	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
49	704	2	9	3	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
49	704	2	9	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
49	704	2	9	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
49	704	2	10	6	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
49	704	2	10	5	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
49	704	2	10	4	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
49	704	2	10	3	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
49	704	2	10	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant

Table 10-2: Land Uses and Property Owners Within 1000 Feet of Project Site (continued)

Ref #	Sec-Blk-Lot				Owner of record	Address of owner	City	State	ZIP	Land Use
49	704	2	10	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
50	704	2	11	12	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
50	704	2	11	11	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
50	704	2	11	10	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
50	704	2	11	9	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
50	704	2	11	8	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
50	704	2	11	7	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
50	704	2	11	6	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
50	704	2	11	5	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
50	704	2	11	4	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
50	704	2	11	3	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
50	704	2	11	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
50	704	2	11	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
50	704	2	12	4	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
50	704	2	12	3	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
50	704	2	12	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
50	704	2	12	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
51	740	2	1	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
51	740	2	1	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
51	740	2	1	3	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
51	740	2	1	4	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
51	740	2	1	5	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
51	740	2	1	6	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
51	740	2	1	7	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
51	740	2	1	8	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
51	740	2	1	9	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
51	740	2	1	10	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
51	740	2	2	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
51	740	2	2	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
51	740	2	2	3	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant

Table 10-2: Land Uses and Property Owners Within 1000 Feet of Project Site (continued)

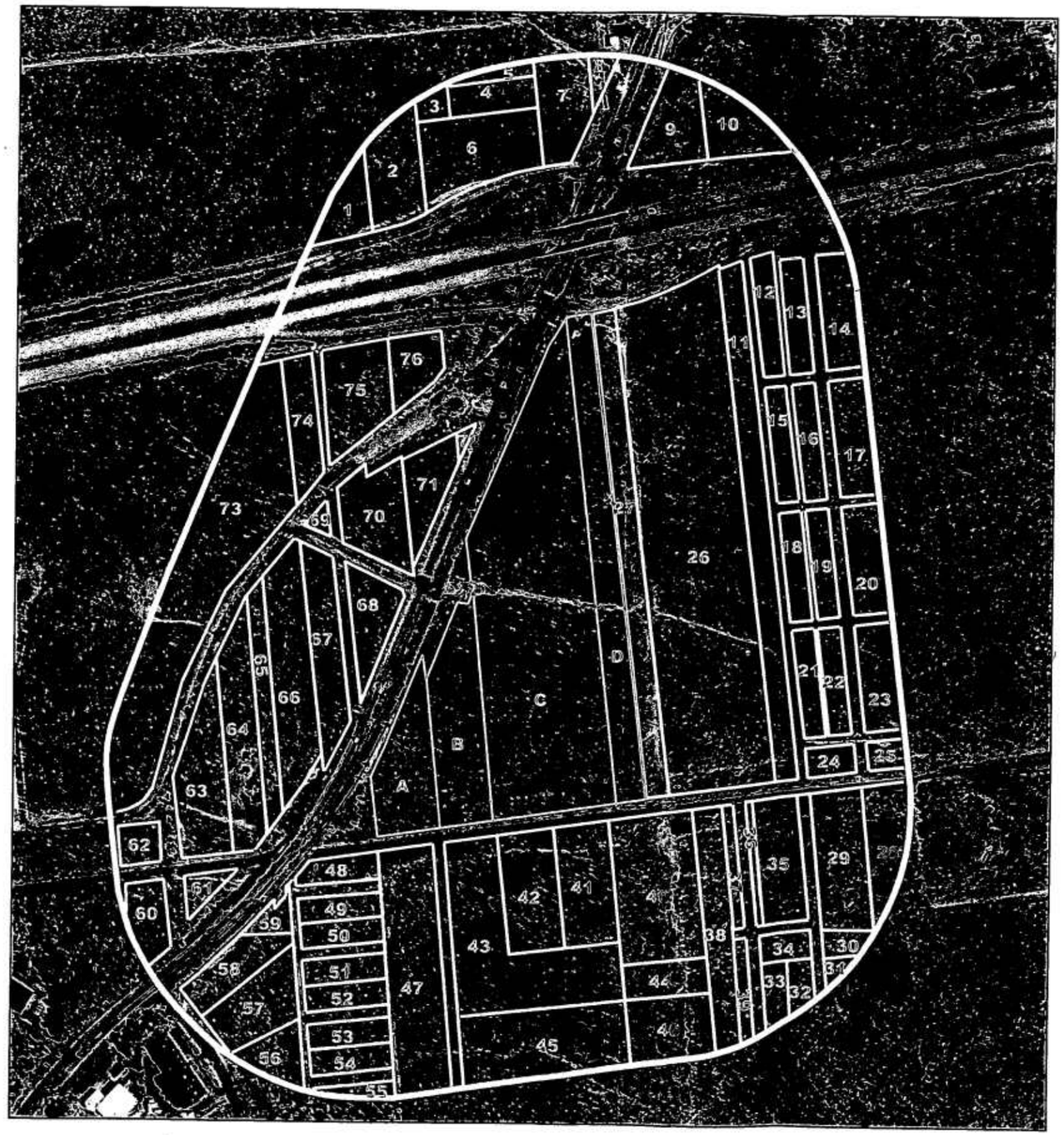
Ref #	Sec-Blk-Lot				Owner of record	Address of owner	City	State	ZIP	Land Use
51	740	2	2	4	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
51	740	2	2	5	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
51	740	2	2	6	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
52	740	2	3	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
52	740	2	3	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
52	740	2	3	3	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
52	740	2	3	4	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
52	740	2	3	5	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
52	740	2	3	6	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
52	740	2	3	7	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
52	740	2	3	8	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
52	740	2	4	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
52	740	2	4	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
52	740	2	4	3	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
52	740	2	4	4	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
52	740	2	4	5	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
52	740	2	4	6	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
52	740	2	4	7	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
52	740	2	4	8	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
53	740	2	5	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
53	740	2	5	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
53	740	2	5	3	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
53	740	2	5	4	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
53	740	2	5	5	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
53	740	2	6	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
53	740	2	6	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
53	740	2	6	3	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
53	740	2	6	4	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
53	740	2	6	5	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
53	740	2	7	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant

Table 10-2: Land Uses and Property Owners Within 1000 Feet of Project Site (continued)

Ref #	Sec-Blk-Lot				Owner of record	Address of owner	City	State	ZIP	Land Use
53	740	2	7	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
53	740	2	7	3	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
53	740	2	7	4	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
53	740	2	7	5	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
53	740	2	7	6	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
54	740	2	8	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
54	740	2	8	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
54	740	2	8	3	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
54	740	2	8	4	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
54	740	2	8	5	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
54	740	2	8	6	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
54	740	2	8	7	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
54	740	2	8	8	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
54	740	2	8	9	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
54	740	2	8	10	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
54	740	2	8	11	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
54	740	2	8	12	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
54	740	2	8	13	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
54	740	2	8	14	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
54	740	2	8	15	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
54	740	2	8	16	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
55	740	2	9	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
55	740	2	9	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
55	740	2	9	3	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
55	740	2	9	4	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
55	740	2	9	5	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
55	740	2	9	6	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
55	740	2	9	7	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
55	740	2	9	8	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
55	740	2	9	9	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant

Table 10-2: Land Uses and Property Owners Within 1000 Feet of Project Site (continued)

Ref #	Sec-Blk-Lot				Owner of record	Address of owner	City	State	ZIP	Land Use
55	740	2	9	10	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
55	740	2	10		Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
55	740	2	11	1	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
55	740	2	11	2	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
55	740	2	11	3	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
55	740	2	11	4	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
55	740	2	11	5	Zorn, Carl & Wine Services	1863 Pond Rd	Ronkonkoma	NY	11779	Vacant
56	740	1	5	25	Orient Express Motorcycles Inc.	625 County Rd 39A	Southampton	NY	11968	Vacant
57	740	1	5	24	Brookhaven IDA	3233 Rte. 112	Medford	NY	11763	Vacant
58	740	1	5	23	Schad, Gus	686 Deer Park Ave	Dix Hills	NY	11746	Vacant
60	703	1	31	1	Hawxhurt, D., H., J.	58 Fairfield Lane	Huntington Sta.	NY	11746	Vacant
62	703	1	30		Yaphank Holding Corp.	c/o Apple Bank, 205 E 42 St	New York	NY	10001	Vacant
63	704	1	9		Charney, Edward	3503 Locust Ave	Wantagh	NY	11793	Vacant
64	704	1	8		Nudo, Carman	66 Orchard Rd	East Patchogue	NY	11772	Vacant, dirt track
65	704	1	7		Nudo, C. & Charney, E.	66 Orchard Rd	East Patchogue	NY	11772	Vacant, dirt track
66	704	1	6		Nudo, Carman	66 Orchard Rd	East Patchogue	NY	11772	Vacant, dirt track
67	704	2	37	1	LIE 66 LLC	Old Town-Coram Rd	Yaphank	NY	11980	Vacant
68	704	1	4	1	Gazza, Joseph	Box 969	Quogue	NY	11959	Vacant
69	704	1	14	1	Castellano, Gloria	26 Seaview Lane	Port Washington	NY	11050	Vacant
70	704	1	2	1	Gazza, Joseph	Box 969	Quogue	NY	11959	Vacant
71	704	1	5		Sills Road Associates	66 Medford Ave	Patchogue	NY	11772	Vacant
72	704	1	1		Arved, Inc.	982 East 22nd St	Brooklyn	NY	11210	Vacant
73	704	2	1	1	LIE 66 LLC	Old Town-Coram Rd	Yaphank	NY	11980	Vacant
74	704	2	3	2	Castellano, G. et al.	26 Seaview Lane	Port Washington	NY	11050	Vacant
75	704	2	4		Rosemarie Bongiorno Revoc.	29 Station Rd	Bellport	NY	11713	Vacant
76	704	2	6		Sills Road Associates	66 Medford Ave	Patchogue	NY	11772	Vacant



2938/1000 FEET

Brookhaven Energy LP

Refer to Table 10-2 for
Landowner and Property Address Information

Figure 10-1
Assessors Map Within 1000 Feet of Site

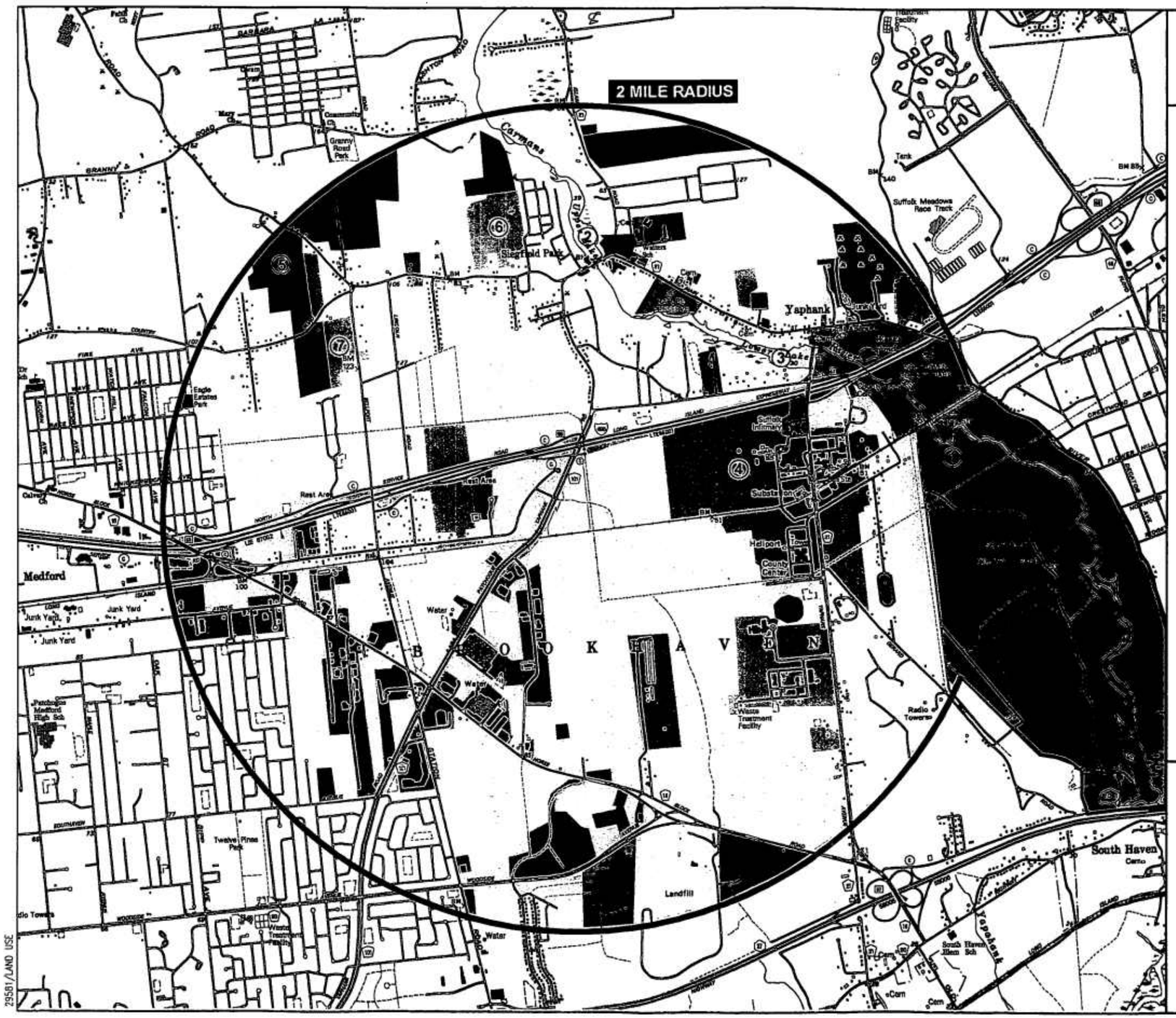
0 500 1000
Feet

Brookhaven Energy LP

Figure 10-2
Aerial Photograph Showing
2-Mile Radius Around Site

0 2500 5000
Feet

2958\TWO MILE AERIAL



Brookhaven Energy LP

Zoning Classification Code

☐	**Agricultural**
▤	**Retail, Commercial, Office Complex**
☐	**Government Facilities/Infrastructure**
▨	**Industrial**
■	**Open Space Institutional**
	Residential
	Vacant

Recreational Uses

① **Southaven County Park**
② **Upper Lake**
③ **Lower Lake**
④ **Suffolk County Farm and Education Center**
⑤ **Mill Pond Golf Course**
⑥ **Good Shepherd Farm**
⑦ **Touch-n-Go Farm**

Base Map is a Portion of the Following:
New York State Department of Transportation Quadrangle,
Bellport, New York 1991

Information Sources:
Aerial Photography, 1994 and 1999; Field Observations, 2000 and 2001

Figure 10-3
Land Use Map

23581/LAND USE

The title search on the Project site revealed no easements or rights-of-way, including for the electric and telecommunications utilities on the site. The official tax assessment map also shows no such rights-of-way. The site is encumbered by slope easements toward the northwest and north, associated with the construction of Sills Road and the Long Island Expressway. At the east edge of the site, between the site and the LIPA right-of-way, a 34-foot-wide paper street shown on the tax assessment map as "Bellport Avenue" is found. This paper street dead-ends into the LIRR at the south, and thus provides no access south of the LIRR. It connects to the LIE South Service Road in the north. The only landowners with frontage on this paper street are LIPA and Brookhaven Energy. In the middle of the site are remnants of past subdivisions, including two paper streets called "Middle Island Avenue" and "Yaphank Avenue." These are entirely landlocked within the site (no access to any public way), and the only adjoining land is within the Project site. Brookhaven Energy (or, for parcels under Brookhaven Energy's option, the present landowner) have submitted a demapping plan to the Town of Brookhaven. This is a title-clearance issue, and is therefore not an action for which Article X permitting is applicable.

In addition, because certain historic property maps refer to the former Old Town Road, the remnant of which forms the central driveway on-site, it has been treated for title-clearance purposes as a potential right-of-way. It should be noted, however, that the former Old Town Road follows from the Project site toward the southeast, and dead-ends into the LIRR. It provides no access for adjacent parcels. Rather, frontage for adjacent parcels is along the Long Island Expressway South Service Road right-of-way, and that is the public access to these parcels. For example, a recent land use proposal on a parcel east of the site (see Northeast Motorcross, described in Section 10.2.3 and shown in Appendix L-4), uses the LIE South Service Road for access. Town of Brookhaven and Suffolk County staff both confirmed in oral communication that neither the Town nor the County, respectively, had any plans for using the central driveway of the site as a public right-of-way.[1] For all these reasons, the Project will not cause any other parcels to be landlocked.

10.2.1.3 The Site and One-Mile Radius

The pattern of land use in the area, analyzed at a 2-mile radius around the Project site, is described below and presented in Figure 10-2 (an aerial photograph) and Figure 10-3 (a land use map). There are no residences within about 2,000 feet of the Project location. The nearest land uses are all linear corridors – the LIE to the north, Sills Road to the west, LIRR to the south, and LIPA transmission lines to the east. The use of the site is vacant forested land.

South of the site (that is, on the east side of Sills Road and north side of Horseblock Road) are the Sills Industrial Park and other industrial parcels. The industrial park is home to a variety of businesses that include a petroleum distributor, a greeting card company, newspaper distribution, and other businesses such as offices or warehouses. There is one atypical land use here – the Maryhaven center for adult education and skills. It shares the largest building in this industrial zone with TRW Steering Wheel Systems. Toward the south of the industrial park is a Waste

1 Communication with Steven Nadramia, Suffolk County DPW, August 21, 2000; John Girandola, Brookhaven Commissioner of Planning, Environment, and Development, October 18, 2000.

Management, Inc., facility. Field reconnaissance revealed that three residences are located at or just north of Horseblock Road, in this otherwise industrial area. The nearest of these is approximately 1 mile from the site. In addition to industries within the Sills Industrial Park, there are industrial and office properties along both Horseblock Road and Sills Road. A gasoline station is located on Horseblock Road. Land to the east of the industrial park and directly south of the site is unoccupied and forested.

East and southeast of the site there is additional forested vacant land, bisected by the LIPA transmission corridor. The Grucci fireworks manufacturing and storage facility is located approximately ½ mile southeast of the site, with a driveway extending south to Horseblock Road, approximately 1½ miles from the site. The land use east of the site is dominated by a complex of Suffolk County facilities, which are located on both sides of Yaphank Avenue. The facilities within 1 mile are a corrections facility (southeast of the site) and the Suffolk County Farm (east of the site). The Suffolk County Farm and Education Center is operated by the Cornell Cooperative Extension. (Other county facilities are more distant than 1 mile and are therefore described in the next section.)

Northeast and north of the site (east side of Sills Road) is the LIE and, to its north, Long Island Avenue. Long Island Avenue in effect serves as a feeder or service road for the LIE, but it is also a local road with existing residences, forested land, the Brookhaven Country Day camp and school, as well as agricultural land (fields separated from the county farm by the LIE). There is low-density residential development along Gerard Road. There are three residences toward the western end of Long Island Avenue. The westernmost of these is one of the two closest residences to the Project site boundary, about 2,000 feet from the anticipated Project building locations. However, all of these residences are separated from the site by the LIE. A farm stand is located at the northeast corner of the Sills Road/Long Island Avenue intersection. Altogether, there are only 9 residences north of the LIE and within a half-mile of the site.

Beyond the land uses that front onto Long Island Avenue and Gerard Road is the Carmans River. This river is seen as a valuable natural and community resource on the basis of discussions with members of the community, its recreational uses (such as fishing and canoeing), and its status as a state-designated "wild, scenic and recreational" river. (See also Section 17.4 regarding its water quality and Project impacts.) The river is surrounded by vegetation as it flows from northwest toward southeast. About a 1-mile segment of the river is located within 1 mile of the site. The shortest distance between the proposed Project location and an elbow of the river is a little less than 1 mile. Two mill-related impoundments along the river have created the Upper Lake and Lower Lake, both of which are a little more than 1 mile from the site. (The two principal intersections in Yaphank village are associated with these two locations. The village is described in the next section with other land uses that are more than 1 mile from the Project location.) Sills Road follows from Exit 66 toward the Upper Lake impoundment in Yaphank. Land on the east side of Sills Road and south of the Gerard Road intersection is unoccupied. Land at the Gerard Road intersection and north of it is residential.

North and northwest of the site (that is, on the west side of Sills Road and north of the LIE) is vacant forested land that is part of the Central Pine Barrens. The LIPA transmission corridor,

which follows in a north-south direction at the site, begins to follow an east-west direction in this area. The transmission lines cross Sills Road on the north side of the LIE and from that point westward are parallel to and offset from the LIE. Along Sills Road, north of the Exit 66 interchange, is a Texaco gasoline station. North of the gas station, the western side of Sills Road is flanked by residences whose backyards face the forested zone. Beyond the forested land are residential cul-de-sacs, including a 27-lot new development, Doral Woods, which can only be accessed from the north, via Mill Road. There are also some older residential developments on streets accessible from Sills Road near the very north of the 1-mile radius area. Along the north side of the LIE and west of the forested zone is a large agricultural tract. West of that tract the land use is residential, with single-family residences on both sides of Lincoln Road and Bellport Road.

West and southwest of the site (that is, west of Sills Road and south of the LIE), is a mostly vacant forested area bisected by the old Patchogue-Yaphank Road, which was retained as a cul-de-sac. All traffic, however, is routed from the old Patchogue-Yaphank Road to Old Town Road and onto Route 101 (Sills Road). Dumping of trash articles has taken place on both sides of the old Patchogue-Yaphank Road. West of the vacant zone is a large Estee Lauder warehousing facility, with regular truck traffic. West of that is a large agricultural tract (Liere farm). Southwest of the warehousing facility are three residences, the closest of which (109A Long Island Avenue) is approximately 2,000 feet away from the Project site. Only 4 residences are within a half-mile of the site in this direction. There are more residences along Lincoln Road and Bellport Road, west of the agricultural tract. The LIRR separates the residential/agricultural area from other mostly vacant land. The active land uses south of the LIRR are some residences and a construction company on the west side of Bellport Road, and several different land uses on the west side of Sills Road. The nearest of these is a light industrial building (about 1,500 feet from the site), the Calvary Gospel Church (about 2,800 feet away), a Suffolk County Authority water tower and well field (3,000 feet away), the New Interdisciplinary School (same distance), and four residences (approximately 4,000 feet away). Note that the Maryhaven facility (described above) is across the street from the New Interdisciplinary School.

10.2.1.4 Land Uses Beyond One Mile

In the southern direction, the dominant land use feature is the Brookhaven Landfill, which rises to a height of 262 feet above sea level (approximately 200 feet above surrounding terrain). There is also an extensive excavation area between Horseblock Road and Woodside Avenue (Country Route 99), where a 795-unit new housing development (Regency Oaks) is being built. On the north side of Horseblock Road is a driveway leading to the Grucci Fireworks Complex. The Horizon Village development is located several hundred feet west of the landfill and south of Woodside Avenue. Some of the residences in this development are located within the 2-mile radius study area.

In the southeast direction, the primary land use features are Suffolk County facilities (west side of Yaphank Avenue) and sparse residential uses, located both along Yaphank Avenue and Gerard Road. The Suffolk County facilities in this zone include the sewer treatment plant (to which the Project is proposed to discharge wastewater), Fire Marshal's office, and Emergency Medical Services. North of those buildings are the aforementioned jail and the Skilled Nursing Facility. The

closest residences within this section of the study area are those near the corner of Gerard Road and Yaphank Avenue. There is an agricultural field on the west side of Yaphank Avenue. In addition, there is a small shopping plaza at the intersection of Yaphank Avenue and Horseblock Road, and a soil excavation/landscaping business along Horseblock Road.

In the eastern direction (and south of the LIE), there are three different types of land uses. In relation to the Project site, the nearest are Suffolk County facilities, followed by residences, followed by the Carmans River and the surrounding Southaven County Park. The Suffolk County facilities in this zone are located on both sides of Yaphank Avenue, and include the old county infirmary (Suffolk County Home), the Board of Elections, the Department of Public Works (including offices, maintenance garage and refueling, and a deicing salt shed), Mosquito Control, and Police Headquarters (including a heliport). South of the LIRR is a Georgia Pacific warehouse, and south of that – a farm. East of the county facilities are single-family residences along Park and Crescent streets. An equestrian oval is located at the end of Crescent Street. Other nearby residences (on Sterling Path) are accessible only from the south, via Gerard Road. The sprawling Southaven County Park is made up mostly of forested land, with firebreaks, paths, and some open areas. The study area also includes a trap and skeet facility within the park. A small portion of the study area is beyond Southaven County Park – the intersection of River and Moriches-Middle Island roads.

In the northeast direction (north of the LIE) is the village area of Yaphank. East of the village are soil excavation and equestrian facilities. North of the village are residential areas and an expanse of vacant land within the Central Pine Barrens. Yaphank village is linear in character, with two focal intersections: Yaphank Avenue/Main Street near the Lower Lake and Mill Road/Main Street near the Upper Lake. Notable land uses at the lower end of the village are the Yaphank Post Office, several small businesses, two churches, a NYSDEC fishing access at Lower Lake, historic buildings near Lower Lake (described in Section 7 above), and residences on both sides of Main Street. Between the two nodes, along Main Street, the land use is almost exclusively residential. Yaphank cemetery is located north of Main Street and toward the lower end of the village. On the south side of Main Street, all development is only one layer deep, with backyards facing the woods that surround the Carmans River. Notable land uses in the upper end of the village are the Yaphank Presbyterian Church, the Yaphank Fire Department, Yaphank Commons, the Town-owned Swezey-Avey House community center and adjacent town park, a Verizon telephone depot, and several restaurants/delis.

North of the Mill Road/Main Street intersection is the Charles E. Walters School, adjacent fields, and other buildings of the Longwood Central School District. North of the school complex, single-family residences line Yaphank-Middle Island Road (County Route 21), Shannon Street, and Raimond Boulevard. There is a considerable rise in elevation between the school and some of these residences. Several more residences can be found at the northern edge of the study area (south of Middle Island Country Club).

In the northwest and west direction (north side of the LIE), the predominant land uses are residential and agricultural. These include the private development of Siegfield Park, similar

suburban-density development along German Boulevard and adjacent streets, the Sobaco girl scout camp, and Good Shepherd horse farm. Further west along Mill Road, there are residential cul-de-sacs both to the south and north, as well as two small businesses. A prominent facility is the Mill Pond Golf Course. East of the golf course is a new residential development, currently under construction. North of the golf course, the study area includes a small portion of the Gordon Heights community, including the Granny Road Park (consisting mostly of playgrounds). Southwest of the golf course are residences along Country Road and Locust Avenue. Further west the study area includes much of the Eagle Estates development (off LIE Exit 65).

In the west and southwest direction (south side of the LIE), there are two contrasting types of uses. Nearer to the Project site are industries and commercial buildings, and beyond them there is high-density suburban development. The industrial uses in this area range from an extensive junkyard/recycling facility along the LIE, to some lighter industries and offices along Horseblock Road. The South Silver Industrial Park is currently expanding in this zone. Along Sills Road, the development is commercial (a shopping plaza and restaurant) and also includes a large office building (Arrow Electronics). The suburban residential areas southwest of the industrial/commercial belt are relatively recent (since about 1970). They follow a superblock pattern, such that primary streets through this portion of the study area (Woodside Avenue, Sills Road) are separated from the residential development by fencing and landscaping, and typically two access points are provided per superblock.

10.2.2 Existing Zoning Profile

This section addresses Stipulation 5, Clause 1(c), which requires a map of existing zoning districts within a 2-mile radius of the Project site, including a description of the permitted/prohibited uses within each zone.

The zoning districts found within the land use study area are shown in Figure 10-4. Generally, the Project is part of a vast swath of industrially zone land, which is found primarily on the south side of the Long Island Expressway. Residential zoning is primarily found in Yaphank, on the north side of the Long Island Expressway, as well as to the west and southwest. The following zoning districts are within the study area: A-1 Residential, A-5 Residential, A-10 Residential, PRC-3 Residence, B-1 Residence, J-1 Business, J-2 Business, J-3 Business, J-4 Business, J-5 Business, L-1 Industry, L-2 Industry, and L-3 Industry. A description of the permitted and prohibited uses for each district is found below. The dimensional requirements and restrictions for each residential district are provided in Table 10-3 and for the PRC-3 district in Table 10-4.

- **A-1 Residence District:** Permitted uses include: (1) one family dwellings, except that mobile homes shall not be a permitted principal use; (2) churches or similar places of worship and parish houses; (3) public and parochial schools and private schools having a curriculum similar to that ordinarily given in public schools, but not including day care facilities; (4) open farming provided, that no storage of manure or odor or dust producing substances shall be permitted within one hundred fifty feet of any street line. In addition, this section permits the sale at retail or wholesale of farm, garden or nursery products produced on the premises.

- **A-5 Residence District:** Permitted uses include all principal uses, accessory uses and uses authorized by a special permit which are permitted in a A-1 Residence District subject to the dimensional restrictions outlined in the Brookhaven Code at Section 85-56.
- **A-10 Residence District:** Permitted uses include all principal uses, accessory uses and uses authorized by a special permit which are permitted in a A-1 Residence District subject to the dimensional restrictions outlined in the Brookhaven Code at Section 85-56.
- **B Residence 1 District (B-1):** Permitted uses include all principal uses, accessory uses and uses authorized by special permit in the A-1 District including the construction of convents and monasteries. These activities are subject to the dimensional restrictions outlined in the Brookhaven Code at Section 85-56.

Table 10-3: Brookhaven Residential District Dimensional Requirements (§85-56)

Use	A-1 Residence One-Family	B-1 Residence One-Family	A-5 Residence One-Family	A-10 Residence One-Family
Maximum height (feet/stories)	35 / 2 ½	35 / 2 ½	35 / 2 ½	35 / 2 ½
Minimum area (square feet)	40,000	22,500	200,000	400,000
Maximum total building area (percentage of lot area)	15	20	6	3
Minimum road frontage (feet/at a point in feet back from street line)	15 / 50	125 / 40	300 / 70	400 / 80
Minimum front yard (depth in feet)	50	40	70	80
Minimum side yard (width in feet)	25	20	35	40
Minimum total side yards (feet)	75	45	85	90
Minimum rear yard (feet)	60	60	80	85
Accessory Structures				
Maximum height (feet)	18	18	18	18
Minimum setback from any lot line (feet)	10	7 ½	20	20
Minimum setback from street (feet)	70	60	90	95
Maximum lot coverage (percentage of required rear yard area)	25	25	12 ½	10

- **PRC-3 Residence District (PRC-3):** The PRC-3 Residence District provides for the construction of buildings for planned retirement communities. Permitted uses include residential accommodations, including units in apartment houses, garden apartments and townhouses, but not including motels, rooming houses or tourist homes. In addition, this section permits recreational and cultural facilities, for the sole use of residents of the community and their guests, which may include lakes, golf courses, picnic grounds, sitting areas, group game areas and swimming pools. These activities are subject to the dimensional restrictions outlined in the code at Section 85-75.

Brookhaven Energy LP

Legend:

Zoning Classification Code	Zoning Classification
A-1, A-5, A-10, B-1, PRC-3	Residence
J-1, J-2, J-3, J-4, J-5	Business
L-1, L-2, L-3	Industry
LIEX	Long Island Expressway

Base Map is a Portion of the Following:
New York State Department of Transportation Quadrangle,
Bellport, New York 1991

Zoning Information Sources:
Town of Brookhaven, Suffolk County, New York Zoning Map,
Sheets 7,8,12 (March 2, 1999) and Sheet 13 (August 21, 2000)

Figure 10-4
Zoning Map

0 2000 4000
Feet

2958I/ZONING

Table 10-4: Brookhaven PRC-3 District Dimensional Requirements (§85-75)

Use	PRC-3
Maximum height (feet/stories)	35 / 2 ½[1]
Maximum building area (percentage of gross area/percentage of gross area for accessory buildings)	25 / -
Minimum gross area (acres)	3
Road frontage (in feet/at a point in feet back from street line)	N/A
Minimum setbacks (in feet for front yard/side yard(s)/back yard from any exterior boundary line)	50 / all
Maximum density (number of units per acre)	11
Density (number of 1-bedroom units/per area in square feet)	N/A
Maximum units per building (or within part of a building within fire walls)[3]	4
Minimum distance between buildings (in feet between 2 buildings or rows of parallel buildings/between 2 abutting ends of buildings)	50 / 25[4]

1 Except for flagpoles, domes, spires, chimneys, skylights, water tanks, antennas and other necessary appurtenances, enclosure of bulky appurtenances may be required by Planning Board.

2 Except that for each unit containing more than one (1) bedroom, there shall be an additional one thousand (1,000) square feet of site area provided.

3 Except for gatehouses, walls, and fences.

4 Where windows serving habitable rooms are contained in such end walls the minimum distance shall be increased to thirty-five (35) feet.

Business districts are described below. The dimensional requirements and restrictions for each business district are provided in Table 10-5.

- **J-1 Business District (Neighborhood Business):** The following uses are permitted: (a) all uses permitted in the B Residence District; (b) telephone exchanges; (c) shops and stores for the sale at retail of consumer merchandise and services; (d) personal service shops such as barbershops, beauty parlors etc.; (e) banks, offices and restaurants; and (f) undertaking establishments. This district does not authorize businesses that are all or part of a commercial center.

- **J-2 Business District (General Business):** The J-2 District permits those activities in a J-1 district plus the following: (a) shops and stores for the conducting of wholesale business, (b) shops for custom work and for making articles to be sold at retail on the premises, (c) motor vehicle sales rooms; (d) ferry slips and boat docks, (e) shipyards, (f) railroad and bus passenger stations; (g) electric substations; (h) dry cleaning plants; (i) off street parking; (J) Laundromats; and (k) health clubs. This district does not authorize businesses that are all or part of a commercial center.

- **J-3 Business District (Commercial Center):** The J-3 District permits those activities permitted in the J-2 district except that such uses shall constitute all or part of a commercial center. In addition the following establishments are permitted: (a) shops and stores for the sale at retail of consumer merchandise and services and for wholesale business; (b) personal service shops such as barbershops beauty parlors, shoe repair shops; (c) shops for custom work and making articles to be sold at retail on the premises;

(d) banks, offices and restaurants including fast food restaurants; and (e) motor vehicle salesrooms.

- **J-4 Business District (Professional and Business Offices):** The J-4 District permits professional and business offices. It permits those activities permitted in the B Residence District as well as: (a) administrative, financial, business and professional offices; (b) art galleries, exhibit halls, artists and photographers studios and dancing studios; and (c) clubs, fraternities and lodges.

- **J-5 Business District (Gasoline Filling Stations):** The J-5 District is intended to provide adequate safeguards for the location and siting of filling stations. This section permits gasoline stations as follows: (a) the use shall be limited to the retail of motor fuels, lubricants and other motor vehicles supplies. It prohibits the repair of vehicles outside and the outdoor storage of cars, and requires setbacks to protect public safety.

Table 10-5: Brookhaven Business District Dimensional Requirements (§85-207)

Use	J-1	J-2	J-3	J-4	J-5
Maximum height (feet/stories)	35 / 2 ½	50 / 3	35 / 2	35 / 2 ½	- / 1
Maximum building area (percentage of lot area)	50	50	20	30	25
Minimum lot area (square feet unless otherwise noted)	15,000	4,000	5 acres	9,000	20,000
Minimum road frontage (feet)	75	40	None	75	150
Minimum front yard setbacks (in feet, front yard/rear yard)	15 / 50	15 / 20	30 / 30[1]	40 / 35[1]	50 both[1]
Side yard setback	25 / 10	None[1]	None[1]	None[1]	501

Notes: Exception(s) to minimum requirement(s) is/are set forth in text of Chapter 85.

Industrial districts are described below. The dimensional requirements and restrictions for each industrial district are provided in Table 10-6.

- **L Industrial 1 District (L-1):** In the L-1 District, buildings, structures and premises may be used for any lawful business or industrial use, except as otherwise provided in Section 85-308. A comprehensive list of approximately 80 prohibited uses is included. Section 85-308.B authorizes the construction of electric generating plants in accordance with certain requirements (see discussion in Section 10.4 as it applies specifically to the Project). Section 85-308.C outlines requirements within the hydrogeologically sensitive zone. The study area includes land both inside and outside that zone. The Project site and areas south and northeast are designated L-1.

- **L Industrial 2 District (L-2):** In the L-2 Heavy Industrial District, buildings, structures and premises may be used for any lawful purpose whatsoever, except for gasoline filling stations, commercial centers as defined in Section 85-1 and personal service shops and stores for the sale at retail of consumer merchandise or services or both, and residential

purposes of any kind including all types of dwellings and uses which are not in conflict with any other provision of the Code.

- **L Industrial 3 District (L-3):** The L-3 District is intended for Industrial Parks. It allows for limited industrial uses such as laboratories, pilot plants for industry, bookbinding, printeries and in general, those uses that could be classified as limited industrial which, by their existence, do not in any way disturb the general character of the surrounding area.

Table 10-6: Brookhaven Industrial District Dimensional Requirements (§85-292, 85-308)

Use	L-1	L-1 in HSZ	L-2	L-3
Maximum height (feet/stories)	50 / 3	50 / 3	50 / -	40 / -
Maximum building area (percentage includes gross area for accessory buildings)	60	30	50	50
Minimum lot area	20,000 s.f.	20,000 s.f.	5 acres	3 acres
Frontage (ft./at a point back from street line)	100 / NA	200 / NA	200 / 100	200 / 100
Minimum front/rear yard/in feet from back yard)	30 / 50	50 / 50	100 / 50	100 / 50
Minimum side yard setback, total side (feet)	10 both	20 / 50	20 / 50	20 / 50

Note: L-1 zoning applicable to electric generating facilities is discussed in Section 10.4 as a local law applicable specifically to the Project because of its nature, not to any specific site.

10.2.3 Proposed Land Uses

This section addresses Stipulation 5, clause 1(d), which requires a map of all publicly known proposed land uses within a 2-mile radius of the Project site, gleaned from interviews with State and local planning officials, from Brookhaven Energy's public involvement process, or from other sources. Proposed land uses were obtained from the following sources:

- A review of all pending applications for subdivision and/or site plan approval in the Town of Brookhaven.
- Interviews and meetings with town and county officials and civic leaders.[2]
- Projects discussed at a meeting of the Yaphank Taxpayer's and Civic Association in April 2000, and at an open house on August 2000.

The following is a description of projects planned within the study area. These facilities are identified by number in Figure 10-5, which shows the future land uses by changing the land uses of the directly affected land and keeping the land uses of all remaining areas.

2 Communication with Stephen Jones, Director, Suffolk County Planning, September 27, 2000; Ralph Wiebelt, Assistant Site Plan Reviewer, Town of Brookhaven, Division of Planning, September 26, 2000; William James, Map Drafter, Brookhaven Division of Planning, September 26, 2000; Commissioner John Girandola, January 30, 2001.

Commercial and Industrial Projects under Subdivision Review

1. Zorn Industrial Park, a 29.2-acre industrial/commercial subdivision of land on the north side of Horse Block Road, east of Old Dock Road and extending northward to the Long Island Railroad. Present land use is vacant.

2. Brookhaven Industrial Park, a 118-acre industrial/commercial subdivision located between Horse Block Road and Woodside Ave. Present land use is vacant.

3. South Silver Industrial Park, a 8.4-acre industrial/commercial subdivision located adjacent to the west side of Route 101 and the north side of Southaven Ave. Present land use is vacant.

Commercial and Industrial Projects under Site Plan Review

4. Frame Mica, a 101,125-s.f. industrial building located on the southeast corner of Todd Court and Old Dock Road. Present land use is vacant.

5. Zorn Industries, a 6,000-s.f. building located on Zorn Boulevard. Present land use is vacant.

6. Ryder Transportation, a 8,330-s.f. industrial building located on the northeast corner of Patchogue Yaphank Road and Horse Block Road. Land use already includes a commercial building which will be torn down to allow for construction of the facility.

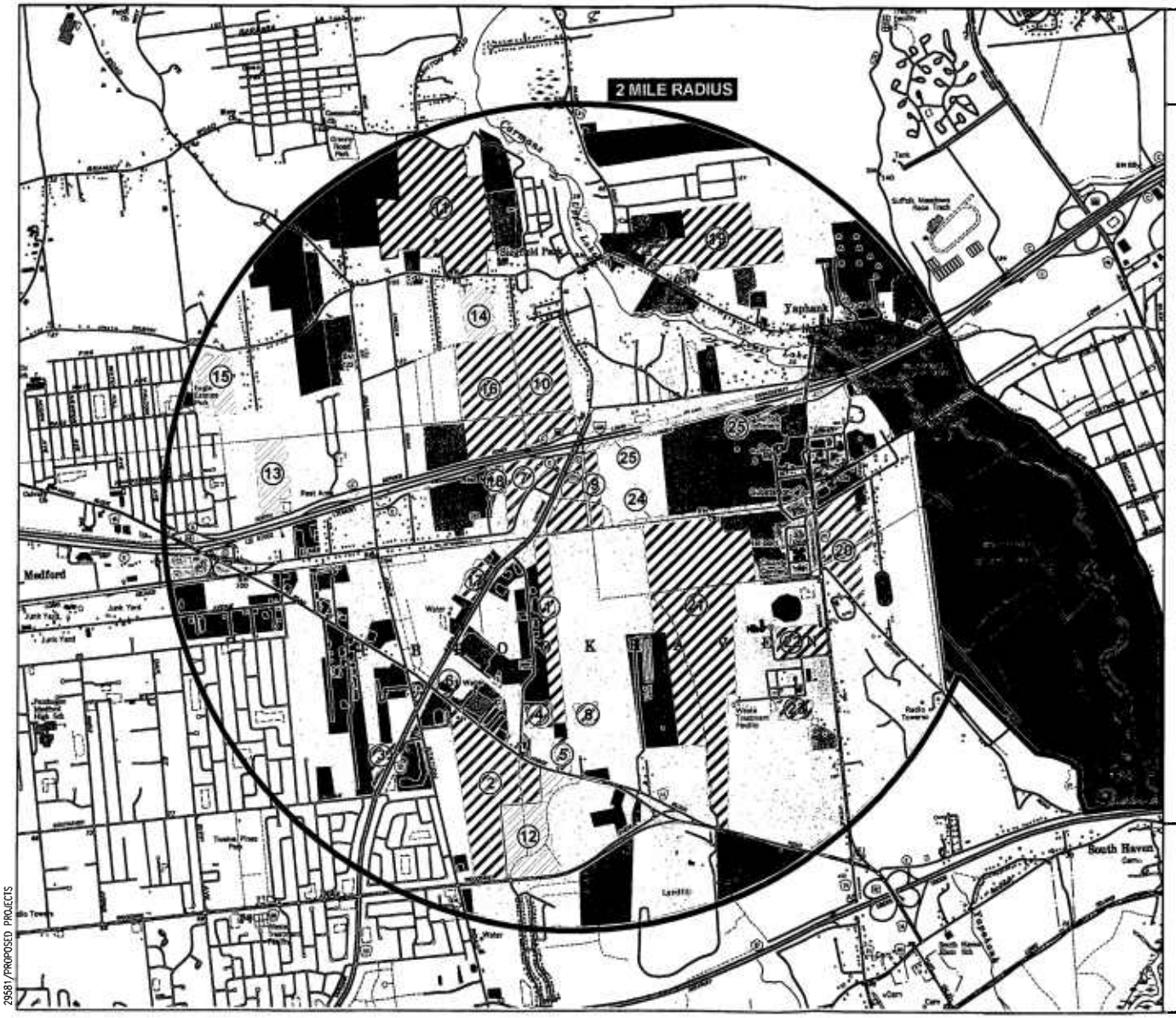
7. Office @ Exit 66, a 22,800-s.f. office building located between the Long Island Expressway south service access road, Long Island Avenue and Patchogue Yaphank Road. Present land use is vacant.

8. Island Motorcross of New York, a 10-acre motorcross facility on the east side of Miller Ave. and 2,000 feet north of Horseblock Road. Present land use is vacant.

9. Northeast Motorcross Park, a 19.2-acre motorcross facility on the south side of the Long Island Expressway, 200 feet east of Sills Road as measured along the LIE, and generally east of the LIPA right-of-way which is adjacent to the Brookhaven Energy Project site. Present land use is vacant.

10. American Tissue Corporation, a 585,000-s.f. industrial facility to be located northwest of the Exit 66 interchange on a 78-acre parcel of land. Present land use is vacant. It is Brookhaven Energy's understanding that plans for this project are on hold.

11. Iron Wood Golf Course, an 18-hole golf course with practice range and club house located at Mill Road and Granny Road. Present land use is vacant and agricultural.



Brookhaven Energy LP

Proposed Project

Zoning Classification Code

- Agricultural
- Retail, Commercial, Office Complex
- Open Space/Institutional
- Industrial
- Residential
- Vacant
- Government Facilities/ Infrastructure

Proposed Industrial/Commercial

1. Zorn Industrial Park
2. Brookhaven Industrial Park
3. South Silver Industrial Park
4. Frame Mica
5. Zorn Industries
6. Ryder Transportation
7. Office at Exit 66 Office Complex
8. Island Motorcross of New York
9. Northeast Motorcross Park
10. American Tissue

Private Recreational Facility

11. Iron Wood Golf Course

Residential Subdivisions

12. Regency Oaks
13. Toussie Oaks
14. Doral Woods
15. Golf View Acres

Other Industrial Projects

16. Caithness Island Power
17. Adesa Auto Auction
18. Estee Lauder Expansion

County Projects

19. 92 Acre Open Space
20. 63 Acre Agricultural Land
21. County Golf Courses
22. Soccer Fields
23. Juvenile Detention Center

State Projects

24. LIRR Yard
25. Ramps between Exits 66, 67

Base Map is a Portion of the Following: New York State Department of Transportation Quadrangle, Bellport, New York 1991

Information Sources: Aerial Photography, 1994 and 1999; Field Observations, 2000 and 2001

Figure 10-5
Proposed Projects

0 2000 4000
Feet

29581/PROPOSED PROJECTS

Residential Projects

12. Regency Oaks, a 795-unit residential townhouse complex located between Woodside Avenue (County Route 99), Horseblock Road (County Route 16), and Bellport Station Road. This project has been approved and is under construction.

13. Toussie Oaks, a 40-lot residential subdivision along the north access road to the Long Island Expressway. The project is undergoing subdivision review.

14. Doral Woods, a 27-lot residential subdivision on 27.5 acres of land located south of Country Road. The project is undergoing subdivision review.

15. Golf View Acres, a 20-lot residential subdivision along the south side of Country Road. The project is undergoing subdivision review.

Other Industrial Projects

16. Caithness Island Power, L.L.C., a 750 MW natural gas fired combined-cycle electric power facility located on approximately 112 acres of undeveloped land and adjacent to the west side of the proposed American Tissue property and immediately north of the Long Island Expressway North Service Road. A preliminary scoping statement was submitted on August 15, 2000.

17. Adesa Auto Auction is a 6 lane auto auction that will operate one auction per week. It is located on the west side of Sills Road between Old Dock Road and Horseblock Road.

18. Estee Lauder Expansion project. Estee Lauder plans to expand its current warehouse facility (south of the LIE and about 2000 feet west of the Project site) by an additional 85,000 s.f.

County Projects

19. The acquisition of land for preservation of open space and agriculture. The parcel is located on the north side of Main Street, east of Island Road in Yaphank and consists of approximately 92 acres of forested land.

20. The acquisition of land for preservation of open space and agriculture. The parcel is located on the east side of Yaphank Avenue in Yaphank and consists of approximately 63 acres of mostly agricultural land.

21. The construction of two eighteen hole golf courses on approximately 350 acres of land southeast of the Project. The golf courses would extend north from Horse Block Road to the south side of the Long Island Rail Road and would be adjacent to the east side of the Grucci fireworks facility and west of the County prison.

22. The construction of a complex of soccer fields. The soccer field complex is located about 1000 feet east of the proposed golf courses on a 23-acre site, off Yaphank Avenue and north of the County Prison.

23. In March 2001, the County announced the construction of a juvenile detention center near the existing Suffolk County Minimum Security Facility. The juvenile detention center will house up to 40 juvenile delinquents.

State Projects

24. The Metropolitan Transportation Authority (MTA) Long Island Railroad is proposing a train storage yard adjacent to the north or south side of the LI Rail Road (to be sited east of the Project and west of Yaphank Avenue – specific location to be determined).

25. The New York State Department of Transportation (Region 10) has proposed to construct a south service road or on and off-ramps on the south side of the Long Island Expressway between Exits 66 and 67 as part of ongoing improvements to the Long Island Expressway. These are scheduled to be constructed in 2004-2005.

10.2.4 Recreational Land Uses

This section addresses Stipulation 5, Clause 4 (in part) and Clause 5. Clause 4 requires identification and analysis of the recreational land uses in the vicinity of the site, county parks and nature preserves, fishing areas, and town parks that might be affected by the sight or sound of the construction or operation of the Project and interconnections. Clause 5 calls for estimates, based on surveys or public records, of the number of persons using the Carmans Wild Scenic and Recreational River and the Upper Lake for recreational purposes and the number of persons using the Suffolk County Farm and Education Center for recreational or educational purposes. The Stipulation notes that as relevant, these estimates will distinguish between the various types of activities taking place at these locations.

Recreational land uses within a 2-mile radius of the site are described below and are shown in Figure 10-3 above. The study area has been increased to include the entire Carmans River zone designated under the New York State Wild, Scenic, and Recreational (WSR) Rivers Act. The Carmans River, Long Island's second longest river, contains Recreational and Scenic reaches. This river forms the context for most of the outdoor recreational uses in the study area. The public recreational areas within the Carmans WSR Zone are: Wertheim National Wildlife Refuge, Southaven County Park, a fishing access area on the Lower Lake, the Swezey-Avey Park at the Upper Lake, Cathedral Pines County Park, and Prosser Pines County Park.

The methodology for extrapolating annual estimates in a uniform manner is as follows. It is assumed that the primary recreational season for all activities is from May to October (inclusive of both months). A breakdown is then made between "weekend-equivalent" and "weekday-equivalent" days. Weekend equivalent days are the 52 weekend days that occur during

this period, the 4 paid holidays (Memorial Day, Independence Day, Labor Day, and Columbus Day), and 15 additional days when a family is likely to be on vacation, for a total of 71 weekend-equivalent days. The remaining 113 days are assumed to be weekday-equivalent days. This methodology is helpful because most estimates, as well as field surveys, are typically based on a single weekend day and weekday.

The *Wertheim National Wildlife Refuge* is situated between 3 and 5 miles southeast of the Project site and consists of about 2,600 acres. It is managed by the US Fish and Wildlife Service for protection of the Carmans River estuary and the waterfowl species that use it. It consists of forested and grassland areas and extensive wetland habitat. The National Wildlife Refuge has also been included in the Central Pine Barrens (ECL §57). Recreational activities include boating and canoeing, fishing, and hiking. Boats and canoes can be launched at a ramp at Montauk Highway and one at Beaver Dam Road (east of Brookhaven village). The one-mile-long nature trail (Indian Landing Nature Trail) is accessible only from the Carmans River. Fishing is permitted subject to state regulations and certain exclusions specific to the Refuge.[3]

The *Southaven County Park* consists of 1,356 acres and extends from Main Street in Yaphank to the Sunrise Highway. It is situated between 1.5 and 3.5 miles east and southeast of the Project site, and consists mostly of pine and oak forest surrounding the Carmans River. The park is managed by the Suffolk County Parks Department for a variety of recreational purposes: camping, picnicking, hiking, trap and skeet, bridle paths, equestrian activities, freshwater fishing, rowboat rentals, and canoe rentals. Southaven County Park offers a total of 200 trailer, tent, and club camping areas. According to the park superintendent, the park's picnicking areas are capable of accommodating up to 5,000 to 6,000 people. During a typical summer weekend day, the park has between 5,000 and 10,000 visitors (with typically 200-600 visitors on summer weekdays). This translates to a May-October park attendance of approximately 380,000 to 780,000 people, using the methodology described above. The park's trap and skeet center has about 200 visitors per summer weekend day with a maximum capacity of 500. The Long Island Equestrian Center, off Gerard Road and within the park, offers guided trail and wagon rides, horse riding lessons, and equestrian boarding facilities. Freshwater fishing is allowed with a daily park permit. Rowboats may be launched at the park's southern impoundment, and the park has 50 of its own rowboats, which it rents out. During a summer weekend day, the park rents rowboats to as many as 1000 different users. Southaven is also the primary venue for Carmans River canoeing, though according to park officials, use of canoes is less than that of rowboats. The canoe launching area for paddlers on this stretch of the Carmans River is via the northern end of the park in Yaphank, at the "K-9" gate off Yaphank Avenue.[4]

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3 See http://www.gorp.com/gorp/resource/us_nwr/ny_longi.htm; http://www.friendsofwertheim.org. Note that USFWS officials were unable to provide estimates of Wertheim NWR use. Since the NWR is approximately 4-5 miles away from the Project, and there are no views of the Project from the NWR, a detailed survey has not been undertaken for this area.

4 Internet web site http://www.co.suffolk.ny.us/exec/parks and Carmans River Canoe and Kayak home page http://www.carmans-river.com/index, available on Internet as of August 21, 2000.

The *Upper Lake and Lower Lake* are formed by dammed areas of the Carmans River, which flows northwest to southeast in this stretch. Only the far southern portion of Upper Lake, about 50 yards on both the west and east sides, and the far south end (Mill Road), are accessible to the public. The rest of the lake is bordered by private property. A small portion of the Lower Lake is also accessible to the public: the far west side, about 200 yards on the southeast tip, and 50 yards along its eastern end (Yaphank Avenue).

Estimates of the number of recreational users were not available from NYSDEC or Town of Brookhaven officials.[5] Therefore, a recreational survey was conducted on Sunday, October 15, 2000, and Monday, October 16, 2000. Observations took place each day continuously from 8:00 AM to 6:00 PM. Weather was warm and sunny on Sunday and cloudy and in the 60s on Monday.

Observations indicate that the area around Upper Lake is used primarily for picnicking, leisurely walking and sitting, fishing (particularly from the south end along the dam area) as well as for children's recreation (there is a sandy beach along with a jungle gym near the Town-owned Swezey Avey House). Although some swimmers were observed during a field visit on a hot August day to this area, the Commissioner of Parks noted (above-cited interview) that the beach area near the Swezey Avey House is seldom used for swimming.

Observations indicated that the Lower Lake has no sitting or playing areas, nor beaches. The Lower Lake shores are used for fishing, whether in the western portion of the lake, or from the small NYSDEC Fishing Access site on the lake's southeast shore (about 1.5 miles from the Project site). The lake is visible from the Hawkins Homestead, located along the north banks of the lake across from the fishing site. The Lower Lake is also used by a summer camp – the Brookhaven Country Day Camp and Preschool. Year-round, this facility operates a day care center and pre-school. There are up to 160 children enrolled in this program. Outdoor activities during the school year are limited to playgrounds. During the summer, a primary focus of outdoor activities is on sports, with several athletic fields on the camp's 24 acres. There is also a boating program on the Lower Lake. Groups of up to 20 children go on hourly boating trips during the day. Swimming is allowed only in pools on the camp property, not in the Lower Lake. Total enrollment at the camp was about 400 children during the year 2000 summer sessions.[6]

Observations indicate that boating is popular in both Upper and Lower Lakes and that most boating takes place in canoes, kayaks and rowboats. Based on interviews with recreational visitors, a common boat trip includes a launch at the Upper Lake, travel to the north, then back south, with a portage around the dam to the portion of the Carmans River south of the Upper Lake, travel southward, into and across the Lower Lake, portage to the Carmans River southeast of the Lower

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5 Telephone interviews with Mr. Steve Lawrence, NYSDEC, August 28, 2000. Interview with Dan Kimlicka, Commissioner, Brookhaven Parks and Recreation Department, September 15, 2000.

6 Telephone interview with Ms. Stacey Zarlack, Brookhaven Country Day Camp and School; August 30, 2000.

Lake and finishing at either the Southaven County Park offices or further out to Bellport Bay. The results of the recreational use observations are provided in Table 10-7 below.

Extrapolations of annual use based on these data, using the methodology described above, would indicate that a total of approximately 11,500 people per year use the Upper and Lower Lakes.

Table 10-7: Recreational Users, Upper and Lower Lakes, within Carmans WSR Zone

Category	Sunday, October 15, 2000		Monday, October 16, 2000	
	Upper Lake	Lower Lake	Upper Lake	Lower Lake
Fishing	7	9	0	1
Canoers and rowboaters	11	11	0	0
Kayakers	2	7	0	0
Picnickers	3	0	0	1
Leisure Visitors (walking/socializing)	70	12	4	0
Totals	93	39	4	2

Notes: Canoers/Boaters who also fished were only included in the Fishing Category. The number of visitors indicated on the upper lake are distinct from those visitors indicated on the lower lake.

Along the Carmans River, the Girls Scouts of Suffolk County operate the 42-acre *Camp Sobaco*. This is a year-round facility for weekend campers, used by an estimated 200 girl scouts for spring and fall weekends, as well as throughout the summer. There is also limited winter use. The Carmans River itself is not used by the scouts for swimming, boating, or fishing. Outdoor activities include hiking, environmental education, and walks through woods at the site.[7] The *Cathedral Pines County Park* consists of 320 acres and extends from Bartlett Road northward toward Middle Country Road. It is situated between 3 and 4 miles north of the Project site. Adjacent to it is the *Prosser Pines County Park*, managed as a nature preserve and featuring a pine stand planted in 1812. Cathedral Pines is managed by the Suffolk County Parks Department for a variety of recreational purposes: camping, hiking, mountain biking, and bridle paths. This park offers a total of 30 trailer, tent, and club camping areas, as well as youth group camping facilities (the park regularly has youth groups attending on weekends with as many as 200 people).[8] Several campsites have water and electric hookups. The park also features an indoor activity building and a dog training area. Bicycle facilities are a 6.5-mile loop of narrow width and modest elevation changes, but with an additional 1.5 miles of steeper paths branching off the loop, for use by advanced riders. There are also limited horse riding trails and associated stables.[9] The park has approximately 500 to 1,000 visitors on a weekend day and very few on weekdays. This translates to an annual use of approximately 40,000 to 75,000 people, using the methodology described above.

7 Telephone interview with Ms. Doreen Goldberg, Girl Scouts of Suffolk County; August 30, 2000.

8 Interview of Charles Bender, Superintendent of County Parks, September 6, 2000.

9 Internet web site http://www.co.suffolk.ny.us/exec/parks.

The *Suffolk County Farm and Education Center* is located about 1 mile east of the Project site (farm fields being nearer). It is an active, working farm, presently supplying crops, dairy, and meat products to county facilities. It is operated by the Cornell Cooperative Extension of Suffolk County. The farm has an active youth program, arranging for class field trips and targeting all ages. Educational programs include tours of various farm activities. The farm is open to the public every day between 9 AM and 3 PM, and the public can visit the farm area, picnic, and tour the display gardens – the Butterfly Garden, Children's Garden, and a greenhouse. Leisure recreational activities targeted to children include pony rides and birthday parties. The farm supplements its income by renting out its garden for events such as weddings, corporate events and photo shoots, typically of farm buildings and animals. The farm is home to the historic Suffolk County Almshouse Barn, which is on the National Register of Historic Places and is described in more detail in Section 7 above. Estimates of educational and recreational visitors to the Suffolk County Farm are as follows: 25,000 registered program participants; 75,000 other annual visitors. A reasonable average daily estimate for visitors is therefore between 200 and 300. In reality, visitation is not evenly spread out, with fewer visitors on typical days and many more visitors during seasonal festivals that the farm hosts, when 8,000 visitors or more come during a single weekend.[10]

Other recreational land uses within a 2-mile radius of the Project site include golf courses, equestrian facilities, school playgrounds, and the Benjamin Tallmadge Trail.

There are two golf courses within two miles of the project site: *Middle Island Country Club* and *Mill Pond Golf Course. Middle Island Country Club* has between 300 to 400 golfers on a weekend day and about 200 to 250 golfers on weekdays.[11] (This would translate to an annual use of approximately 43,900 to 56,650 golfer visits). *Mill Pond Golf Course* has between 300 to 400 golfers on weekends and about 100 to 200 golfers on weekdays.[12] (This would translate to an annual use of approximately 34,600 to 51,000 golfer visits).

Good Shepherd Farm: Good Shepherd Farm has facilities to board up to 20 horses and offers riding lessons to the general public. It is entirely outside the Carmans WSR zone.

Touch-n-Go Farms: Touch-n-Go Farms offers riding lessons and boarding of horses for the general public. It is entirely outside the Carmans WSR zone.

Benjamin Tallmadge Trail: The Benjamin Tallmadge Trail is not a hiking trail, but rather follows existing county and town highways. It follows River Road and Main Street and is located approximately 1 mile from the Project site at its nearest location. Its termini are at the north as south shores of Long Island. Recreational use numbers are not applicable, since this is a designation rather than an independent trail.

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10 Interviews with Suffolk County Farm personnel (Patricia Pearson, Michael Murray, Jennifer Quinones), May 8 and August 31, 2000. Correspondence with Cornell Cooperative Extension, August 14, 2000.

11 Interview with Tim Mcauley, Golf Professional, Mill Pond Gold Course, September 6, 2000.

12 Interview with Ray Hallarhan, General Manager, Middle Island County Club, September 6, 2000.

10.3 Land Use Compatibility

This section address the land use compatibility of the Project on existing land uses, recreational areas, proposed land uses, community planning documents, and in general. It also addresses the issue of cumulative land use compatibility of two of the planned developments – the Caithness Island Power Project and the American Tissue Project.

10.3.1 Compatibility with Existing Land Uses

This section partly addresses Stipulation 5, Clause 1(e) -- a qualitative assessment of the compatibility of the Project with existing land uses. It also addresses the land use compatibility of interconnections, per clause 1(f), and the American Tissue and Caithness projects, per clause 1(g), with existing land uses.

The Project is compatible with existing land uses within the 2-mile radius study area, as well as the broader region. To be compatible with an existing land use, the Project would need to avoid, minimize, or mitigate impacts to that land use, including impacts to the air that neighbors breathe, the water they consume and discharge, the noise they hear, the traffic they encounter, the odors they may smell, and the natural and built environment that they see. In addition, the Project must not render existing land uses non-viable. The following general summary, which relies on the conclusions of various sections of this Application, evaluates overall compliance with land uses.

10.3.1.1 Air Quality

Impacts to the environment are calculated in terms of air pollutant concentrations at receptor points which are located throughout the study area. Consideration is given to both the conventional "criteria" pollutants and to any trace levels of air toxics, as well as impacts to soils and vegetation and other analyses, as presented in Section 6. For both the criteria and non-criteria pollutant analyses, the Project falls not only below acceptable health-based thresholds, but even below the screening thresholds for further analysis.

There will also be no air emissions from interconnecting facilities.

No data have been provided or are available to Brookhaven Energy regarding the air quality impacts of the Caithness plant. In order to be approved, it is expected that the Caithness application will be required to have a cumulative assessment of air quality impacts with the Brookhaven Energy Project. If that analysis, in combination with all other necessary air quality demonstrations, cumulative and otherwise, shows that the ambient air quality standards are not violated, the cumulative impact would be regarded as acceptable. Regarding American Tissue, an air quality analysis is provided that relates only to truck traffic. (The facility would not be a major source of stationary combustion air emissions.) It is stated in the Draft EIS for that project that the only air emissions will be from an HVAC system.

10.3.1.2 Water Use and Quality

The Project will be a minimal additional demand on the Suffolk County Water Authority system, and will for that reason not impact the ability of nearby SCWA customers to purchase water (see Section 17.1). The impact of the withdrawal in terms of groundwater availability to nearby private wells and to the Carmans River is negligible also (see Section 17.1.4). In terms of wastewater, many households in the study area use septic systems, while others discharge to sewers which ultimately also feed groundwater. The Project will not affect wastewater discharge by other land users in the area. The Project's connection to the Yaphank sewer treatment plant will be achieved via a force main, minimizing the incentive other industries may have to be sited adjacent to the interconnecting sewer line. The aquifer will be protected through the minimization of material stored on-site (i.e., the elimination of a 1 million gallon oil tank), proper design mechanisms for hazardous material storage, oil storage, and storm water management, and frequent inspection (see Sections 3.2.9 regarding hazardous materials, 9.4.2 regarding fuel oil storage, 17.3.5, and Appendix Z -- a storm water pollution prevention as well as spill prevention and control plan).

The interconnection facilities will generate no water use and no wastewater, and thus will not affect water use or wastewater disposal patterns. Interconnections are located adjacent to the site, except for the sewer line which extends approximately 1 mile to the east within the LIE right-of-way.

A cumulative analysis regarding the Caithness project's water use is provided in Section 17.1.4. It shows that if that project's water strategy mirrors Brookhaven Energy's water strategy, there would be no adverse impacts either on private wells or on the Carmans River. American Tissue's water use is estimated in that project's Draft EIS to be approximately 23,500 gallons per day[13] – an amount similar to that of the Project, and not creating a significant cumulative impact when compared to the massive Suffolk County Water Authority supply. Note, furthermore, that the water use is for potable and general uses – not process uses, and is estimated on the basis of Suffolk County Department of Health Services wastewater disposal factors. The estimate therefore could be conservative. Regarding wastewater disposal, cumulative Caithness impacts are analyzed in Section 17.3.4.3. The Caithness project does not propose a sewer discharge, but rather a direct in-ground wastewater discharge. To do so, Caithness would be required to meet all applicable regulatory limits, and thus a cumulative adverse impact to groundwater, following and dependent upon appropriate pretreatment by Caithness, is not expected. American Tissue's wastewater disposal strategy is to discharge its sanitary wastewater flow via an on-site septic system.

10.3.1.3 Noise

The Project will be designed to be very quiet. The dominant noise in the area will continue to be, as it is today, from the Long Island Expressway. Brookhaven's noise control ordinance sets limits on noise based on adjacent land uses, not the proposed land use. New York State's approach to power plant noise regulation goes a step further by limiting noise on the basis of existing sound levels, even

13 American Tissue Draft Environmental Impact Statement, pp. 1-11 and 1-12.

if local regulations would allow a higher limit. The Project will produce a maximum L_{eq} of 46 dBA at the nearest residences (110 Long Island Avenue to the north and 109A Long Island Avenue to the west), which is well below existing average ambient nighttime noise levels at those residences (58 dBA and 50 dBA, respectively) and below existing ambient noise levels at all the nearest receptors. See Table 10-8. As noise dissipates with distance, noise levels at farther receptors will consequently be even lower. Compatibility with the nearest residential zones is thereby ensured.

Note also that the predicted levels shown below are lower than EPA's recommended limit of 55 dBA "to protect the public health and welfare with an adequate margin of safety," and well below the limit of L_{dn} = 65 dBA that the Department of Housing and Urban Development considers acceptable for urban housing locations.

Noise related to interconnection facilities (e.g., the gas compressors) is included in the above noise evaluation. There will be no off-site noise source from interconnection facilities.

A cumulative noise study including the Caithness and American Tissue projects has been conducted. See Section 11.9 for a detailed analysis and Table 10-9 below for a summary.

Table 10-8: Average Noise Levels, L_{eq}, in dBA

Location	Present Daytime Level	Predicted Daytime Construction Noise	Present Nighttime Level	Predicted Operational Noise
110 LI Ave.	65	50	58	46
109A LI Ave.	58	52	50	46
444 Patchogue-Yaphank Road	66	43	53	41
Suffolk Co. Farm	53	38	47	39
151 Gerard Road	55	43	46	41

From Table 11-5 and Table 11-12.

Table 10-9: Cumulative Levels, L_{eq}, in dBA for Project, Caithness and American Tissue

Location	Present Daytime Level	Predicted Daytime Construction Noise	Present Nighttime Level	Predicted Operational Noise
110 LI Ave.	65	56	58	50
109A LI Ave.	58	54	50	49
151 Gerard Road	55	54	46	52

From Table 11-17 and Table 11-18.

It is demonstrated that the combined noise levels from all three facilities are below the existing ambient noise levels, except for operational noise levels at the 151 Gerard Road location, which is indicative of houses along Sills Road and Gerard Road as one gains distance from the LIE toward the north. But this is caused almost entirely be noise from trucks at American Tissue and by sounds from Caithness. Even if the Project were not to operate, the total combined ambient noise level at 151 Gerard Road would be only 0.3 dBA quieter (see Section 11.9.3).

In conclusion, the Project will not affect the continued enjoyment of the nearest (and thus also the more distant) residential and other noise-sensitive properties from the perspective of noise. Also,

the Project is not a significant contributor to the only noise receptor location where predicted cumulative levels exceed present average levels.

10.3.1.4 Traffic

The Project will only have a minimal effect on traffic during construction. The project's peak daily construction work force, approximately 650 workers, is only expected to occur over a three month period. The majority of the workers will access the site via Long Island Expressway Exit 66, where there is immediate access to the site by way of Sills Road. This avoids the use of side roads and minimizes any potential for traffic occurring on local roads around the site. A smaller percentage of construction workers will come from the east and the south. From the east, traffic will follow Long Island Avenue between Exits 67 and 66. After ramps are built between the two exits (which will occur only after Project construction), all of that traffic would simply follow the LIE to Exit 66 and would avoid Long Island Avenue. From the south, workers will use Sills Road. During operation, the Project will contribute negligible traffic (approximately 25 round trips per day). Table 10-10 shows the estimated increase in overall traffic volumes during construction, and Table 10-11 does the same for operations period traffic. As shown in these tables, the Project will contribute not more than a 5% increase during construction at any location, and not more than 3% at any residential location (that maximum being Long Island Avenue).

Construction of the gas interconnect will require work immediately adjacent to east side of Sills Road extending most of the length of the site. This may result in the temporary closure of the shoulder or the shoulder and one lane of the eastern side of Sills Road. Traffic impacts will be avoided through the use of appropriate construction signage and, if necessary, traffic control personnel. Construction of the water and sewer interconnects will also require the installation of pipeline adjacent to the LIE South Service Road. The sewer corridor will extend from Sills Road to Yaphank Avenue. The water line will be built from the LIE South Service Road corridor directly into the site. Here again, traffic impacts will be only temporary and will be minimized through the use of traffic control personnel to the extent necessary.

10.3.1.5 Odors

The facility will burn only clean natural gas and its emissions will not have any discernible odors. Odors are sometimes associated with the storage of residual (no. 6) petroleum oil, but this was never proposed for the Brookhaven Energy Project. Also, there are odors during construction associated with the use of diesel-fueled construction vehicles, but these dissipate outside the immediate vicinity of such pieces of equipment. All on-site hazardous substances and oil will be securely contained and properly stored. Heavy truck traffic to the Project, some of which could be a source of odors if idling adjacent to a pedestrian or residential yard, will be minimal and is expected to use the Long Island Expressway.

Odors are not expected with any of the interconnections. No odors are associated with the water line of the electric transmission line. Natural gas will be securely contained within its interconnecting pipeline. The Project wastewater will consist partly of domestic sewage, but this will be

piped via a force main and will be separated from any storm water flow, so that post-precipitation odors will not occur from the sewer line.

No data have been provided or are available to Brookhaven Energy regarding the odor impacts of the Caithness plant. Regarding American Tissue, odors are not addressed in that project's Draft Environmental Impact Statement, and thus no odor data are available regarding that project.

Table 10-10: Existing Daily Traffic and Construction Year Estimates (in trips per day)

Roadway or Intersection	Existing Traffic	Baseline Growth	Other Projects*	Caithness, Am. Tissue	Project Traffic	Cumulative Traffic
Sills Road (16 to site)	10,400	1,066	2,655	91	129	14,341
Percentage basis		10%	26%	1%	1%	38%
Yaphank Av. s/o LIE	7,800	800	0	0	0	8,600
Percentage basis		10%	0%	0%	0%	10%
LI Av. (101 to 21)	4,600	472	190	9	129	5,400
Percentage basis		10%	4%	0%	3%	17%
LIE (Exits 66 to 67)	64,000	6,560	0	0	0	70,560
Percentage basis		10%	0%	0%	0%	10%
Horseblock Rd. at 101	11,000	1,128	1,706	68	32	13,934
Percentage basis		10%	16%	1%	0%	27%
21/495 Exit 67 EB	9,860	1,011	190	9	65	11,135
Percentage basis		10%	2%	0%	1%	13%
21/495 Exit 67 WB	10,320	1,058	190	100	129	11,797
Percentage basis		10%	2%	1%	1%	14%
LI Ave./101	20,960	2,148	190	190	129	23,617
Percentage basis		10%	1%	1%	1%	13%
495 Exit 66 WB/101	17,280	1,771	1,422	553	324	21,350
Percentage basis		10%	8%	3%	2%	24%
495 Exit 66 EB/101	12,920	1,324	2,655	371	518	17,788
Percentage basis		10%	21%	3%	4%	38%
101/State Street	12,920	1,324	2,655	100	647	17,646
Percentage basis		10%	21%	1%	5%	37%
101/16	21,640	2,218	2,465	113	129	26,565
Percentage basis		10%	11%	1%	1%	23%

Notes: Data from Table 15-2 and composite tables in Appendix T.
Construction Year is a 2-year forecast. A baseline growth factor of 5% is applied consistent with Town of Brookhaven standard practice.

* "Other Projects" are those listed in Section 15.3.1, but not including the Caithness and American Tissue Projects, which are listed separately for purposes of this analysis.

Table 10-11: Existing Daily Traffic and Operation Year Estimates (in trips per day)

Roadway or Intersection	Existing Traffic	Baseline Growth*	Other Projects**	Caithness, Am. Tissue	Project Traffic	Cumulative Traffic
Sills Road (16 to site)	10,400	4,234	3,146	173	3	17,956
Percentage basis						
Yaphank Av. s/o LIE	7,800	3,175	8	-	-	10,983
Percentage basis						
LI Av. (101 to 21)	4,600	-1,364	33	-	-	3,269
Percentage basis						
LIE (Exits 66 to 67)	64,000	29,291	950	285	5	94,531
Percentage basis						
Horseblock Rd. at 101	11,000	4,478	1,810	59	1	17,348
Percentage basis						
21/495 Exit 67 EB	9,860	3,439	508	-	-	13,807
Percentage basis						
21/495 Exit 67 WB	10,320	3,051	287	-	-	13,658
Percentage basis						
LI Ave./101	20,960	5,296	362	113	-	26,731
Percentage basis						
495 Exit 66 WB/101	17,280	5,885	1,914	1,146	10	26,235
Percentage basis						
495 Exit 66 EB/101	12,920	4,685	3,869	745	20	22,239
Percentage basis						
101/State Street	12,920	5,260	3,773	173	25	22,151
Percentage basis						
101/16	21,640	8,810	2,956	173	5	33,584
Percentage basis						

Notes: Data from Table 15-2 and composite tables in Appendix T.

Operation Year is a 7-year forecast, consistent with Town of Brookhaven standard practice. A baseline growth factor of 5% is applied consistent with Town of Brookhaven standard practice.

* "Baseline growth" includes reallocation of vehicles from Long Island Avenue to the planned ramps between Exit 66 and Exit 67. Long Island Avenue, the LIE, and the ramp intersections with the LIE are all affected

** "Other Projects" are those listed in Section 15.3.1, but not including the Caithness and American Tissue Projects, which are listed separately for purposes of this analysis.

10.3.1.6 Visual Impacts

The Project will be visible from few locations, but because of generally low relief and low tree heights, its visibility from certain vantage points cannot be eliminated. The Project will not be visible at all from Yaphank's village area. It will be either not visible or partly visible and generally obscured from Long Island Avenue north of the LIE. This is also the only residential location from whose yard it will be visible. Due to elevation, the Project will be hardly visible to LIE motorists exiting eastbound at Exit 66 and turning left. It will be visible to motorists who pass by it along Sills Road. Visibility from Long Island Avenue west of the site will occur for the eastbound motorist, but the view will be available for only a small fraction of the one-mile straightaway of Long Island Avenue. From the Suffolk County Farm, views of the horizon line are apparent, and the stacks will

protrude above treetops. The stacks will exceed the existing transmission towers in height. From the top floor of the Skilled Nursing Facility, only the stacks will protrude above treetops due to the relative elevation of the viewer.

The only aboveground interconnection occurs on and immediately adjacent to the site – the electrical interconnection. New pole structures – no higher and probably lower than existing structures – will be added. This is regarded as an incremental impact that will be difficult to discern even when visible, because the visual impression from vertical transmission poles lining the horizon is considered collective rather than individual, especially from views of about a mile away or more. From many views, the interconnection will not be visible at all.

Regarding cumulative impacts, the analysis proceeds on assumptions in the Caithness Preliminary Scoping Statement (*e.g.*, 3 units, 180-foot tall stacks) and on documentation in the American Tissue Draft EIS. Specifically, that EIS indicates that there will only be one exterior vent on the facility (no stacks required) for the discharge of clean exhaust air from a central vacuum unit. Thus, only the building height (35 feet) and building size (584,808 square feet) have the potential to cause visual impacts. The squat nature of this building renders far-field analyses unnecessary, but the extensive tree clearing associated with that project could create near-field views. Thus, Caithness visibility is addressed below for all views, of sensitive areas, while American Tissue visibility is only addressed where the Draft EIS predicts impacts to occur (Sills Road north of LIE).

10.3.1.7 Conclusion

It is concluded that the Project and interconnections are compatible with existing land uses, for the following reasons. They do not create conditions that significantly affect local air quality, water use and water quality, or odors. They fall within noise-related guidelines not only to protect human health, but as judged by the yardstick of community complaint potential. They generate significant traffic only during the short-term construction period, after which the Project will generate only approximately 25 vehicles per day, a negligible level. Regarding visibility, the Project and interconnections have limited impacts which are studied in greater detail for specific sensitive land uses, but are found on the whole to be minor in nature and are offset by appropriate mitigation proposals.

Regarding cumulative land use impacts, available data are not sufficient to make a definitive conclusion, largely because not all necessary documents have been filed. It appears that if incompatibilities in terms of land use exist, they relate to the proximity of these projects to sensitive receptors, and thus are tied to a specific site. However, there are no types of land use impacts regarding which this study comes to a definitive conclusion of land use incompatibility.

10.3.2 Compatibility with Specified Sensitive Land Uses

This section partly addresses Stipulation 5, Clause 1(e) -- a qualitative assessment of the compatibility of the Project with specific sensitive land use areas. It also addresses the land use

compatibility of interconnections, per clause 1(f), and the American Tissue and Caithness projects, per clause 1(g), with these areas. The areas are:

- the Suffolk County Farm and Education Center;
- the Suffolk County Skilled Nursing Facility and Minimum Security Facility;
- the residential area along Sills Road between the LIE and Gerard Road;
- the residential area of Long Island Avenue north of the LIE between Sills Road and Yaphank Avenue; and,
- the residential area of Long Island Avenue south of the LIE between Sills Road and Bellport Avenue.

On the basis of the conclusions in Section 10.3.1.7, the following types of impacts are considered to be eliminated from a land use standpoint and thus are not analyzed for each sensitive area: air quality, water use, and odors. The following impacts are analyzed below: noise, traffic, and visibility.

10.3.2.1 Suffolk County Farm and Education Center

The Suffolk County Farm and Education Center has been described in Section 10.2.4 above. Land use impacts on this facility are analyzed here.

Land. The sewer interconnection uses the LIE South Service Road corridor, but this corridor includes within its right-of-way some land that is presently being farmed as part of the County Farm complex. Brookhaven Energy's approach in this location is to coordinate the timing of the sewer line construction with the County Farm, and to replace all topsoil.

Noise. The Project's construction noise is expected to contribute only 38 dBA at the Suffolk County Farm, while the existing daytime average ambient level is 53 dBA (and 47 dBA at night). During operation, the noise contribution is only 39 dBA. Any noise resulting from work on off-site interconnections would be limited to the daytime. The cumulative impacts with Caithness and American Tissue would not be substantively different due to the relative distance of those facilities. No other industrial facilities are proposed near the farm. In summary, the Project's noise impacts and cumulative noise impacts at this area are minimal and acceptable.

Traffic. The Project's traffic is not expected to use Yaphank Avenue near the Suffolk County Farm at all. There is no impact in terms of additional traffic at or along the frontage of the County Farm. After ramps are built between Exits 66 and 67, additional Project traffic will use the Long Island Expressway adjacent to the County Farm, but the added traffic will be only about 5 vehicles, compared to a projected 95,000 vehicles (see Table 10-11). One of the Project's interconnections – the sewer line – will be built adjacent to the County Farm, and may result in closing a shoulder of Yaphank Avenue north of the County Farm entrance way.

Visibility. This area is represented in the visual resources study (Section 16) by Viewpoint 36. It is an area which will have views of the Project, albeit distant ones. The visual resources study concludes that the visibility of the Project will not hamper the ability of the Suffolk County Farm or any county facility to continue to operate. Note that none of these facilities are designed for passive recreation or enjoyment of the natural environment. All the environment, especially at the County Farm, is either man-made or manipulated by design. That is its chief interest, and for that reason the recreational and educational opportunities at the County Farm are found looking inward, not outward. This holds true for the Farm's many buildings and outdoor landscaped areas – the Almshouse Barn, the playground, the gardens (note: there is no view of the Project from that location), the animal barns and stockade, etc. The Farm will have a view of transmission line alterations associated with the electric interconnection, but that change should be nearly imperceptible because the towers will be no higher and probably lower than existing towers that are prominently visible on the horizon. Lastly, the Caithness and American Tissue Projects are not expected to be visible from the County Farm.

In summary, land use, noise, and visual impacts will be very minor at this location. Traffic impacts are not anticipated at all. There will be no detriment to the continued use and enjoyment of the Suffolk County Farm by its residents, workers, and visitors.

10.3.2.2 Suffolk County Skilled Nursing Facility

The Suffolk County Skilled Nursing Facility is located slightly more than 1 mile southeast of the Project. The facility is five stories high and has approximately 264 patients. The facility has a patio on the fifth floor that faces toward the northwest (and the proposed Project) as well as a patio that faces northeast (no view of proposed Project). There is a patio area/entrance on the east side (no view of proposed Project).

Land. No land of the Suffolk County Skilled Nursing Facility will be used by the Project or interconnections.

Noise. With respect to noise, the Suffolk County Farm and Education Center is also representative of this location, and thus the Skilled Nursing Facility will experience noise levels as described above for the County Farm. The same conclusions regarding noise from interconnections and cumulative impact with Caithness and American Tissue therefore are drawn. Of course, the Project or other facilities being examined will not be audible indoors at the Nursing Home. Thus, the Project's noise impacts at this area are minimal and acceptable, and within the building they are nonexistent.

Traffic. The Project's traffic is not expected to use Yaphank Avenue near the Suffolk County Skilled Nursing Facility at all. This is the only roadway of concern for this location. Also, construction of interconnections will not occur in this area.

Visibility. The bottom floors of the Skilled Nursing Facility, as well as ground-level outdoor areas, will have no views of the Project, interconnections, Caithness or the American Tissue project. The top floor of the facility (Viewpoint 82) is an area which will have views of the Project as well as

Caithness, albeit distant ones. 138 kV transmission lines are much more visible and dominant today than the views of either the Brookhaven Energy or Caithness projects. This is a function of distance: the lines pass within several hundred feet of the Skilled Nursing Facility, whereas the separation between the Project and the Skilled Nursing Facility is over a mile. Caithness is even further. Thus, the visual resources study concludes that the visibility of the Project will not hamper the ability of the Skilled Nursing Facility to continue to operate. Also, viewers from the Skilled Nursing Facility will have a view of transmission line alterations associated with the electric interconnection, but that change should be nearly imperceptible because the towers will be no higher and probably lower than existing towers that are prominently visible on the horizon.

In summary, visual impacts will be very minor at this location. Land use, noise, and traffic impacts are not anticipated at all. There will be no detriment to the continued use of the Suffolk County Skilled Nursing Facility by its patients, staff, and visitors.

10.3.2.3 Suffolk County Minimum Security Facility

The Suffolk Minimum Security Facility is located slightly more than 1 mile southeast of the Project. The facility has a maximum capacity of 475 inmates and has six outdoor recreational and outdoor work areas. These are the principal focus of the land use study. The use and type of the outdoor areas are summarized below in Table 10-12.

Table 10-12: Outdoor Land Uses at Minimum Security Facility

Area ID	Description	Number of People	Use per Day
1	Wooded and grassy areas surrounding the facility	15	8 hrs
2	Main recreational area (asphalt) – basketball courts, weights, and 2 open court areas on north side of main facility.	Available to all inmates	12 hrs
3	Small recreational area (asphalt yard) on northeast side of main facility.	Not in use	
4	Grassy areas south of the main facility used for recreation, leisure, and resting.	30	8 hrs
5	Prison loading area.	2-3	8 hrs
6	Suffolk County Farm fields, located on the north-northeast side of the prison facility.	10-15	8 hrs

Land. No land of the Suffolk County Minimum Security Facility will be used by the Project and interconnections.

Noise. With respect to noise, the Suffolk County Farm and Education Center is also representative of this location, and thus the Minimum Security Facility will experience noise levels as described above for the County Farm. The same conclusions regarding noise from interconnections and cumulative impact with Caithness and American Tissue therefore are drawn. Thus, the Project's noise impacts at this area are minimal and acceptable.

Traffic. The Project's traffic is not expected to use Yaphank Avenue near the Minimum Security Facility at all. This is the only roadway of concern for this location. Also, construction of interconnections will not occur in this area.

Visibility. With respect to visibility, the Suffolk County Farm and Education Center is also representative of this location, and thus views of the Project from the Minimum Security Facility will be of the same general character in terms of distance, context, appearance, and scale. For cumulative analysis, the Suffolk County Skilled Nursing Facility was used as a point of analysis, and which indicated that views are not likely of both the Project and Caithness from ground level.

In summary, noise and visual impacts will be very minor at this location. Land use and traffic impacts are not anticipated at all. There will be no detriment to the continued use of the Suffolk County Minimum Security Facility by its inmates, staff, and visitors.

10.3.2.4 Sills Road Residential Area between LIE and Gerard Road

This area stretches from the intersection of Long Island Avenue and Sills Road, approximately half a mile north of the site, to Gerard Road, more than a mile away from the site. This entire area is located on the north side of the Long Island Expressway, whereas the Project site is on the south side of the Long Island Expressway.

Land. No land in this area will be used by the Project or interconnections.

Noise. The Project's construction noise is expected to contribute only 43 dBA at the intersection of Sills Road and Gerard Road, while the existing daytime average ambient level is 55 dBA (and 46 dBA at night). Any noise resulting from work on off-site interconnections would be limited to the daytime. During operation, the noise contribution is only 41 dBA. The cumulative impacts with Caithness and American Tissue would be greater because of the close proximity of those facilities to this residential area. The construction-period noise contribution is predicted to rise from 43 to 54 dBA and the operations-period noise contribution is predicted to rise from 41 to 52 dBA under the cumulative impact scenario. These assessments are based on the 151 Gerard Road noise receptor location.[14] As demonstrated in Section 11 (in detail) and Section 10.3.1.3 (in summary), the predicted construction and operation noise levels are lower than existing levels, except for this location, where a cumulative noise impact condition is predicted, but it is one to which the Brookhaven Energy Project's contribution is minimal. Thus, the Project's noise impacts at this area are minimal and acceptable.

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14 Note that Noise Receptor No. 6 is located at the north end of the referenced Sills Road sensitive residential area and thus would be further from the Project than residences located more to the south along Sills Road. These residences would experience noise levels more in line with those predcted at 110 Long Island Ave near the intersection of Sills Road. Here, daytime and nighttime average ambient noise levels are 65 and 58 dBA, respectively, and predicted construction and operations noise levels are 50 dBA and 46 dBA, respectively. See assessment of Long Island Avenue sensitive residential area for further analysis at this location.

Traffic. The Project's traffic is not expected to use Sills Road near north of Long Island Avenue, but during construction all traffic passing by Long Island Avenue will also pass within several hundred feet of the nearest houses at this location. Occasional local traffic into Yaphank can also be considered a possibility, although this will not occur during peak times. At the Long Island Avenue and Sills Road intersection, the Project will be a contributor of approximately 1% of additional traffic per day during the peak construction period. It will generate no traffic in this area after ramps are built between Exits 66 and 67, and even then its total contribution to such traffic would be only approximately 5 vehicles. Construction of interconnections will not occur in this area.

Visibility. The Project will not be visible from any residence or residential yard along Sills Road. There will be a view of the Project from the Long Island Avenue/Sills Road intersection, and slightly north of it. This will be a view available to motorists only and will not affect the view from houses. The vantage point from Sills Road at Long Island Avenue (Viewpoint 75 in the visual resources study) affords direct views of the Project site, but the topography and vegetation in the northern portion of the site combine to screen most of the Project buildings, up to approximately 75 feet. The context of the view is industrial, with two highway corridors and the transmission lines playing a dominant role, and the Project subordinate. Electric interconnection transmission towers are not expected to be visible from this direction, although the existing transmission lines will remain dominant. Regarding Caithness and American Tissue, the following conclusions can be drawn. Caithness is located behind American Tissue, and views of Caithness would only be expected if sufficient land clearing took place on the American Tissue site. Furthermore, because the Caithness Preliminary Scoping Statement indicates that a visual buffer will be maintained around that facility, any views are expected to be limited to the upper portions of the facility. The American Tissue Draft EIS, meanwhile, states that views from residential properties located north and east of the property will be hindered by tracks of vegetation present within the areas reserved for land banked parking but that during winter leaf off conditions, residences will have views of the American Tissue facility. Since no residences will have views of the Brookhaven Energy Project, the cumulative visual impacts from this location are no greater than the impacts of the Caithness and American Tissue projects.

In summary, noise, traffic and visual impacts will be very minor at this location. Land use impacts are not anticipated at all. Also, the Project will not be visible from residential homes or yards. There will be no detriment to the continued use of the Sills Road residential area by local residents, passersby, and visitors.

10.3.2.5 Long Island Avenue north of LIE Between Sills Road and Yaphank Avenue

This area stretches from the intersection of Long Island Avenue and Sills Road, approximately half a mile north of the site, to Yaphank Avenue, more than 1.5 miles away from the site. This entire area is located on the north side of the Long Island Expressway, whereas the Project site is on the south side of the Long Island Expressway.

Land. No land in this area will be used by the Project, except for improvements associated with traffic mitigation: the demarcation of a second left turn lane at Long Island Avenue westbound at Sills Road. This is a very short-term, daytime construction effort.

Noise. At the point within this area closest to the Project site (near the intersection of Long Island Avenue and Sills Road), construction noise is expected to be 50 dBA. As one moves east, noise levels due the Project decrease quickly. Even at maximum levels, however, the noise is much less that the existing daytime average ambient level of 65 dBA (and 58 dBA at night). Any noise resulting from work on off-site interconnections would be limited to the daytime. During operation, the noise contribution is 46 dBA. The cumulative impacts with Caithness and American Tissue would be greater because of the close proximity of those facilities to this residential area. The construction-period noise contribution is predicted to rise from 50 to 56 dBA and the operations-period noise contribution is predicted to rise from 46 to 50 dBA under the cumulative impact scenario. As demonstrated in Section 11 (in detail) and Section 10.3.1.3 (in summary), the predicted construction and operation noise levels are lower than existing levels both for the Project and cumulatively with Caithness and American Tissue. Thus, the Project's noise impacts at this area are minimal and acceptable.

Traffic. The Project's traffic will use Long Island Avenue during construction, but will contribute no more than 6% of the existing traffic during that period. In terms of intersection operations, mitigation has been proposed at the Long Island Avenue and Sills Road intersection that will improve the operation of that intersection. The total number of estimated construction vehicle trips on Long Island Avenue is 129 per day (approximately 45 of which will take place before 7 AM, with the rest taking place during later shift changes). During operation, the Project will generate no traffic in this area, because ramps will be built between Exits 66 and 67, and even then the total contribution to such traffic would be only approximately 5 vehicles. Construction of interconnections will not occur in this area.

Visibility. There will be intermittent and limited visibility of the Project from this stretch of Long Island Avenue. Visibility is dependent upon the presence or absence of screening from vegetation. Although the Project will not be visible from most vantage points along Long Island Avenue north of the LIE, several points (including Viewpoint 6, which is representative of two residences – 4 and 5 Gerard Road; and Viewpoint 48, across from the Brookhaven Country Day Camp driveway) afford views of the Project. The impact of the Project is noticeable, but minor. Viewpoint 6 will be a prime candidate for the Project's mitigation program – see Figure 16-26 for the proposed mitigation. Where views of the Project are possible, a view of transmission line alterations associated with the electric interconnection would also be possible, but that change should be nearly imperceptible because the towers will be no higher and probably lower than existing towers that are prominently visible on the horizon. On the basis of field visits and available documentation, it appears that neither the Caithness nor the American Tissue facilities will be visible from Long Island Avenue, except at the far western end, where potential impacts are as discussed above for the Sills Road residential area.

In summary, land use, noise, traffic and visual impacts will be very minor at this location. There will be no detriment to the continued use of the Long Island Avenue residential area between Sills Road and Yaphank Avenue by local residents, passersby, and visitors.

10.3.2.6 Long Island Avenue south of LIE Between Exit 66 and Bellport Avenue

This area stretches from the nearest residence west of the site (approximately 2,000 feet away) to the intersection of Long Island Avenue and Bellport Road, approximately a mile west of the site.

Land. No land in this area will be used by the Project or interconnections.

Noise. The Project's construction noise is expected to contribute 52 dBA at the nearest residence to the west (109A Long Island Avenue), which is the maximum level within this area. As one moves west, noise levels due the Project decrease quickly. Even at maximum levels, however, the noise is much less that the existing daytime average ambient level of 58 dBA (and 50 dBA at night). Any noise resulting from work on off-site interconnections would be limited to the daytime. During operation, the noise contribution is 46 dBA. The cumulative impacts with Caithness and American Tissue would be only slightly greater, because those facilities are not as proximate to this residential area as they are to areas north of the LIE. The construction-period noise contribution is predicted to rise from 52 to 54 dBA and the operations-period noise contribution is predicted to rise from 46 to 49 dBA under the cumulative impact scenario. As demonstrated in Section 11 (in detail) and Section 10.3.1.3 (in summary), the predicted construction and operation noise levels are lower than existing levels both for the Project and cumulatively with Caithness and American Tissue. Thus, the Project's noise impacts at this area are minimal and acceptable.

Traffic. The Project's traffic is not expected to use Long Island Avenue in this residential area at all, because of the convenience of using the Long Island Expressway via Exit 66. No traffic-related impact is anticipated during construction or operation. Construction of interconnections will not occur in this area.

Visibility. Due to a planned mitigation effort, views from most of this stretch of Long Island Avenue have been eliminated, but the eastern portions do afford views of the Project above existing vegetation. In those cases, impacts are incrementally not great because of the presence of vertical elements all along this stretch of Long Island Avenue – 69 kV transmission poles, which are significantly taller than distribution/telephone poles. Section 16.6.2.1 contains details of a planning-stage mitigation effort whereby the entire Project was shifted northward to avoid a head-on view from this linear corridor. As a result of a crane demonstration, it was determined that shifting the plant approximately 60 feet north of the place where it was then proposed would eliminate the view for most of Long Island Avenue, leaving it only when the driver approaches toward the end of the straightaway and is able to see the stacks in the left background – as represented by Viewpoint 20. In that view, the Project occupies the background (leftward half only) of an eastbound motorist's view at this location. No interconnections will be visible. Caithness and American Tissue would not be visible, except for possible views of Caithness across the fields of the

Liere farm, located in the middle of this stretch. Both facilities cannot be seen together due to alignment.

In summary, noise and visual impacts will be very minor at this location. Land use and traffic impacts are not anticipated at all. Also, the Project will not be visible from residential homes or yards. There will be no detriment to the continued use of the Long Island Avenue residential area east of Bellport Road by local residents, passersby, and visitors.

10.3.2.7 Sills Road near New Interdisciplinary School and Maryhaven

This area includes four homes along Sills Road southwest of the site, adjacent to the Calvary Full Gospel Church, the New Interdisciplinary School, and the Maryhaven facility. The general land use surrounding this area is industrial, so that the Project will not be the nearest industrial use to these residences and institutions.

Land. No land in this area will be used by the Project or interconnections.

Noise. The Project's construction noise is expected to contribute 43 dBA in this area, while the existing daytime average ambient level is 66 dBA (and 53 dBA at night). During operation, the noise contribution is only 41 dBA. Any noise resulting from work on off-site interconnections would be limited to the daytime. The cumulative impacts with Caithness and American Tissue would not be substantively different due to the relative distance of those facilities. In summary, the Project's noise impacts at this area are minimal and acceptable.

Traffic. The Project will generate a very minor component of its traffic from the south, and these vehicles will pass by Sills Road through this area. An additional 1% of traffic is expected during construction, and less than and additional 0.1% during operation. These impacts are considered minimal. Construction of interconnections will not occur in this area.

Visibility. The Project will not be visible from this area. This is a location at which the tip of a 180-foot tall stack would have been visible. Lowering the stack height has eliminated the view. There will also be no view of the electric interconnection at the site. On the basis of field visits, neither the Caithness nor the American Tissue project would be visible from the area.

In summary, land use, noise and traffic impacts will be very minor at this location. Visual impacts are not anticipated at all. There will be no detriment to the continued use of the four homes along Sills Road, the New Interdisciplinary School, and Maryhaven by local residents, passersby, pupils, staff, program participants, and visitors.

10.3.3 Compatibility with Recreational Land Uses

This section addresses Stipulation 5, Clause 4 (in part). Clause 4 requires that impacts to recreational areas be predicted and mitigation measures be proposed as part of the noise and visual assessments.

The Project and interconnections will be compatible with the recreational land uses in the area. To demonstrate this in detail, Table 10-13 shows that for each recreational use, a representative or conservative assessment of noise, traffic, and visual impacts has been conducted as part of analyzing compatibility with existing land uses in general, and especially the specifically identified sensitive land uses (Sections 10.3.1 and 10.3.2).

Table 10-13: Consistency with Recreational Land Uses

Proposed Land Use	Distance from Project	Noise -- represented by NL # *	Traffic – as per T. 10-10, T. 10-11**	Visual -- represented by VP # ***
Wertheim NWR	3-5 miles	< at Loc. 4, 5	Not affected	33, 34
Southaven County Park	1-3 miles	< at Loc. 5	Not affected	1, 7
Upper Lake	About 1 mile	< at Loc. 6	Not affected	67
Lower Lake	About 1 mile	< at Loc. 2, 6	LI Ave/21	7, 8, 48
Camp Sobaco	> 1 mile	< at Loc. 6	Not affected	12, 15
Cathedral Pines County Park	3 miles	< at Loc. 6	Not affected	54, 65
Prosser Pines County Park	3 miles	< at Loc. 6	Not affected	54, 65
Suffolk County Farm	About 1 mile	Loc. 5	Yaphank Ave.	4, 36, 37
Middle Island Country Club	> 2 miles	< at Loc. 6	Not affected	54
Mill Pond Golf Course	2000 feet	< at Loc. 3, 6	Not affected	16
Good Shepherd Farm	1 – 2 miles	< at Loc. 6	Not affected	15
Touch-n-Go Farms	> 1 mile	< at Loc. 3	Not affected	16
Benjamin Tallmadge Trail	> 1 mile	< at Loc. 5, 6	Not affected	34, 7, 8, 11, 54

* Refers to representative noise monitoring location as discussed in Section 11.2.2.
** Refers to the *row title* in Tables 10-10 and 10-11 that states adjacent traffic increases, if any.
*** Refers to representative Viewpoint as discussed in Section 16.4.

Impacts of any kind are identified only at the following locations: certain recreational uses associated with *Lower Lake*, and the *Suffolk County Farm and Education Center.*

Traffic, noise, and visual impacts for the Lower Lake recreational uses and the Suffolk County Farm use are as described in Sections 10.3.2.1 and 10.3.2.5, respectively.

Noise impacts for these recreational uses are insignificant because all recreational facilities are at or further than the noise receptor locations, and minimal noise impact (including cumulative noise impact with other proposed facilities) is demonstrated for these locations. See Section 11.5.2 and 11.6.2 for an analysis of noise abatement and mitigation measures.

Traffic impacts for recreational uses are of even more marginal concern because recreational activities do not take place at adjacent roadways. For example, traffic is increased slightly along Long Island Avenue near the Brookhaven Country Day Camp and School. However, the recreational activities at this location are centered in the interior of the grounds and along Lower Lake. Refer to Section 15.3.9 for an analysis of traffic mitigation measures.

Visual impacts for the Lower Lake uses are in fact minimal, and the impact shown for Viewpoint 48 (see Section 16.5) is conservative because no recreational activity takes place along Long Island

Avenue, but rather north of it, where no views are available. The Project will not be visible from the Lower Lake, as further documented in Section 16.5. Visual impacts for the Suffolk County Farm and Education Center are discussed in detail as represented by Viewpoint 36. Mitigation is proposed in Section 16.6. Figures 16-4, 16-9, 16-17, 16-18, and 16-22 all relate to visual impact and mitigation for recreational areas.

10.3.4 Compatibility with Regional Land Use Plans

This section partly addresses Stipulation 5, Clause 1(e) -- a qualitative assessment of the compatibility of the Project with regional land use plans. It also addresses the compatibility of interconnections with these plans, per clause 1(f), and the cumulative effect of American Tissue and Caithness projects on these plans, per clause 1(g).

10.3.4.1 Consistency with Brookhaven Comprehensive Land Use Plan

The current Brookhaven Comprehensive Land Use Plan was adopted in 1996. It places emphasis on appropriate economic development together with preservation and protection of natural and community resources. For purposes of land use planning, the town is divided into hamlets or groups of hamlets. For the Project site and the surrounding area, a "mini-master plan" has been developed. The Longwood Mini-Master Plan (discussed below) states a desired direction for various types of future land development, including commercial, industrial, and residential. It also sets forth environmental, cultural, and agricultural priorities.

With respect to industrial development, the Brookhaven Comprehensive Land Use Plan seeks to channel industries away from the Central Special Groundwater Protection Area (SGPA), which is on the north side of the LIE. Instead, "other parcels south of the LIE, close to the [school district] boundary should be designated as future site for industrial development." The Project site and all interconnections are south of the LIE, outside the SGPA, and approximately 1,600 feet from the school district boundary. It is therefore fully consistent with this important Town priority.

Both Caithness and American Tissue are within the Central SGPA. Thus, cumulatively, either Caithness' or American Tissue's construction would lead to an inconsistency with this Town priority. However, building the Brookhaven Energy Project in no way contributes to that inconsistency.

The Comprehensive Plan also provides general recommendations for environmentally sensitive lands including: wetlands, special geologic features, coastal erosion hazard areas, groundwater divide, and ecological resources. The site is outside all such zones. The Comprehensive Land Use Plan's recommendations with respect to environmentally sensitive lands include: (1) update and expand the Town's Natural Resource Inventory; (2) analyze existing steep slope topography protections in the town code to determine if changes are needed; (3) develop a stream corridor management plan; and (4) determine whether any additional land use policies are needed to protect groundwater. These recommendations are more general in nature and do not apply to the Project as the site is not located in an area of steep slope topography, affects no stream corridor, and is outside an SGPA.

Caithness and American Tissue also would not affect stream corridors. Both, however, are inside the Central SGPA. Also, the area north of the LIE between Sills Road and Bellport Road is identified as an area of steep slope topography. However, since the Project is outside such zones, it would have no effect on the consistency of cumulative development with the Plan regarding these issues.

The Plan also provides specific recommendations to address "special environmental areas" in Brookhaven. The Plan designates the following Special Environmental Areas:

- *Central Pine Barrens.* Project site and interconnections are outside Central Pine Barrens. Caithness and American Tissue are both inside this area. However, since the Project is outside the Central Pine Barrens, it would have no effect on the consistency of cumulative development with the Plan regarding this issue.

- *Central SGPA.* Project site and interconnections are outside this SGPA, which is largely coterminous with the Central Pine Barrens, but does not include Southaven County Park. Caithness and American Tissue are both inside this area. However, since the Project is outside the Central SGPA, it would have no effect on the consistency of cumulative development with the Plan regarding this issue.

- *South Setauket Pine Barrens SGPA.* Project site and interconnections are outside this SGPA. Caithness and American Tissue are outside this area also.

- *Hydrogeologic Zones I, III, VI and VIII.* Project site and interconnections are within Hydrogeologic Zone III. The Plan notes that the Town has established stricter standards for light industrial development in Hydrogeologic Zone III. These are covered in Section 10.4 in detail, with dimensional requirements summarized in Table 10-6 above. These would also apply to Caithness and American Tissue.

- *Wild, Scenic and Recreational Rivers.* Project site and interconnections are outside these zones. The nearest is the Carmans River WSR zone, north of Long Island Avenue on the north side of the Long Island Expressway. Caithness and American Tissue are outside this area also.

- *Long Island Sound Estuary.* Project site and interconnections are outside this area. Caithness and American Tissue are outside this area also.

- *South Shore Estuary Reserve.* Project site and interconnections are outside this area. Caithness and American Tissue are outside this area also.

- *Peconic River Estuary.* Project site and interconnections are outside this area. Caithness and American Tissue are outside this area also.

Among several types of environmental and open space recommendations, none specifically mention the Project site and interconnection corridors. Also, none mention the Caithness or American

Tissue sites. One general goal for the area is to plant street trees and preserve existing trees. There are several recommendations affecting Yaphank and the Carmans River corridor, including preservation or enhancement of open space, the Tallmadge Trail and historic buildings in the area (see Section 7). With respect to agricultural land, it is recommended that the Suffolk County Farm be preserved. Other, more distant agricultural parcels are also named, and their preservation is encouraged. Greater detail with respect to the recommendations is found in the Longwood Mini-Master Plan.

10.3.4.2 Consistency with Longwood Mini-Master Plan

The Longwood Mini-Master Plan states eight goals which "reflect the visions, aspirations and concerns of the residents of the community". The following is a list of these goals and their objectives along with a discussion of how the Project and interconnections are consistent with the goals, and in each case a note regarding the cumulative consistency of the Caithness and American Tissue projects.

- *To advance the preservation of our dwindling historic resources.* The objectives of this goal include: (1) clearly identify historic resources; (2) seek, where appropriate, historic district status and historic landmark status; (3) seek the maintenance, and integration of historic resources into future plans for the community; (4) enhance the Tallmadge Trail so that it can be utilized by a greater segment of the community.

  The Project and interconnections are sited in an area zoned for industrial use that is away from historic resources. As documented in greater detail in Section 7 and Section 16, the Project will not be visible from the Yaphank town-designated historic district or from National Register listed or eligible landmarks, except for one view from the southwest corner of the rear parking lot of the old Suffolk County Home (impacts and mitigation are evaluated in Sections 7 and 16). Therefore, the Project and interconnections are consistent with this goal. Caithness and American Tissue are also distant from these areas, and the cumulative development of these projects does not affect historic areas.

- *To encourage the creation of unique, identifiable community centers.* The objectives of this goal include: (1) foster easily distinguishable perimeters between communities; (2) encourage the up-zoning of commercially zoned property on peripheries of downtown; (3) advocate the creation of architecturally compatible downtowns; (4) encourage the use of vacant land within downtown areas for commercial office use, and discourage such use on peripheries of downtowns; (5) encourage the reuse, and refurbishing of vacant commercial property, prior to approving more of the same; and (6) encourage receiving zones within downtowns.

  The Project and interconnections are located in an industrial area away from the nearest downtown areas. The Project and interconnections do not constitute a commercial or retail use that depends upon pedestrian or commercial traffic. The Project's presence in an industrial setting will not affect the vibrancy of downtown areas. Therefore, the

Project and interconnections are consistent with this goal. Caithness and American Tissue are also distant from the nearest downtown areas, and the cumulative development of these projects does not affect community centers.

- *To encourage diversity or intricacy of use within our downtown.* The objectives of this goal include: (1) to insure that a variety of amenities and services are located in close proximity to one another, and where possible, that those amenities be internally interconnected; and (2) to encourage both commercial and residential uses along our main streets.

  The Project and interconnections are located away from the nearest downtown areas and will not affect the variety of amenities and services located in the downtown areas. Therefore, the Project and interconnections are consistent with this goal. Caithness and American Tissue are also distant from the nearest downtown areas, and the cumulative development of these projects does not affect this community goal.

- *Encourage the development of people-friendly street and downtowns.* The objectives of this goal are to: (1) create downtowns which are developed densely enough to encourage walking from one place to another; (2) foster the development of attractive, well landscaped parking areas which are located behind stores and office buildings; (3) foster the development of sidewalks and bike paths along roadways; (4) encourage the plantings of shade trees within downtowns; (5) encourage street furniture, outdoor restaurants, etc.; (6) encourage the full integration of future housing projects into established communities rather than building housing projects which are designed as islands unto themselves.

  The Project and interconnections are located on industrial land and in highway corridors away from town centers and will not have an effect on downtowns. Economic benefits and tax revenues from the Project will provide funding to the Town, which could be used to carry out the tasks needed to accomplish this goal. Therefore, the Project and interconnections are consistent with this goal. Caithness and American Tissue are also distant from the nearest downtown areas, and the cumulative development of these projects does not affect this community goal.

- *To enhance our tax base with properly sited industrial and commercial development.* The objectives of this goal are: (1) to encourage those industries within the SGPA that do not unduly threaten groundwater; and (2) locate large segments of industrial development outside of the SGPA.

  The Project will provide a very significant enhancement to the Town's tax base. Ancillary economic benefits will also result from the construction and operation of the Project, as described in detail in Section 12. The Project site and interconnections are outside the SGPA and are thus in keeping with this objective. For these reasons, the

Project would have no effect on the consistency of cumulative development (including Caithness and American Tissue) with respect to this community goal.

- *Create corridors of open space throughout our community.* The objectives of this goal are to: (1) create a corridor of open space from Wertheim NWR to Rocky Point DEC; (2) extend North Shore Properties Greenbelt through the western boundaries of parcels 1,2, and 3 (north and east of the village area of Yaphank); (3) create east-west greenbelt; (4) preserve wildlife habitat; (5) provide additional recreational opportunities; and (6) enhance educational opportunities of the area.

  The Project site and interconnections are located outside of areas designated for open space and will not affect this goal. Caithness and American Tissue are also outside such areas.

- *To encourage the preservation and ecologically sound management of our agricultural resources.* The objective behind this goal is to encourage the purchasing of development rights.

  The Project site is not located on farmland and thus will not affect agricultural resources. The sewer interconnection will follow through the LIE South Service Road corridor, some of which is presently used as farmland by the Suffolk County Farm. As discussed above, the interconnection will have no effect on the availability of agricultural resources. Tax revenues from the Project could be used to help to meet the objective of purchasing development rights of important agricultural resources. Caithness and American Tissue are outside agricultural areas.

- *Maintain existing water quality in special groundwater protection areas.* The objectives behind this goal are to: (1) insure the appropriate reclamation of sand mines particularly in the core watershed corridor; (2) insure the retention of undisturbed woodlands; (3) protect wetlands; (4) preserve the most sensitive areas of open space through acquisition; (5) limit density within the Central Suffolk SGPA; (6) encourage the clustering of development to insure the maximum preservation of natural areas; (7) work for the consolidation of existing and proposed STPs in order to insure the creation of state of the art sewage treatment; (8) prohibit the construction of new small STPs within the central Suffolk SGPA; (9) enhance the protection of existing and potential SCWA well sites; and (10) work for the prohibition of industries within SGPA which pose a high risk for groundwater contamination.

  The Project site and interconnections are entirely outside an SGPA and are consistent with this goal. Also, the Project is consistent with the Town's objective to cluster development and protect natural areas (objective 6) as it is in an area specifically designated for industrial development. The Project will not require the construction of a new STP inside or outside an SGPA (objectives 7 and 8). Through its design, the Project is protective of the nearest SCWA well sites, which are located about 3,000 feet to the southwest (objective 9 -- see Section 17). For these reasons, the Project would

have no effect on the consistency of cumulative development (including Caithness and American Tissue) with respect to this community goal.

In addition to the above-described general goals, the Longwood Mini-Master Plan includes specific community priorities in Yaphank, broken down by short-term goals and long term goals. The goals are for street improvements, purchase of open space, and creation of bikeways. All of these proposed improvements are not located near the Project site or interconnections and would not be affected by the Project or interconnections. The same holds true for the Caithness and American Tissue sites. Among long term goals, the plan also envisioned a "recreational hub" between Exits 66 and 67, and movement of the Yaphank railroad station to the recreational hub. However, this has not been a live development issue, and thus the Project and interconnections do not affect it.

The Longwood Mini-Master Plan also provides specific community priorities for East Yaphank (located east of Southaven County Park). These consist of road improvements as well as designation of an area for recreational use, development of the Brookhaven Calabro Airport, the inclusion of parkland as part of the Dowling College's aeronautical training center, the development of a parcel as a transportation hub, and adoption of a sign ordinance. These projects do not apply to the area of the Project site, interconnections or the Caithness and American Tissue projects.

10.3.4.3 Consistency with Medford Hamlet Comprehensive Plan

Although the Project site and interconnections are not located in Medford, they are near the eastern boundary of Medford. Therefore, this review assesses the Project's impact on the overall goals of the hamlet of Medford as outlined in the Medford Hamlet Comprehensive Plan. Only two of the goals outlined in this plan appear to apply, at least indirectly, to the Project: (1) create strong economic activity to provide jobs and an adequate tax base; and (2) develop appropriate zoning regulations to insure proper development. The Project will provide tax revenues to the town of Brookhaven and due to the close proximity to Medford, is likely to result in jobs related to construction and operation of the facility. Brookhaven Energy has also corresponded with the Patchogue-Medford school district regarding its analysis of potential incremental costs to that district, as described in Section 12. Thus the project is in keeping with Medford's economic goal. With respect to the development of zoning regulations, the plan calls for a large area that borders with Yaphank (designated as area "V" and located south of the railroad tracks and west of Bellport Avenue) to be zoned L-3 - Industrial Park. This zoning designation is similar to the L-1 industrial zoning designation of the Project site. Thus land use will be similar between the Project site and land uses in Medford's "V" area.

10.3.4.4 Consistency with Suffolk County Smart Growth Policy Plan

In October 2000, the Suffolk County Planning Department, acting on a resolution of the County Legislature, issued the "Smart Growth Policy Plan for Suffolk County." This document is not intended to specify a use for each parcel in the County, but rather is intended to measure existing laws, regulations, policies and programs against smart growth principles. Even though the plan is

designed for County government actions, the Project can be analyzed against smart growth principles also. The principles most relevant to industrial development are examined below.

Principle: Encourage Consultation and Collaboration among communities. Intermunicipal agreements are encouraged because many projects affect multiple towns. However, all areas within a 5-mile radius of the Project are within the Town of Brookhaven, limiting the applicability of this principle in the Project's particular case. Among the recommended implementing steps for this principle is to get input for the community "*before* the design process." Brookhaven Energy has extensively sought to do just that. Numerous changes in the original conceptual design took place because of public input (see Section 4).

Principle: Encourage compact and orderly development. Among the recommended implementing steps for this principle is to "measure the growth impact" of planned projects. The Project will be a significant contributor to the regional economy, but it will be a generator of very little traffic and will not attract industries to collocate, since it is not a cogenerator.

Principle: Encourage Permitting Processes which are predictable, certain, efficient and final. The Plan states that in permitting, "when delays pile on delays and years pass by without approvals in sight, projects which are eventually approved suffer. They suffer because quality and amenities are sacrificed to pay for the unanticipated delays." Among the recommended implementing steps for this principle is to amend the Suffolk County Planning Commission Guidelines (see Section 10.4) to reflect smart growth principles.

Principle: Ensure consistency of government policies and programs. Among the recommended implementing steps for this principle is that the Council on Environmental Quality should make recommendations regarding proposed county activities to state and local governments. While this does not appear to affect private projects, Brookhaven Energy has consulted extensively with both Town and County officials from various departments (see Section 10.4 and Appendix L), acting in a spirit consistent with this principle.

10.3.5 Consistency with Proposed Development

This section partly addresses Stipulation 5, Clause 1(e) -- a qualitative assessment of the compatibility of the Project with proposed development. It also addresses the compatibility of interconnections with proposed development, per clause 1(f), and the cumulative effect of American Tissue and Caithness projects on proposed development, per clause 1(g).

The Project and interconnections will be compatible with the proposed development in the area. Visual, noise, and traffic-related impacts will be compatible with these other projects. To demonstrate this in detail, Table 10-14 shows that for each proposed use, a representative or conservative assessment of noise, traffic, and visual impacts has been conducted as part of analyzing compatibility with *existing* land uses, and especially the specifically identified sensitive land uses (Sections 10.3.1 and 10.3.2). In Table 10-14, bold rows represent residential or recreational areas, and non-bold rows represent industrial, commercial, or infrastructure projects. (Note that

motorcross courses are included in the industrial category. Due to the loud nature of motorcross, noise from the Project will not affect enjoyment of these motorcross areas. These areas may have partial views of the Project due to their close proximity. However, that should not interfere with the enjoyment of this sport.)

Table 10-14: Consistency with Proposed Land Uses

Proposed Land Use	Distance from Project	Noise – represented by NL # *	Traffic – as per T. 10-10, T. 10-11**	Visual -- represented by VP # ***
1. Zorn Industrial Park	Up to 1 mile	Locs. 1 & 4	Not affected	23, 80, 81
2. Brookhaven Industrial Park	> 1 mile	< at Loc. 4	Horseblock	25, 81
3. South Silver Industrial Park	> 1 mile	< at Loc. 4	Horseblock/101	24
4. Frame Mica	About 1 mile	< at Loc. 4	Not affected	23, 81
5. Zorn Industries	> 1 mile	< at Loc. 4	Horseblock	23, 81
6. Ryder Transportation	> 1 mile	< at Loc. 4	Horseblock	24
7. Office @ Exit 66	1000 feet	Loc. 3	Exit 66 EB off	78
8. Island Motorcross	About 1 mile	< at Loc. 4	Not affected	23, 81
9. Northeast Motorcross Park	Adjacent	Loc. 1	LIE	79
10. American Tissue	2000 feet	Loc. 2	Exit 66 WB on	51
11. Iron Wood Golf Course	**1 – 2 miles**	**< at Loc. 6**	**Not affected**	**15, 16**
12. Regency Oaks	**> 1 mile**	**< at Loc. 4**	**Horseblock**	**25, 81**
13. Toussie Oaks	**> 1 mile**	**< at Loc. 3**	**Not affected**	**17**
14. Doral Woods	**About 1 mile**	**< at Loc. 6**	**Not affected**	**15**
15. Golf View Acres	**2 miles**	**< at Loc. 3**	**Not affected**	**17**
16. Caithness Island Power	2000 feet	Loc. 2	Exit 66 WB on	77
17. Adesa Auto Auction	2000 feet	Locs. 3 & 4	Sills Road	22, 80
18. Estee Lauder Expansion	2000 feet	Loc. 3	Not affected	20, 78
19. 92 acre open space	**> 1 mile**	**< at Loc. 6**	**Not affected**	**9**
20. 63 acre agricultural land	**> 1 mile**	**< at Loc. 5**	**Yaphank Ave.**	**83**
21. County golf courses	**0.2 – 1.5 miles**	**Loc. 5**	**Not affected**	**23, 82**
22. Soccer fields	**> 1 mile**	**< Loc. 5**	**Yaphank Ave.**	**3, 83**
23. Juvenile detention center	**> 1 mile**	**< Loc. 5**	**Yaphank Ave.**	**3, 83**
24. LIRR yard	About 1 mile	Locs. 1 & 5	Not affected	84
25. Ramps between Exits 66, 67	Up to 1.5 miles	Not applicable	Not applicable	Not applicable

* Refers to representative noise monitoring location as discussed in Section 11.2.2.
** Refers to the *row title* in Tables 10-10 and 10-11 that states adjacent traffic increases, if any.
*** Refers to representative Viewpoint as discussed in Section 16.4.

As shown in Figure 10-5, proposed development projects close to the site consist mostly of commercial and industrial uses (Zorn Industrial Park, Northeast Motorcross, Caithness Island Power, American Tissue, Estee Lauder expansion, Adesa Auto Auction, Zorn Industries, Office@66, and Frame Mica). As such, the Project will be compatible with these other commercial and industrial uses. These projects are all proposed in the same general industrial area that already has elevated noise levels from the LIE, as well as existing visual impacts from commercial and industrial buildings. Traffic from the Project will have no greater an effect on these proposed uses as on existing uses (see Tables 10-10 and 10-11 above).

Among the proposed land uses in the area, some are recreational -- the Suffolk County and Ironwood golf courses and the County soccer fields. Some are residential – see rows 12 through 15 in Table 10-14, as well as the juvenile detention center. Finally, two are for open space or agricultural preservation. These are analyzed in more detail below, and impacts of Project interconnections as well as American Tissue are also considered for these land uses.

- *Ironwood Golf Course.* On the basis of terrain, Ironwood Golf Course is similar to the existing Mill Pond Golf Course, and could have views of the Project. However, field visits and modeling showed no visibility of the Project at either representative viewpoints. Project-generated traffic will not pass by this course. The distance from the Project is such that noise levels are not noticeable (lower than at Location 6). The interconnections have no land, noise, traffic, or visual impact at this location. Caithness or American Tissue could have greater noise impacts and visual impacts at this location. However, because the Project is expected to be undetectable from here, any cumulative effect would be due solely to Caithness and/or American Tissue.

- *Suffolk County Golf Courses, Juvenile Center, and Soccer Fields:* The Suffolk County golf courses, juvenile center, and soccer fields could have views of the Project depending upon how broadly vegetation is removed and the orientation of fairways. Impacts should be minimal as there would remain 1000 feet of forest between the Project and the northwest end of the proposed golf courses; as much as 8000 feet of forest between the Project and the southern end of the golf courses; and intervening buildings as well as vegetation adjacent to the juvenile center and soccer fields. Noise impacts would be similar to those estimated for Location 5, as described in Section 11, and would be very minor when the plant is audible. Traffic access to the golf courses will be off Horseblock Road. As the vast majority of Project workers will commute on the LIE, minimal Project-generated traffic is expected to use Horseblock Road. Traffic access to the juvenile center and soccer fields would be via Yaphank Avenue, which is not expected to be used by Project construction or operation traffic. The interconnections have no land, noise, traffic, or visual impact at these locations. Caithness or American Tissue are farther from these locations than is the Project. Cumulative noise and viewpoint analyses are presented in Section 11.9 and in Section 16.5.4. Cumulative impacts are found to be negligible.

- *Doral Woods.* On the basis of terrain, and even more so of vegetation, the Doral Woods development is not expected to have views of the Project. A representative viewpoint (from near German Boulevard) showed no visibility due to tall vegetation. Project-generated traffic will not pass by this development. The distance from the Project is such that noise levels are not noticeable (lower than at Location 6). The interconnections have no land, noise, traffic, or visual impact at this location. Caithness or American Tissue could have greater noise impacts and visual impacts at this location. However, because the Project is expected to be undetectable from here, any cumulative effect would be due solely to Caithness and/or American Tissue.

- *Golf View Acres and Toussie Oaks.* These two developments are located up to 2 miles west of the Project site. On the basis of representative viewpoints, they are expected to have no views of the Project. Project-generated traffic will not pass by these developments. The distance from the Project is such that noise levels are not noticeable (much lower than at Location 3). The interconnections have no land, noise, traffic, or visual impact at these locations. Caithness or American Tissue are not significantly closer, and cumulative impacts are not expected, except for traffic exiting Caithness and American Tissue via the Long Island Expressway North Service Road and passing by Toussie Oaks. However, because the Project is expected to be undetectable from here, any cumulative effect would be due solely to Caithness and/or American Tissue.

- *Regency Oaks.* This development is located more than 1 mile south of the Project site. Any views would be limited to stack tops and only available in places where vegetation has been entirely removed. Nearby viewpoints 24 and 25 demonstrate that even in high-density subdivisions, vegetation and intervening structures act to minimize or eliminate visual impact. One traffic access point to Regency Oaks will be off Horseblock Road. As the vast majority of Project workers will commute on the LIE, minimal Project-generated traffic is expected to use Horseblock Road. The distance from the Project is such that noise levels are not noticeable (much lower than at Location 4). The interconnections have no land, noise, traffic, or visual impact at these locations. Caithness or American Tissue are farther from these locations than is the Project. Cumulative noise and viewpoint analyses are presented in Section 11.9 and in Section 16.5.4. Cumulative impacts are found to be negligible even for closer locations, and would consequently be negligible for Regency Oaks, as well.

- *92-acre agricultural land:* This agricultural land is located north and east of the Yaphank village area, and its preservation would be wholly consistent with the goals of the planning documents discussed in Section 10.3.4 (where it is referred to as part of the North Shore Properties development). Visual impacts are represented by Viewpoint 9, at which point heavy vegetation blocks out distant views. The distance from the Project is such that noise levels are not noticeable (lower than at Location 6). Project-generated traffic will not pass by this parcel. The interconnections have no land, noise, traffic, or visual impact at this location. Caithness or American Tissue are not significantly closer, and cumulative impacts are not expected.

- *63-acre agricultural land:* This agricultural land is located east of the Police Headquarters, south of the LIRR and north of Gerard Road. Visual impacts are minor and are documented in detail in Section 16 as part of the analysis for Viewpoint 83. Noise impacts would be less than those measured at Location 5, as described in Section 11, and would be very minor when the plant is audible. Traffic access can be made via Yaphank Avenue, which is not expected to be used by Project construction or operation traffic. The interconnections have no land, noise, traffic, or visual impact at this location. Caithness or American Tissue are farther from this location than is the Project.

Cumulative noise and viewpoint analyses are presented in Section 11.9 and in Section 16.5.4. Cumulative impacts are found to be negligible even for closer locations, and would consequently be negligible for this parcel, as well.

- *State infrastructure projects*: The Project will have no effect on the LIRR storage yard project, and only the sewer interconnection will have any effect on the south service road/new ramps being built by NYSDOT. The sewer line is to be placed in the south service road of the Long Island Expressway, which requires a permit (described in detail in Section 15.5) which Brookhaven Energy is applying to obtain as part of the Article X process. Caithness and American Tissue are located further from these projects than is the Brookhaven Energy Project, and cumulative impacts are not anticipated.

10.4 Consistency with Local Laws

This section addresses Stipulation 5, Clauses 6 and 7. Clause 6 requires Brookhaven Energy to provide copies of potentially applicable local laws, ordinances and regulations to DPS Staff, and to provide to the Town of Brookhaven, Suffolk County, and DPS Staff a draft analysis and summary of local law applicability and the basis of any waiver request. The stipulation requires that Brookhaven Energy then consult with the Town of Brookhaven, Suffolk County, and DPS Staff regarding the applicability of regulations and rules of the Town of Brookhaven and Suffolk County to the construction or operation of the Project and interconnections. Clause 7 further expands upon this consultation by requiring an identification of all substantive provisions which Brookhaven Energy deems to be unreasonably restrictive in view of the existing technology, and for such provisions -- an explanation of the basis for asserting that the provision is unreasonably restrictive, including a review and analysis of reasonably related local precedent regarding the granting of variances or exceptions. For other provisions, a demonstration of compliance is required. Finally a summary comparison table is required listing the provisions in the first column and the degree of compliance in the second column.

Brookhaven Energy conducted its consultation regarding local laws over a continuous period from August 2000 through March 2001. Copies of all substantive local laws were provided to DPS Staff. On October 23, 2000, a local law memorandum was submitted to the Town of Brookhaven (see Appendix L.1). On November 17, 2000, a local law memorandum was submitted to Suffolk County (see Appendix L.2). Local law meetings were held on January 30, February 6, and March 8, 2001. The first meeting was with the Brookhaven Town Attorney and Commissioner of Planning, Environment, and Development. The second was with Suffolk County Department of Health Services, County Attorney, and Planning Department. The third was to further discuss certain noise control provisions of the Brookhaven Code with the Town's Commissioner of Public Safety and Noise Control Administrator. The following analysis presents the cumulative knowledge from those meetings and from the draft memoranda presented in Appendix L.

10.4.1 Brookhaven Local Laws

Below, all provisions of the Code of the Town of Brookhaven that apply to the proposed Project in any specific sense are briefly summarized, and a compliance statement or explanation is made. The discussion typically summarizes but does not quote the applicable local laws and regulations verbatim.

The Project will be consistent with all local land use requirements except for a height restriction in Section 85-308(B) of the Brookhaven Zoning Ordinance. A combined-cycle plant like the proposed Project cannot be built to meet the 50-foot restriction imposed under this provision. Local requirements, and the Project's compliance with them, are discussed in the sections below.

Table 10-15: Consistency with Local Laws

Chapter/Section	Code of the Town of Brookhaven	Compliance Degree*
Chapter 16	**Building and Construction**	**Full**
16-3	Permit required; inspection, information to be submitted	Full
16-4	Certificates of Occupancy	Full
Chapter 30	**Fire Prevention**	**Full**
Article I	**General Regulations**	**Full**
30-11	Permits	Full
30-18	Occupancy of Buildings	Full
30-19	Registration of businesses	Full
Article II	**Adoption of Standards**	**Full**
30-22	Adoption of Standards by Reference	Full
Article III	**Fire Protection Equipment**	**Full**
30-27	Protection	Full
30-29	Permit Required	Full
30-30	Approval of Systems and Equipment	Full
Article IV	**General Precautions Against Fire**	**Full**
30-39	Chimneys and Heating Appliances	Full
Article XIV	**Combustible and Flammable Liquids**	**Full**
30-79	Permit Required	Full
30-80	General Requirements	Full
Article XVI	**Hazardous Chemicals and Materials**	**Full**
30-91	Permit Required	Full
30-92	General Requirements	Full
30-93	Oxidizing Materials	Full
30-95	Potentially Explosive Materials	Full
30-96	Highly Toxic Materials	Full
30-98	Corrosive Liquids	Full

Chapter/Section	Code of the Town of Brookhaven	Compliance Degree*
Article XIX	**Oil-Burning Equipment**	**Full**
30-117	Permit Required	Full
30-118	General Requirements	Full
Article XXII	**Electrical Systems**	**Full**
Article XXVII	**Fire and Smoke Detection Systems**	**Full**
Article XXIX	**Emergency Access Systems**	**Full**
Chapter 33	**Flood Damage Prevention**	**Full**
Chapter 35	**Grading**	**Full**
35-3.A-B	Drainage Systems may not be overloaded	Full
35-3.C	Slope Embankments	Full
35-3.D	Grades adjacent to Buildings	Full
35-3.E	Front and Rear Yards	Full
35-3.F	Roof Runoff	Full
35-3.G	Driveway Apron	Full
Chapter 38	**Highways**	**Full**
Article I	**Alteration or Excavation of Highways**	**Full**
38-1	Written Consent of Town Superintendent of Highways	Full
38-1.1	Sufficient Indemnity Required	Full
Article V	**Issuance of Licenses to Maintain encroachments**	Full
38-19	Written Consent of Superintendent Required	Full
38-20	Standards of Issuance	Full
38-21	Hold-harmless Agreement Required	Full
Chapter 45	**Sanitation**	Full
45-7	Commercial Collection of Solid and Liquid Wastes	Full
45-9	Hours of Collection	Full
Chapter 46	**Recycling**	Full
46-9	Mandatory Commercial, Industrial and Institutional Source Separation Program	Full
Chapter 47	**Disposition of Petroleum Substances**	**Full**
47-3	Disposal Regulations	Full
47-4	Storage Regulations	Full
47-5	Transportation of Waste Oil	Full
Chapter 49	**Property Maintenance**	**Full**
49-1	Conformance; standards	Full
49-2	Maintenance of landscaping/screening facilities	Full
Chapter 50	**Noise Control**	**Full**
50-5	Maximum Permissible Sound Pressure Levels	Full
50-6	Prohibited Acts	See discussion below
Chapter 53	**Sand and Gravel Pits; Excavation; Removal of Topsoil**	**Full**
53-3	Operations Regulated	Full

Chapter/Section	Code of the Town of Brookhaven	Compliance Degree*
Chapter 57A	**Signs**	**Full**
57A-3	Signs Permitted in All Areas	Full
57A-8	Signs Permitted in L, L-1, L-2 and L-3 Districts	Full
57A-12	Setback Requirements	Full
57A-13	Illumination	Full
57A-14	General Restrictions and Prohibitions	Full
Chapter 70	**Tree Preservation**	**Full**
70-3	Permit Required	Full
70-4	Exemptions: Surveying and Soil Investigation Activities	Full
70-6.A	Application; Issuance of Permit	Full
70-6.B	Criteria to be Considered	Requires findings: Supporting information presented
Chapter 72	**Disposition of Trees and Debris**	**Full**
72-3	Burial of Trees Prohibited	Full
Chapter 78	**Water Resources**	**Full**
78-3	Permit Required	Full
Chapter 81	**Wetlands and Waterways**	**Full**
81-4	Permit Required	Requires findings
81-11	Granting, denying, or limiting Category A projects	Supporting information presented
Chapter 85	**Zoning**	**Full**
Article II	**Zoning Districts, Map, General Regulations**	**Full**
85-10	Transition Between Districts	Full
85-10.C	Lots in Industrial Districts	Full
Article III	**Building Permits and Certificates of Occupancy**	**Full**
85-17.A	Now Building Permit without Zoning Compliance	Full
85-17.B	Issuance of Building Permits; Restrictive Covenants	Full
85-18.A	Information to be Submitted with Building Permit Application	Full
85-19.A	Chf. Building Inspector May Issue Foundation Permits	Full
85-19.B	Site Plan required for Foundation Permits	Full
85-19.C	Foundation Permits Expire after 120 Days	Full
85-20	Certificates of Occupancy	Full
Article IV	**Board of Appeals**	**Full**
85-29	Power and Duties	Full
85-29.B	Special Permits	Requires findings: Supporting information presented
Article VI	**Site Plan Review**	**Full**
85-45	Site Plan Review and Approval	Full

Chapter/Section	Code of the Town of Brookhaven	Compliance Degree*
Article XXVIII	**Industrial Districts**	**Full**
85-292	Table of Dimensional Requirements	Full
Article XXIX	**L Industrial 1 District**	**Full (except height limit)**
85-308.A	L Industrial 1 District Permitted Uses	Full
85-308.B	L Industrial 1 District Electric Generating Facilities	Full
85-308.B-2(a)	Wholly within L-1 District	Full
85-308.B-2(b)1	Minimum area: 20 acres	Full
85-308.B-2(b)2	Minimum frontage: 200 feet	Full
85-308.B-2(b)3	Maximum building height: 50 feet	Impossible given existing technology
85-308.B-2(b)4	Maximum stack height: 200 feet	Full
85-308.B-2(b)5	Minimum front, side, and rear yards: 100 feet	Full
85-308.B-2(b)6	Maximum lot coverage by building: 25%	Full
85-308.B-2(b)7	Maximum clearance: 70% w/o offsets; 85% with offsets	Full
85-308.B-2(b)8	Central Pine Barrens standards	NA
85-308.B-2(b)9	Vegetated perimeter buffer at residentially zoned property	Full
85-308.B-2(b)10	Minimum stack setback: height x 1.5; or height x 0.75	Requires findings: supporting information presented
85-308.B-2(b)11	Accessory buildings and their setbacks	Requires findings: supporting information presented
85-308.B-2(b)12	Location of front and side yard	Full
85-308.B-3	Impact to community	Requires findings: supporting information presented
85-308.C	Dimensional Requirements within Hydrogeologic Sensitive Zone	Full
85-308.C-1	No Building may be in Excess of 50 feet	See 85-308.B
85-308.C-2	Total Building Area shall not Exceed 30% of Total Lot Area	See 85-308.B
85-308.C-3	Lot Area	See 85-308.B
85-308.C-4	Front Yard	See 85-308.B
85-308.C-5	Side Yards	See 85-308.B
85-308.C-6	Rear Yard	See 85-308.B
85-308.C-7	Type I Projects under SEQRA	Full
85-308.C-8	Natural Vegetation	Full
85-308.C-9	Landscaping	Full

Chapter/Section	Code of the Town of Brookhaven	Compliance Degree*
85-308.C-10	Toxic or Hazardous Materials	Full
85-308.C-11	Industrial Discharge	Full
85-309	Hydrogeologic Sensitive Zones	Full
Article XXXIV	**Off-Street Parking Spaces**	**Full**
85-350	Required Off-street Parking Spaces	Full
85-351	Required Off-street Loading Spaces	Full
85-353	Location of Facilities	Full
85-354	Plot Plan Required	Full
85-355	Construction and Maintenance of Facilities	Full
85-355.A	Parking, Loading Space & Driveways	Full
85-355.B	Curb Cut Approval	Full
85-355.C	Underground Installation	Full
85-355.D	Marking of Parking and Loading Spaces	Full
85-355.E	Access Driveways and Passageways	Full
85-355.F	Illumination of Parking Area	Full
85-356	Prohibited Uses	Full
Article XXXV	**Supplementary Provisions**	**Full**
85-371	Yard Encroachments	See 85-308.B
85-378	Visibility at Intersections	Full
85-379	Prohibited Uses of Front Yard	Full

* "Full" compliance means substantive compliance, with no additional findings necessary, and is more particularly described in the paragraph that corresponds to each row.

Chapter 16: Building and Construction

§16-3. Permit required; inspection, information to be submitted: No structure (including plumbing) may be constructed without a permit from the Chief Building Inspector. (See also Section 85-17 below). Every permit application is to be filed with duplicate copies of plans and specifications. Building permits are valid for one year and may not be amended. All construction must comply with the National Electrical Fire Code.

The plans for the Project necessary to obtain a building permit and plumbing permit (when these mature from the current conceptual stage to the design stage) will be submitted to the Chief Building Inspector for review and consultation. The present Article X Application is also being submitted to the Chief Building Inspector. The Project will comply with applicable sections of the National Electrical Code, as well as applicable sections of the New York State Uniform Fire Prevention and Building Code.

§16-4. Certificates of occupancy: No certificate of occupancy will be issued without a valid building permit. No certificate of occupancy will be issued until the applicant files an affidavit of compliance with the Tree and Debris Disposition Law (see Chapter 72 below). A temporary certificate of occupancy may be issued for up to 3 months, with a maximum of two extensions of three months each. If a temporary certificate of occupancy is obtained, the Chief Building Inspector "shall require that a cash bond be deposited with the Department of Finance" of the Town of Brookhaven to ensure the completion of all incomplete on-site improvements.

Brookhaven Energy's construction schedule will require commissioning to begin at about Month 18. Thereafter, it is envisioned that 8 months will be required before the facility is ready for commercial operation. With respect to the cash bond requirement, Brookhaven Energy will post, if required, a cash bond with the Department of Finance during construction when temporary occupancy is necessary. (See also Section 10.6, Decommissioning).

Chapter 30: Fire Prevention

Article I: General Regulations and Provisions

§30-11. Permits: No building or structure may be erected until plans have been approved by the Chief Fire Marshal. A permit is required to store "explosives, chemicals, flammable liquids and gases or other hazardous materials." Applications for permits must be accompanied by plans as required by the Chief Fire Marshal. Permits are issued for not longer than 1 year.

Copies of the project plans included in the Application are also being forwarded to the Chief Fire Marshal. Brookhaven Energy has corresponded with the Chief Fire Marshal's office regarding the issue of fire prevention equipment to be included in the design. The proposed fire protection systems are described in Appendix O (preliminary Emergency Response Plan). As design of the Project is finalized in the post-permitting stage, plans as necessary to obtain this authorization will be submitted.

§30-18. Occupancy of buildings: No building may be occupied until a successful fire inspection is completed and a certificate of compliance issued. The Project will work out a schedule of inspections with the Division of Fire Prevention to ensure compliance prior to both temporary occupancy and permanent occupancy.

§30-19. Registration of businesses: All persons, corporations or other entities owning a business in the town of Brookhaven are required to file a certificate of registration with the Chief Fire Marshal.

Brookhaven Energy will file a certificate of registration with the Chief Fire Marshal prior to operation.

Article II: Adoption of Standards

§30-22. Adoption of standards by reference: The National Fire Protection Association (NFPA) Fire Prevention Code is adopted in its entirety.

The Project's fire system is described in Appendix O, which documents consultation with Town and County fire safety officials in advance of filing this Application, along with a preliminary Emergency Response Plan. Prior to finalization of the fire protection system design, the Project's methods of compliance with NFPA's Fire Prevention Code will be discussed with the Chief Fire Marshal.

Article III: Fire Protection Equipment

§30-27. Protection: Every new building exceeding 12,000 square feet gross area shall be protected by an approved automatic fire sprinkler system. New buildings outside the scope of the above must be protected by an approved fire detection system or device as required by the Chief Fire Marshal.

The Project will rely on automatic sprinkler systems in the gas compressor enclosures and part of the workshop. The Project proposes to employ a combination of automatic CO_2, water spray, manual fire extinguishers, and outdoor hydrants to protect the equipment and other buildings (see also the discussion in Appendix O). These systems have been successfully employed in numerous similar power plants throughout the world. Furthermore, sprinkler systems are being avoided for areas with energized electrical equipment.

§30-29. Permit required: A permit is required for the installation of any fire alarm or fire extinguishing system.

The fire protection system proposed for the Project is described in Appendix O, which has been submitted to the Chief Fire Marshal for review. Prior to installation, Brookhaven Energy will submit a design for the system to the Chief Fire Marshal for review.

§30-30. Approval of systems and equipment: No fire prevention equipment will be deemed acceptable until a successful fire inspection is completed and a certificate of compliance issued.

The Project will work out a schedule of inspections and tests with the Chief Fire Marshal to ensure that the equipment is deemed acceptable, and will conduct regular fire inspections during operation.

Article IV: General Precautions Against Fire

§30-39. Chimneys and heating appliances: Chimneys and stacks must be constructed so as not to create a hazardous condition. A permit from Chief Fire Marshal is required for installation of any exhaust stacks.

The Project will comply with this requirement or its substantive provisions. The Project stack design accounts for the characteristics of the exhaust flow as well as being structurally sound.

Article XIV: Combustible and Flammable Liquids

§30-79. Permit required: Permits are required for:

1. storage and handling of any Class I or Class II flammable liquid above six gallons in a building or in excess of ten gallons outside of a building (except (1) flammable liquids stored or used on a tank of a vehicle or mobile plant or (2) paints, oils, varnishes or similar flammable mixtures when stored for maintenance, painting or other similar purposes);
2. any Class III flammable liquid above 25 gallons in a building or 60 gallons outdoors (except fuel oil used in connection with oil-burning equipment); and
3. any flammable liquid storage container above 60 gallons.

The Project will comply with this requirement. The oil and chemical liquids that are expected to be stored at the site during construction and operation are described in Section 3.2.9. As a general matter, most of the flammable liquid stored at the site will be lube oil contained within equipment, insulating oil contained within transformers; fuel oil for emergency generating equipment; and mixtures associated with maintenance.

§30-80. General requirements: Storage, handling, use and dispensing of flammable and combustible liquids shall be in accordance with appropriate NFPA standards.

The Project will comply with this requirement. The most relevant NFPA standard with respect to this issue is NFPA 30 (last issued in 2000), which includes requirements for separation from property lines, design requirements for spill control and relief vents, and fire safety requirements for proper handling and use of liquids.

Article XVI: Hazardous Chemicals and Materials

§30-91. Permit required: Permits are required for storage and handling of: (1) any corrosive liquids in excess of 55 gallons; (2) oxidizing materials in excess of 100 pounds; (3) organic peroxides in excess of 10 pounds; (4) nitromethane in excess of 500 pounds; (5) ammonium nitrate (and related fertilizers) in excess of 1,000 pounds.; or (6) highly toxic material or poisonous gas of any amount.

The Project will apply for the necessary permits to ensure compliance with this requirement. Chemicals expected to be stored at the site are described in Section 3.2.9. Corrosive liquids are primarily aqueous ammonia (high pH) and sulfuric acid. Oxidizing materials include acetylene and propane. Oxygen and carbon dioxide will also be stored. No organic peroxides, nitromethane, ammonium nitrate, or highly toxic/poisonous materials are expected on-site. Ammonium nitrate could be used if blasting were required on-site during construction, but blasting is not expected to be required at the Project site.

§30-92. General requirements: Storage, handling, use and dispensing of flammable and combustible liquids shall be in accordance with appropriate NFPA standards, except that the town fire code has certain more restrictive articles, outlined below.

The Project will comply with this requirement, as described above in reference to NFPA 30 and below in reference to the Town's additional requirements.

§30-93. Oxidizing materials: Oxidizing materials (includes substances such as chlorates, permanganates, peroxides or nitrates that yield oxygen readily to stimulate combustion) must be sorted in dry locations and separated from organic materials. Bulk oxidizing agents shall not be stored on or against wooden surfaces.

The Project will comply with this requirement because no such bulk oxidizing agents are proposed at the Project, or would be present only in small quantities during construction.

§30-95. Potentially explosive materials: Explosive and blasting agents may not be stored in the same building or in close proximity to potentially explosive chemicals, including organic peroxide, nitromethane, and ammonium nitrate.

The Project will comply with this requirement by storing materials such as acetylene, propane, oxygen, and carbon dioxide in appropriate locations. Blasting agents are not expected at the site.

§30-96. Highly toxic materials: Highly toxic materials (such as TEPP, HETP and similar insecticides and pesticides) must be segregated from other chemicals and combustible and flammable substances in an adequately ventilated room, which has walls and a ceiling with a fire resistance rating of 2 hours or more.

The Project will comply with this requirement because no highly toxic materials such as insecticides and pesticides are proposed to be stored on site.

§30-98. Corrosive liquids: Satisfactory provisions must be made for containing and neutralizing or safely flushing away leakage of corrosive liquids which may occur during storage or handling.

The Project will comply with this requirement both for the ammonia storage system and the small amounts of sulfuric acid stored on-site. Ammonia storage is described in more detail in Section 3.2.9. Sulfuric acid will be limited to small portable vessels and will only be handled in contained areas.

Article XIX: Oil-Burning Equipment

§30-117. Permit required: Permits are required for installation of any oil burner using a fuel tank in excess of 25 gallons in a building or 60 gallons outdoors (with fuel oil defined as any hydrocarbon oil conforming to ASTM Specifications for Fuel Oils, having a flash point not less than 100°F).

To the degree applicable to the Project's emergency equipment, the Project will comply with this requirement.

§30-118. General requirements: Installation, operation, and maintenance of oil-burning equipment shall be in accordance with appropriate NFPA standards.

The Project will comply with this requirement. The most relevant standard is NFPA 31 – Installation of Oil-Burning Equipment.

Article XXII: Electrical systems

The scope of the Article, as set forth in Section 30-128, excludes "installations or equipment employed by a railway, electrical or communication utility in the exercise of its function as a utility and located outdoors or in buildings used exclusively for that purpose".

Even though the specific provisions of this Article do not appear to apply to the Project, it will in fact be designed in accordance with the National Electric Fire Code that is referenced in Section 30-129, and will be inspected by the New York Board of Fire Underwriters or another approved electrical inspection service as referenced in Section 30-129.B.

Article XXVII: Fire and Smoke Detection Systems

This Article is intended to provide regulations for fire alarm installation (see Section 30-154). It requires that the installers of such systems be licensed and that they notify all entities that might receive automatic notification, including the Fire Department, the central station monitoring agency and the occupants of the building (see Sections 155 & 156), concerning certain activities that are taking place at the facility.

Brookhaven Energy will use only appropriately licensed personnel to install and test any fire alarm equipment, and will comply with the appropriate notification requirements.

Article XXIX: Emergency Access Systems

This Article requires key lock boxes, information storage cabinets, or both, as determined by the Chief Fire Marshal (see Section 30-167). A permit issued by the Chief Fire Marshal is required prior to the installation of any key lock box, information storage cabinet, or any combination thereof (see Section 30-168). No equipment installed pursuant to Section 30-169 is acceptable until the Division of Fire Prevention has performed an inspection and the certificate of inspection has been issued (see Section 30-169).

Prior to commencement of operations, Brookhaven Energy will consult with the Chief Fire Marshal to determine what key lock box and information storage cabinet, if any, will be required for the Project. If required by the Chief Fire Marshal, the Division of Fire Prevention will be requested to perform an inspection after installation.

Chapter 33: Flood Damage Prevention: This chapter applies to structures (including walled and roofed buildings as well as storage tanks) in Special Flood Hazard Areas, as delineated by the Federal Emergency Management Agency.

The Project proposes no such activity, and the chapter does not apply in this case.

Chapter 35: Grading

§35-3. Minimum standards.

A & B. Drainage systems may not be overloaded. Development may not cause flooding and erosion. Adequate drainage for storm water runoff is required.

The Project's storm water management plan is included as part of Appendix Z, and complies with these requirements.

C. Proposed slope embankments along property lines may not exceed 1:3, unless an adequate stabilization or retaining wall is provided.

No such slopes are proposed.

D. Grades adjacent to buildings must slope downward (away from the building). At a point at least ten feet from exterior openings in foundation of habitable buildings, the finished grade must be at least 1 foot below such openings.

The Project will comply with these requirements as part of detailed on-site grading.

E. Front and rear yards shall have a grade not more than 5% for a distance of 25 feet, and side yards shall have a grade not more than 10% for 10 feet. All finished grades within 10 feet of a building shall pitch away from the building a grade of not less than 2%.

As measured from the building walls out toward the property line, the Project will comply with these requirements.

F. Where roof runoff will produce erosion or drainage problems with respect to adjoining properties, dry wells of adequate capacity are to be installed.

Due to the location of on-site structures and the size of the Project site, roof runoff is not anticipated to produce any erosion or drainage problems with respect to adjoining properties. The storm water management system is described in Section 17.5 and Appendix Z.

G. Driveway apron is to be at least one foot below the garage floor unless natural topography dictates grading away from the street and protective grading is provided to adjoining property.

The site grading and drainage will be designed to drain storm water away from plant buildings and entrances.

Chapter 38: Highways

Article I: Alteration or Excavation of Highways

§38-1. Written consent of Town Superintendent of Highways: No person may alter the grade of any town highway or sidewalk, or make any excavation under the highway, or erect a pole along the highway without the written consent of the Town Superintendent of Highways.

The Project proposes no such excavations, grade alterations, or pole erections. The proposed natural gas interconnection will be via a county road (Route 101), while the water and sewer interconnections will be within the Long Island Expressway South Service Road right-of-way.

§38-1.1. Sufficient indemnity required: Town Superintendent of Highways "shall not give his written consent" to work in highways without a sufficient indemnity or performance bond as determined by the Superintendent of Highways.

This provision will not apply since work in a town highway is not proposed.

Article V: Issuance of Licenses to Maintain Encroachments

§38-19. Written consent of Superintendent required: No person may permit any structure or man-made objects to encroach within a town highway without the written consent of the Town Superintendent of Highways.

As construction approaches and timing is more certain, Brookhaven Energy intends to consult with the Town Superintendent of Highways regarding the use of the currently closed section of Old Patchogue-Yaphank Road and cul-de-sac for construction laydown. In this Application, Brookhaven Energy assumes that private laydown areas will be used for this purpose.

§38-20. Standards for issuance: An application for encroachment must demonstrate that encroachment is necessary for the health, safety, and welfare of the occupant of the adjacent property, that the encroachment will not unduly endanger or interfere with the public usage of the road, and that removal would not create an undue hardship.

If an arrangement is worked out whereby a portion of the currently closed section of Old Patchogue-Yaphank Road and cul-de-sac is used for construction laydown, the Project would meet the standards for issuance. First, the Project would be using a portion of the road currently closed to motor vehicles for laydown during construction. Use of this area would ensure that construction will proceed in a safe and organized manner at the Project site, thereby, protecting the health, safety and welfare of Project construction workers.

Second, because this section of Patchogue-Yaphank Road is currently closed to motor vehicles, use of the area for laydown would have no impact on traffic patterns. The Project would be responsible for ensuring that the public does not use the area during construction and that motor vehicles cannot physically access the area after construction, unless directed by the Town to keep access to the roadway open after construction. Additionally, the temporary use of this area would cause no financial impact to the Town, since Brookhaven Energy would pay for any costs associated with the use.

Third, for the reasons noted above, use of the area also would not create an undue burden. The Project's temporary use of the area will not result in the "removal of any structure or object." Thus, no undue burden will result.

In fact, allowing the Project to use this section of the closed road (a previously paved right-of-way) will help to reduce tree clearing – an environmental benefit. The Project, as well as any future occupant of the lands adjacent to the proposed roadway encroachment area, are obligated by the Town's tree preservation and zoning ordinance guidelines for the "hydrogeologic sensitive area" of the Town to minimize clearing wherever possible. Any use that reduces land clearing, as mandated, while not impacting roadway safety in any way and causing no hardship on other parties or the public is necessary for the health, safety, and welfare of the adjacent occupant as well as the public. Thus, if the Town Superintendent of Highways is willing to license the use of this segment of road at the appropriate time, the Project would be in compliance with this local law. In the event that the closed segment of road cannot be used for laydown, the local law would not apply.

§38-21. Hold-harmless agreement required: Prior to issuance of any encroachment permit, a hold-harmless agreement with the Town will be required.

Brookhaven Energy will enter into such an agreement with the Town.

Chapter 45: Sanitation

§45-7. Commercial collection of solid and liquid wastes: The commercial waste hauler(s) for the Project are required to be licensed by the Town of Brookhaven. Permit requirements are incumbent upon such haulers.

The Project will comply with this provision by ensuring that it hires qualified licensed haulers and by periodically requesting evidence that they are properly licensed.

§45-9. Hours of collection: It is unlawful for waste haulers to collect solid or liquid waste between the hours of 10pm and 6am.

Brookhaven Energy will require its commercial haulers to abide by this provision.

Chapter 46: Recycling

§46-9. Mandatory commercial, industrial and institutional source separation program: Commercial or industrial facilities are required to source separate recyclables. Designated recyclables may include newspaper; high-grade paper; corrugated cardboard; glass containers, plastic containers and cans; and vegetative yard waste, in addition to any designated recyclables mandated by the Town.

The Project will implement a recycling program during operation. It is described in Section 3.

Chapter 47: Disposition of Petroleum Substances

§47-3. Disposal regulations: Petroleum substances (waste oils including lube oils) must be deposited directly into a container, drum or storage tank. All activities involving disposal of petroleum substances must take place on an impervious surface such as concrete, which must be surrounded by a 2-inch berm.

The Project will comply with this provision as follows. Outdoor oil storage (e.g., waste oil areas) will be placed on an impervious surface and will have at minimum a 2-inch berm, or will be housed in enclosures designed with appropriate containment. The main turbine areas, the gas compressor areas, and the warehouse storage area are sloped to a central drain point, with an outlet to an oil/water separator. All floors in these areas are impervious, and the slope substitutes for a berm. Emergency diesel engines are housed in enclosures with walls and rest on concrete foundations. Miscellaneous pumps are housed in buildings with concrete foundations and walls. Periodically, air-cooled condenser gearbox oil will need to be changed. The gearboxes are located in the fan deck area of the air-cooled condensers (more than 60 feet off the ground), and a steel grated walkway is located underneath them. Drip trays will be provided.

§47-4. Storage regulations: Waste oil from any equipment may be stored in approved containers. All waste oil storage receptacles must be located outside of the building at locations designated by Brookhaven's Director of the Division of Environmental Protection.

The Project will comply with this provision. Brookhaven Energy will coordinate its waste oil collection location with the Division of Environmental Protection. Oil removed from oil/water separators will be stored together with other waste oils prior to transport.

§47-5. Transportation of waste oil: Waste oil must be transported by licensed operators. Any transport in excess of 10 gallons must be contained in an approved container and properly secured or be placed in an approved containment vehicle.

The Project will require its waste oil transporters to abide by the provision.

Chapter 49: Property Maintenance

§49-1. Conformance; standards; penalties for offenses: Properties must be maintained in conformance with certain general maintenance standards relating to drainage, pedestrian and motor vehicle traffic, landscape, solid waste, vacant areas and lighting.

The facility will be maintained in conformance with these standards.

§49-2. Maintenance of landscaping and/or screening facilities.

Landscaping and screening facilities are required to be kept in good repair and condition.

The Project will comply with this requirement.

Chapter 50: Noise Control

§50-5. Maximum permissible sound pressure levels: No person may cause the operation of any source of sound on a particular category of property so as to create a violation of the maximum permissible levels. Industrial sources may not contribute more than 75 dBA at industrial property lines; 65 dBA at commercial property lines; 65 dBA at residential property lines during the day (7 AM to 10 PM); and 50 dBA at residential property lines at night (10 PM to 7 AM). Exceptions from these limits include, *inter alia*, noise from construction activity (see Section 50-5C(3)).

Sections 11.5.4 and 11.6.4 of the Application describe the Project's compliance with this provision.

§50-6. **Prohibited Acts:** Among acts prohibited by the code is (see Section 50-6B(7)): construction, drilling, earth moving, excavating or demolition work at night (defined as between the hours of 6 PM and 7 AM), during weekends, and during legal holidays, except for emergency work or by special variance. Variances (under Section 50-8) are limited to 30 days during any calendar year.

In light of the labor-intensive nature of building a combined-cycle electric generating facility, dual shifts and weekend hours are an essential and integral part of good construction management. However, the construction effort during the periods that require work after 6 PM will not adversely affect residential properties. Note the following characteristics of the construction period:

- Earth moving work only during the 7 AM to 6 PM period. Earth moving is generally understood to be the noisiest phase of construction.
- Construction work starting at about month 12 would proceed on a two-shift schedule. During approximately months 12-21, the predicted construction noise impact at the nearest residences between 10 PM and 7 AM could reach approximately 48 dBA, and lower at other nearby receptors (see Section 11.5.4). This is below the Brookhaven residential nighttime noise limit of 50 dBA and similar to the existing background level. After approximately month 21, major outdoor construction will essentially be completed and the noise produced by the facility during this nighttime period (10 PM and 7 AM) is expected to be much the same as during operation.

On March 8, 2001, Brookhaven Energy and Town of Brookhaven representatives met regarding this issue. Town personnel did not take a specific position as to whether the above-described work could be permitted by variance. However, as a practical matter, there was general agreement that it is sensible to conduct construction of a power plant in a manner that minimizes the overall duration of the construction effort, especially since night work would feature less noisome activities. Town officials indicated that there has not been precedent for nighttime variances being issued. Town officials suggested that Brookhaven Energy set forth the merits for a variance pursuant to Section 50-8 in the Article X application.

§50-8. Variances.

A: Any person who owns or operates a stationary noise source may apply to the Noise Control Administrator for a variance. Applications for a variance must include: the nature and location of the facility or process; the reason for the request; the nature and intensity of noise; a description of interim noise control measures; and a schedule to bring the source into compliance.

It should be stated at the outset that Brookhaven Energy's predicted noise levels are in compliance with the Brookhaven Code, so that a schedule for bringing the source into compliance is not applicable. The variance request would be for the time of construction. The remaining requirements for the application are set forth below.

The nature and location of the process is for construction at the Project site, as described in Section 3. See also the description in 50-6 above.

The reason for the variance request is that it is not feasible to economically construct a facility as complex as a combined-cycle power plant without using a two-shift schedule beginning approximately in the second year of construction, and eventually round-the-clock operation. See the description in 50-6 above.

The nature and intensity of nighttime construction noise is described in Section 11.5.4 and Table 11-6.

Noise control measures during construction are described in Section 11.5.2.

D: Variances may not be longer than for 15 days. Any person holding a variance and requesting an extension of time may apply for a new variance, but the total variance days during any calendar year may not exceed 30.

Town officials further clarified this clause by saying that variances could be granted for individual days, and that these need not be consecutive. Brookhaven Energy holds that because of this limit, the following 3 interpretations of the Code are all possible. (It should be stressed that the local law consultations have not produced any official interpretation or position by the Town of Brookhaven.)

1) That construction is only interpreted as construction when it would violate the limits set forth in Section 50-5, but for the exception for construction activities found in Section 50-6.B(7). In that event, the Project is expected be fully compliant with this local law.

2) That the 30-day limitation on variances is intended only for activities that, as suggested by Section 50-8, are louder than the permitted sound levels, and hence the Project is expected to be fully compliant with this local law if issued a variance through the Article X process.

3) That neither of the above applies, in which case the Project is not compliant with this local law. In that event, Brookhaven Energy requests the Siting Board to refuse to apply this local law, in light of the fact that is unreasonably restrictive to conduct the later stages of the construction effort in a one-shift schedule. There are two principal drawbacks to a one-shift schedule. First, it would lengthen the construction period by several months at the least. This is not good construction management, when technology easily allows the Project to continue limited quiet nighttime construction. Second, it would be much more costly to construct the Project with this type of delay. Limiting construction cost helps the Project to be competitive in the marketplace during operation. As described in Section 1, the competitiveness of energy supply is squarely in the public interest. If the Project is not held by the Siting Board to be in compliance with this local law, then Brookhaven Energy requests that pursuant to PSL 168(2)(d), the Siting Board determine that the provision limiting construction to weekdays between the hours of 7 AM to 6 PM is unreasonably restrictive in view of existing technology and waive this requirement.

Chapter 53: Sand and Gravel Pits; Excavation; Removal of Topsoil

§53-3. Operations regulated.

Mining operations on industrial or commercial zoned premises shall be limited to the extent necessary to accommodate the construction of the structures or uses of a proposed and approved site plan (see Section 53-3E).

The Project is balancing its cut and fill to the maximum extent practicable to accommodate construction, and no portion of the development is intended for soil extraction or mining. Thus, the Project complies with this provision.

Chapter 57A: Signs

§57A-3. Signs permitted in all areas: Signs permitted without a special permit include: (1) building contractor's, subcontractor's, architect's or engineer's sign, to be erected and maintained during construction. (Only one sign is allowed without a special permit, not larger than 6 square feet in area (see Section 57A-3J)); and (2) public safety signs warning the public of a specific danger (see Section 57A-3H).

During construction, the Project expects to erect one building contractor's, subcontractor's, architect's or engineer's sign at the Project site. In addition, the Project may erect, in consultation with the Town, one public safety sign at the parking/laydown area.

§57A-8. Signs permitted in L, L-1, L-2 and L-3 districts: Signs allowed with a permit from the Building Division include: Detached or ground signs advertising only the business on the premises, provided that: only one such sign exists; it is no greater than 32 square feet in area or 12 feet in height from mean ground level; its bottom is 5 feet off the ground; the area between the sign and the property line is maintained free of obstruction and debris; the sign does not oscillate or rotate (see Section 57A-8B).

A sample front sign in included in Site Development Plan, Sheet 6. It is designed to conform to these provisions entirely. Only one such sign will be needed.

§57A-12. Setback requirements: Freestanding signs generally must be set back not less than 10 feet from a side property line, 30 feet from a roadway (or possibly less, depending on the speed limit) and 30 feet from roadway intersections.

The Project's on-premises signage will be located at least 30 feet from the nearest intersection and 10 feet from any side property line.

§57A-13. Illumination: Light sources illuminating signs must be shielded or otherwise prevent glare. There may be no flashing, rotating or moving light sources. Any electrical apparatus must be approved by Underwriters' Laboratories.

The Project will install a shielded light at on-premises signage, one that will avoid glare. It will comply with the requirements of this provision.

§57A-14. General restrictions and prohibitions: Permanent signs may not be of destructible material (cloth, paper, etc.). Signs shall not frame or outline building sides. No signs may advertise off-premises activity. No sign may be attached to a tree, fence or utility poles, unless required for safety and placed by the utility. No banners, streamers, flags, pennants, or noise-creating devices may be used. Signs may not be similar to traffic control devices. Signs may not project into rights-of-way.

Project signage will comply with these requirements.

Chapter 70: Tree Preservation

§70-3. Permit required: No person may destroy or remove any tree (defined as a perennial living woody plant at least 6 feet high and greater than 3 inches in diameter measured 3 feet from ground level) from an industrial site without first obtaining a permit. This permit is only issued after a site plan has been approved or a building permit issued.

§70-4. Exemptions

A. **Surveying and soil investigation activities**: Tree removal must be conducted in accordance with a plan approved by Commissioner of Planning, Environment, and Development. Application must be filed for this permit, accompanied by a 1"=200' topographical map and a 1"=200' scaled aerial photograph, indicating site boundaries and extent of clearing that is required.

Surveying and soil investigation activities are required to support the Application. A Test Hole Permit Application was filed on behalf of Alstom Power by TRC Environmental Corporation on August 21, 2000. Department of Public Service staff indicated to Brookhaven officials that Article X does not prohibit local officials from acting under this provision prior to Brookhaven Energy's Article X application. Notwithstanding, the Town has not acted on this application. As a result, Alstom Power undertook a preliminary geotechnical investigation to support the Article X Application, and will undertake a final, more detailed investigation in advance of construction in order to perform a detailed civil works design for the Project.

§70-6. Application; issuance of permit.

A. Applications for tree removal must include: the name and address of applicant and owner; the purpose of removal; the affected site; and a sketch or plan of heavily wooded areas and location of any improvements.

The names of the site owners are provided in Section 10.2.1.2 above. The party that would be filing such an application (were development not subject to Article X) is "Brookhaven Energy Limited Partnership". The purpose of removing trees from the site is the construction of the Project that is the subject of this Article X application. The affected site is the Project site and the laydown areas, described in more detail in Section 14 of the Application.

B. Criteria to be considered with respect to such application are: the location and size of trees to be removed; the condition of trees with respect to disease and potential for creating hazardous conditions; the proximity of trees to existing or proposed structure and utility appurtenances; the necessity of the removal for the proposed project; the environmental effect of the removal (including stabilization and preservation of the soil, the absorption of air pollutants and the provision of oxygen, natural barrier to noise, habitat for wildlife and intrinsic aesthetic quality).

Location and size of trees to be removed: the trees are approximately 30 feet tall, with most trees having a diameter of about 2-5 inches and several trees having a diameter greater than 12 inches (see Figure 14-3). As further described in Section 14, the tree vegetation consists primarily of pitch pine and scrub oak.

Condition of trees: the trees do not exhibit prevalent diseases, and the reason for their clearance is not related to such conditions.

Proximity of trees to proposed structure and necessity of removal: the proposed structure, a power plant, cannot be built without tree clearing at this site. However, a tree buffer will be preserved between the facility and Sills Road, as well as between the facility and the Long Island Expressway.

Environmental effect of removal:

Stabilization and preservation of soil: the Project site is relatively flat, as documented in Section 13, such that tree clearing does not, by itself, cause an erosion hazard. Of course, during construction it will be necessary to install sedimentation and erosion controls, as detailed in Section 17 and Appendix Z.

Absorption of air pollutants and provision of oxygen: the trees on the Project site are small and therefore sequester relatively small amounts of carbon. According to a 1994 study of the Chicago Urban Forest, carbon sequestration would amount to not more than approximately 10 pounds of carbon per year from the atmosphere per tree.[15] Assuming 200 trees/acre, clearing 24 acres of trees within the site would result in a reduction of carbon sequestration (i.e. carbon assimilation) of 24 tons per year. This would be equivalent to an increase in CO_2 emissions of 88 tpy, which is approximately the annual emission of 11 automobiles driving 15,000 miles per year and averaging 20 mpg.[16] It should be noted that the Project is projected to *reduce* CO_2 emissions on Long Island by 63,173 tpy (see Table 1-1), or more than 700 times greater than the loss of sequestration potential due to tree clearing.

Natural barrier to noise: to the degree that trees on-site act as a natural barrier to noise, this barrier will be preserved because a tree buffer will be maintained both to the north (approximately 500 feet deep) and to the west (including the existing trees within the Sills Road right-of-way). However, it should be noted that several noise-producing sources will be located above the treetops, which are only at 30 feet on the site. In noise modeling (Section 11), vegetation is not assumed to have a mitigating effect on noise propagation.

Habitat for wildlife: as documented in Section 14, tree clearance on the site will constitute an environmental impact with respect to removal of habitat for certain wildlife species. However, this parcel's habitat value is reduced due to its segmentation by four relatively wide corridors on all sides (the LIE, Sills Road, LIRR, and LIPA transmission lines). Furthermore, the only protected species noted by NYSDEC as potentially occurring in the general vicinity, the Persius Dusky Wing butterfly, depends on open field habitats, not forested areas. Vegetation supporting this species was not found on-site.

Intrinsic aesthetic quality: as documented in Section 16, aesthetics impact will be limited because of existing tall electric transmission lines at the site. The aesthetic value of trees is recognized as part of Project design, and a substantial tree buffer on the west and north sides of the site will ensure that the lower portions of the facility (at least 30 feet worth) are not visible, while the trees remain visible.

Chapter 72: Disposition of Trees and Debris

§72-3. Burial of trees prohibited: The burial of trees or debris is prohibited, except at any official town dump or disposal area.

The Project will dispose of trees and associated debris from land clearing at an approved off-site location, thus complying with this provision.

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15 *Air Pollution Removal by Chicago's Urban Forest*, USDA Forest Service, General Technical Report NE-186; by David J. Nowak (1994).

16 Calculation is for illustration purposes only. It assumes 7 lbs./gallon weight of gasoline and 83% carbon content in gasoline.

Chapter 78: Water Resources

§78-3. **Permit Required.** A permit is required to remove subterranean waters located within the Town of Brookhaven. A permit is also required to discharge any industrial wastewater into groundwater within the Town of Brookhaven.

The Project will obtain water from previously permitted withdrawals via the Suffolk County Water Authority and, therefore, will not dig wells to remove subterranean waters. Industrial wastewater from the Project will not be discharged on-site. Therefore, Section 78-3 has no applicability to the Project.

Chapter 81: Wetlands and Waterways

§81-4. **Permit Required.** No activity may take place within 150 feet of a Town of Brookhaven regulated wetland, without first obtaining a wetlands permit or a work release (see Section 81-4(a)). Regulated wetlands are determined by the Town Division of Environmental Protection on a case-by-case basis, with Town-mapped wetlands, the presence of wetland vegetation, perched ponds, and submerged lands being listed as determining factors (see definition of freshwater wetlands, Section 81-3).

By correspondence included in Appendix Q, it has been determined that there are no Town wetlands that would be affected by the Project, laydown area, or interconnections.

Chapter 85: Zoning

Article II: Zoning Districts, Map, General Regulations

§85-10. Transition between districts.

C. For lots in industrial districts adjacent to a residential district, a yard shall be provided equal to the width or depth required in that residential district. In addition, the Planning Board may require a planting strip of evergreens no less than 4 feet high.

The Project site does not abut residential property, but the Long Island Expressway appears to be zoned A-1 Residence. That zone requires 60-foot rear yards and 25-foot side yards. The buffer zone (area not to be disturbed) between plant buildings and the Long Island Expressway will be well above either of the A-1 yard requirements, and thus conforming with this provision.

Article III: Building Permits and Certificates of Occupancy

§85-17. Issuance of building permits; restrictive covenants.

A. No building permit or certificate of occupancy for a building or structure shall be issued unless such building or structure complies with all applicable requirements of Chapter 85 other than those requirements from which a variance or similar relief has been granted.

The Project will comply with all applicable requirements of Chapter 85, except the height restriction imposed on electric generating facilities and other uses in the L Industrial 1 District. As discussed below, compliance with this requirement is technologically impossible. Therefore, a waiver from this requirement is requested.

B. Applicants for building permits are required to present the Building Department with information as to any restrictive covenants in favor of the Town of Brookhaven. If no such restrictive covenant exists, the applicant for a building permit is required to submit an affidavit to that effect.

No such restrictive covenants exist. An affidavit to that effect will be provided to the Town prior to construction.

§85-18. Information to be submitted with building permit application.

A. The following information is required in a building permit application: the proposed structure, showing front, side and rear yards; the elevation of first floor in relation to existing street elevation; the location and number of the two nearest utility poles; the total area of the plot and the dimensions of the plot indicated by metes and bounds; the total area of each floor and building, as well as facility total; distance of the plot from the nearest intersecting streets; the street descriptions including ownership, right-of-way width, type and width of pavement, existing curbs and walks, and elevation of property corners along street line and rear property line; the zoning district classification; and the name and address of surveyor.

This information is presented in the Site Development Plan (in the oversize roll attached to the Article X application). See especially Sheet 2.

§85-19. Foundation permit.

A. The Chief Building Inspector may issue permits for installation of foundations, once final conditional site plan approval has been obtained, subject to the following requirements: construction plans approved by Chief Building Inspector; Fire Prevention permit(s) for the final structure; authorization for access from agency having jurisdiction over proposed point of access (Suffolk County Department of Public Works); clearing and grading must be limited to the minimum necessary for the installation of the foundations; satisfaction of site plan approval conditions relating to such foundation work.

Because of the nature of final detailed design, with many final plans and specifications covering the various systems within the facility, Brookhaven Energy is likely to proceed with the installation of foundations meeting the foregoing requirements.

B. Foundation permit applications must include a site plan depicting foundation location, clearing limits, grading or ground disturbance, proposed construction access point, construction driveways, staging areas and any other information reasonably deemed necessary by the Commissioner of Planning, Environment and Development. Also required is a copy of the current tax bill for the subject property. Also required are a certificate of indemnity and any county or state work permits required by law or regulation.

This information is provided in the Site Development Plan. Tax information is provided in Section 12. A certificate of indemnity, to the extent required in light of the decommissioning security described in Section 10.6, will be submitted before any foundation work takes place. Brookhaven Energy will submit any remaining information required for a foundation permit to the Siting Board as a compliance filing, with a copy provided to the Town.

C. Foundation permits expire after 120 days, but may be extended for 60 days by the Commissioner of Planning, Environment and Development, after which they can be extended for 60 more days by the Planning Board where "compelling circumstances" are demonstrated.

Brookhaven Energy expects approximately a 180-day period between initial grading and the completion of foundation work. Building erection will then be covered under Sections 85-17 and 85-18 (discussed above).

§85-20. Certificates of occupancy: Land and buildings may not be used until the Chief Building Inspector issues a certificate of occupancy declaring compliance with the Zoning Code. In addition to the affidavit requirement in Section 16-4, a survey is required showing "as-built" plans, including dimension of the lot, location of buildings and structures, first floor elevation, and all regraded elevations. Certificates of occupancy are to be applied for coincident with the application for a building permit.

Brookhaven Energy anticipates that the foregoing requirements for a certificate of occupancy will be addressed through a compliance filing with the Siting Board and coordination with the Town. The compliance filing will include the required affidavit and survey. Similarly, "as-built" plans will be provided once feasible (i.e., during the later stages of construction).

Article IV: Board of Appeals

§85-29. Power and duties.

B. Special permits. One special permit would need to be requested from the Zoning Board of Appeals, except that this process is subsumed, pursuant to PSL §172, under the Article X process. That special permit is for the construction of an electric generating facility. Required information and standards of issuance specifically for generating facilities are discussed below under Section 85-308.B. However, in addition to these, there are general requirements, as follows (note: the language of Section 85-29 is quoted verbatim, as marked by italics):

1. *No special permit shall be granted by the Board of Appeals unless it shall determine:*

   a) *That the use will not prevent the orderly and reasonable use of adjacent properties or of properties in the surrounding area or impair the value thereof.*

   The land use of each adjacent property is presented in Section 10.2.1.2. Properties in the surrounding area are presented in Sections 10.2.1.3 and 10.2.1.4. Compatibility of the Project with existing land uses is presented in Section 10.3.

   b) *That the use will not prevent the orderly and reasonable use of permitted or legally established uses in the district wherein the proposed use is to be located or of permitted or legally established uses in adjacent districts.*

   The permitted land uses in all the zoning districts within a 2-mile radius are presented in Section 10.2.2. The proposed land uses are presented in Section 10.2.3. Compatibility of the Project with proposed or permitted land uses is presented in Section 10.3.

   c) *That the safety, health, welfare, comfort, convenience or order of the town will not be adversely affected by the proposed use and its location.*

   The Town itself has weighed in on the issue of power plants in Brookhaven by establishing them as a permitted use by special permit in the L-1 district. The demonstration of compliance with the Town's power plant ordinance (Section 85-308.B) is found below.

2. *In making such determination, the Board of Appeals shall give consideration, among other things to:*

   a) *The character of the existing and probable development of sites in the district and the peculiar suitability of such district for the location of any such permissive uses.*

   The L-1 district has been determined by the Town to be a district in which power plants are a permitted use. The suitability of the site is determined primarily by the following combination of criteria: (a) proximate to all necessary infrastructure, minimizing linear interconnections; (b) approximately 2,000 feet distant from any residences, with only 15 residences within 3,000 feet; (c) LIE access minimizes neighborhood traffic; (d) Project complies with every zoning provision except 50-foot height limitation, which is not technically feasible for power plants; (e) town and hamlet planning documents state preference for industrial development *south* of the LIE, while keeping areas north of the LIE for preservation as part of the Central Pine Barrens.

b) *The conservation of property values and the encouragement of the most appropriate uses of land.*

The proposed Project is consistent with conservation of property values. It will observe the town's noise ordinance, as detailed in Section 11. It will not emit any objectionable odors. It will generally not be visible from existing residences, including Sills Road residences, as detailed in Section 16.

c) *The effect that the location of the proposed use may have upon the creation or undue increase of traffic congestion on public streets, highways or waterways.*

Section 15 addresses both construction period and operations period impacts.

d) *The availability of adequate and proper public or private facilities for the treatment, removal or discharge of sewage, refuse or other effluent, whether liquid, solid, gaseous or otherwise, that may be caused or created by or as a result of the use.*

Removal of air pollutants is a part of the Project design, as detailed in Section 6. Wastewater disposal is detailed in Section 17.2. Removal of minimal solid waste is addressed in Section 3.2.8.

e) *Whether the use or materials incidental thereto or produced thereby may give off obnoxious gases, odors, smoke or soot.*

The Project will have minimal air emissions and will adhere strictly to all air quality standards, as detailed in Section 6. Odors are addressed in Section 10.3.1.5. This precludes the type of emissions that can be characterized as "obnoxious gases, odors, smoke of soot."

f) *Whether the use will cause disturbing emission of electrical discharges, dust, light, vibration or noise.*

With respect to disturbing emissions of electrical discharges, the interconnection study that is described in Section 8 is designed to ensure stability and safety of the electrical system. Levels of electromagnetic fields (EMF) are also addressed in Section 8. EMF levels will be below the policy levels of the Public Service Commission. With respect to disturbing emissions of dust, the Project will use a construction period fugitive dust control program, which is described in Section 6.15. With respect to disturbing emissions of light, all lighting at the Project will be installed and used only to the extent necessary to ensure safety. Lights will be shielded in a downward direction and will be turned on and off as necessary. Because of the lower stack height FAA no longer requires marker lights on the exhaust stacks. With respect to disturbing emissions of vibration, the Project must be designed to eliminate or minimize vibration not only for the sake of adjacent residences, but for preservation of its own equipment. Vibration is addressed in Section 13. With respect to noise, the Project will comply with Town provisions as described above. Furthermore, it will meet state requirements through the Article X process.

g) *Whether the operation in pursuance of the use will cause undue interference with the orderly enjoyment by the public of parking or of recreational facilities, if existing or if proposed by the town or by other competent governmental agency.*

The recreational use inventory is presented in Section 10.2.4. Compatibility with these uses is established in Section 10.3.3.

h) *The necessity for an asphaltic or concrete surfaced area for purposes of off-street parking and loading of vehicles incidental to the use, and whether such area is reasonably adequate and appropriate and can be furnished by the owner of the plot sought to be used within or adjacent to the plot wherein the use shall be had.*

The Project will only require 28 parking spaces, which will be provided on-site. Four loading spaces are required, and they will also be provided on-site.

i) *Whether a hazard to life, limb or property because of fire, flood, erosion or panic may be created by reason or as a result of the use or by the structures to be used therefor or by the inaccessibility of the plot or structures thereon for the convenient entry and operation of fire and other emergency apparatus or by the undue concentration or assemblage of persons upon such plot.*

A draft emergency response plan, including evacuation of on-site personnel, is presented as Appendix O. There would be excellent access to the Project for emergency vehicles from any direction, since the intersection at the proposed front gate of the Project is signalized. During normal operation, the Project will never act as an assembly hall or place of concentration for a large number of persons. Any visitor groups will be guided by plant personnel and will observe applicable safety requirements.

j) *Whether the use or the structures to be used therefor shall cause an overcrowding of land or undue concentration of population.*

The Project proposes no residential uses, and will not strain land or resources with additional concentration of population. It will generate a very limited number of vehicle trips per day to the site.

k) *Whether the plot area is sufficient, appropriate and adequate for the use and the reasonable anticipated operation and expansion thereof.*

The site is in excess of the area required to operate a 2-unit natural gas combined-cycle generating plant. There are no plans to expand the plant.

l) *The physical characteristics and topography of the land.*

The land consists of well drained soils and the topography is gently rolling (less than 3% slopes). The site is suitable for construction of an industrial facility, as described in Section 13.

m) *Whether the use to be operated is unreasonably near to a church, school, theater, recreational area or place of public assembly.*

Maximum distance form sensitive receptors has been accounted for in Project design. The nearest church is the Calvary Full Gospel church, about 3,500 feet away. The nearest school is the New Interdisciplinary School, also about 3,500 feet away. There are no known commercial theaters within the 2-mile land use study area. The nearest recreational/educational area is the Suffolk County Farm, whose visitors' facilities are

from about 1 to about 1.5 miles away. The nearest places of public assembly, other than the aforementioned church, school, and farm, are in Yaphank: *e.g.*, the Fire Department and the Presbyterian Church.

Article VI: Site Plan Review

§85-45. Site plan review and approval: Site plan approval is required for any building in the industrial zone. They must include elevations, showing front, side and rear architectural features, and demonstrate consistency of architectural and aesthetic features with the surroundings. Landscape plans may be required.

Attached to this Article X application is an oversize roll containing the Site Development Plan sheets. They follow Brookhaven Planning Board guidelines for site plan preparation and are consistent with this provision.

Article XXVIII: Industrial Districts

§85-292. Table of Dimensional Requirements. Industrial developments are to conform to this table. Footnote 1 to the table states that L-1 Industrial District properties that are within the area described in Section 85-309 (hydrogeologic sensitive zone), are to conform with the more stringent Section 85-308 requirements, and not with the requirements of this dimension table.

The Project site falls into that category, and its dimensional requirements are addressed in Section 85-308.C below. The proposed Project is an electric generating facility, and therefore the provisions of Section 85-308.B also apply.

Article XXIX: L Industrial 1 District

§85-308. Permitted Uses.

A. *In the L Industrial 1 District, buildings, structure and premises may be used for any lawful business or industrial use, except as otherwise provided in this Chapter and except for the following prohibited uses: ...*

The proposed use of the Project, generating electricity, is not one of the more than 80 prohibited uses. Therefore, the Project complies with this provision. (In addition, see Section 85-308.B.)

B. Electric generating plants are permitted with a special permit in the L-1 District, under this provision. Therefore, Brookhaven Energy is setting forth its demonstration of compliance with the standards for issuance of such a special permit as part of the Article X process. (Note: the language of Section 85-308.B is quoted verbatim, as marked by italics.)

1. *Purpose and Intent: The Town Board of the Town of Brookhaven hereby determines that there is an ever increasing demand for electric power due to continuing growth, changing technology and other factors; and, in order to facilitate the provision of an adequate supply of electric power to users within the town, both presently and in the future, that the establishment of electric generating facilities within the Town, may be permitted, by special permit from the Board of Zoning Appeals upon its finding(s) that the establishment of and use of such a facility, together with such conditions and safeguards as it may impose, is in the public interest.*

2. *Special Permitting: Electric generating facilities shall be permitted, when authorized by a special permit from the Board of Zoning Appeals, so long as in conformity with the following criteria:*

a) *Location: The proposed site is located wholly within the L Industrial 1 Zoning District.*

The proposed Project site is wholly within the L-1 industrial zoning district.

b) *Dimensional Requirements:*

1) *Minimum lot area: twenty (20) acres;*

A 28-acre site is proposed. Additional land has been purchased since filing the Preliminary Scoping Statement to ensure that there are no parcels between the LIPA transmission lines and Sills Road not under ownership of Brookhaven Energy, as well as to maximize flexibility in terms of including laydown areas within the site.

2) *Minimum lot frontage: two hundred (200) feet;*

Frontage along Sills Road is approximately 2,000 feet.

3) *Maximum building height: fifty (50) feet*

In view of existing technology, construction of the following buildings cannot comply with this limit: turbine buildings and heat recovery steam generators. The height of the turbine equipment, the need for a sliding crane above the turbine enclosure, and similar technical requirements make it unreasonable to construct a combined-cycle plant of this magnitude in a building less than 50 feet high. (Note that there are also structures that are not buildings that must also be higher than 50 feet, as follows: air-cooled condensers, exhaust stacks, water tanks, and towers associated with switchyard/transmission infrastructure.) Pursuant to PSL 168(2)(d), Brookhaven Energy requests that the Siting Board determine that this provision is unreasonably restrictive in view of existing technology and waive this requirement.

In making this request, Brookhaven Energy is required to analyze reasonably related local precedent regarding the granting of variances or exceptions, per Stipulation 5, Clause 7(b). Because this is the first proposed power plant in Brookhaven that is governed by a 50-foot height limit specifically for power plants, direct precedent does not exist. However, there exists reasonably related precedent.

Brookhaven National Laboratory buildings are not considered in this analysis because the complex is Federal property. Similarly, state institutional buildings such as the hospital at SUNY-Stony Brook are not analyzed, because they require no Town permits and are not similar to the proposed Project.

The New York Power Authority (NYPA) Richard M. Flynn plant is in excess of 50 feet and is located in the L-1 Industrial district. Hence, precedent exists for power plants in this zone that are in excess of 50 feet. However, since NYPA is a state agency, Town zoning approvals for the Flynn plant were not necessary, per Brookhaven Planning Division staff.[17] Brookhaven Energy is aware of at least four

[17] Interview with Mr. Ralph Wiebelt, April 24, 2001.

non-power plant buildings that have been granted height variances in excess of 50 feet. These are:

- Holiday Inn Express hotel on Route 347 in Centereach (issued approximately a decade ago by Zoning Board of Appeals; archives not available);
- Teachers Federal Credit Union on County Route 83 in Farmingville (issued approximately a decade ago by Zoning Board of Appeals; archives not available);
- John John LLC proposal for Holiday Inn (now Hampton Inn) at the northwest corner of Long Island Expressway and County Route 83. This project applied for construction of a 168-room, 6-story hotel. The site is in the L-3 Industrial District. The project received a special permit for conditional use as a hotel in an industrial district, as well as a height variance for 76 feet 5 inches, whereas maximum height allowable as-of-right is 40 feet. The height variance was granted on October 25, 1999. See Appendix L-3.
- Browning Hotel in Ronkonkoma (between LIE Exits 60 and 61, access via Mill Road). This project, now under construction, applied for removal of a 10,000 s.f. industrial building and construction of a 165-room 80-foot high hotel, located in the J-7 zoning district, where maximum building height allowable as-of-right is 35 feet. The Planning Board approved a height variance for 60 feet. Available documentation does not provide the reasoning used by the Planning Board. Presumably, it was related to the cost-effectiveness of the project per square foot of land. The height variance was granted on June 17, 1996. See Appendix L-3.

In addition, the Zoning Board of Appeals has issued dozens of height variances for cellular communications towers, in each case the height being a determinant of the effectiveness of the technology. This is reasonably related to a power plant because the feasibility and cost-effectiveness of the technology are implicitly or explicitly recognized when such variances are issued.

In conclusion, the Town of Brookhaven has on multiple occasions issued height variances, including at least one in an industrial district. In addition, an existing power generation facility in the L-1 industrial district is greater than 50 feet in height, albeit no Town approvals were issued. Thus, there is reasonably related local precedent for the Siting Board to determine that this provision is unreasonably restrictive in view of existing technology and waive this requirement.

4) *Maximum stack height: two hundred (200) feet;*

A 160-foot stack height is proposed.

5) *Minimum front, side and rear yard setbacks: one hundred feet;*

These are observed in the proposed layout.

6) *Maximum lot coverage by building: twenty-five (25%) percent;*

The lot coverage by building will be less than 7%. The total lot area is about 1.22 million s.f. The total building area is about 85,000 s.f. Note that a building is defined as a "structure having a roof supported by columns or walls" (Section 85-1.B).

7) *Minimum percentage of lot to remain natural and undisturbed: thirty (30%) percent; (however, this percentage may be reduced to a minimum of fifteen (15%) percent if the applicant sterilizes and conveys to the Town of Brookhaven an acceptable parcel of property which is equal to or greater than the additional clearing over seventy (70%) percent subject to Pine Barrens standards where applicable.*

The proposed layout includes clearing of 85% of the Project site, even though much of that area is to be revegetated. Thus, the Project is obligated to convey an area of approximately 4 acres that is acceptable to the Town. Brookhaven Energy has discussed suitable sites with the Town of Brookhaven as well as with members of the community. These discussions will continue, albeit without prior publication, to ensure that land prices for candidate sites remain competitive. Brookhaven Energy proposes to make this a condition of an Article X Certificate (to the degree that clearing above 70% of the site actually occurs), and to convey such a parcel prior to the actual tree clearing.

8) *Where applicable, in compliance with Central Pine Barrens standards;*

These are not applicable for the Project site because it is outside the Central Pine Barrens.

9) *Vegetated perimeter buffer of five hundred (500) feet or more, along all lot boundaries which abut residentially zoned property.*

The nearest residentially zoned properties are north of the LIE. The LIE itself is not shown on town zoning maps under any specific district, and thus can be interpreted as default to an A1 residence district. A 500-foot vegetated perimeter buffer will be maintained on the north side of the facility.

10) *Minimum stack setback of a distance equal to one hundred fifty (150%) percent or more of the height of the stack from any adjoining lot lines, except that, as it deems appropriate, the Board of Zoning Appeals may reduce said setback to no less than seventy-five (75%) percent of the height of the stack from any adjoining lot line.*

Brookhaven Energy was asked by town officials and Yaphank residents living north of the LIE to site the facility as far south within the property as possible. At an open house, residents living along Long Island Avenue south of the LIE were concerned that a southerly location could align views down Long Island Avenue with the Project stacks. Further visual analysis established that the best way to avoid such a view would be to locate the plant generally in the south of the site, but 60 feet north of where originally proposed. Therefore, Brookhaven Energy has sited the facility within a distance to the south boundary line allowable under this provision. By lowering the stack to 160 feet, a minimum 120-foot stack setback is permissible

under the 75% provision. The proposed stack setback is about 160 feet – 100% of stack height. The structural integrity of the 18-foot wide stacks is ensured by the materials and sound design engineering. No guy wires or similar structural support is required for the stacks, which will be built, like the remainder of the plant, to New York State Building Code standards. For this reason, Brookhaven Energy believes the setback from the south boundary line is not only reasonable but also necessary to minimizing visual impact, while being no less protective of public safety. Brookhaven Energy anticipates that the Project's Article X Certificate will provide the authorization that would otherwise be at the discretion of the Brookhaven Zoning Board of Appeals.

11) *Setbacks for accessory buildings shall comply with the standards set forth herein except that the Board of Zoning Appeals may modify same, in its discretion upon its finding and determination that such modification is not inconsistent with the stated objections of this section herein.*

All accessory buildings fit within the 100-foot setback except for a gas metering station located in the far southwest corner of the Project site, as shown in the Site Development Plan, Sheet 14 and Figure 15-20. The reasons to locate the gas metering station in this area are as follows. First, the location is convenient to the Sills Road right-of-way, where the gas interconnection is proposed to be placed. The gas interconnection is proposed to be built outside the Project site in order to avoid other construction activities and plant buildings as an additional safety precaution. Second, building the gas metering station in the southwest corner of the site allows the Project to utilize a previously disturbed, cleared dirt driveway area, instead of clearing a minimum 20-foot wide right-of-way through the vegetation buffer zone along the west property line. Third, the gas metering station would be situated well beneath Sills Road at its nearest point (because Sills Road is elevated on a bridge over the LIRR), and thus would not be visible. Fourth, because the metering station is a fenced-in area approximately 40 by 60 feet, it is not a major or primary component of the Project, but is only an accessory facility meant to separate off-site Keyspan facilities from on-site Brookhaven Energy facilities. Fifth, the location at the southwest corner of the Project site is distant from the nearest residential parcels. In conclusion, siting the gas metering station at the southwest corner of the Project site is therefore consistent with the stated objectives of Section 85-308.B. Brookhaven Energy anticipates that the Project's Article X Certificate will provide the authorization that would otherwise be at the discretion of the Brookhaven Zoning Board of Appeals.

12) *Where the subject parcel fronts, on two (2) or more roads, the Board of Zoning Appeals shall, in its discretion, determine which shall be deemed the frontage for access and front yard setbacks.*

Access to the Project site is from Sills Road. Since there will be no access from the Long Island Expressway, the proposed frontage is Sills Road. All setbacks for electric generating facilities are equivalent per Section 85-308.B-2(b)5, except for accessory uses as discussed in the preceding paragraph.

3. *Impact to the community: In its consideration of any such applications as aforesaid for an electric generating facility, the Board of Zoning Appeals shall take into consideration the existing infrastructure, proximity to other commercial or industrial development, proximity to residentially zoned properties and/or residentially developed properties, traffic patterns and any other matters which, in its opinion, may reasonably be anticipated to affect the viability of such facility and the health, safety and welfare of the Town's residents, and more particularly the following:*

   a) *Existing infrastructure*

      The Project site has excellent access to infrastructure. A 20-inch natural gas pipeline, two high-voltage transmission circuits, and a 16-inch water main all border the site. Wastewater infrastructure is available about 1 mile away.

   b) *Existing transportation facilities;*

      The Project site has excellent access to transportation facilities. The Project site is adjacent to the Long Island Expressway and is located on a major county highway, Route 101 (Sills Road). There is a left turn lane into the site with a signalized intersection. This minimizes the distance of travel for vehicles coming from any direction.

   c) *Traffic Impacts*

      As demonstrated in Section 15, the Project will not cause a degradation in the levels of service of any of the study area intersections, following the planned installation of a traffic light at Sills Road and Long Island Avenue.

   d) *Separation distance(s) from other electric generating facilities;*

      The nearest electric generating facilities listed in the United States Department of Energy's inventory are Keyspan's Holtsville facility and the nearby Richard M. Flynn plant owned by the New York Power Authority. These plants are located approximately 6 miles to the west of the Project site. There is also an approximately 4 MW methane-burning generating plant associated with the Brookhaven landfill.

      There is now another proposed electric generating facility located less than ½ mile from the proposed Project, known as "Caithness Island Power Project". A preliminary scoping statement under Article X was filed for this facility in August 2000, approximately 5 months after the preliminary scoping statement for the Brookhaven Energy Project.

   e) *Setback distance(s) between the proposed electric generating facility and the nearest existing residential dwelling(s) and/or residentially zoned properties.*

      The nearest residential buildings are about 1,800 to 2,200 feet from the proposed Project (depending on which buildings are used for reference). The closest undeveloped residentially zoned properties are located on the north side of the Long Island Expressway, also about 1,800 away from the proposed Project.

   f) *The nature of existing and/or proposed uses on adjacent and nearby properties;*

This is detailed in Sections 10.2 and 10.3 above. To summarize: adjacent existing uses are the Long Island Expressway, LIPA transmission lines, the Long Island Railroad, and County Route 101 (Sills Road). Proposed uses across the street from Sills Road are an office park and a warehouse expansion. Proposed uses south of the site call for expansion of the industrial park. Proposed use of the parcel east of the LIPA lines is a motorcross facility.

g) *Proposed accessory structures and/or uses, if any;*

All proposed structures are associated with the primary use of the site, electric generation. Buildings include gas compressor, gas metering station, ammonia storage, water forwarding (and two storage tanks), a switchyard, a warehouse/shop and other smaller facilities.

h) *Height of the proposed stack;*

Brookhaven Energy has diligently been working to reduce stack height. As a result, the original proposal for 180-foot tall stacks has been reduced to 160 feet.

i) *The stack design, in particular, design characteristics calculated to reduce or eliminate visual intrusion of the structure.*

The proposed stacks would be of a light grey color that blends well with the background of the sky. This judgment is made on the basis of a sister facility in Massachusetts. The stacks have been shortened as much as possible without exceeding stringent thresholds related to air quality.

j) *The extent to which the proposed development complies to the applicable requirements of this Article;*

The only provision of this Article that the development cannot meet is the height limit of 50 feet. The proposal also calls for discretionary findings on the basis of good design and management and reduced environmental impact related to:

- a stack setback that is between 75% and 150% of height, permitted under Section 85-308.B-2(b)10;
- an accessory use (gas metering station) within the front/side yard setback, permitted under Section 85-308.B-2(b)11;
- an on-site tree clearance of 85% instead of 70%, with offsets to be acquired that are acceptable to the Town of Brookhaven, permitted under Section 85-308.B-2(b)7.

k) *Compliance with Federal, State, Local Law and Regulation and any other matters which, in the opinion of the Board of Zoning Appeals may affect the health, safety and welfare of the Town's residents;*

This Application exhaustively documents compliance with federal, state, and local laws, including an analysis of all relevant regulations and land use planning documents of the Town of Brookhaven.

C. Dimensional requirements within the hydrogeologic sensitive zone.

1. No building or structure may be in excess of 50 feet.

   See discussion of this provision pursuant to 85-308.B above.

2. Total building area shall not exceed 30% of the total lot area.

   See discussion of similar provision pursuant to 85-308.B above. The standard applicable to electric generating facilities is more stringent (25%). Since the 25% standard is met, the 30% standard is also met.

3. Lot area. The minimum lot frontage must be at least 200 feet. Average lot area may not be less than 3 acres. Frontage of the Project site is approximately 2,000 feet.

   Frontage of each individual tax map lot that comprises the Project site and has frontage onto Sills Road is also greater than 200 feet. The Project site is several times larger than 3 acres. Also, the average area of the 4 constituent tax map lots that make up the Project site is more than 7 acres. Thus, the Project fully complies with this provision.

4. Front yard. Front yard depth must be at least 50 feet.

   Because the Project is required to comply with a more stringent 100-foot setback under 85-308.B, compliance with this provision is assured. Note, however, that accessory buildings may be located within the front yard setback at the discretion of the Zoning Board of Appeals. See the discussion under Section 85-308.B-2(b)11 above.

5. Side yards. Side yard depth must be at least 20 feet, and the two side yards combined must be at least 50 feet wide.

   Compliance is the same as in the preceding paragraph.

6. Rear yard. Rear yard depth must be at least 50 feet.

   Compliance is the same as in the two preceding paragraphs.

7. Projects in this zone are considered to have a potential significant effect on the environment and may require the preparation of an environmental impact statement (EIS).

   Article X projects are deemed Type II actions under the State Environmental Quality Review Act regulations (not requiring the preparation of an EIS) because environmental review requirements are governed by Article X and the regulations promulgated thereunder. Therefore, the studies performed and submitted as part of this Application, as well as the Application review process, effectively constitute compliance with this provision.

8. Natural vegetation. "As much of the site's natural vegetation as is possible shall be retained in preparation of the final site plan and final development, including necessary actions to protect natural vegetation during site development."

   The Project complies with this requirement by maintaining a 500-foot buffer at the north side of the site. Natural vegetation will be protected by the installation of temporary fences along the limit of work.

9. Landscaping. No greater than 15% of any lot shall be established in turf and landscaped areas.

   The Project will comply with this requirement. Most unimproved areas within the site will be impervious (where necessary for operations), gravelled or allowed to revegetate naturally. Plans for such natural revegetation are to be approved by the Commissioner of Planning, Environment, and Development. Landscaping plans are included as Site Development Plan, Sheets 9 and 10.

10. Toxic or hazardous materials; financial assurance. Adequate financial assurances guaranteeing the immediate cleanup of spills or illegal discharges are required. The owner of a property where such activities take place is required to file a covenant for the Town to enter the property and clean up any spills or illegal discharges and to assess costs against the property to the extent the costs exceed the amount of financial assurance.

    Section 10.6 below is Brookhaven Energy's financial assurance and decommissioning plan. It includes a security to be in place prior to commencement of any construction and is responsive to this provision. Brookhaven Energy will also file the required covenant prior to construction, the details to be determined in consultation with the Town. The covenant will be submitted to the Siting Board as a compliance filing.

11. Industrial discharge. No industrial discharge may be made unless in conformance with a treatment and disposal system approved by Suffolk County Department of Health Services and the Commissioner of Planning, Environment, and Development.

    The Project's proposed industrial discharge is detailed in Section 17.2, including a demonstration of compliance with Suffolk County sewer use standards.

§85-309. Hydrogeologic sensitive zones: The boundary of one of these zones follows the Long Island Railroad between Sills Road and Moriches-Middle Island Road. This segment of the border forms the Project's site's southern boundary, and thus the site is within a hydrogeologic sensitive zone under the Brookhaven Zoning Code. For this reason, Section 85-308(C) is applicable instead of Section 85-292, as detailed above.

Article XXXIV: Off-Street Parking and Loading

§85-350. Required off-street parking spaces.

A. For industrial buildings, one parking space must be provided for each two employees, computed on the basis of the greatest number of persons to be employed at peak employment. Irrespective of that calculation, a parking space must be provided for each 300 s.f. of total floor area.

28 parking spaces are proposed to be built. By the employee based calculation, 13 parking spaces would be sufficient, since the peak employment during operations would be 25 individuals. For the floor area calculation, if it is conducted on the basis of the control room, switchyard control room, and workshop/store, the total area would call for less than 28 parking spaces. The combined floor area of these buildings and the combustion turbine buildings is approximately 85,000 s.f., resulting in a requirement for up to 287 total parking spaces. Brookhaven Energy proposes to build 28 parking spaces and landbank 259 parking spaces within the site, if required by the relevant authority. As a practical matter, there will be no need to increase the parking stock for this facility because it cannot readily be adapted to a different type of land use.

§85-351. Required off-street loading spaces.

A. For premises with a building floor area between 40,000 and 100,000 s.f., 4 off-street loading spaces are required. A loading space is defined as an off-street area not less than 12 feet wide by 22 feet long with an overhead clearance of at least 14 feet.

Brookhaven Energy's proposed site plan includes 4 designated unloading areas, as indicated in Site Development Plan, Sheet 2.

§85-353. Location of facilities. All off-street parking spaces provided must be on the same lot on which the principal use is located.

The Project will comply with this requirement.

§85-354. Plot plan required: Every building permit application is to include a plot showing the required number of parking and loading spaces with the passageway and driveways appurtenant thereto, giving direct access to a street, as well as the location and width of all curb cuts for driveways, entrances and exits as approved by the Town Superintendent of Highways (and, if applicable, by county or state).

The Site Development Plan (see especially Sheets 2, 5, and 6) includes this information. The Project complies with applicable requirements.

§85-355. Construction and maintenance of facilities.

A. Parking and loading spaces and all driveways must be paved with an asphalt or concrete surface.

The Project design calls for certain loading areas to be concrete, with parking and driveways to be asphalt.

B. The location and width of all curb cuts must be approved by the Town Superintendent of Highways or the State Department of Public Works.

In the case of the Project, the access is via a County Highway, and thus access authorization is via the Suffolk County Department of Public Works.

C. Underground installation must have suitable covers sufficient to support traffic.

The Project design takes this requirement into account.

D. Parking and loading spaces must be clearly marked and delineated, and must have wheel or bumper guards.

The Project design follows this requirement.

E. Access driveways and passageways must have entrance and exit signs, as well as arrows marking the proper flow of traffic.

The signage plan is shown as part of the Site Development Plan, Sheet 5.

F. The entire parking area must be fully illuminated at night during the business hours of the premises that it serves.

The facility will not be open to the public. Hence, the lighting plan shown as part of the Site Development Plan, Sheet 11 reflects the desires of the Project's nearest residential neighbors, which include avoiding glare by downward shielding of lights.

§85-356. Prohibited uses

A. No part of any required front yard may be used for parking motor vehicles or for loading and unloading.

The Project design places all parking or loading areas outside of the front yard.

Article XXXV: Supplementary Provisions

§85-371. Yard encroachments. Subject to certain exceptions, yards must be kept open and unobstructed. Exceptions include, but are not limited to, accessory buildings and structures in rear yards, and walks, strips, retaining walls, paved areas and terraces accessory and customarily incident to the principal use.

The Project will substantively comply with the requirement that yards be kept open and unobstructed. Of course, the front driveway to the facility must of necessity constitute an encroachment, as must every underground and aboveground interconnection – gas, water, electric and sewer. The fence around the facility must also be within this area, although Brookhaven Energy has moved the fenceline closer to the facility to enhance preservation of a buffer along Sills Road. The setback distances between the pavement and the rear (south) property line are proposed to be approximately 60 feet. The demineralization trailer parking area is also proposed to be within the rear yard. In addition, the equipment separating off-site Keyspan gas facilities from on-site Brookhaven Energy facilities includes a metering station located within a 40-foot by 60-foot fenced area, which is proposed to be located within the southwest corner of the site, pursuant to the discretionary provision of Section 85-308.B-2(b)11 relating specifically to accessory buildings for electric generating facilities.

§85-378. Visibility at intersections: No object obscuring visibility at an intersection may exceed 2½ feet in height, measured at a 30-foot radius from the center of the intersection.

Project design places no such structures into the front driveway, and thus complies.

§85-379. Uses prohibited in front yard: No goods, wares, or merchandise may be displayed in front yard.

Project design calls for no such displays, and thus complies.

10.4.2 Suffolk County Local Laws

County laws that were reviewed since they may potentially apply to the Project are:

- Suffolk County Charter
- Suffolk County Administrative Code
- Suffolk County Regulatory Local Laws
- Suffolk County Resolutions, Rules, and Regulations

Below, all provisions that apply to the proposed Project in any specific sense are briefly summarized, and a compliance statement or explanation is made. The discussion typically summarizes but does not quote the applicable local laws and regulations verbatim.

The Project will be consistent with all county requirements. Suffolk County requirements, and the Project's compliance with them, are discussed in the sections below.

Table 10-16: Consistency with Suffolk County Local Laws

Chapter/ Section	Suffolk County Administrative Code	Compliance Degree*
A14-22	Certain Special Permits being considered by Municipal Agencies to be Referred to Planning Commission	Full, findings not required
A14-23	Certain variances being considered by Municipal Agencies to be Referred to Planning Commission	Not applicable
Chapter/ Section	**Suffolk County Regulatory Local Laws**	**Compliance Degree***
Chapter 213	**Alarms**	**Full**
Chapter 279	**Environmental Quality Review**	**Full**
Chapter 324	**Hazardous Waste**	**Full**
Chapter 366	**Noise**	**Full**
Chapter 424	**Sewers**	**Full**
424-10	Notice, Review and Approval of Construction	Full
424-12-A	Possible Requirement of Maps, Plans, Reports, Bonds, Insurance	Full
424-12-B	Number of Structures per sewer connection	Full
424-13	Abandonment or Demotion of Structure	Full
424-19	Special Permits	Full
4224-19-I	Records regarding Discharges to Sewer-maintained for three years	Full
424-20	Disconnect Permits	Full
424-22	Special Conditions	Full
424-23-A-B	Discharging of Prohibited Wastes or Limited Wastes	Full
423-23-C	Mixing of Industrial Wastes with Domestic Wastewater	Full
423-23-D	Substituting Dilution for Treatment	Full
424-24-A	Remedies to "objectionable, prohibited or limited wastes"	Full
424-24-B	Pretreatment or Flow Equalization Systems	Full

* "Full" compliance means substantive compliance, with no additional findings necessary, and is more particularly described in the paragraph that corresponds to each row.

Chapter/ Section	Suffolk County Regulations/Local Laws (Continued)	Compliance Degree
424-24-C	Testing Specifications	Full
424-26-A	Actions resulting Infiltration of Groundwater	Full
424-26-B	Within Sewer District: Industrial Process Wastewater and Domestic Wastewater must be discharged to the Sewer	Full
424-38	User Charges	Full
424-39	Rates	Full
424-40	Surcharges	Full
424-44	Connection to Public Sewer Required	Full
424-45	Connection by Premises Outside District	Full
Chapter/ Section	**Suffolk County Resolutions/Rules/Regulations**	**Compliance Degree**
Chapt. 760	**Sanitary Code**	**Full**
Article 4	**Water Supply**	**Full**
760-408	Permit to construct	Full
760-441	Disinfection	Full
760-451	Cross-Connection Control	Full
Article 5	**General Sanitation**	**Full**
760-502	Sewage Disposal	Full
Article 6	**Realty Subdivision, Developments and Other Construction Projects**	**Full**
760-602-A	DHS Approval required for any construction project	Full
760-603-E	Applications for Approval	Full
760-607-A	Sewage Facilities Requirements	Full
760-608-A	Community Water Connections re existing water district or service area	Full
760-608-B	Community Water Systems – Capacity and Pressure Requirements	Full
Article 7	**Water Pollution Control**	**Full**
760-705-A	Permit Required for construction of Disposal System	Full
760-705-B	Prohibitions against discharge without a SPDES Permit.	Full
760-705-D	Co-mingling of Waste Streams, etc.	Full
760-705-E	Storm water Discharges – Contaminated	Full
760-706-A	Restricted Toxic or Hazardous Materials Discharge	Full
760-706-B	Restricted Toxic or Hazardous Materials Storage	Full
760-709-B	Monitoring of Wastewater Discharges	Full
760-709-D	Non-Residential Property Owners must notify DHS of a new facility on their property.	Full
760-710	Connection to Public Sewer Required	Full
760-711	Abandonment of Disposal Systems	Full
760-715	Variances and Waivers	Full
Article 9	**Toxic and Hazardous Materials Registry**	
760-904&905	Requirements, Timetable	Full

Chapter 760 Section	Suffolk County Resolutions, Rules and Regulations (Continued)	Compliance Degree
Article 10	**Air Pollution Control**	
760-1005-A	Construction Permit Required before construction of an Air Contamination Source	Full
760-1005-B	Exemptions from Requirement	Full
760-1006	Certificate to Operate	Full
760-1008-B	On-site Burning	Full
760-1011	Emission of Visible Air Contaminants	Full
760-1012-E	Material Stockpiles	Full
760-1012-F	Disturbance of Land	Full
760-1014	Emission of Air Contaminant	Full
760-1016	Use of equipment without use of control apparatus prohibited.	Full
760-1017	Operation of Motor Vehicles	Full
Article 12	**Toxic and Hazardous Materials Storage and Handling Controls**	**Full**
760-1205-A	Discharge of Toxic or Hazardous Materials	Full
760-1205-D	Storing of Toxic or Hazardous Materials	Full
760-1205-E	Storing of Toxic or Hazardous Materials in Proximity to one another	Full
760-1206	Construction and Modification Permits	Full
760-1207	Permits to Operate	Full
760-1208-A	Exemption for Emergency Equipment Fuel Storage	Full
760-1208-F	Exemption for storage in small quantities	Full
760-1211-A-2	Aboveground Facility that "will allow the discharge of a toxic or hazardous material to the ground" Unlawful	Full
760-1211-A-3	Specific Design Requirements	Full
760-1211-A-4	Specific Overflow Detection	Full
760-1211-A-5	New Aboveground Storage-conforming regulations	Full
760-1211-A-6	New Aboveground Storage-cathodic protection	Full
760-1211-C-1-8	Abandonment of Storage Facility	Full
760-1211-C-11	Construction of Storage Facility –plans and specifications	Full
760-1211-C-12	Monitoring wells required	Full
760-1212-A-2	Prevention of escaping of Toxic or Hazardous materials	Full
760-1212-C-2	Leak regulations	Full
760-1213	Transfer of Toxic or Hazardous Materials	Full
760-1213-A-3	Construction of New Loading/Unloading Areas	Full
760-1213-B-4	Conditions for Transferring Toxic or Hazardous Materials	Full
760-1214-B-2	Indoor Storage specific design requirements	Full
760-1215-A-1	Storage Time Requirements	Full
760-1215-A-2	Securing Portable Containers-protecting from vandalism etc.	Full
760-1215-B-1	Stacking of Portable Containers	Full
760-1215-F	Empty Containers – Labeling	Full
760-1216	Bulk Storage of Toxic or Hazardous Materials	Full
760-1219	Posting and Labeling	Full

10.4.2.1 Suffolk County Administrative Code

§A14-22. Certain special permits being considered by municipal agencies to be referred to Planning Commission: Before a town or village issues a final decision on a special permit pursuant to zoning concerning, the action shall be referred to the Suffolk County Planning Commission if the affected real property is, *inter alia*, within 500 feet of a county or state road or expressway.

The Project site is within 500 feet of County Route 101 and the Long Island Expressway. Any electric generating facility in the L-1 District requires a special permit. But for the Article X process, the Suffolk County Planning Commission could act on the Town Zoning Board of Appeal (ZBA) review. Also, the decision of the Suffolk County Planning Commission could be overruled by a majority vote plus one of the Brookhaven Town Board. Because the Project is subject to Article X, Brookhaven Energy has consulted with the Suffolk County Planning Department, which acts as staff for the Planning Commission. Planning Department staff indicated that not all projects are referred to the Commission, some being deemed to be appropriately addressed by the Director of the Planning Department. Staff concurred that any formal action by the Department could take place within the context of the Article X process. It is the opinion of the Suffolk County Planning Director that the type of approval necessary for this Project would not receive County review.[18]

§A14-23. Certain variances being considered by municipal agencies to be referred to Planning Commission. Before a town or village issues a final decision on a variance, the action shall be referred to the Suffolk County Planning Commission if the affected real property is, *inter alia*, within 500 feet of a county or state road or expressway.

The Project site is within 500 feet of County Route 101 and the Long Island Expressway. The Project will not seek any area variances. Rather, Brookhaven Energy will ask the Siting Board, pursuant to Article X of the Public Service Law, to waive one restriction that is unreasonably restrictive in light of existing technology: a 50-foot height limitation for combined-cycle power plants.

10.4.2.2 Suffolk County Regulatory Local Laws

Chapter 213-4: Restrictions on use of alarm systems.

A. No audible alarm may be installed in any building or structure unless it is installed and designed to terminate operation or to automatically reset within 60 minutes of activation.

   The Project alarm system will comply with this requirement.

Chapter 279. Environmental Quality Review: This chapter sets forth the Suffolk County's procedures for complying with the State Environmental Qualify Review Act (SEQRA). Section 279-2 provides that no decision to carry out or approve an action, except, *inter alia*, a Type II action, until there has been full compliance with SEQRA.

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18 Mr. Thomas Isles, Suffolk County Planning Director, telephone conversation, March 28, 2001.

The Project is a Type II action because Article X projects are defined as Type II actions under the Environmental Conservation Law (§8--0111.5(a)(ii)(b); 6 NYCRR 617.5(c)(35). Therefore, the requirements of Chapter 279 do not apply.

Chapter 324. Hazardous Waste. The purpose of Chapter 324 is to protect the land and water resources of Suffolk County from hazardous waste pollution and ensure that hazardous waste transportation and disposal occurs in compliance with the Federal Resource Conservation and Recovery Act, the New York State Environmental Conservation Law, and the Suffolk County Sanitary Code.

The Project will comply with this requirement in that it will follow applicable federal, state and local requirements relating to hazardous waste transportation and disposal. The Suffolk County Sanitary Code requirements are discussed below.

Chapter 366. Noise. This chapter contains general prohibitions and restrictions against noise disturbance from the operation or playing of radios and amplifiers or boom boxes on any county highway or right-of-way, or any parcel of land owned by Suffolk County. Noise disturbance is defined as any sound that (a) endangers the safety or welfare of any person, (b) disturbs a reasonable person of ordinary sensibilities, or (c) endangers personal or real property.

The Project does not intend to operate any such device on any county highway or right-of-way, or any parcel of land owned by Suffolk County that would create a noise disturbance. Noise issues are addressed in detail in Section 11.

Chapter 424. Sewers.

§424-10. Notice, review and approval of construction: Adequate notice must be given to the applicable Suffolk County Sewer District Administrator prior to any sewer construction or road paving if it could in any way affect the County-owned sewer system. Proposed connections to the County sewer system must be reviewed and approved by the Administrator prior to the commencement of construction.

Brookhaven Energy made an availability request to the Suffolk County DPW by letter dated September 14, 2000, and attached in Appendix E. DPW responded that there are no technical difficulties in accepting the Project's sewer flow in terms of quantity or quality, but that a district has not yet been formed for the Yaphank STP. With respect to sewer connection plans -- conceptual plans are presented as part of this Application, while detailed design plans will be submitted to DPW prior to construction.

§424-12. General specifications and conditions for sewer construction:

A. The Administrator may require the applicant to supply maps, plans, reports; and to post bonds or insurance.

   Brookhaven Energy is supplying maps, engineering plans, and reports as part of this Application. Brookhaven Energy will require its building contractors to carry insurance as described in Section 10.6.

B. No more than one premises, structure or building is to be served by a sewer connection, except with prior written approval.

Only the Brookhaven Energy Project, the only facility occupying the Project site, will make a sewer connection at the Project site.

§424-13. Abandonment or demolition of structure: If a structure connected to the sewer system is abandoned or demolished, the sewer disconnection must take place at the original point of connection, with sewer plugged. Failure to do so may incur a lien against the property.

Brookhaven Energy will account for sewer disconnection costs as part of its decommissioning analysis (Section 10.6).

§424-19. Special permits: Any new industrial sewer connection requires a special permit in order to "identify, regulate and monitor" certain types of discharges. Applications for special permits may require information required to characterize the proposed waste discharge. Special permits must be renewed every five years. 40 CFR 403.12, with reporting requirements, is incorporated by reference. The District Administrator may require copies of reports pursuant to these federal regulations, and may require monitoring facilities. Records regarding discharges to the sewer must be kept for not less than 3 years.

Brookhaven Energy anticipates that the special permit requirements will be reviewed during the Article X process. The proposed waste discharge to the sewer is characterized in Section 17. To date, Brookhaven Energy has corresponded with Suffolk County DPW and characterized the Project's wastewater constituents. Brookhaven Energy will apply to the Suffolk DPW to renew the permit at the appropriate time. The Project will comply with applicable reporting and record keeping provisions, as required.

§424-20. Disconnect permits: A disconnection permit must be obtained prior to disconnecting to the system.

Brookhaven Energy or its affiliated operating company will file this permit when disconnecting from the sewer at the end of the plant's useful life.

§424-23. Unlawful discharges

A, B. It is unlawful to discharge prohibited wastes or limited wastes above the limitations set by the Sewer District Administrator.

During the course of the wastewater engineering study, Project effluent has been determined to be within all sewer influent limits published in Section 424. A thorough analysis of water quality is presented in Section 17.2.

C. It is unlawful to mix industrial wastes with domestic wastewater without prior written consent of the Administrator.

In its letter dated September 14, 2000 and included in Appendix E, Brookhaven Energy indicated that it would be seeking consent to discharge both domestic wastewater and all other wastewater from the Project via a single sewer connection. DPW responded that there would be no technical difficulties in accepting the Project's flow, without reservations as to the inclusion of domestic flow.

D. It is unlawful to substitute dilution for treatment.

The Project will not dilute its wastewater.

§424-24. Remedies

A. The Administrator may propose "remedies" to address otherwise "objectionable, prohibited or limited wastes".

Section 17.2 lists the design elements and mitigation incorporated into the Project to address the facility's proposed discharge to the sewer.

B. If a pretreatment or flow equalization system is required, the burden is on the Administrator to specify a compliance schedule and on the applicant to demonstrate compliance and stay in compliance.

The proposed design would enable the Project to meet a reasonable compliance deadline.

C. Testing specifications are listed.

The Project will ensure that the appropriate testing methodologies are followed, as required.

§424-26. Prohibited infiltration, inflow and exfiltration

A. Actions resulting in infiltration of groundwater into sewers are prohibited.

The Project would create or cause no such infiltration.

B. Within a sewer district, all industrial process wastewater and domestic wastewater must be discharged to the sewer, not to an individual discharge point. Also, non-contact cooling water and storm water runoff may not be discharged into a sewer.

The Project is outside a sewer district, but will follow this directive anyway. The Project will generate no non-contact cooling water flows. Storm water flows will be covered under the SPDES program.

§424-38. User charges: User charges can be established in addition to or in lieu of sewer-dedicated property tax or betterment fees.

The Project will pay user fees on a common basis with other users.

§424-39. Rates: Rates are to be kept on file at Suffolk DPW, identifying industrial users, among others.

The Project will pay its sewer rates on a common basis with other users.

§424-40. Surcharges: Surcharges may be assessed for above-normal concentrations of a constituent (but never in lieu of federal and county pretreatment standards).

The Project will pay surcharges, if any are assessed after a public hearing as described in Section 424-41.

§424-44. Connection to public sewer required: If the County sewer system is available and accessible, all neighboring buildings must be connected to it, or connect to it within one year of its becoming available and accessible.

Brookhaven Energy intends to connect to the County sewer system pursuant to Section 424-45.

§424-45. Connection by premises outside district: As long as the sewer property tax burden on properties within a sewer district is not exacerbated, a sewer district may accept applications for connection by users outside the district.

The Project would be an example of such a user.

10.4.2.3 Suffolk County Resolutions, Rules, and Regulations

Chapter 760. Sanitary Code.

Sanitary Code Article 4: Water Supply. The Project proposes to use a public water system and not to construct any wells. The applicable provisions of this article with respect to the Project are those that address piping and cross-connections.

§760-408. Permit to construct. It is Brookhaven Energy's understanding that a new connection to an existing water supply system does not require a permit under this provision.

§760-441. Disinfection

A. Any pipe or structure through which water is delivered for potable purposes must be disinfected in accordance with NYSDOH standards and satisfactory microbiological evidence must be presented to DHS.

The Project will use water for both potable and non-potable purposes, but it will purchase and receive this water through one delivery system from the Suffolk County Water Authority. All sanitary plumbing within the facility will comply with this disinfection requirement.

§760-451. Cross-connection control

A. Public water suppliers are required to implement programs that prevent backflow of wastewater into the water delivery stream.

The Project's backflow prevention system will conform to the Suffolk County Water Authority cross-connection program.

Sanitary Code Article 5: General Sanitation

§760-502. Sewage Disposal

A. Sewage shall be discharged directly into a municipal sewage disposal system, if available and accessible. If municipal sewage disposal is not accessible, community or private systems may be used. If a municipal sewer system becomes accessible, private sewage disposal systems are to be discontinued in favor of connections to the municipal system. At the time of connection of an industrial building to a sewage disposal system, all other points of liquid discharges except uncontaminated storm water runoff and non-contact cooling water must be discontinued.

Brookhaven Energy will construct a sewer line to a municipal sewer system, thus ensuring full compliance with this provision. The only regular flow that will not be discharged to the sewer will consist of uncontaminated storm water runoff from the Project site.

Sanitary Code Article 6: Realty Subdivisions, Developments and Other Construction Projects

§760-602. Department approval of realty subdivision, development or other construction project plans.

A. No developer may engage in the creation of a development or construction project without DHS approval of the existing or proposed water supply and sewage disposal facilities.

The Project will use a municipal water system (Suffolk County Water Authority) which has issued a letter of availability for the Project's water use and a sewer system (Suffolk County DPW) which has issued a letter stating that acceptance of the wastewater streams to be generated by the Project poses no technical difficulties; however, the district has not yet been formed. DHS approval is also contingent on a set of standards pertaining to industrial water and wastewater connections, which are outlined below. Brookhaven Energy will comply with them all.

§760-603. Applications for approval.

A. For projects proposing to use community water and/or sewer systems ("community" is defined under §760-601 to include public or municipal water and sewer services), the developer shall supply DHS with a written certification by the utility owner that the water and sewer facilities will be available for the proposed project.

The Project will use a municipal water system which has issued a letter of availability for the Project's water use and a sewer system which is expected to issue a letter indicating acceptance of the wastewater streams to be generated by the Project. The Project complies with this provision.

§760-607. Sewage facilities requirements.

A. Community sewer connections are required for any projects that, *inter alia*, are in Groundwater Management Zone III and the population density equivalent is greater than a subdivision of single-family residences on 40,000-s.f. lots; or if the proposed development is within a sewer district.

The Project site is in Groundwater Management Zone III, but the workplace population will be less than 20 people during the daytime shift, across a 28-acre site. Also, the Project is not in a sewer district. Thus, the Project would not necessarily be required to connect to a sewer system. However, the Project is being designed to connect to the sewer system.

§760-608. Water facilities requirements.

A. Community water connections are required for any projects that, *inter alia*, are in an existing water district or service area.

The Project is in the Suffolk County Water Authority's service area and will use that water source, thus complying with this provision.

B. Community water systems must meet capacity and pressure requirements, water quality requirements, continuity of service, at least 2 separate wells, at least one day's average storage, and comply with state DOH standards.

The Suffolk County Water Authority system is the major water purveyor in Suffolk County, and Brookhaven Energy's understanding is that it easily meets the DHS requirements for a community water system.

Sanitary Code Article 7: Water Pollution Control

§760-703. Definitions

P. This section lists specific compounds or groups of compounds that are classified as "restricted toxic or hazardous materials" under Article 7. They include petroleum distillates. The list of materials is reproduced in Table 10-17 below.

The Project will not add any of the compounds listed below to its process flow. (Note that some of the above materials are naturally occurring in potable water at trace concentrations.) The Project will store a limited amount of petroleum distillate fuel for its emergency equipment. Lube and insulating oils will also be stored on-site as well within operating equipment. Thinners and solvents will be used during the construction phase of the Project. The list of chemicals to be stored on-site is provided in Section 3.2.9.

Table 10-17: Toxic and Hazardous Materials Under Article 7

Regulated compound	Regulated compound	Regulated compound
Arsenic	1,1 Dichloroethane	Phthalates
Barium	1,2 Dichloroethane	Roadway Deicing Salt
Benzene	1,1 Dichloroethylene	Silver
Bromobenzene	1,2 Dichloropropane	Styrene
Bromodichloromethane	p-Diethylbenzene	Tetrachloroethylene
Bromoform	Ethylbenzene	1,2,4,5 Tetramethylbenzene
Cadmium	p-Ethyltoluene	Toluene
Carbon	Fluoride	1,2,3 Trichlorobenzene
Chlorobenzene	Freon 113	1,2,4 Trichlorobenzene
Chlorodibromomethane	Lead	1,1,1 Trichloroethane
Chloroform	Mercury	1,1,2 Trichloroethane
Chlorotoluene	Methylene	1,1,2 Trichloroethylene
Chromium	Chloride	1,2,3 Trichloropropane
Cis 1,2 Dichloroethylene	Nickel	1,2,4 Trimethylbenzene
Creosotes	Pesticides	1,3,5 Trimethylbenzene
Cyanide	Petroleum Distillates	Vinyl Chloride
Dichlorobenzene	Phenols	Xylenes
All other halogenated hydrocarbon compounds		

§760-705. General restrictions and prohibitions

A. A permit is required for the construction of any disposal system.

The Project proposes no on-site disposal of industrial or sanitary wastewater. The Project proposes on-site disposal of storm water.

B. Prohibitions against discharge without a SPDES permit.

With respect to this Project, this provision applies to the storm water system because, under Section 760-705(B)(2)(c), the storm water disposal system has a "potential discharge" of restricted materials. This provision does not apply to the wastewater system because, under Section 760-705(B)(2)(b), it is a discharge of sewage from an industrial facility to a municipal sewage system. Brookhaven Energy will obtain a SPDES permit or SPDES General Permit coverage for its storm water discharge (see Section 17.5).

D. Commingling of different types of waste streams is prohibited in a disposal system not approved by DHS.

The Project's sanitary and process wastewater flows will both be sent to the sewer system. The Yaphank STP is an approved facility. Wastewater disposal for the Project will be detailed in Section 17.2.

E. Storm water discharges that become contaminated are prohibited.

Project design ensures that no contamination of storm water occurs (see Section 17.5).

§760-706. Deep recharge areas and water supply sensitive areas

A. Discharge of "restricted toxic or hazardous materials", or industrial wastes from a facility that contains "restricted toxic or hazardous materials" is prohibited unless, *inter alia*: (3) the discharge is to a municipal sewage system whose recharge is outside deep recharge areas and water supply sensitive areas, and the following specific requirements are satisfied.

The Yaphank STP is outside Groundwater Management Zone III (the deep recharge area), and thus discharge to this facility from the Project site is permissible under Article 7.

(a) Dual plumbing systems are required, one for sanitary wastes and one for industrial wastes;

The Project proposes to discharge both sanitary and industrial process wastewater flows to the Yaphank STP. Separate plumbing systems will be constructed on-site for sanitary wastes and industrial process wastewater. Both systems will join prior to connecting to the Yaphank STP.

(b) Inspection and sampling access must be provided for the treatment plant operator and for Suffolk DHS;

Such access will be provided.

(c) The treatment plant operator has the right to determine which flows, if any, will require pretreatment prior to discharge;

Brookhaven Energy has submitted to the Suffolk County DPW a characterization of constituents in the Project wastewater flow that could be expected to be found in concentrations greater than in potable water.

(d) Project pretreatment personnel (or contractors) must be authorized by the treatment plant operator or by Suffolk DHS;

The Project will coordinate with both Suffolk DPW and DHS regarding such personnel or contractors.

(e) Only batch pretreatment permitted;

The Project proposes no continuous pretreatment mechanisms.

(f) Project sludge disposal personnel (or contractors) must be authorized by treatment plant operator or by Suffolk DHS;

The Project will coordinate with both Suffolk DPW and DHS regarding such personnel or contractors.

(g) Industrial process-area floors must have adequate means to contain any spill of each "restricted toxic or hazardous materials" and design is subject to Suffolk DHS review.

Floors in these types of areas within major plant buildings will be constructed from an impervious material – concrete. Means to contain spills are discussed with regard to Article 12 of the Sanitary Code (see below)

(h) Containment facilities shall be subject to the approval of the Commissioner;

Containment facilities are discussed with regard to Article 12 of the Sanitary Code (see below)

(i) A minimum of four groundwater monitoring wells must be installed.

Groundwater monitoring well installation is addressed under Article 12 (see below).

(j) Adequate financial assurance must be provided for cleanup of spills.

Section 10.6 below is Brookhaven Energy's financial assurance and decommissioning plan. It includes a security to be in place for spill cleanup and is responsive to this provision.

B. Storage and use of "restricted toxic or hazardous materials" is prohibited unless, *inter alia*:

1a The intended use of the product stored is solely for on-site heating, or intermittent stationary power production such as stand-by electricity generation or irrigation pump power; and

1b The facility for such storage is intended solely for the storage of kerosene, number 2 fuel oil, number 4 fuel oil, number 6 fuel oil, diesel oil or lubricating oil; and

1c The facility for such storage is constructed in accordance with the requirements of Article 12 of the Suffolk County Sanitary Code for new construction; and

1d The materials so stored are not industrial wastes from processes containing restricted toxic or hazardous materials; and

1e The materials stored are not intended for resale

OR

2a. For buildings with gross floor area of less than or equal to 20,000 square feet (s.f.), the materials so stored are in containers where the total liquid capacity stored at any time does not exceed 250 gallons and where the dry storage in bags, bulk or small containers does not exceed 2,000 pounds; and

2b. For buildings with gross floor area greater than 20,000 square feet (s.f.), the materials so stored are in containers where the total liquid capacity stored at any time does not exceed 0.0125 gals/s.f. of gross floor area and where the dry storage in bags, bulk or small containers does not exceed 0.1 pounds/s.f. of gross floor area; and

2c. For the purpose of determining quantity of allowable storage, the internal fluids within production machinery shall not be included; and

2d. If storage of restricted toxic or hazardous materials at a facility exceeds 1250 gallons or 10,000 pounds dry storage, then an annual environmental audit is to be conducted of the property, buildings and appurtenances, and the audit will conform to any standards which may be promulgated by the Commissioner.

OR

6a. The materials are stored at an establishment for which a permit has been obtained in accordance with 760-706(A)3.

The primary on-site substance meeting the Article 7 definition of toxic and hazardous materials (presented in Table 10-17 above) is petroleum distillate oil for the Project's emergency equipment. Emergency diesel storage is excepted under §760-706(B)(1). Storage of emergency diesel will comply with Article 12 standards. Brookhaven Energy initially had proposed to employ back-up fuel for facility operation (1 million gallons), but the Project is now proposing to use natural gas exclusively.

The Project could also store a minimal amount of lube oils and solvents. The total building footprint of the Project is approximately 85,000 s.f. Thus, the total allowable storage of such material is 85,000 * 0.0125 = 1,062.5 gallons. The Project will not store such oils or solvents in excess of that amount during operation. (Note the exception in 760-706(B)2c regarding fluids used within equipment, as the Project will have insulating, lubricating, and hydraulic oils contained within transformers as well as lube oils in turbines and other miscellaneous equipment.) Brookhaven Energy spoke with DHS Office of Pollution Control staff in February 2000 regarding these limits during construction, as they would not be possible to meet during some construction stages, such as when paint is brought to the site. Staff indicated the limits are not applied to the construction phase.

Finally, Brookhaven Energy's proposed discharge to the Yaphank STP will be in compliance with 760-706(A)3 requirements. Thus, the Project will be in full compliance with Section 760-706(B).

§760-709. Monitoring and reporting.

B. All persons with industrial wastewater discharges must monitor the discharge in accordance with DHS specifications, using an approved laboratory.

The Project proposes no in-ground process wastewater discharges. The proposed discharge to the sewer will consist of blow down and other waste streams specified in Section 17 of the Application, which will be within the water quality parameters presented therein.

D. Owners of non-residential property must notify DHS, within 30 days of a change, of a new facility on their property, including name of occupant, address, and Tax Map number; as well as a description of the process, operation or use.

Such formal notice will be sent to DHS within 30 days of commencement of Project construction.

§760-710. Connection to public sewer required: If the County sewer system is available and accessible, all neighboring buildings must be connected to it, or connect to it within one year of its becoming available and accessible..

Brookhaven Energy has chosen to connect to the County sewer system.

§760-711. Abandonment of disposal systems: If a disposal system is being abandoned, its owner must permanently remove or seal it in a manner acceptable to the Commissioner of DHS.

This design review would take place as part of the disconnection permit filing (see Section 424-13 and Section 424-20).

§760-715. Variances and waivers: If an applicant for a permit or approval is dissatisfied with a DHS determination, a variance or waiver can be sought before a Board of Review.

Brookhaven Energy does not anticipate that any variances from the County Sanitary Code provisions will be required for the Project.

Sanitary Code Article 9: Toxic and Hazardous Materials Registry

§760-904 & 905. Requirements, Timetable: Anyone using and storing toxic or hazardous materials (as defined in §760-903) above 250 gallons or 2,000 lbs. (for dry storage), must provide to DHS each material's name, CAS number, trade name, quantity, location of storage, and potential for flammability, explosion or reactivity. The requirement can be waived "if the nature of the business is easily recognizable and the contents of the establishment easily predictable." Such facility information sheets are due within 90 days of storage, and are to be updated annually.

Brookhaven Energy will comply with this provision through timely reporting.

Sanitary Code Article 10: Air Pollution Control. (Note: Per conversations with Suffolk County DHS personnel, there is no longer a permit program being administered by DHS for new sources of air pollution. It is Brookhaven Energy's understanding that the standards of this Article with respect to new sources are not enforced or addressed in NYSDEC's air permitting process.)

§760-1005. Construction and modification permits.

A. Construction permit is required before construction of an air contamination source.

It is not possible to obtain such a permit in light of the absence of this permit program.

B. Exemptions from a requirement that a construction permit be obtained include the following category: (4) fuel-burning equipment using No. 2 oil or natural gas, distributed by a regulated New York State utility.

The Project's combustion turbines fall under this category.

§760-1006. Certificate to operate. Certificate to operate is required before using an air contamination source.

It is not possible to obtain such a certificate in light of the absence of this permit program

§760-1008. Open fires.

B. Unless contradicted by other law, on-site burning of trees and brush derived from land-clearing operations or construction is allowed if a DHS permit has been issued.

Brookhaven Energy will not incinerate trees during land clearing.

§760-1011. Emission of visible air contaminants. Emissions with an opacity of greater than 20% lasting for 3 minutes in the aggregate in any 60-minute period (other than visible water vapor) are not allowed.

The Project anticipates achieving compliance with these opacity limits through firing natural gas as the primary fuel and employing good combustion practices.

§760-1012. Fugitive dust.

E. Material stockpiles: Material that can become airborne (including sand, cement, soils) is to be stockpiled in such a way that it does not become airborne.

The Project will comply with this provision to the maximum extent practical through fugitive dust abatement practices described in Section 6.15.

F. Disturbance of land: Land disturbance must be conducted in such a way that visible particulates are not airborne. Land must be revegetated within one growing season after final grading.

The Project will control particulates to the maximum extent practical through fugitive dust abatement practices described in Section 6.15. The Project's landscaping plan will result in natural revegetation as soon as within one growing season.

§760-1014. Emission of air contaminant. Emissions "detrimental to the health, safety, welfare or comfort" of any person, or those that "cause damage to property or business" are prohibited.

Since the language of this provision is broad, the Project's compliance with it is demonstrated through Prevention of Significant Deterioration (PSD), Non-attainment area New Source Review (NNSR), and other New York State program requirements (see Section 6).

§760-1016. Use of equipment without use of control apparatus prohibited. The use of equipment fitted with control apparatus is prohibited unless the control apparatus is used.

The Project design incorporates control apparatus that will be used during operation. Therefore, the Project complies with this requirement.

§760-1017. Operation of motor vehicles. Except for circumstances of traffic congestion, keeping passengers warm, or providing auxiliary power, no vehicle may idle for longer than five consecutive minutes when the temperature is greater than 25°F.

In order to comply, all Project construction personnel will be instructed not to idle vehicles without cause.

Sanitary Code Article 12: Toxic and Hazardous Materials Storage and Handling Controls.

§760-1203. Definition of Toxic and Hazardous Materials. The Article 12 definition of Toxic and Hazardous Materials is more expansive than the Article 7 and Article 9 definitions. The Article 12 definition includes:

A. All substances named in 40 CFR 116 (hazardous substances under the Clean Water Act); 40 CFR 261 (hazardous wastes under the Resource Conservation and Recovery Act); 40 CFR 302 (hazardous substances under the Community Environmental Response, Compensation, and Liability Act); 6 NYCRR 371 (New York Hazardous Waste Regulations); and 6 NYCRR 597 (List of Hazardous Materials).

Aqueous ammonia (ammonium hydroxide) and ethylene glycol are listed under 40 CFR 116, 40 CFR 302, 6 NYCRR 371, and 6 NYCRR 597. Thus, they are regulated under Article 12.

B. Acids and alkalis with a pH outside the range of 4.0 – 10.0;

The Project contemplates no such acid or alkaline storage in excess of 250 gallons during operation. Smaller amounts of sulfuric acid may be stored. During commissioning, larger amounts of acid/caustic will be used during a short period of time.

C. Heavy metal sludges, mixtures, and solutions "in excess of standards";

The Project contemplates no such sludges, mixtures, or solutions.

D. Petroleum products;

The emergency diesel engines will have fuel storage day tanks that will comply with such Article 12 requirements as secondary containment holding 110% of a tank's volume.

E. Organic solvents, including petroleum solvents;

An indoor solvents storage area is included in Project design. Small amounts of solvents may be stored on-site during construction and operation.

F. All material listed in 6 NYCRR 703.6 that is in excess of its concentration standards except iron, manganese, foaming agents, and pH; and

Brookhaven Energy's analysis in Section 17.2 indicates that there will be no toxic or hazardous materials at the Project that qualify on the basis of this provision alone. For example, the Project's wastewater is not, in and of itself, an Article 12 toxic or hazardous material.

G. Any other substance so designated by the Commissioner of DHS.

Table 10-18 shows the materials and volumes proposed for the Project during operation that Brookhaven Energy has concluded are subject to Article 12.

Table 10-18: Brookhaven Energy Project Article 12 Materials

Material	Quantity (Indicative Values)	Storage Method	System Piping Material, Location	Secondary Containment
Aqueous Ammonia (19% concentration)	2 x 14,000 gallons	Bulk storage tanks (2) within a building	Welded carbon steel, Indoor and Outdoor	Storage pit for 110% of one tank volume located within a building
Aqueous Ammonia (1-2% concentration)	2 x 270 gallons	Indoor storage tanks (2)	Welded carbon steel, Indoor	Containment for 110% of one tank volume
Diesel fuel for emergency generators and backup fire pump	2 x 600 gallons and 1 x 500 gallons	Day Tanks	Steel braid reinforced neoprene tubing, Indoor within enclosure or building	110% rupture basin
Step-up transformer insulation oil	2 x 18,500 gallons	Transformer vessels (steel tanks), Outdoor	Welded 304 stainless steel, Outdoor within secondary containment	Diked containment area for 110% of stored volume. Rainwater drained to an underground oil/water separator.
Auxiliary transformer insulation oil	2 x 2200 gallons	Transformer vessels (steel tanks), Outdoor	Welded 304 stainless steel, Outdoor within secondary containment	Diked containment area for 110% of stored volume. Rainwater drained to an underground oil/water separator.
Lube and hydraulic oils (turbines and misc.)	16,500 gallons	Lube oil tanks (steel), Indoor	304 stainless steel tubing (for GT/ST/GEN train), Indoor	The main turbine and gas compressor areas, and the warehouse storage area are sloped to central drain points, which drain the areas to an underground concrete pit* and an oil/water separator. Miscellaneous pumps are housed in buildings with concrete foundations and walls.
Mixture of water and ethylene glycol (for plant closed cooling water system)	2 x 16,000 gallons, 34% (vol.) ethylene glycol	Within heat exchangers and piping of cooling system	Welded 304 stainless steel, Indoor and Outdoor	Portions of the piping are contained within the turbine buildings
Air-cooled condenser gearbox oil	2 x 115 gallons	Within gearboxes located outdoors in the fan deck area	N/A	Drip trays will be supplied

Note: All piping for above-mentioned systems is single walled and aboveground.

* The underground concrete pit is designed to contain at least 110% of the lube oil volume of one GT/ST/GEN train in the case of a catastrophic failure.

§760-1205. Prohibited discharges, transporting, disposal, improper storage.

A. Discharge of toxic or hazardous materials without a SPDES permit is prohibited. Discharge is defined (Section 760-1203) to include accidental release. Thus, any storm water that comes in contact with any toxic or hazardous material must be managed properly according to the SPDES permit.

Alongside the Article X application process, Brookhaven Energy has applied for storm water SPDES permit coverage (see Appendix Z). The Project, with a SPDES storm water permit, will comply with this provision.

D. Storing a toxic or hazardous material without compatible construction materials is prohibited.

The Project will comply with this requirement by using appropriate materials. For example, during operation, any storage of solvents will be indoors, where floor and roof are impervious.

E. Storing toxic or hazardous materials in proximity to each other "in a manner that could allow a reaction to occur in the case of leakage, spillage or fire" is prohibited.

The Project will comply with this requirement through appropriate placement of materials.

§760-1206. Construction and modification permits: It is unlawful to construct a storage facility without a permit from Commissioner of DHS. Permits are issued for one year and renewed annually.

The Project is applying for storage of several materials that appear to be jurisdictional to Article 12. These are listed in Table 10-18 above, and include ammonia, insulating, hydraulic, and lube oils, petroleum for emergency equipment, and ethylene glycol. The approval to construct storage for these materials is subsumed in the Article X process, with Suffolk DHS input.

§760-1207. Permits to operate: It is unlawful to use a storage facility without a permit from Commissioner of DHS. Permits are issued for one year and renewed annually. Storage facilities also must be registered prior to use.

The Project will apply for initial approval as part of the Article X process. The Project will seek renewals from the appropriate authority on a quintennial basis. The storage facilities will be registered prior to use.

§760-1208. Exemptions:

F. Storage in containers of five-gallon capacity or smaller where the total capacity stored at any time does not exceed 250 gallons or where the dry storage in bags, bulk, or small containers does not exceed 2,000 pounds is exempt from all portions of Article 12 unless specifically ruled otherwise by the Commissioner on a case-by-case basis.

The Project anticipates having a small amount of laboratory chemicals stored in manufacturer's original containers, and well below the above thresholds.

§760-1211. Outdoor aboveground storage facilities.

A(2). It is unlawful to construct aboveground storage that "will allow the discharge of a toxic or hazardous material to the ground, groundwaters or surface water" of the county.

The Project complies because its proposed toxic or hazardous material storage design will not allow such a discharge.

A(3). It is unlawful to construct aboveground storage without specific design requirements: impervious containment and dike holding 110% of the largest tank contained in the dike; material of dike must be impervious to the material being stored; drainage and precipitation controlled in manner to prevent a discharge per Section 760-1211.A(2) above. Alternate designs are permitted if they provide equivalent protection to a diked enclosure.

The Project design includes all the aforementioned design requirements. The Project complies by proposing to construct diked enclosures made of materials impervious to those being stored, as detailed in Table 10-18 above. The diesel fuel oil storage for the emergency generators and emergency fire pump will have secondary containment in the form of 110% rupture basins.

A(4). It is unlawful to construct aboveground storage without specific overflow detection designs.

The transformers, which contain insulating oil, rely on visual overflow detection. Fuel oil storage for emergency equipment will also rely on visual overflow detection.

A(5). It is unlawful to construct new aboveground storage without also conforming to all regulations and standards pursuant to pre-existing storage facilities, general provisions, and leak/repair procedures.

The proposed Project will comply with such procedures through good maintenance practice.

A(6). It is unlawful to construct new aboveground storage without cathodic protection of the exterior surface of areas in contact with the ground. The interior bottom of surface must also be coated with an approved coating system.

Cathodic protection is neither supplied nor required for aboveground oil storage since there is no oil storage contained within tanks which are in contact with the ground.

C(1-8). It is unlawful to abandon a storage facility without either removing it or placing it into proper out-of-service condition (which includes protection from deterioration). There are specific maintenance, notice and other requirements that all apply to the out-of-service condition.

The Project will comply with these provisions if and when necessary (e.g., at decommissioning). It is not anticipated that tanks would be placed out of service during the facility life.

C(12). It is unlawful to construct or use any aboveground storage facility that has tanks that rest on the ground or underground piping, unless monitoring wells (one upstream and three downstream) are installed for the purpose of detecting leakage.

The Project will not have any outdoor aboveground storage facilities that rest on the ground or have underground piping. The Suffolk DHS defines resting on the ground as the contact of the tank itself with soil. It has therefore been concluded, upon consultation with Suffolk DHS, Office of Pollution Control, that monitoring wells are not necessary for the Project.

§760-1212. Pipings, fittings, connections.

A(2). New installations must prevent escape of toxic or hazardous materials; be made of non-corrodible materials and cathodically protected; be installed with access points to permit pressure testing of all underground piping without extensive excavation; contain simple and reliable leak detection for piping installed underground or in areas where piping is not clearly visible; be constructed of double-walled pipe or in durable product-tight galleries, or with an alternate form of secondary containment.

The Project design complies with these requirements through its use of product-tight galleries throughout the Project. Piping associated with Article 12 substances is described in Table 10-18. The Project proposes no underground piping that would be affected by this clause.

C(2). If a leak is discovered, all contents of the piping must as soon as possible be emptied and the leak must be repaired and the repair inspected by qualified personnel. Piping may not be used again until repaired.

The Project will comply with this requirement during operation.

§760-1213. Transfer of toxic or hazardous materials.

A. It is unlawful to construct new loading/unloading areas (used for loading or unloading toxic or hazardous materials) without submitting plans to the Commissioner of DHS, and approval by the Commissioner of DHS; without simple and reliable leak detection; and without providing a system draining any leaks to a holding tank of adequate size.

The only two substances listed in Table 10-18 that will be regularly brought to the Project site are aqueous ammonia solution and emergency diesel engine fuel oil. Any leaks that could occur in the ammonia unloading area are drained into the main containment area for the indoor storage tanks. Automatic detection for leakage or spillage in the unloading area is not typically supplied. Fuel delivery for the emergency diesel engines is expected to occur very infrequently because these units are only operated during emergencies and for testing. The emergency generator fuel tanks rest on concrete foundations, with the fuel filling connections being housed within the engine enclosure. The emergency fire pump fuel tank will be housed within a building with a concrete floor.

B(4). Conditions for transferring toxic or hazardous material are inadequate unless: all points of overflow are visible from the unloading locations; tank or storage capacity is adequate and the transfer operator ensures "by some reliable means" that it is adequate.

Overflow points are visible for all fuel storage tanks and all vessels holding lubricating or insulating oils. The ammonia tank is an indoor system that relies on a high-level alarm, as discussed in the following paragraph.

§760-1214. Indoor storage facilities.

It is unlawful to construct indoor storage facilities (which include potable containers and tanks with an individual volume of greater than eighty (80) gallons, stored or located indoors and used to contain toxic or hazardous materials) without Suffolk DHS plan review and approval, as well as specific design requirements that are outlined below:

B2(d). An impervious secondary containment equal to or greater than 110% of the entire volume to be contained;

The indoor storage facilities subject to Article 12 are lube oil tanks in the main turbine buildings and gas compressor areas, and aqueous ammonia storage. Floors will be sloped to central drain points leading to an underground concrete pit designed to contain at least 110% of the lube oil volume of an entire turbine-generator train in the case of a catastrophic failure. Likewise, the ammonia storage building will be designed to contain 110% of an ammonia tank.

B2(e). Construction in a manner which will prevent the release of any toxic or hazardous materials into the ground or surface waters;

The Project design complies with this provision by using surfaces impervious to the material being contained, by installing product-tight piping, by its inclusion of containment areas, and through proper operating procedures.

B2(f). If there are any open tanks or vessels for toxic or hazardous materials that are in a building equipped with a sprinkler system, there must be head deflectors or automatic covers (or an equivalent) in order to prevent the overflow of the tanks by reason of flow from the sprinkler system;

All toxic and hazardous materials storage that is indoors will be in closed tanks or vessels. This provision therefore does not apply.

B2(g). High-level alarms or other adequate means of detecting an impending overfill condition must be provided for all tanks not readily visible by the operator controlling filling.

The operator of the ammonia loading and unloading system will not readily see the indoor ammonia tanks, and for that reason a high-level alarm will be installed for each ammonia tank.

§760-1215. Outdoor portable containers and tanks.

A(1). It is unlawful to install a storage facility for portable containers that is greater than 250 gallons total capacity without submitting plans to the Commissioner of DHS and receiving approval; preventing discharge or toxic or hazardous material to the environment; providing a chemically resistant pad onto which portable containers or tanks are placed and which is impervious to the material being stored; providing 30% containment.

During operation, storage of portable containers will be within entirely self-contained units (effectively indoor units) or in the plant buildings (as described in Table 10-18). During construction, outdoor storage of portable containers >250 gallons total capacity will be in a centralized area with a chemically resistant pad providing containment of 30% of the contents being stored.

A(2). It is unlawful to install and maintain storage in portable containers without preventing the discharge of toxic or hazardous contents to ground, groundwaters, or surface waters; securing the portable containers or tanks to protect from vandalism or accidental damage; storing them indoors unless it is impossible due to fire regulations or the "physical or financial constraints of the facility", with permission of Commissioner of DHS; and protecting portable storage from weather-related conditions.

During operation, waste oil containers would be stored in a section of the warehouse. If the warehouse cannot be used for fire protection reasons, they would be stored indoors in self-contained units. Likewise, spare lubricating oil containers will be stored indoors. All such drums will be in a secure location that features a chemically resistant pad or floor (regulated under Section 760-1214). During construction, because the portable containers will be on-site at a time when there is no building in which to store them, it is not practical to store them indoors. Instead, storage of portable containers > 250 gallons total capacity will be in a centralized area with a chemically resistant pad.

Once indoor storage is possible (when the Project buildings are complete), any portable containers or tanks will be stored indoors (in warehouse buildings or self-contained units).

B(1). It is unlawful to stack portable containers more than two high, unless a storage rack is installed. Portable containers must be available for inspection from all sides. Records related to handling must be kept for five years.

The Project will comply with these requirements by ensuring sufficient space is available to store and inspect portable containers.

F. Empty containers must be so labeled or else presumed to be full. They must be stored in a way that prevents precipitation from entering. If it enters, it is presumed to be contaminated.

The Project will comply with this provision through diligent labeling and storage practices.

§760-1216. Bulk storage of toxic or hazardous materials. (Note: This refers to storage of dry or semidry materials, not to bulk fuel oil storage as understood under New York State law.) Leachate from any outdoor bulk storage must be collected and treated. Potentially reactive chemicals must be segregated. Toxic or hazardous materials must be placed on pallets and stored within a roofed structure. For indoor bulk storage, an impervious containment dike must be provided in case firefighting water comes in contact with toxic or hazardous materials. Adequate security must be provided to protect from vandalism or accident. Road deicing salt is a toxic or hazardous material.

The Project anticipates storage of such materials during construction, but the total amount is expected to be less that the exemption amount of 2,000 pounds, per Section 760-1208.F. The materials will be in a protected indoor area or in a roofed outdoor structure. Roadway deicing salt is not expected to be stored.

§760-1219. Posting and labeling.

A notice must be conspicuously posted at any site containing toxic or hazardous materials that warns of their presence and provides safety information necessary to protect the public and assist emergency response personnel. Each portable container must be clearly labeled. Each aboveground tank must be clearly labeled. All piping must be clearly labeled as to its "actual, intended and possible" contents. Permits issued pursuant to Article 12 must be conspicuously posted.

The public will be protected by the erection and maintenance of a secure fence around the facility. Emergency personnel will be assisted through conspicuous labeling, periodic inspection, and regular updates as to the chemicals contained in the plant and their locations.

10.5 Environmental Site Assessment

This section addresses Stipulation 5, Clause 3, requiring a summary of Brookhaven Energy's Phase I ASTM Phase I Environmental Site Assessment for the Project site.

Nelson, Pope & Voorhis conducted a Phase I site assessment and limited site investigation, pursuant to the format and requirements of the ASTM Standard Practice for Environmental Site Assessments, as published in ASTM E1527-97. This document is presented, in part, in Appendix R. The following is a brief summary.

Aerial photographs and Sanborn Maps were reviewed in order to document past uses of the property. Sanborn Map coverage did not include the Project site. Aerial photographs from 1957, 1966, 1976, 1980 and 1994 were reviewed. The aerials revealed the site was vacant undeveloped woodland, with two cleared dirt roads/paths extending the width of the central and southern portion of the site. Smaller footpaths appear evident throughout the historical review. The USGS Bellport Quadrangle Map dated 1940, photo-revised in 1966, and field checked in 1967, illustrated the subject property as undeveloped land.

The areas surrounding the Project site consist of undeveloped vacant land, utility and transportation uses, located adjacent to and in the immediate vicinity of the site. No potential threats to the integrity of the site were observed in the form of petroleum or chemical storage tanks or hazardous uses from off-site sources.

An extensive government records search found no major sources of environmental degradation on or in the vicinity of the site. Several Federal, State and County documented regulated sites (with minor spills or generation of hazardous wastes) were noted in the vicinity. However, none of the hazardous waste generators (all more than 1,200 feet away) are expected to adversely impact the site. Additionally, the nearby spill incidents have been closed, and the sites were cleaned. Therefore no adverse impact is expected to occur to the Project site.

A detailed field inspection was also conducted. The Phase I ESA notes that the site is vacant undeveloped woodland. Two dirt paths extend the width of the site – one is located in the center of the property and the other is located in the southern portion of the site. An additional small footpath transects the northern portion of the site. The site also contains portions of two previously burned areas, the largest of which is located along the western property boundary in the central portion of the site and an additional small area is located in the southeastern corner of the site.

Debris is found along the site periphery, generally consisting of paper, metal, glass, plastic, wood, carpet, concrete, asphalt, screen, a sink, an empty 15 lb plastic container of Winter Heat ice melt, shotgun shells, ladders, counter top, furniture, chain-link fencing, chicken wire, shingles, tires, and landscaping debris. Seven empty disintegrated 5-gallon metal buckets were found near the northern portion of the site. A disintegrated 55-gallon drum was seen off site along the LIPA transmission line, and an empty 1,000-gallon tank was seen off-site adjacent to the western property boundary in the southern portion of the site. All metal and plastic containers were empty and appeared to have

been moved to the site from another location. There were no other above or below ground storage tanks observed on the site. Debris was inspected and there was no evidence of release in the form of residue, odors, stressed vegetation, or other visible indicators. There are several dirt piles/mounds within the site, which are vegetated to varying degrees. The majority of these features are expected to be the result of prior site grading activities, although small piles found along the central trail may be present due to unauthorized illegal dumping. One such pile is particularly dark in color and mixed with residential debris.

The dirt piles found on site, particularly those found on the existing dirt roads/paths, have been sampled to determine if the piles contain any contaminated or hazardous materials in concentrations above the limits of laboratory detection for the volatile or semi-volatile organic compounds analyzed. The piles were not documented to contain any such materials. With regard to metals, none of the concentrations were above typical background levels for native Long Island soils. The laboratory analysis was provided by Long Island Analytical Laboratories. Also, soil within the Project site that is adjacent to the 55-gallon drum and 1,000-gallon tank was inspected for any staining. None was found.

In summary, the Phase I ESA recommended no further analysis of any environmental conditions on-site. The site is suitable for development and does not present an environmental hazard or environmental liabilities.

10.6 Decommissioning and Restoration

This section addresses the requirements of 16 NYCRR §1001.7(b) and Stipulation 5, Clause 2, which require: a description of the financial resources available to restore any disturbed areas of the Project site in the event the Project is abandoned, cannot be completed, or is decommissioned; and a plan for the decommissioning of the Project site. Further paragraphs in Clause 2 describe the methodology that must be followed, as presented below.

Clause 2(a) requires that a default plan be developed for restoring the site to a green field condition, defined as the removal of all structures, improvements and equipment constructed or installed by Brookhaven Energy, the remediation of any spills or other environmental damage which occurred during the lifetime of the Project and the regrading and revegetation of the site to a condition which conforms with the zoning in effect at the time of decommissioning and is compatible with surrounding land uses. The components of this plan must include:

- A statement of the performance criteria proposed for site restoration or decommissioning;
- A description of the major phases of the decommissioning plan and a summary of the procedures to be used to accomplish each phase;
- An itemized analysis of the cost of implementing the decommissioning plan; and

- A description of the nature and amount of any insurance, bond or independently administered fund to be established by Brookhaven Energy to insure that adequate financial resources are available to restore the site to the condition specified in the performance criteria.

10.6.1 Performance Criteria

In addition to the requirement of Clause 2(a) that performance criteria be identified, Clause 2(b) requires a discussion of why these performance criteria are appropriate. Both these requirements are addressed here.

The decision to cease operations permanently and decommission the Project will be solely at the discretion of Brookhaven Energy or any succeeding owner of the Project. The criterion for reaching such a decision will be commercial: if the Project is not economically viable, it will need to be decommissioned.

The performance criteria for the decommissioning process and site restoration will be as follows:

- the Project must be dismantled safely and removed in an environmentally safe manner;
- all electrical equipment, including that on the LIPA side of the switchyard bus structure, must be removed safely, in an environmentally safe manner, and in coordination with LIPA or its successor with respect to outage period;
- all spills occurring as part of the operation of the Project must have been remediated following any such event;
- recycling must be maximized wherever there is a market for scrap metal and other materials;
- foundations and underground utilities must be removed, except for those previously deeded to and operated by public authorities, municipalities, utilities or other agencies;
- if so requested by the appropriate agencies, all underground utilities associated with the Project (water line, sewer pumping station and line, natural gas line) will also be removed;
- the site and temporary laydown area need not be regraded to their pre-development condition because they are already relatively flat, with no erosion concerns in the areas to be disturbed for the plant and temporary laydown;
- the site and temporary laydown area must be revegetated using natural vegetation that is not dependent on fertilizers, consistent with Town of Brookhaven requirements.

These performance criteria are appropriate because they satisfy the requirement of a default "green field" plan, as defined in the stipulations. They cover the different aspects of the decommissioning and site restoration process.

10.6.2 Phases of Decommissioning/Restoration

There are four major phases to the decommissioning plan: removal of specialized equipment; removal of basic structures; removal of foundations, piping, and utilities; and site restoration. Procedures for each phase are summarized below.

For removal of specialized equipment, all hazardous materials associated with or housed in that equipment will first be removed. Then, the equipment will be either taken off-site in its entirety, if reusable elsewhere, or dismantled in place. Equipment can be a source of scrap metal. For large equipment, the first two phases of decommissioning may overlap.

For removal of basic structures, dismantling will first occur. Roofs, beams, wall sidings, the condenser structure, and tanks will be taken apart. Much of this material will be a source of scrap metal.

For removal of foundations, piping, and utilities, excavation will be necessary. In order, the first part of this phase will be removal of aboveground piping, followed by excavation and removal of foundations (with appropriate disposal of the concrete and steel girders), and excavation and piecemeal removal of underground piping. Finally, areas of excavation will be backfilled.

For site restoration, all pavement will first be removed (with appropriate disposal). Then, the areas will be appropriately reseeded with a material not dependent on fertilizer (*e.g.*, hydroseed). Natural vegetation will also be planted. This phase includes the restoration of both the site and the temporary laydown area.

10.6.3 Cost Analysis

This section addresses the requirements of Stipulation 5, Clause 2(c) – a demonstration that the financial resources available for restoration or decommissioning are adequate to restore the site to the condition specified in the performance criteria.

It is expected that the aboveground portion of the Project will be offered for sale, for at least its scrap value. The scrap value of the equipment, buildings and structures on the Project site is estimated to be sufficient to cover the complete demolition of the aboveground portion of the energy facility. This is certainly true for most demolition work today, but in this case, due to certain materials used in the major equipment, there should be a higher than normal value in the scrap. The expectation, therefore, is that the purchaser will be responsible for dismantling and removal of the facility from the Project site.

Brookhaven Energy or the seller will be responsible for the removal of the foundations, backfilling, and seeding/landscaping. For the purposes of this analysis, it is assumed that these costs cannot be

recovered through sale of scrap materials. It is also conservatively assumed that the Project would have no other resale value. Under current economic conditions, these tasks are estimated to cost $1.5 million, as estimated in Table 10-19.

Table 10-19: Decommissioning Costs and Revenues

Hardware	Estimated Cost	Estimated Revenue	Net Cost (Revenue)
Equipment within buildings	$0.4 million	$0.5 million	($0.1 million)
Switchyard and transmission lines	$0.2 million	$0.3 million	($0.1 million)
Buildings and tanks	$0.7 million	$0.7 million	$0 million
Air-cooled condensers	$0.3 million	$0.3 million	$0 million
Foundations	$1.1 million	None	$1.1 million
Underground piping/utilities	$0.5 million	None	$0.5 million
Natural revegetation	$0.1 million	None	$0.1 million
Total	$3.3 million	$1.8 million	$1.5 million

10.6.4 Surety

This section addresses the requirements of Stipulation 5, Clause 2(a), in part and Clauses 2(d). Clause 2(a) requires a description of the nature and amount of any insurance, bond or independently administered fund to be established by the applicant to insure that adequate financial resources are available to restore the site to the condition specified in the performance criteria. Clause 2(d) requires a description of any security fund or insurance in place or to be obtained, and the financial resources available to the applicant in the event that either the Project cannot be completed, or that the Project must be decommissioned.

Brookhaven Energy will provide surety in the form of a letter of credit during construction and decommissioning fund during operation. The funding is described below.

- Commencing with the construction of the Project, Brookhaven Energy will post, or cause to be posted, a letter of credit in favor of the overseeing authorities (*e.g.*, Town of Brookhaven) in the amount of $500,000 for the first year of construction;
- This amount will be increased to $1,000,000 for months 13 through 20; and
- Further increased to $1,500,000 for the remainder of the construction period.

The letter of credit will expire upon the commencement of commercial operation of the Project.

For decommissioning following the operations period, Brookhaven Energy proposes to establish a decommissioning fund, which will be funded on an annual basis by Brookhaven Energy during the life of the Project. Brookhaven Energy expects that the establishment, use, and disposition of this account will be subject to an agreement between Brookhaven Energy and the overseeing authorities. Such an agreement will ensure that these funds will be used solely for the restoration/decommissioning of the Project site, regardless of whether or not Brookhaven Energy is the owner at that time. Brookhaven Energy expects to deposit $50,000 into the account each year.

Assuming a five percent (5%) interest rate, the funds available for restoration/decommissioning are projected as follows:

- After 20 Years $1,745,963
- After 30 Years $3,488,039
- After 40 Years $6,341,988

The expectation is that the Project will have a 40-year life (although the decommissioning fund will run for the entire life cycle of the Project). Assuming an average annual escalation rate of 2.5%, the cost in 40 years will be $4.0 million. Thus the $6.3 million accrued in the Decommissioning Account over that period of time will be more than adequate to ensure that the property is restored to a "greenfield" condition. If the average annual escalation rate is higher than 2.5%, it is reasonable to expect that the interest rate on the decommissioning fund will also increase to keep pace. Unexpected though it is, any shortfall will be the responsibility of Brookhaven Energy or any succeeding owner.

10.6.5 Alternative Plan

This section addresses Stipulation 5, Clause 2(e), which states that Brookhaven Energy may also submit an alternative decommissioning plan.

Returning the land to a "greenfield" condition will maximize the value of the land for future development. This is consistent with the land use goals of the Town of Brookhaven. Hence, Brookhaven Energy proposes no alternative decommissioning plan.

11. NOISE

11.1 Regulatory Applicability

All new power plants in New York State are required to quantify expected noise impacts and to minimize them. Generally, the emphasis of environmental noise regulation is toward noise-sensitive receptors, such as residences, near a facility that produces noise. The Public Service Law requires that Brookhaven Energy Project's Article X application include a noise study and document noise abatement measures. PSL §164.1(c)(i-ii). Specifically in the Brookhaven Energy Project proceeding, Stipulation 6 (Clauses 1 through 10) and a "Noise Impact Assessment Protocol" (attached to the stipulation) address noise issues. The stipulation and protocol require documentation of the existing and proposed noise levels around the Project site, an impact assessment during construction and operation, and mitigation of noise levels to achieve compliance with applicable noise standards.

11.2 Existing Project Area Sound Levels

11.2.1 Measurement Types

Because the sounds in our environment usually vary with time, they cannot simply be described with a single number. Two methods are used for quantifying sounds: exceedance levels and equivalent level. The *exceedance* levels are the sound levels exceeded a given percent of the time. For example, the residual sound level (L_{90}) is the sound level exceeded 90 percent of the time during a measurement period (almost the lowest sound level observed). The *equivalent* level, designated L_{eq}, is an average of sounds measured over time. It is strongly influenced by occasional loud, intrusive noises. Because it is able to account for such noises, the L_{eq} is the best descriptor for the intermittent sound levels from construction activities.

The human ear is more sensitive to sounds of middle frequencies, and less so to sounds of high or low frequencies. A weighting scale, known as the "A" scale, has been developed to approximate the response of the human ear, and decibels are often listed as A-weighted decibels (dBA).

11.2.2 Measurement Locations and Periods

This section addresses Stipulation 6, Clause 1, which requires a map showing the locations of noise receptors in relation to the Project site, including the nearest residential and sensitive receptor locations, as described in Section 2 of the Noise Impact Assessment Protocol.

Existing ambient noise levels were measured in the vicinity of the site in February, April and July of 2000. This allowed observations to be made both with leaves on the trees (July) and with the trees bare (February and April). Measurements were made during the daytime (8 AM to 5 PM) and the nighttime (12 AM to 4 AM), and during the week and on a weekend, in order to observe any diurnal and weekly variations in noise levels. As a result, up to ten different measurements were made to characterize the ambient noise levels at each sampling location. No residences are located closer than 2,000 feet from the Project. In accordance with Stipulation 6, Clause 1, Figure 11-1 provides

the residential and property-line noise measurement locations for the noise study. These locations are as follows:

- 1 — On the site entrance drive, off County Route 101. This location is representative of the site and its property lines.
- 2 — West of the residence at 110 Long Island Avenue, north of the Long Island Expressway. This is the closest residential location north of the site. The measurement position was south of Long Island Avenue and at the residential setback.
- 3 — East of the residence at 109A Long Island Avenue, west of the site. This is the closest residential location west of the site. The measurement position was south of the avenue at the residential setback.
- 4 — North of the residence at 444 Patchogue-Yaphank Road southwest of the site, at the residential setback on the west side of the road. This is the closest residential location south of the site.
- 5 — South of the Suffolk County Farm and Education Center buildings complex, east of the site, near farm manager's residence (closest residential location east of the site).
- 6 — Near 151 Gerard Road near Sills Road, a more distant location that can be useful in determining highway and other types of noise dissipation.

11.2.3 Measurement Methodology

This section addresses Stipulation 6, Clause 2, which requires an evaluation of ambient pre-construction baseline noise conditions, including pure tones, at the nearest noise receptors, using actual measurement data recorded as a function of time and frequency using a Type 1 precision sound level meter (SLM) and octave band frequency spectrum analyzer.

Sound levels were observed several times a second for periods of 15 or 20 minutes. During the foliate measurements, spectra were observed in 1/3 octave bands and the octave band levels were calculated from the 1/3 octave band levels. The measured parameters include the L_{eq}, L_{90} and L_{10} levels. Percentile and L_{eq} levels were automatically calculated by the instrument for each data set.

Ambient noise levels were measured with equipment that complies with the requirements of the stipulation and protocol, as described in Appendices N1, N2, and N3. Monitoring was conducted only during meteorological conditions that include wind speeds of less than 10 miles per hour and no precipitation. Surface weather observations were made locally during the sound measurements by the measurement technician.

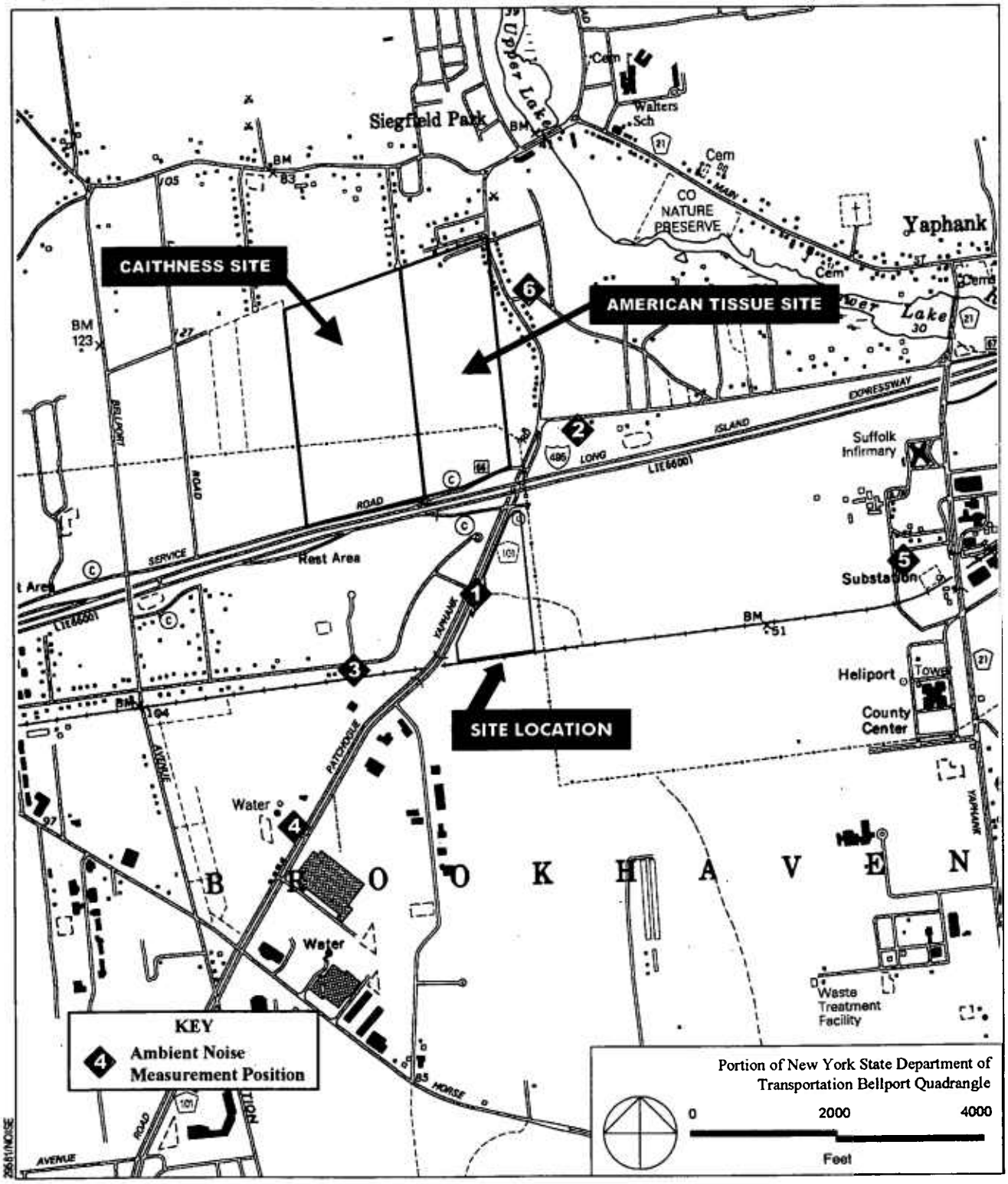

Figure 11-1
Ambient Noise
Measurement Locations

11.2.4 Baseline Sound Levels

This average and minimum ambient daytime and nighttime L_{eq} noise levels at each location are summarized below in Table 11-1. Detailed results of the ambient noise measurements are provided in Appendices N1, N2, and N3.

Table 11-1: Summary of Ambient A-Weighted Noise Levels (L_{eq}, dBA)

Noise Monitoring Location	Daytime Average	Nighttime Average	Sources of Noise
1 – Project site	63	55	Traffic on Patchogue Yaphank Road and the LIE and humming sound from nearby power lines
2 – 110 LI Ave.	65	58	Traffic on LIE
3 – 109A LI Ave.	58	50	Traffic on LIE and buzzing sound (source unknown)
4 – 444 Patchogue-Yaphank Road	66	53	Traffic on Patchogue Yaphank Road, the LIE and Horseblock Road; HVAC equipment on a nearby building, and lawn sprinklers (in the summer)
5 – Suffolk County Farm	53	47	Traffic on LIE and Yaphank Road, transformer hum at nearby substation
6 – 151 Gerard Rd.	55	46	Traffic on Patchogue Yaphank Road

In general, the minimum nighttime noise levels were lower in the winter than in the summer and decreased with distance from the LIE. Weekend nighttime noise levels tended to be a little higher than weekday nighttime levels.

As mentioned above, humming sounds could be heard from power lines and a substation at two of the locations. During the summer measurements, one-third octave band spectra were measured at every location to determine whether or not any of the ambient noise environments contained pure-tone sounds. See Appendix N3. Applying the criteria in section 3.2.26 of the EPA's *Model Community Noise Ordinance*, no pure-tone sounds were identified[1].

11.3 Noise Standards

This section addresses Stipulation 6, Clause 3, which requires, in part, a description of the noise standards applicable to the Project. A more detailed description of these regulations and guidelines is found in Appendix N, Section 3.

[1] US Environmental Protection Agency, Model Community Noise Ordinance, EPA 550/9-76-003, page 21, September, 1975.

11.3.1 Brookhaven Noise Code

Brookhaven has a noise control ordinance (Chapter 50 of the Brookhaven Code) that addresses both construction and operational noise. The Brookhaven noise control code is described in detail in Section 10.4. Noise from construction activities during the daytime is exempt, but the code prohibits the operation of any tools or equipment used in construction between the hours of 6:00 PM and 7:00 AM on weekdays, and all day on Saturdays, Sundays and holidays. However, a Town variance from this prohibition is provided for in the Code. With respect to operational noise, the noise control code prohibits a nighttime (10 PM to 7 AM) noise contribution of more than 50 dBA at any residence or its property line. The daytime (7 AM to 10 PM) limit for residences is 65 dBA. For industrial parcels, which surround the site on all sides except the northern tip, the limit at the property line is understood to be 75 dBA during both day and night periods.

11.3.2 New York State Department of Pubic Service

In accordance with DPS requirements, the Modified Composite Noise Rating (CNR) method is used to assess potential noise impacts. This methodology takes into account many factors including the expected sound levels from the plant, the existing sound levels, character of the noise (e.g., tonal, impulsive), duration, time of day and year, and subjective factors such as community attitude and history of previous exposure.

11.3.3 Federal Noise Regulations and Guidelines

There following are federal noise regulations or guidelines that can be used as references in determining appropriate noise design goals:

- Noise Emission Standards for Medium and Heavy Trucks: 40 CFR 205
- Noise Emission Standards for Motor Carriers Engaged in Interstate Commerce: 40 CFR 202
- Occupational Noise Exposure Standards: 29 CFR 1910.95
- USEPA Guidelines
- Department of Housing and Urban Development (HUD) Housing Regulations

The first two federal regulations apply to heavy trucks when sold as new, and when used in interstate commerce. Trucks would access the power plant during construction, and for deliveries of supplies during plant operation. The third of the referenced federal regulations was promulgated by the United States Occupational Health and Safety Administration (OSHA) and restricts the noise exposure of employees at the workplace. The OSHA noise regulations require that employee hearing be monitored when cumulative workday exposure reaches 85 dBA, and that hearing protection be provided when cumulative workday exposure exceeds 90 dBA.

The USEPA noise guidelines recommend that noise levels outdoors in residential areas not exceed a day night sound level (L_{dn}) of 60 dBA in order to "protect the public health and welfare". A "margin of safety" of 5 dBA is then subtracted from this value. The EPA guideline of L_{dn} 55 dBA is not intended to be a regulatory limit, and the EPA has no authority to establish such a limit. According to the EPA's studies, exposure to noise levels at or below this guideline limit will not produce significant speech interference either indoors or outdoors, and will lead to negligible community reaction, complaints or annoyance in average communities.

The HUD regulations state that sites where the L_{dn} does not exceed 65 dBA are acceptable for housing; sites where the L_{dn} is between 65 and 75 dBA are normally unacceptable but may be approved under special circumstances; and sites where the L_{dn} exceeds 75 dBA are unacceptable.

11.4 Operational Noise Design Goals

This section address Stipulation 6, Clause 3, which requires, in part, a discussion of noise design goals that are necessary to meet the standards at the referenced noise monitoring locations.

The five nighttime L_{90} ambient noise spectra observed at each residential location have been arithmetically averaged and plotted on the ambient background noise classification curves for the Modified CNR Method. An example using position 3, which is the closest residence, is shown in Appendix N, Figure 6. The noise spectrum is "humped" in the 1,000 Hz band, which is characteristic of high-speed motor vehicle noise. Although the A-weighted levels are relatively high and it sounds noisy when the locations are visited, the lack of sound energy at low frequencies tends to reduce the background noise correction. Hence the Modified CNR Method provides a very conservative limit to noise that might be produced by the project. It is seen in that figure that the majority of the average octave-band levels falls into the "+1" correction band in Appendix N, Figure 6. This is the case for all of the other receptor locations, too, except for location 6 where the ambient correction number is "+2".

The Modified CNR Method also takes into account correction numbers related to time of operation, season of operation, intermittency, intrusiveness, and previous noise exposure. For a new facility that will operate continuously, and which produces noise without tonal or impulsive components, all these CNR correction factors are "0". Therefore, the proposed noise level rank limit for the facility at locations 2 - 5 would be "c" based upon the need to achieve a composite noise rating of "D", which has historically been the noise design goal for power plants in New York State. The limit at location 6 is "b" to achieve the same goal of "D". The Project proposes to use a rating of "D", which corresponds to a sound level of about 46 dBA at locations 2 - 5. This sound level is:

- quieter than required by the most stringent nighttime noise limits of the Brookhaven Code and
- quieter than the existing average ambient equivalent noise levels at those residential receptors under all conditions.

The referenced noise limits are listed in Table 11-2. These levels would be decreased by about 5 dB if the objective were to achieve a CNR of "C", as shown in Table 11-3. Note that, in addition, the noise cannot be tonal or impulsive or contain excessive low-frequency components.

Table 11-2: Operational Noise Level Limits to Achieve a CNR of D

Noise Monitoring Location	F/oct	31.5	63	125	250	500	1000	2000	4000	8000
Locations 2 through 5	dB	70	62	54	47	43	39	35	32	30
Location 6	dB	66	58	49	42	38	34	30	28	25

Table 11-3: Operational Noise Level Limits to Achieve a CNR of C

Noise Monitoring Location	F/oct	31.5	63	125	250	500	1000	2000	4000	8000
Locations 2 through 5	dB	66	58	49	42	38	34	30	28	25
Location 6	dB	63	54	45	38	33	29	25	23	20

11.5 Construction Noise Impacts and Mitigation

11.5.1 Construction Activities

Construction of the power plant is estimated to take 26 months. This will involve the construction of the various buildings, water storage and handling facilities, the electrical switchyard, roadways, electrical transmission lines and ancillary activities. The major effective noise sources during construction are expected to be earthmoving equipment and steam blows for pipe cleanout. Much of the earthmoving activity will be over after the first 6 months of construction. In addition, a muffler will be used for the steam blows that are required for cleaning steam pipes near the end of the construction period. No blasting or pile driving is anticipated at this site.

As stated above, the Brookhaven Noise Code prohibits any construction work between the hours of 6 PM and 7 AM on weekdays, as well as all day on weekends and holidays. However, in light of the labor-intensive nature of building a combined-cycle electric generating facility, the construction effort will need to involve multiple shifts and weekend hours (typically including Saturdays). Because extended construction hours are necessary, the Project will seek from the Siting Board authorization to conduct nighttime and weekend work. As detailed in Section 10.4 (regarding local laws), the action could be a variance, as provided in Section 50-8 of the Brookhaven Code, or a waiver pursuant to PSL §168.2(d). The variance and/or waiver is acceptable from a noise impact perspective because, as demonstrated below, the predicted noise levels from construction work during both daytime and nighttime periods are below the applicable residential, industrial, and commercial limits of the Brookhaven Code.

11.5.2 Noise Abatement Measures for Construction Activities

The section addresses Stipulation 6, Clause 5, which requires an identification and evaluation of reasonable noise abatement measures for construction activities.

Construction noise is extremely difficult to control because of the mobile nature of its sources and the fluid way in which most construction work must be done. Fortunately, construction is also temporary in nature. In order to mitigate the possible effects of noise caused by the construction of the power plant, the following steps will be taken:

- The Federal regulations limiting the noise of trucks will be enforced.
- The construction equipment manufacturers' sound muffling devices will be used, and will be kept in good repair during the construction process.
- Construction activities that produce significant noise will generally be limited to weekday, daytime hours.
- A muffler will be used during steam blows for pipe cleanout.
- Portable, temporary noise barriers may be used beside fixed construction equipment during nighttime hours.

In addition to these standard measures, Brookhaven Energy has evaluated three other types of mitigation – a noise complaint hotline, local communications/notification, and limiting hours of construction.

- The noise complaint hotline will be a local telephone number published and distributed to the nearest residents. The construction shift manager or designee will investigate all complaints and prepare a brief written report attesting the same. Project staff will follow up with the person lodging the complaint within a reasonable time period.
- A local liaison committee will be formed during the detailed design phase prior to or during the early stages of construction. The chief function of this committee will be to act as two-way personal communications system between local residents and Project staff. It will serve as an opportunity to update local residents about the phases of construction and to notify them of any unusual, singular noise-producing events.
- Limiting construction hours to between 7 AM and 6 PM and to weekdays (as listed in the Brookhaven Code) is not practical in light of the technology and labor effort required to construct the Project. However, as demonstrated below, the predicted noise levels from construction work during both daytime and nighttime periods are below the applicable residential, industrial, and commercial limits of the Brookhaven Code. This is also discussed in Section 10.4 (regarding local laws).

11.5.3 Construction Noise Modeling

This section addresses Stipulation 6, Clause 4, which requires that computer noise modeling be performed (per Noise Protocol, Section 5.2) in order to determine the projected noise contribution of the proposed Project during the construction period.

Estimated noise levels for expected construction equipment were incorporated into a spreadsheet computer model. This model is a hemispheric free-field model using the algorithms detailed in the Power Plant Construction Noise Guide (PPCNG). Average noise levels were calculated for each

construction phase using PPCNG methodology, and the octave-band spectrum of the construction noise was based upon the generalized spectrum given in the PPCNG (see Appendix N, Section 5).

Estimates of the energy average sound levels (L_{eq}) during the daytime for each major phase of the construction project were calculated and are shown below in Table 11-4. In addition, nighttime construction work, which will involve much more limited equipment and activities, is treated as a separate construction activity, and the results are summarized in Table 11-6. Nighttime work will occur between 10 PM and 7 AM, and will not include any earthmoving activities.

11.5.4 Construction Noise Impact Assessment

The average Project noise levels for the entire 26-month construction period are listed in the right hand column of Table 11-4. The average, daily energy-equivalent level of the noise caused by construction of the Brookhaven Energy Project is summarized in Table 11-5 for the site property line and for each of the five nearby residential receptors. Also listed is the average, daytime ambient equivalent level presently existing at each receptor. The information in this table shows that the highest construction-related noise level at a residential location (52 dBA at location 3) would be well below the existing daytime ambient L_{eq} noise level of that location (58 dBA).

Table 11-4: L_{eq} Noise Levels for Each Phase of Construction (Daytime), dBA

Noise Levels	Major Construction Phases					
	Excavation	Concrete Pouring	Steel Erection	Siding and Machinery Installation	Blow-Out Clean-Up Start-Up	All Phases
at Site Boundary: 400 ft	74	71	69	69	71	71
at Location 2, NE: 2,400 ft	53	50	48	48	50	50
at Location 3, W: 2,000 ft	55	52	50	50	52	52
at Location 4, SW: 4,000 ft	46	43	41	41	43	43
at Location 5, E: 5,600 ft	41	38	36	36	38	38
at Location 6, N: 4,000 ft	46	43	41	41	43	43

Table: 11-5: Average Daytime Construction Noise Levels Compared to Average Daytime Ambient Noise Levels (L_{eq})

Receptor Location	Average Construction Noise, L_{eq}, dBA (from Table 11-4)	Present Average Daytime Ambient Noise Level, L_{eq}, dBA
Property line	71	63
2	50	65
3	52	58
4	43	66
5	38	53
6	43	55

Table 11-6: Average Noise Levels for Nighttime Construction Compared to Average Nighttime Ambient Noise Levels (L_{eq})

Receptor Location	Average Nighttime Construction Noise, L_{eq}, dBA	Present Average Nighttime Ambient Noise Level, L_{eq}, dBA
Property line	67	55
2	46	58
3	48	50
4	39	53
5	34	47
6	39	46

The Noise Impact Assessment Protocol requires that the predicted noise levels be compared to the Brookhaven Code and New York State DPS standards described above. The following discussion makes such a comparison, as well as a comparison with EPA guidelines and HUD regulations.

EPA Guideline and HUD regulations.. Except at the site property line, the average anticipated noise from daytime construction of the Project is 6 dBA or more *below* the existing average daytime ambient equivalent noise level at every location. The present annual average L_{dn} at Location 3, the most critical location, is 58.9 dBA. With the addition of the noise from daytime construction of the Brookhaven Energy Project this will grow by 0.5 dBA to 59.4 dBA – still below the EPA's recommended limit of 60 dBA "to protect the public health and welfare". 59.4 dBA is well below the limit of L_{dn} = 65 dBA that HUD considers acceptable for housing locations. As a result, daytime construction will have a negligible noise impact on residences in the neighborhood. The expected noise from nighttime construction is also 2 dBA or more below the existing average nighttime ambient equivalent noise level at every residential location.

Brookhaven Code. The noise from construction during the daytime is exempt from the Brookhaven Code. However, it should be noted that daytime (7 AM to 10 PM) noise levels for each phase described in Table 11-4 are well below Brookhaven's industrial noise limit of 75 dBA at the site property line, and less than the 65 dBA daytime noise limit at all residential locations. The nighttime (10 PM to 7 AM) noise levels at residential locations (in Table 11-6) are also below the 50 dBA nighttime limit in the Brookhaven Code.

Modified CNR. In order to assess construction noise impacts against the Modified CNR Method, octave band spectra of the noise to be produced by the construction of the Brookhaven Energy Project were calculated as described in more detail in Appendix N, Section 5.6. The resulting Composite Noise Ratings are presented in Table 11-7. It is seen that the Modified CNR response estimate for construction noise is "D" or less under both daytime and nighttime conditions. This meets the Project goal of "D".

Table: 11-7: Modified Composite Noise Rating of Construction Noise

Receptor Location	Modified CNR during Daytime Construction	Modified CNR during Nighttime Construction
2	B	D
3	C	D
4	<A	<B
5	<A	<A
6	A	<C

11.5.5 Noise From Construction Traffic

A detailed traffic study has been conducted for the Project (Appendix T), and the results of this study have been used to estimate the noise impact resulting from increased traffic caused by construction of the project. These estimates are presented in Appendix N, Table 8. The greatest increase, 1.5 dBA, is predicted to occur at Location 1 (the site entrance), where there are no nearby residences. At residential locations the increases are 0.7 dBA or less, and no increase is expected at the closest residence, Location 3. Hence, at every location the traffic noise increases are expected to be unnoticeable.

11.6 Operational Noise Impacts and Mitigation

11.6.1 Operational Noise Sources

Power plant noise is produced by many plant components. These include the turbine units; air inlets; gas compressors; HRSGs and stacks; feedwater pumps; air-cooled condensers; closed circulating water coolers; and transformers. Each contributes to the overall noise impact. Appendices N5 and N6 describe the sound power level spectra design guidelines for each major plant noise source in order to achieve the Project's noise goals. These data have been used as input to Alstom's noise prediction computer model.

11.6.2 Noise Abatement Measures for Project Operation

This section addresses Stipulation 6, Clause 6, which requires an identification and evaluation of reasonable noise abatement measures for the final design and operation of the Project.

ANP will mitigate operational noise impacts through facility design in order to achieve a CNR rating of D. Likely mitigation measures are outlined in Table 11-8.

Table 11-8: Expected Noise Mitigation for Project Operation

Component	Proposed Noise Mitigation
Turbine buildings	The turbine buildings will be built with a double skin cladding and with absorbing inner liner in some areas.
Gas compressor buildings	The gas compressor buildings will be built with a double skin cladding and with absorbing inner liner in some areas.
Building ventilation	Ventilation air intake openings will be equipped with silencers and/or acoustical louvers as required to obtain the required noise levels. The noise emission of the rooftop fans will be limited by using low noise fans.
Turbine units	The gas turbine units, including generators, will be contained within acoustical enclosures specially designed to attenuate sound.
Gas turbine air inlets	Two-stage silencers with vibration isolation at the silencer casings will be installed to reduce the noise emission of the gas turbine compressor inlets. The silencers will be located inside the turbine building to avoid noise transmission from the silencer walls to the environment.
HRSG exhaust stacks	The stacks will be equipped with silencers.
HRSG feedwater pumps	The HRSG high pressure feedwater and circulation pumps will be installed inside acoustical enclosures beside the HRSG's.
Air cooled condensers	The ACCs will be designed and constructed using low noise fans to specifically meet the project noise requirements.
CCW Coolers	The closed cooling water coolers will be designed and constructed using low noise fans.
Transformers	Transformers will be selected to specifically meet the project noise requirements.

In order to achieve a CNR rating of C, significant additional mitigation would be required, as outlined in Table 11-9.

The incremental costs listed in Table 11-9 do not include any operational losses resulting from greater pressure drop through the gas turbine inlet and exhaust mufflers, or increased muffler maintenance costs.

Because the Project must operate within a competitive environment and control costs, the evaluation of these mitigation measures should be viewed in light of what alternative mitigation could be provided for an equivalent amount. These could include such items as multiple acres of land preservation; significant targeted groundwater protection or remediation programs; or general appropriation funds. Brookhaven Energy believes that the decision as to how such resources are best allocated is best made at the local level. That is why earmarking these resources only toward incremental noise mitigation, far beyond what is required by the Brookhaven Town Code, and in an environment already dominated by other significant noise sources, may not be the best use of available mitigation funds.

Table 11-9: Reductions in Sound Power Levels (PWLs) Necessary to Achieve a CNR of "C", and Their Costs

Component	PWL for "D" (dBA)	PWL for "C" (dBA)	Additional Mitigation Action	Incremental Cost Estimate
HRSG walls	103	101	Change design for the Inlet Duct Acoustic Shroud	$70,000
HRSG exhaust stacks	102	93	Increase Acoustic Baffles inside the stack	$120,000
HRSG steam valves for power augmentation	102	99	Different type insulation to be used incorporating common Thermal/Acoustic insulation.	$20,000
Gas Turbine air inlet cross-sections	100	99	Increase the Acoustic Baffles in the GT inlet	$60,000
ACC air inlets and outlets	104	99	Install fans with lower air velocities and increase heat transfer surface area	$510,000
Main transformers	104	100	Add sound panels to the transformer walls or specify a lower noise transformer	$260,000
Gas compressor station	105	98	Add additional cladding to the building or change the type of cladding	$30,000
Gas compressor coolers	99	95	Install lower noise fans	$90,000
HRSG pump enclosures	99	96	Additional cladding or modify cladding design	$40,000
CCW coolers	102	99	Install lower noise fans or increase the number of fan bays and run fans at lower speed	$90,000
Roof fans	109	99	Larger fans with lower air velocities and silencers	$160,000
Turbine Bldg. cladding	-25 dB (1000 Hz)	-39 dB (1000 Hz)	Additional cladding or modify cladding design	$240,000
Air intake louvers	-4 dB (1000 Hz)	-12 dB (1000 Hz)	Add silencing and/or change louver design	$80,000
Total				$1,770,000

11.6.3 Operational Noise Modeling

This section addresses Stipulation 6, Clause 4, which requires that computer noise modeling be performed (per Noise Protocol, Section 5.1) in order to determine the projected noise contribution of the proposed Project during the operations period.

The receptors used in the computer model are those listed in Table 11-1 above. Detailed noise data for each major source in the proposed facility were obtained from equipment vendors, Alstom's field measurements, or, in some cases, from technical reference sources. Noise emissions from the

Project were estimated using Alstom Power's noise prediction model which considers: prevailing climatic conditions; screening external to the site; attenuation characteristics and insertion losses of buildings; directivity factors applicable to certain noise sources. i.e. air intakes, stack openings etc; and plant layout effects. Refer to Appendix N4 for detailed information on the Alstom Power's noise data and prediction model.

11.6.4 Operational Noise Impact Assessment

Noise levels at the site property lines and at the noise monitoring locations to achieve a CNR of "D" are shown in Tables 11-10 and 11-11. As shown in Table 11-12, the expected operational noise levels are 4 dBA or more below the existing average nighttime ambient equivalent noise levels at all residential receptors. For the closest residential receptor, Location 3, the operational noise level (46 dBA) is well below the existing ambient L_{eq} noise level of that location (50 dBA).

Table 11-10: Predicted Noise Levels at the Property Line

Property Line Location	Noise Level
Site property line to the east:	63 dB(A)
Site property line to the south	66 dB(A)
Site property line to the west:	66 dB(A)

Table 11-11: Predicted Noise Levels at the Nearest Residential Receptors

Loc.	f/oct	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	Total (dBA)
2	dB	70	62	52	47	43	39	34	21	-	45.7
3	dB	70	62	53	47	43	39	35	25	6	45.9
4	dB	66	57	46	43	39	34	27	12	-	40.9
5	dB	65	55	45	41	37	32	23	7	-	39.0
6	dB	66	58	49	42	38	34	28	12	-	41.0

Table 11-12: Predicted Operational Noise Levels Compared to Average Existing Nighttime Ambient Noise Levels (Leq), dBA

Location	Present Average Nighttime Ambient Noise Level	Predicted Operational Noise
2	58	46
3	50	46
4	53	41
5	47	39
6	46	41

The Noise Impact Assessment Protocol requires that the predicted noise levels be compared to the Brookhaven Code and New York State DPS standards described above. The following discussion makes such a comparison, as well as a comparison with EPA guidelines and HUD regulations.

EPA Guideline and HUD Regulations. The anticipated noise from operation of the Project is 4 dBA or more *below* the existing nighttime ambient equivalent noise level at every residential location. The present annual average ambient L_{dn} at Location 3, the most critical location, is 58.7 dBA. With the addition of the noise from operation of the Brookhaven Energy Project (an L_{dn} of 52.4 dBA) this will grow by only 0.9 dBA to 59.6 dBA – staying below the EPA's recommended limit of 60 dBA "to protect the public health and welfare". 59.6 dBA is also well below the limit of L_{dn} = 65 dBA that HUD considers acceptable for housing locations. As a result, Project operation will have a negligible noise impact on residences in the neighborhood.

Brookhaven Code. Table 11-11 shows that the highest Project noise level at a residential location is 45.9 dBA at Location 3. This level complies with the Brookhaven Code's 65 dBA daytime and 50 dBA nighttime noise limits at residential properties. As indicated in Table 11-10, the predicted operational noise levels at the Project property lines are well below the industrial noise limit of 75 dBA in the Brookhaven Code.

Modified CNR. The predicted noise impact at all residential locations is at or below the Modified CNR limit of "D", as shown by Table 11-11. The Project is being designed specifically to meet that design goal as described in Section 11.4. Alstom Power's noise modeling led to the sound power level specifications found in Appendix N6. Similarly, the additional mitigation requirements listed in Table 11-9 are specifically designed to achieve a Modified CNR of "C", as detailed in Appendix N5.

11.6.5 Noise From Operational Traffic

A detailed traffic study has been conducted for the Project (Appendix T), and the results of this study have been used to estimate the noise impact resulting from increased traffic caused by operation of the project. The predicted traffic noise increase is 0.04 dBA or less at all off-site locations, and hence negligible. This, of course, is a direct result of the fact that the Project will generate very little traffic when it is operational.

11.7 Evaluation of Noise Impacts

This section addresses Stipulation 6, Clause 7 which requires an evaluation of the following potential noise impacts: hearing damage (based on OSHA standards); sleep interference; indoor and outdoor speech interference; low frequency noise annoyance; potential for community complaint; and the potential for structural damage due to vibration or infrasound.

- *Hearing damage.* The expected noise from construction and operation at all off-site receptors is well below the 85-dBA OSHA threshold for concern about hearing damage.

- *Sleep interference (construction).* Noisy construction activities will not occur during the nighttime, when most people sleep. In particular, excavation, the noisiest construction activity, will never occur at night. The average noise level from construction, both daytime and nighttime, is less than the existing ambient noise levels. The average day-night sound level from construction is below the EPA guideline that, the EPA

states, is consistent with generally-accepted sleep disturbance criteria. Hence it is not expected that construction will cause sleep disturbance.

- *Sleep interference (operation).* The noise level from Project operation, both daytime and nighttime, is less than the existing ambient noise levels. The day-night sound level from operation is below the EPA guideline which, the EPA states, is consistent with generally-accepted sleep disturbance criteria. Hence it is not expected that Project operation will cause sleep disturbance.

- *Speech interference.* In the present daytime ambient at Location 3, people should be able to carry on a conversation in a normal voice at a separation of about 8 feet outdoors and about 50 feet indoors with windows open. With the addition of the Project's construction noise, these distances decrease to about 8 feet outdoors and 40 feet indoors. Noting that indoor conversations generally take place at much closer distances than either 40 or 50 feet, and considering the assumptions of the methodology, the differences are not significant. In the present nighttime ambient at Location 3, the corresponding separation distances are 18 feet outdoors and more than 100 feet indoors, whereas the impact of Project operation would slightly reduce these values to approximately 16 feet outdoors and around 100 feet indoors. It is similarly concluded that the differences are not significant. An alternative approach to speech interference impact is to ignore the background ambient (for example, because it can heavily influenced by the Long Island Expressway), so as to better judge the impacts of the Project itself. Following that analysis, during construction, people should be able to carry on a conversation in a normal voice at receptor Location 3 at a separation of about 16 feet outdoors and at more than 100 feet indoors with windows open. During operation, these distances increase to more than 30 feet outdoors and considerably more than 100 feet indoors. These are considered to be quite adequate environments for conversation.[2]

- *Low frequency noise annoyance.* Low-frequency noise annoyance may occur when people indoors notice rattling of windows, pictures mounted on walls, light-weight suspended ceilings, dishes in cabinets, etc., due to mechanical motions of light-weight building structures excited by very low frequency sounds. This phenomenon does not occur outdoors. As a general rule, secondary rattling within lightweight building structures can be avoided if the exterior noise level does not exceed about 70 dBA in the 31.5 Hz octave band, or 75 dBA in the 63 Hz band. The noise anticipated to be produced by construction or operation of the Brookhaven Energy Project does not exceed these thresholds at any residential location, so low frequency noise annoyance is not anticipated.

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2 C. M. Harris, ed, *Handbook of Acoustical Measurements and Noise Control*, pp 16.10, McGraw-Hill, Inc., New York, 1991.

- *Community complaint potential.* The potential for noise from the Brookhaven Energy Project to cause complaints by neighbors is estimated by applying the Modified CNR Method. This is discussed above in Section 11.5.4 (for construction) and 11.6.4 (for operation). Brookhaven Energy has proposed a Modified Composite Noise Rating of "D" – corresponding to an "average expected response" of "sporadic complaints".

- *Potential for structural damage due to infrasound.* The noise levels estimated to be produced by construction or operation of the Project are too low to cause structural damage to buildings.

11.8 Post Construction Noise Monitoring

This section addresses Stipulation 6, Clause 8, which requires a description of post-construction noise monitoring that will be performed to establish conformance with design goals.

As part of Project testing (that is, after Project construction), noise measurements will be taken at the site property line and at locations 2 through 6, as identified in Table 11-1. The results of this measurement program will be used to ascertain conformance with the Project's noise design goals and regulatory limits. These measurements will have two objectives:

- To assure that the noise from the Project complies with noise limits imposed by the Siting Board and any applicable Federal and local regulations; and

- To assure that the noise from the Project complies with the requirements of the turnkey engineering, procurement, and construction (EPC) contract.

In general, this will require measurements at the same critical receptors with the Project operating, and also with the Project shut down to define any necessary background noise corrections. Such measurements are most conveniently done at night when background noise levels are lowest. It may be necessary to coordinate with other facilities in order to minimize the effects of background noise from those sources.

All noise evaluation measurements will be made with instruments complying with the Type 1 requirements of ANSI S1.4. Compliance will be determined by post-construction noise measurements taken at the site property line and at each off-site receptor location (or at surrogate locations, if necessary). The details of this post-construction noise measurement program are intended to be a part of the compliance filing made to the Siting Board.

11.9 Cumulative Noise Impact Assessments

11.9.1 With Caithness Island Power

Stipulation 6, Clause 9 requires an assessment of the cumulative impact of noise from the Brookhaven Energy Project and the Caithness Island Power Project, a second power plant proposed in the vicinity of the Brookhaven Energy Project, as shown in Figure 11-1 above.

The Caithness Island Power project would be located north of the Long Island Expressway and west of the site of the proposed American Tissue facility. It would be about 2,000 feet northwest of the Brookhaven Energy Project.

No data are available on the noise that might be produced by the Caithness Island Power project, but it is reasonable to assume that it will be about the same as that from the Brookhaven Energy Project. This is because both projects are electric generating facilities using similar machinery, and because both must comply with the same local, state and federal noise requirements. The Caithness Island Project is about the same distance (2,600 feet) from Locations 2, 3 and 6 as Brookhaven Energy is from Location 2. So, under the above assumption, the noise from Caithness Island at positions 2, 3 and 6 will be about the same as that produced at position 2 by Brookhaven Energy. This is predicted to be 46 dBA for a design goal of CNR = "D". For construction, a similar noise profile is assumed, such that the Caithness Island construction noise levels at locations 2, 3 and 6 are assumed to be the same as the Project's construction noise level at Location 2. The cumulative noise levels resulting from the simultaneous construction and the simultaneous operation of the two facilities, with the design goal of. CNR = "D", are presented in Table 11-13 and Table 11-14, respectively.

Construction noise levels are compared to average existing daytime ambient noise levels because construction noise will be greatest during the daytime. Operational noise levels are compared to existing nighttime ambient noise levels because the nighttime ambients are lower and noise from the operating plants could be more noticeable at that time.

The effect of noise from Caithness Island at the Project site and at receptors 4 and 5 is expected to be negligible because of distance.

Table 11-13: Estimated Cumulative Noise Levels from Combined Daytime Construction of the Project and Caithness Island (L_{eq}), dBA

Receptor Location	Average Daytime Ambient Noise	Project Construction Noise	Caithness Construction Noise	Both Plants Combined	Total With Ambient
2	65	50	50	53	65.3
3	58	52	50	54	59.5
6	55	43	50	51	56.4

It is seen from Table 11-13 that the combined noise from simultaneous construction of both power plants is below the existing daytime ambient noise levels at all nearby residential receptors. The anticipated increase in the existing ambient is 1.5 dBA or less. An increase of less than 3 dBA is generally considered to be unnoticeable in residential communities.

Table 11-14: Estimated Cumulative Noise Levels from Combined Nighttime Operation of the Project and Caithness Island (L_{eq}), dBA

Receptor Location	Average Nighttime Ambient Noise	Project Operational Noise	Caithness Operational Noise	Both Plants Combined	Total With Ambient
2	58	46	46	49	58.5
3	50	46	46	49	52.5
6	46	41	46	47	49.6

It is seen from Table 11-14 that the combined noise from simultaneous operation of both power plants is below the existing nighttime ambient noise levels at locations 2 and 3. At location 6, the combined level is greater than the existing ambient, but this is predominantly because of noise from Caithness Island. The Project's contribution to the total anticipated noise level (including the existing ambient) is only 0.6 dBA at location 6, with the remaining 3 dBA attributable to Caithness.

11.9.2 With American Tissue

Stipulation 6, Clause 9 requires an assessment of the cumulative noise impacts resulting from simultaneous operation of the Project and the American Tissue Facility.

American Tissue Corporation has proposed to build a new facility for the storage, packaging and transportation of paper products. It will be located north of the Long Island Expressway and just west of Sills Road (County Rt. 101), about 3,000 feet north of the Brookhaven Energy Project, as shown in Figure 11-1. Hence it presents the possibility of producing noise at some of the same residences that could be affected by noise from the Project. This possibility has been evaluated based on the noise impact analysis in The Draft Environmental Impact Statement (DEIS) for the American Tissue Project.[3]

The American Tissue DEIS states that the building will be constructed so that there will be "a non-perceptible exterior noise level from equipment operation" inside the building, and that truck traffic will generate the most significant noise related to the project. In the DEIS it is estimated that 500 feet from American Tissue's perimeter driveway the noise level will be 50.5 dBA from a moving truck on the driveway. This is presumably a maximum level that occurs only during truck movements, and levels would be lower when there is no truck activity. Hence it is conservative to base combined noise impact estimates on this occasional, worst-case occurrence. The estimate of 50.5 dBA can be applied to the residences along Sills Road, and it is conservative to apply it to receptor location 6 for the Brookhaven Energy Project, which is a bit further away. Brookhaven Energy's receptor location 2 is about 1,000 feet away, so the estimated level would be at least 6 dBA less. Based on this information, the cumulative impact of the noise from American Tissue's operation and the noise from construction of the Brookhaven Energy Project has been estimated

3 Draft Environmental Impact Statement – American Tissue Corp., Inc. Site Plant Application – LIE North Service Road. W/o Sills Road Yaphank, Town of Brookhaven New York – Volume 1, March 2000.

and is summarized in Table 11-15. See Appendix N for details. The effect of noise from American Tissue at the Project site and at receptors 3, 4 and 5 is expected to be negligible because of distance.

Table 11-15: Estimated Cumulative Noise Impact from Daytime Construction of the Project and Operation of American Tissue (L_{eq}), dBA

Receptor Position	Average Daytime Ambient Noise	Project Construction Noise	American Tissue Operational Noise	Both Facilities Combined	Total with Ambient
2	65	50	44.5	51.1	65.2
6	55	43	50.5	51.2	56.5

It is seen from Table 11-15 that the combined noise levels during Project construction are well below the existing daytime ambient noise levels at both locations. The average daytime ambient would increase by only 0.2 dBA at location 2. At location 6 the ambient is expected to increase by 1.5 dBA, but this is predominantly caused by noise from trucks at American Tissue. The contribution from the Project itself is only 0.2 dBA at Location 6, which is a negligible amount.

Table 11-16: Estimated Cumulative Noise Impact from Simultaneous Nighttime Operation of the Project and American Tissue (L_{eq}), dBA

Receptor Position	Average Nighttime Ambient Noise	Project Operational Noise	American Tissue Operational Noise l	Both Facilities Combined	Total with Ambient
2	58	46	44.5	48.3	58.4
6	46	41	50.5	51	52.2

It is seen from Table 11-16 that the combined nighttime noise levels at location 2 during Project operation would be almost 10 dBA below the existing ambient, and would increase the average nighttime ambient by only 0.4 dBA. At location 6 the ambient is expected to increase by 6.2 dBA, but this is predominantly caused by noise from trucks at American Tissue. The contribution from the Project itself is only 0.4 dBA, a negligible amount.

Trucks entering and departing the American Tissue facility will use an access drive from the Long Island Expressway service road on the south side of the site, so they will not pass any existing residences. The American Tissue DEIS does not address noise that might be generated by the additional off-site traffic volume, so it is assumed that such noise will be negligible.

11.9.3 With Both Caithness Island and American Tissue

Table 11-17 shows the cumulative daytime noise levels expected to be produced by simultaneous construction of the Project and Caithness Island, during operation of American Tissue. Table 11-18 shows the cumulative nighttime noise levels expected to be produced by simultaneous operation of the Project, Caithness Island and American Tissue.

Table 11-17: Estimated Cumulative Noise Levels from Combined Daytime Construction of the Project and Caithness Island, and Operation of American Tissue (L_{eq}), dBA

Receptor Location	Average Daytime Ambient Noise	Project Construction Noise	Caithness Construction Noise	American Tissue Operational Noise	All Facilities Combined	Total With Ambient
2	65	50	50	44.5	55.9	65.5
3	58	52	50	38.5	54.2	59.5
6	55	43	50	50.5	53.6	57.4

Table 11-18: Estimated Cumulative Noise Levels from Combined Nighttime Operation of the Project, Caithness Island and American Tissue (L_{eq}), dBA

Receptor Location	Average Nighttime Ambient Noise	Project Operational Noise	Caithness Operational Noise	American Tissue Operational Noise	All Facilities Combined	Total with Ambient
2	58	46	46	44,5	50.3	58.7
3	50	46	46	38.5	49.4	52.7
6	46	41	46	50.5	52.2	53.1

It is seen that the combined noise levels from all three facilities are below the existing ambient noise levels, except for operational noise levels at location 6. In this case the combined noise level is predicted to exceed the existing ambient level by 7.1 dBA. But this is caused almost entirely be noise from trucks at American Tissue and by sounds from Caithness Island. The noise contribution from the Project is only 0.3 dBA. Even if the Project were not to operate, the ambient noise level at location 6 is predicted to increase by 6.8 dBA (as opposed to the 7.1 dBA increase indicated by Table 11-18).

11.9.4 Conclusions Regarding Cumulative Noise

Noise caused by the construction and operation of the project is projected to be less than the existing average ambient noise levels at all residential locations. Even when combined with noise from the proposed Caithness Island and American Tissue facilities the total predicted noise levels are generally below the existing ambient. The only exception is at location 6. At this location the ambient noise increases would be predominantly caused by activities at American Tissue and Caithness, and not by the Brookhaven Energy Project. It is concluded that noise from the Project, even when combined with that from the other proposed facilities, will not have a significant impact on the surrounding neighborhood.

12. SOCIOECONOMICS

12.1 Applicable Regulatory Requirements

This section addresses Stipulation 7, Clauses 1 through 19. In accordance with that stipulation, the construction and operation of the Project was assessed to determine the net social and economic effects of the Project. This section also provides economic and demographic information (population data must be included in the Application per PSL§164.1(a)). The Project will be a major source of investment in the local economy, especially local labor markets – an activity that also yields secondary beneficial economic effects. At the same time, the locally available labor pool is so extensive that specialized construction and operational labor is expected to be available in the area. The economic effects of the Project quantified below do not include the beneficial effects of electricity price decreases on the overall economy, which are addressed separately in Section 12.4.3.

Safety and emergency response issues are also addressed with respect to local capacities. Safety of the proposed Project is of fundamental importance both to Brookhaven Energy and the community. Its inclusion, in terms of a description of safety features, is also required by Article X and the Siting Board regulations. PSL §164.1 and §168.2, 16 NYCRR 1001.3.

12.2 Population Data

According to the latest available population estimate prepared by the Long Island Power Authority,[1] more than 442,613 people lived in Brookhaven in January 2000, compared to a population of 407,977 enumerated in the 1990 Census. Therefore, Brookhaven has been growing at an annual rate of about 0.7 percent. Brookhaven's 20th-century growth rate is shown in Figure 12-1. The hamlet of Yaphank, which is an area LIPA defined in making population, subsumes all areas within a mile of the Project site (see Figure 12-2). It is estimated to have had 4,505 residents in January 2000. This figure includes an estimated 423 inmates at the Suffolk County Minimum Security Facility and an estimated 261 residents of the Suffolk County Skilled Nursing Facility.

The 2000 LIPA estimate of county population is 1,388,461. Brookhaven accounts for nearly one-third of Suffolk County's population and more than one-quarter of its land area.[2] West of Brookhaven, Suffolk County is densely populated and has an urban center in Islip. East of Brookhaven, settlement is more sparse, but density is increasing. Brookhaven's current density of 1,706 persons/square mile is close to the county average of 1,524 persons/square mile (calculations using 2000 estimates).

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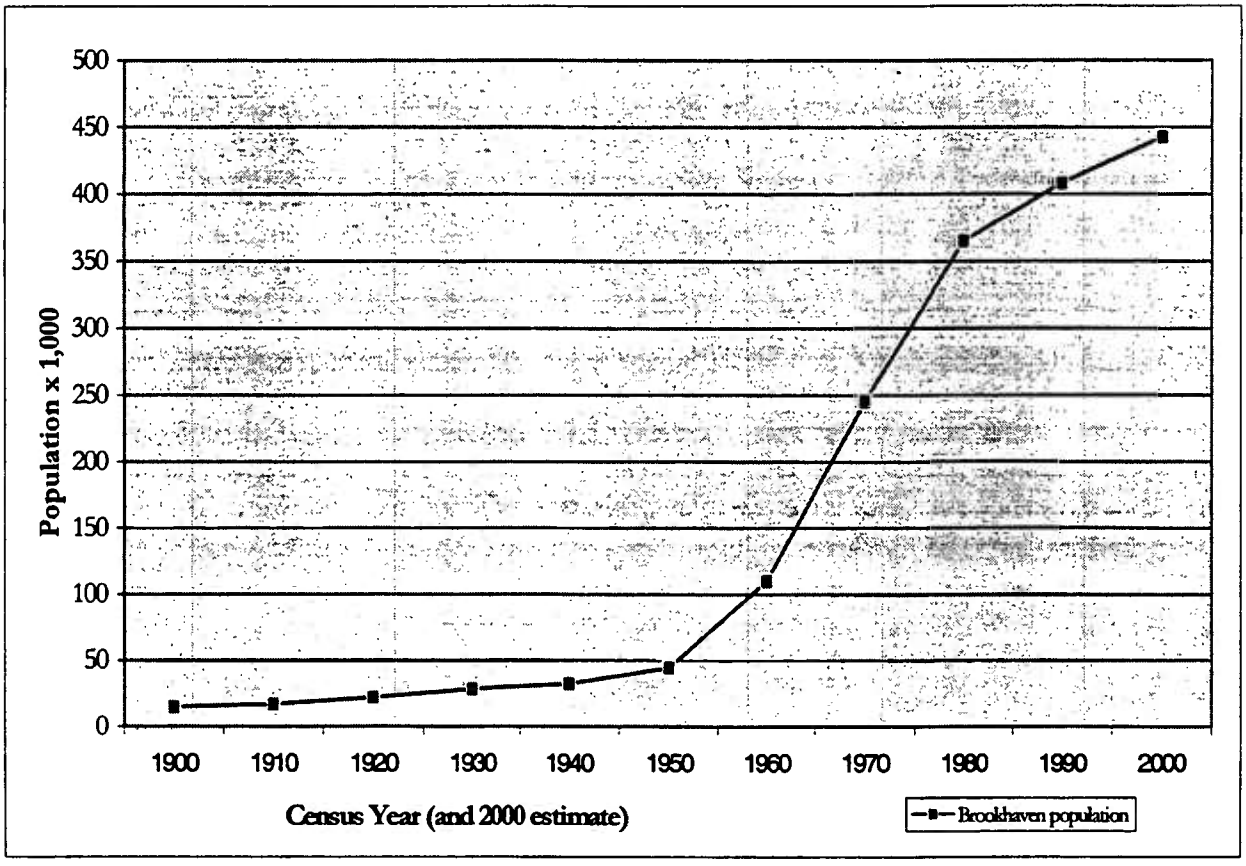
1 Long Island Power Authority, *Long Island Population Survey, 2000*, published October 2000.

2 Brookhaven has a land area of 259.3 square miles, with a total area of 386 square miles (including incorporated villages within town boundaries). Suffolk County's land area is 911.2 square miles.

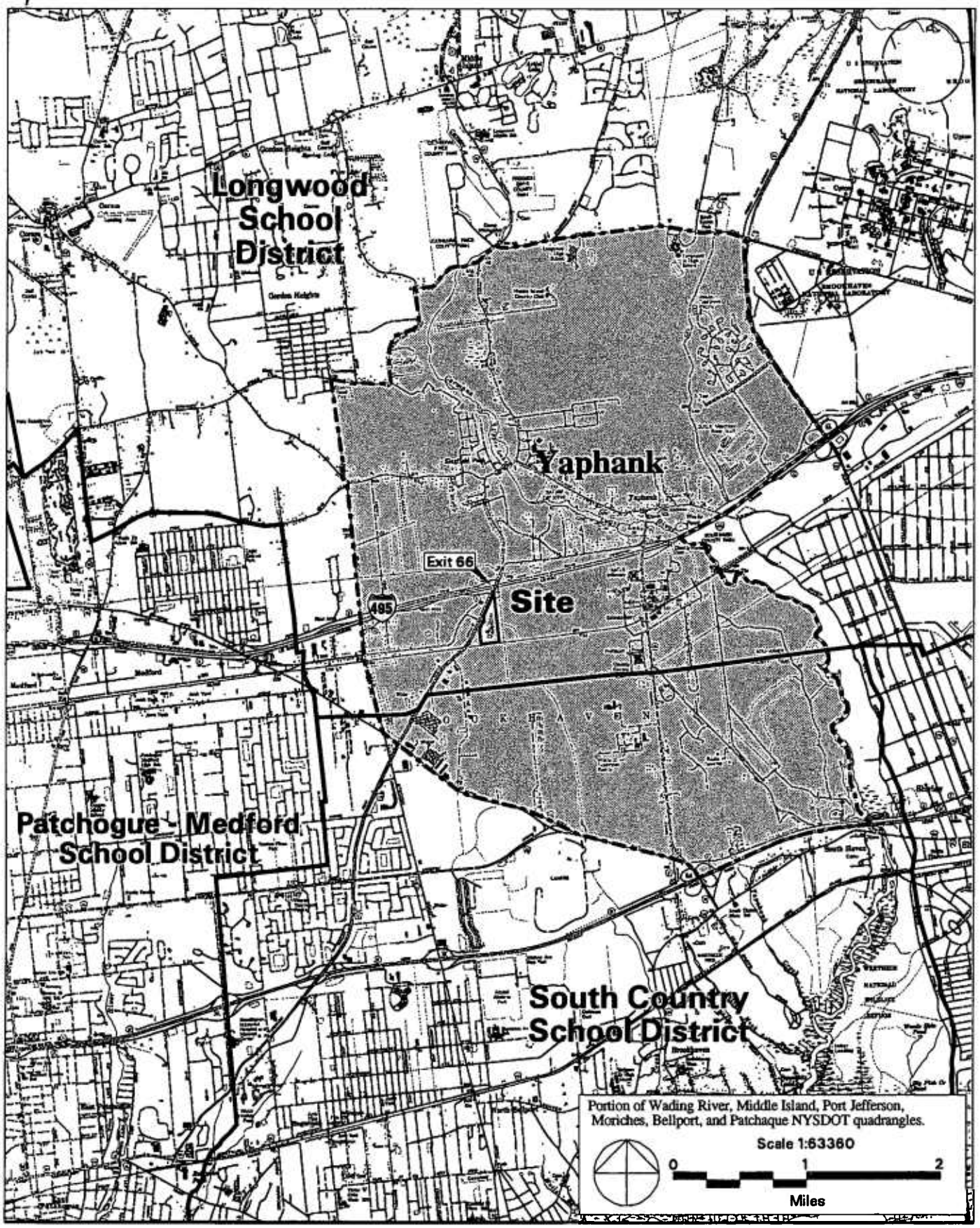
Figure 12-1: Twentieth-century Population, Town of Brookhaven



In terms of population age, Suffolk County in the last 20 years has seen trends that are generally consistent with suburban locations: increases in the number of senior citizens, decreases in school-age population in the 1980s, with a rebound of school-age population in the 1990s. In Brookhaven, the 1990 Census showed a slightly greater percentage of minors within the population (27% in Brookhaven; 25% in the county) and a slightly smaller percentage of senior citizens (10% in Brookhaven, 11% in the county). A total of 63% of Brookhaven's population (and 64% of the county population) was of working age. However, the Suffolk County Planning Department reports that the number of births in the county has been at "near or above record levels since 1988," and elementary school overcrowding has ensued in some locations. Detailed Year 2000 Census figures, due out over the course of 2001, will likely demonstrate a shift toward a higher percentage of the population below the age of 18.

In terms of income, Suffolk County and the Nassau-Suffolk metropolitan area have for a long time been among the wealthiest in the nation.[3] Based on 1997 figures, the average household effective

3 As reported by Suffolk County Planning Department, October 1999, regarding *Sales and Marketing Management* surveys of buying power.



School District Boundary

Hamlet Boundary
(for LIPA population
estimate only)

Figure 12 - 2
School District and Hamlet Boundaries

buying income for the two-county region was $59,317, compared to a national average of $42,191. The median household income for Suffolk County, adjusted to 1998 dollars, is estimated to be $65,303. In 1990, Suffolk's per capita income ranked 21st among the nation's 3,110 counties.

During the late 1980s and through the mid 1990s, Long Island saw defense-related job losses, most notable of which was the loss of several thousand jobs associated with restructuring of the Grumman corporation. Yet on balance the prolonged economic prosperity of the 1990s has reduced unemployment to very low levels. The Suffolk County Department of Labor reported unemployment in March 2001 at 3.1% – a figure that had held steadily low throughout the last years of the twentieth century. New York State's March 2001 unemployment was 4.4%. The national unemployment rate was 4.3%. In terms of employment sector, 32% of Long Island's workforce is employed in services, while 26% is engaged in wholesale/retail trade. The next highest sector is government, with 17% of Long Island's employees.[4]

12.3 Economic Effects of Project Construction

12.3.1 Construction Jobs by Discipline

This section addresses Stipulation 7, Clause 1, which requires an estimate of the number of temporary construction jobs that will be created, by discipline.

It is expected that the Project will generate approximately 745 construction jobs. A breakdown of these jobs by disciplines to be employed during the construction period is provided below in Table 12-1.

Table 12-1: Total Number of Workers Required by Discipline

Discipline or Trade	Number of Workers
Management	80
Boilermakers	80
Carpenters/Millwrights	40
Laborers	40
Painters	7
Pipefitters	175
Sprinklerfitters	9
Electricians	175
Operating Engineers	23
Ironworkers	60
Insulation Workers	15
Sheetmetal Workers	11
Masons/Cement Finishers	10
Teamsters	20

4 Suffolk County Department of Labor, *Economic Indicator Report*, May 2001. These reports may be found on the Internet at http://www.co.suffolk.ny.us/labor.

12.3.2 Construction Work Force by Phases

This section addresses Stipulation 7, Clause 2, which requires an estimate of the average construction workforce, by discipline, for each quarter, during the period of construction, and an estimate of the peak construction employment.

The Project's construction period is expected to be 26 months. The construction activities are described in more detail in Section 3.3.2. In summary, during these 26 months construction will proceed as follows:

- Months 1 to 4 will include site preparation, installation of temporary buildings and parking, and underground utilities;
- Months 3 to 8 will include soil excavation and foundation pouring;
- Months 7 to 13 will include erection of structural steel and delivery of major equipment;
- Months 11 to 23 will include installation of equipment followed by labor-intensive installation of piping, wiring, and ductwork;
- Months 20 to 26 will include systems testing and commissioning.

In order to avoid overlap in construction of the two units, one unit will lag behind the other by approximately a period of 1-2 months. See Table 12-2 for information on average construction workforce, by discipline for each quarter of construction. Brookhaven Energy expects the *peak* workforce level to be approximately 650 construction employees on the site at any one time.

Table 12-2: Average Quarterly Construction Workforce, by Discipline

Trade: / Quarter:	1	2	3	4	5	6	7	8	9
Management	13	32	43	77	80	80	80	50	25
Boilermakers	0	0	10	57	78	80	40	9	4
Carpenters & Millwrights	12	33	40	33	25	25	17	9	4
Laborers	22	33	40	37	20	20	20	8	4
Painters	0	0	0	0	5	7	6	4	1
Pipefitters	4	6	10	45	162	175	175	142	30
Sprinklerfitters	0	4	6	7	9	9	4	0	0
Electricians	4	10	20	40	153	175	175	108	15
Operating Engineers	23	23	20	20	15	15	10	8	4
Ironworkers	3	7	43	60	25	23	12	7	2
Insulators	0	0	0	0	8	15	15	9	0
Sheetmetal	0	0	0	0	10	10	11	1	0
Masons/Finishers	2	3	4	3	4	6	10	5	0
Teamsters	20	20	12	8	7	7	6	3	2
Total	**103**	**171**	**248**	**387**	**601**	**647**	**581**	**363**	**91**
Day Shift	103	171	248	370	451	447	464	323	81
Night Shift	0	0	0	17	150	200	117	40	10
Weekend	90	139	191	250	250	250	150	50	35

12.3.3 Construction Expenditures

For purposes of determining socioeconomic effects from construction, two types of expenditures need to be considered – those made outside the region and those made inside it. The former carries no secondary economic benefits to the region, while the latter does. Thus, estimates of economic impact are based only on the latter type of expenditure.

A calculation of estimated payroll expenditures to construct the Project is approximately $32 million, as detailed in Table 12-3. Local purchases of materials, supplies and contracted services used for construction will comprise another direct and positive socioeconomic effect, and are estimated at $23 million. These estimates are based on a conservative approach that assumes local purchases would be limited to concrete and its basic constituents, construction consumables, and site services (including temporary toilets, office supplies, waste disposal, surveying and site security). Thus, total primary economic infusion into the local economy would be $55 million.

Table 12-3: Average Quarterly Construction Workforce, by Discipline

Trade: / Quarter:	Annual wage	Quarterly Wage	Cumulative quarters (based on Table 12-2)	Total per Trade
Construction managers	60,160	15,040	480	7,219,200
Boilermakers	38,500	9,625	278	2,675,750
Carpenters	34,420	8,605	198	1,703,790
Construction laborers	26,510	6,628	204	1,352,112
Painters, construction and maintenance	29,280	7,320	23	168,360
Plumbers, pipefitters, and steamfitters*	38,750	9,688	749	7,256,312
Plumbers, pipefitters, and steamfitters*	38,750	9,688	39	377,832
Electricians	42,180	10,545	700	7,381,500
Operating engineers and other construction equipment operators	34,760	8,690	138	1,199,220
Structural iron and steel workers	37,780	9,445	182	1,718,990
Insulation workers	29,170	7,293	47	342,771
Sheetmetal workers	33,110	8,278	32	264,896
Stonemasons	34,240	8,560	37	316,720
Truck drivers, heavy and tractor-trailer	31,900	7,975	85	677,875
TOTAL				32,655,328

Source: Bureau of Labor Statistics, National employment and wage data from the Occupation Employment Statistics survey by occupation, 1999, at web site http://stats.bls.gov/news.release/ocwage.t01.htm.

* Includes pipefitters and sprinklerfitters in separate lines to better match Table 12-2.

12.3.4 Secondary Economic Impact

This section addresses Stipulation 7, Clause 3, which requires an estimate of the annual secondary employment and economic activity likely to be generated in the vicinity of the Project by the construction of the plant. The stipulation requires that the analysis state the basis of any economic

multiplier factor or other assumption used and should include an order of magnitude comparison of the employment and economic activity likely to be generated in the Town of Brookhaven and Suffolk County with recent levels of employment and economic activity.

Assuming the primary economic impact estimates noted above, regional input-output models can be used to estimate the secondary impact. The U.S. Department of Commerce, Bureau of Economic Analysis (BEA), uses an updated version of the Regional Industrial Multiplier System (RIMS II) input-output model to estimate secondary impacts that are specific both to certain types of industries and to certain regions. Nassau and Suffolk Counties were chosen as the local study area pursuant to the above-cited stipulation, because they are part of the same metropolitan area.

The estimated primary investment (calculated above) is over $32 million in payroll expenditures and an estimated $23 million in other local investments. Thus, an approximately $55 million investment in the local economy is conservatively predicted. An estimated 745 jobs will be created. Secondary effects are estimated for: (1) overall economic output; (2) change in earnings; and (3) employment levels.

The RIMS II economic output multiplier for industrial construction in Nassau/Suffolk is calculated by BEA to be 1.916.[5] Thus, economic output in the area will increase by $55 million × 1.916 = $105 million, of which $50 million is secondary impact.

The regional multiplier for changes in earnings due to industrial construction payroll in the local area is calculated by BEA to be 1.842. The multiplier for earnings due to industrial construction investment is 0.563. Thus, earnings in the area can be estimated to increase by [($32 million × 1.842) + ($23 million × 0.563)] = $72 million, of which $32 million is primary payroll and $40 million is secondary earnings impact.

The regional employment multiplier for the local area is calculated by BEA to be 1.967 jobs for every new industrial construction job. Thus, on the basis of 745 jobs directly associated with the Project, employment in the area is expected to temporarily increase by an additional 720 jobs (745 × 0.967), for a total of 1,465 jobs created.

For an order of magnitude comparison of the Project's contribution relative to the entire local economy, BEA's regional database regarding earnings, by county, was consulted. The Suffolk County economy produced earnings in 1998 of $24.4 billion dollars. Brookhaven's population is approximately one-third the size of Suffolk County. Brookhaven is considered roughly representative of the entire county in terms of productivity and earnings, because of its balance of industrial centers in the west, village and tourism along the shores, and agricultural areas toward the east. Thus, the Town of Brookhaven economy is assumed to have produced earnings of approximately $8 billion dollars in 1998 ($24.4/3). For employment data, the 1997 economic census summary statistics for the New York-Northern New Jersey-Long Island statistical area were used, with Suffolk County assumed to be 10% of the metro area, and the Town of Brookhaven – 3.3%.

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5 U.S. Department of Commerce, Bureau of Economic Affairs. Based on 1997 regional data.

Total paid employees in Suffolk County were estimated to number 638,493 by this method, and Brookhaven total paid employees were estimated at 212,831.[6]

Earnings associated with the Project will be made partly by Nassau County residents. One-third of the local Project-induced earnings growth ($72 million/3 = $24 million) is assumed to be in Nassau, and two-thirds or $48 million are assumed to be in Suffolk (and thus two-ninths or $17 million in the Town of Brookhaven). Out of the 1,465 primary and secondary jobs created, assuming the same ratio, 976 are created in Suffolk County and 326 in Brookhaven. By this, the Project would account for approximately a 0.25% expansion in earnings within the Suffolk County and Brookhaven economy and a 0.17% expansion of its employment base.

12.4 Economic Effects of Project Operation

12.4.1 On-Site Employment and Payroll

This section addresses Stipulation 7, Clause 5 which requires an estimate of the number of jobs and the on-site payroll, by discipline, during a typical year once the plant is in operation, and an estimate of other expenditures likely to be made in the vicinity of the Project during a typical year of operation.

The Project is expected to provide an estimated 25 permanent power plant operator jobs. The Bureau of Labor Statistics National employment and wage data from the Occupation Employment Statistics survey for 1999 (cited for Table 12-3 above) lists power plant operator annual wages as $43,110. For purposes of this impact analysis, a salary rate of $50,000 per employee is assumed. The on-site payroll is therefore estimated to be $1.25 million per year.

It is estimated that, for a typical year of operation, total non-fuel O&M expenditures in the local area will equal approximately another $1 million. Study area O&M costs do not include wages of the operating staff, but do include contracted services such as janitorial, security, maintenance and general engineering support, plus the cost of chemicals, water, routine inspection and repairs, and forced outage repairs. An appropriate industry aggregation describing these activities (for purposes of choosing earnings multipliers for non-payroll expenditures) is "business services."

12.4.2 Secondary Economic Impact

This section addresses Stipulation 7, Clause 6, which requires an estimate of the annual secondary employment and economic activity likely to be generated in the vicinity of the Project by its operation.

The RIMS II model has also been used to estimate secondary impacts of Project operation for a typical operating year.

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6 BEARFACTS database for Suffolk County (http://www.bea.doc.gov/bea/regional/bearfacts);1997 Economic Census: Summary Statistics for New York–Northern New Jersey–Long Island, NY–NJ–CT–PA CMSA (http://www.census.gov/epcd/ec97/metro5/, then to "m5602.htm").

Total expenditures in the study area are estimated to be: $1.25 million (payroll) + $1 million (services and supplies) = 2.25 million. The regional output multiplier for electrical services in the study area is calculated by BEA to be 1.461. Thus, output in the area is estimated to increase by $2.25 million × 1.461 = $3.29 million per year, or which $1.24 million is secondary impact.

The regional multiplier for changes in earnings associated with electric industry payroll in the study area is calculated by BEA to be 1.982. The multiplier for "business services" is 0.655. Thus, earnings in the area can be estimated to increase by ($1.25 million × 1.982) + ($1 million × 0.655) = $3.13 million per year, of which $1.25 million is direct payroll and $1.88 million is secondary earnings impact.

The regional employment multiplier for the local area is calculated by BEA to be 3.556 jobs for every new job in the electrical industry. Thus, a reasonable estimated employment increase is 89 permanent new jobs in addition to the 25 created directly by the Project, for a total of 114 jobs.

12.4.3 Economic Impact of Energy Cost Savings

The analysis presented above does not include economic benefits associated with energy cost savings by individuals and businesses. As stated in Section 1.2.5, annual savings of up to $150 million could be expected for Long Island because of the Brookhaven Energy Project, assuming all electric energy were purchased on the spot market. For an order of magnitude estimate of the economic effects of such savings, the New York State Energy Plan was consulted. (See Appendix V-2, State Energy Plan, pp. 2-26, 2-27.) The State Energy Plan estimates that reductions of $100 million per year would stimulate development of 1,100 to 1,600 jobs in New York, while increasing economic output by $155-$230 million, and annual wages by $43-$53 million. These would be permanent annual increases. Assuming 20% of electric energy will be purchased on the spot market in Long Island in the forthcoming years (taking no credit for reductions in the price of bilateral contracts), and pro-rating the reported data, reductions in electric power expenditures associated with the Brookhaven Energy Project would:

- Increase economic output by $45 to $69 million per year
- Generate earnings increases of $13 to $16 million per year
- Stimulate the creation of 330 to 480 permanent jobs

In conclusion, energy cost savings are important economic drivers. The increase in economic output, earnings, and employment associated with energy price reductions can be greater than (and is in addition to) the economic benefits of a particular power plant's construction and operation. Brookhaven Energy is proposed in an area where potential energy cost savings are high, and thus the Project is expected to contribute to significant economic benefits for the region by participating in the competitive electric generation markets.

12.5 Labor Supply

12.5.1 Work Force Availability

This section addresses Stipulation 7, Clause 7 – a comparison of the anticipated construction work force, by trade, with the construction work force available within commuting distance, assuming a continuation of recent construction work force employment levels, with the exception that the labor force demands of any unusually large Project which has been publicly announced for construction in the vicinity of the Project site during construction of the Project shall be addressed in the analysis.

An estimate has been provided which identifies the maximum number of workers in each trade required for the construction of the Project. Those estimates are provided in Table 12-2 above.

The labor organizations associated with these trades have been contacted to determine their membership and availability to staff the Project's construction needs, assuming a continuation of recent construction work for employment levels.[7] These consultations are reflected in Table 12-4, which links maximum staffing needs to labor supply availability. The discussions with the various trade union representatives have included unanimous responses in regard to their ability to staff the Project. Many representatives referenced reciprocal agreements with other union chapters to further supplement their ranks, if necessary, and several referenced apprentice programs that will also increase their ranks. Union representatives believe that other future construction projects would not adversely affect their ability to staff the Brookhaven Energy Project. Nor do they believe any temporary in-migration would have any noticeable effect on the housing market. There is one additional proposed construction project in the vicinity that requires a similar workforce in terms of size as the Brookhaven Energy Project – the Caithness Island Power Project, proposed to be sited northwest of the Brookhaven Energy Project. Therefore, the table below shows that even in the unlikely event that the two projects' construction schedules coincided exactly, there would still be more than enough workers within the brief commuting distance of Nassau and Suffolk County, with the possible exception of boilermakers and managers, some or all of whom would commute from Long Island, New York City, Connecticut, Upstate New York, or New Jersey, but some of whom may temporarily reside at a location near the Project site. Note that no estimate is made of skilled local non-union labor pools, a segment that could potentially join organized labor in order to participate in the construction of the Project.

For the operations period, only 25 total employees are expected. With existing operating expertise in the vicinity, Brookhaven Energy expects only approximately one in five operations workers would in-migrate (thus, a total of 5 workers). Cumulatively with Caithness, 10 workers can be expected.

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7 Interviews with Jack Kennedy, President, Long Island Building and Construction Trades Council, September – 2000; Tomas Cook, Business Manager, Boiler Makers Union, October 1, 2000; and William Lindsay, Business Manager, International Brotherhood of Electrical Workers, October 2, 2000.

Table 12-4: Worker Availability for Project Construction

Discipline	Maximum Need	Caithness Estimated Need*	Cumulative Maximum Need	Local Labor Supply (Nassau & Suffolk)
Electricians	175	245	420	2,000
Pipefitters/Sprinklerfitters	184	258	442	1,500
Carpenters/Millwrights	40	56	96	1,700
Ironworkers	60	84	144	750
Laborers	40	56	96	850
Boilermakers**	80	112	192	175
Masons/Finishers & Insulation Workers	25	35	60	1000
Operating Engineers	25	35	60	2,000
Sheetmetal Workers	11	15	26	1,500
Painters	7	10	17	1,800
Teamsters	20	28	48	1,000
Management	80	80	160	209***

* Assumed to be 1.4 times the maximum demand of the Brookhaven Energy, except for managers.

** Approximately 25% of boilermaker union workers would come from Long Island and the remainder are expected to either commute from NYC, Orange County, Rockland County, Putnam County and Sullivan County or to be drawn from skilled local non-union labor that could join unions to work on the Project.

*** 1997 Economic Census reports 15,067 heavy construction workers in New York State, of which 10% are assumed qualified for construction management, and the value is further prorated for Nassau and Suffolk Counties.

12.5.2 Extent and Duration of In-Migration

This section addresses Stipulation 7, Clause 8 – an estimate of the extent and duration of temporary construction worker in-migration.

In the very likely event that Caithness and Brookhaven construction are not fully overlapping, it is anticipated that boilermaker in-migration would not be necessary, because nearby areas such as New York City are easily within commuting distance of the site. If and to the degree such in-migration becomes necessary, it would occur during quarters 5 and 6 (months 12 – 18) of the construction period, and would constitute an estimated 17 boilermakers (an order of magnitude estimate based on cumulative demand of 192 and available supply of 175, from Table 12-4 above. None of these would be expected to relocate with families.

For management, the Project will select specific individuals, giving a preferential weighting to local candidates wherever possible. However, past experience shows that at a temporary in-migration of approximately 25 management personnel is nonetheless anticipated. It would last for the duration of the construction period. Experience at a similar plant in Massachusetts shows that approximately half would relocate with spouses, and about 5 children would also in-migrate for this period. A cumulative assessment including the Caithness project would thus yield an additional 25 management personnel, with presumably a similar pattern in terms of family relocation.

12.5.3 Work Force Accommodation During Construction

This section addresses the requirements of Stipulation 7, Clause 9 – an identification of the amount and location of housing expected to be used by any construction workers in-migrating temporarily.

The latest available published information from the U.S. Census Bureau and the Suffolk County Planning Department was obtained to identify the relative level of available housing in Suffolk County. Suffolk County alone was chosen (instead of Nassau or greater New York City area) because of the assumption that in-migrating workers would prefer proximity to the Project site. Throughout the 1990s until 1999, Suffolk County has seen very low homeowner vacancy rates (between 0.7 and 1.4%), but significantly higher rental vacancy rates (4.3 to 6.5%). Vacancy rates in 1999 were lower: 0.6% for homeowners and 1.9% for rentals. To be conservative, these low vacancy rates have been assumed to hold steady through the construction period.

Table 12-5 demonstrates the analysis that was undertaken. For 1990, census data were used that break down the housing stock between vacant and occupied and between owner and rental (or other form of tenure). Then, for the years 1990 through 2000 (half-year), building permit issuance was identified through the Suffolk County Planning Department (using US Census Bureau data). Single-family housing was assumed to be owner-occupied, while multi-family housing was assumed to renter-occupied. It was then assumed that no housing with a building permit later than June 2000 would be available for use by Project construction workers. Finally, the low 1999 vacancy rates were applied. The result is that 2,304 units are expected to be vacant and for sale during Project construction, while 1,811 units are expected to be available for rent.

In addition, the Suffolk County Department of Economic Development reports that there are 10,270 hotel/motel rooms in the county, at 287 lodging properties. Two thirds of these rooms (approximately 7,000) are open year-round. There are presently plans to add another 1,400 rooms.[8] The availability of hotel/motel rooms in the area further demonstrates that impacts from in-migration on housing will be minimal. The Suffolk County Planning Department reports that hotel occupancy rates were 73% in western Suffolk County and 44% in eastern Suffolk County. This was the highest occupancy rate for both parts of the county since 1991. Well over 2,000 hotel rooms in Suffolk County are thus expected to be vacant and available for construction personnel.

Furthermore, there are 43,930 vacant units in the 1990 census identified as being for recreational, seasonal, or other use. These are not included in the rental or owner vacancy rates cited above. This or a similar order of magnitude number is available at least for short-term use by Project construction personnel.

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8 *Discover Suffolk County: An Economic Profile*, prepared for the Suffolk County Department of Economic Development by Island-Metro Publications, Inc., 1999, p. 48. Slightly more recent Suffolk County data show 10,480 hotel rooms in Suffolk County, of which 7,510 are year-round and 2,970 seasonal.

Table 12-5: Suffolk County Housing Units

Year	As of 1990	Cumulative through 6/2000	Housing Stock at Buildout*
New Single-Family Building Permits		37,500	
New Multi-Family Building Permits		4,482	
Occupied by owner	340,253		99.4% or 381,713
Occupied by renter	84,446		98.1% or 93,521
Vacant, for sale only	6,264		0.6% or 2,304
Vacant, for rent	6,404		1.9% or 1,811
Vacant, for recreational, seasonal, other use (assumed not available)	43,930	No data (assume no growth)	43,930
Total units for owner occupancy	346,517	384,017	384,017
Total units for renter occupancy	90,850	95,332	95,332
Total	481,297	523,279	523,279

Note: 1990 data from US Census Bureau; 1999-2000 data from US Census Construction Statistics Division, prepared by Suffolk County Planning Department and Long Island Regional Planning Board. Single-family building permits assumed to be for owner-occupied housing, and multi-family building permits assumed to be for renter-occupied housing.

* "Housing stock at Buildout" refers to the expected housing stock during Project construction, but conservatively estimates no further building permits or buildings. Vacancy rates are assumed to be at 1999 levels – 0.6% for homeowners and 1.9% for rentals.

On the basis of the available data, there is a large housing stock in relation to the relatively small number of workers who would in-migrate. Assuming that construction of the Caithness project fully coincides with construction of the Brookhaven Energy Project, there could be an in-migration of an estimated 17 boilermakers (per Table 12-4) and 50 managers (assuming 25 internal hires for each project). Without Caithness an in-migration of only 25 managers is expected. In comparison, more than 6,000 homeowner, rental, and hotel rooms are available in Suffolk County, not including several times that amount in seasonally available housing. This total for Brookhaven Energy Project in-migration is only approximately 0.4% of the available vacancies (not including seasonal vacancies). Including Caithness, the in-migration would be 1.5% of available vacancies.

In terms of the location of housing used by in-migrating workers, it is anticipated that local rental vacancies and hotels will be given preference by short-term workers, while some owner-occupied houses could be preferred by managers coming for the duration of construction. No new housing would be required for the construction workforce.

For the operations workforce, even assuming no new housing construction, the maximum possible in-migration would be less than that during construction, since 25 construction managers are expected to in-migrate, while only 25 operations personnel are expected in total (only approximately five of which are expected in-migrate).

12.6 Incremental Costs to the Public

The following sections address various types of incremental operating and infrastructure costs that will be incurred by any school districts, municipalities, public authorities, and utilities during the

construction and operation phases of the Project, respectively. For each of the analyses, the nearest affected school districts, municipalities (Suffolk County and Brookhaven), public authorities (Suffolk County Water Authority and Long Island Power Authority), and utilities (Keyspan), were consulted.

12.6.1 Incremental Cost to School Districts

This section addresses Stipulation 7, Clauses 10 and 11, which requires an estimate of incremental school operating and infrastructure costs that will be incurred by any affected school district during the construction and operation phases of the Project, respectively; these estimates to be made after consultation with the affected school districts.

New York State Education Department data for the 1997-98 school year indicate that the total public school enrollment in Suffolk County school districts was 231,418 students.[9] The Long Island Power Authority's 1999 Population Estimate listed 453,090 households in Suffolk County.[10] This information provides a rate of 0.51 students per Suffolk County household.

Using this rate, the estimated increase in students associated with the potential temporary relocation of a maximum of 25 construction management workers would be 13 pupils (25 x .51 = 13), assuming that all construction management workers would relocate and would come with their entire families. More likely, on the basis of ongoing experience at similar plants under construction in Massachusetts, about 5 pupils would relocate. This total represents approximately 0.002% of the total school enrollment in Suffolk County, or less than one new student per 47,000 existing pupils. During operations, with an estimated in-migration of 5 workers, 3 pupils (5 x .51 = 3) would be expected, representing approximately 0.001% of the total county school enrollment, or less than one new student per 77,000 existing pupils. Per pupil expenditures in New York State range from approximately $5,000 to $7,000 per year.[11] These negligible increments are not expected to result in any additional incremental school operating and infrastructure costs beyond those considered within the parameters of normal school needs planning. Since schools are financed through a combination of property taxes, state aid, and other revenues, any impact of additional students is offset by the additional income and other types of taxes that in-migrating households pay, in addition to their property tax.

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9 As cited in *1999 Market Facts* (formerly known as the Long Island Almanac), published by Long Island Business News, pp. 42-43.

10 Long Island Power Authority, *Long Island Population Survey, 1999*, published October 1999, p. vii.

11 See Longwood Central School District Financial Accountability Supplement, at Internet web site http://www.emsc.nysed.gov/repcrd399/IE580212.html.

12.6.2 Incremental Cost to Police Services

This section addresses Stipulation 7, Clauses 12 and 13, which require, in part, an estimate of incremental municipal operating and infrastructure costs that will be incurred by Suffolk County for police services during the construction and operation phases of the Project, respectively.

Police protection for the Project site is provided by Suffolk County Precinct #6 (based in Coram). The Project will have private security both during construction and operation, requiring no police services. The estimated population increase associated with workers relocating to the study area during the construction period is 25 workers, and during the operations period – 5 workers. Presently, the Suffolk Police Department provides protection for 1.2 million citizens,[12] and the increased demand for police services is thus expected to be negligible.

12.6.3 Incremental Cost to Fire/Emergency Services

This section addresses Stipulation 7, Clauses 12 and 13, which require, in part, an estimate of incremental municipal operating and infrastructure costs that will be incurred by Suffolk County for fire and emergency services during the construction and operation phases of the Project, respectively.

Fire protection for the Project site will be provided by the Yaphank Volunteer Fire District, which is under the umbrella of the Suffolk County Department of Fire, Rescue, and Emergency Services (FRES). This department also provides EMS response. Brookhaven Energy has consulted with the Yaphank Fire District, as well as with the Brookhaven Department of Public Safety, regarding emergency planning for the Project. The result of this collaboration is provided in the *Emergency Response Plan* in Appendix Q. No incremental infrastructure costs are expected to be necessary. Operating costs would occur during any specific emergency response events. In order to limit the demand for medical and emergency services, a safety orientation program, site security and fire response plan will be in place to reduce the likelihood of the need for emergency services. With respect to in-migrating workers, no new housing is expected to be built, and no incremental operating and infrastructure costs are anticipated. Presently, the Suffolk FRES serves 1.3 million citizens, with 109 fire departments, 29 EMS agencies, and approximately 14,000 responders.[13]

12.6.4 Incremental Cost to Electric Services

This section addresses Stipulation 7, Clauses 12 and 13, which require, in part, an estimate of incremental public authority operating and infrastructure costs that will be incurred by Long Island Power Authority for electrical services during the construction and operation phases of the Project, respectively.

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12 Suffolk County Police Department, 1998 Annual Report, p. 4, available via the Internet at http://bern.nais.com/clients/scpd/AnnualReport/1998/ar1998.shtml#4.

13 Suffolk FRES website, http://www.co.suffolk.ny.us/fres/.

Any infrastructure and operating costs incurred by Long Island Power Authority for low-voltage service to the Project site would be covered through electric rates. Most electrical needs at the Project would be met through parasitic load, with no costs to LIPA. Similarly, any infrastructure and operating costs associated with worker in-migration is recovered through electric rates. LIPA's budgeted fuel and electric purchase costs for 2001 are $920 million, compared to a population in the LIPA service territory of 2.8 million people.[14] Prorated incremental costs for 42 additional individuals (based on 25 construction manager households, with an assumed 12 spouses, and 5 children), which can provide an order of magnitude estimate, would constitute an additional expenditure of approximately $14,000 per year, recoverable through electric rates. The figure during operations would consequently be even less, and would also be recoverable through electric rates.

12.6.5 Incremental Cost to Water Services

This section addresses Stipulation 7, Clauses 12 and 13, which require, in part, an estimate of incremental public authority operating and infrastructure costs that will be incurred by Suffolk County Water Authority for water services during the construction and operation phases of the Project, respectively.

Brookhaven Energy will directly reimburse the Suffolk County Water Authority for the infrastructure connection to the Project site, and will pay for water as a regular customer. Similarly, any infrastructure and operating costs associated with worker in-migration is recovered through customer charges. The Suffolk County Water Authority has operations and maintenance expenses of $55 million, with a customer base of 335,000.[15] An increase in 25 customers (assuming a linear relationship), would thus increase costs by approximately $4,000, which would be recoverable through water sales.

12.6.6 Incremental Cost to Sewer Services

This section addresses Stipulation 7, Clauses 12 and 13, which require, in part, an estimate of incremental municipal operating and infrastructure costs that will be incurred by Suffolk County Department of Public Works for sewer services during the construction and operation phases of the Project, respectively.

Brookhaven Energy will directly reimburse the Suffolk County Department of Public Works for the infrastructure connection from the Project site to the Yaphank Avenue interceptor, will pay a capacity fee to the County, and will pay for sewer services on a prorata share of the water use for the entire service area, with a 5% administrative cost. Similarly, any infrastructure and operating costs associated with worker in-migration is recovered through customer charges. The Suffolk DPW sewer system operates 21 treatment plants, 70 pumping stations, and over 1250 miles of sewers.[16]

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14 LIPA 2001 budget, available on Internet at http://www.lipower.org/pdfs/budgetadop2001.pdf, p. A-5; LIPA Year 2000 Population Survey, p. 3.

15 Suffolk County Water Authority website, at http://www.scwa.com/financial.htm.

16 Suffolk County DPW, Division of Sanitation website, at http://www.co.suffolk.ny.us/dpw/Sanitation/index.htm.

Wastewater generation by an additional 25 customer households is predicted to be less than 2,000 gallons per day – a miniscule increase for the system. Connection to the system is dependent upon formation of a sewer district. Under the trucking alternative discussed is Section 17.2.4.4, payment of commercial hauler rates will ensure reimbursement to the County system.

12.6.7 Incremental Cost to Private Utilities

This section addresses Stipulation 7, Clauses 12 and 13, which require, in part, an estimate of incremental utility operating and infrastructure costs that will be incurred by affected utilities during the construction and operation phases of the Project, respectively.

Private utilities servicing the site will include the Keyspan natural gas pipeline and telephone lines. All such costs will be recovered by the utilities through customer charges paid by Brookhaven Energy. For example, Keyspan rates on Long Island for standard firm residential customers were $0.69/therm in February 2001.[17] For 25 hypothetical customers using 100 therms/month in winter and 25 therms in other seasons, costs would amount to approximately $9,000, all recoverable through rates. For telephone service, the market is sufficiently deregulated that the local and long distance charges levied by the provider can be assumed to flexibly cover costs in a manner determined solely by the provider, taking into account market conditions.

12.6.8 Incremental Cost to Solid Waste Services

This section addresses Stipulation 7, Clauses 12 and 13, which require, in part, an estimate of incremental municipal operating and infrastructure costs that will be incurred by Brookhaven for solid waste services during the construction and operation phases of the Project, respectively.

As an industrial facility, Brookhaven Energy will contract with private waste haulers to remove solid waste resulting from the Project both during construction and operation, thus not causing any incremental costs to the Town of Brookhaven. Furthermore, waste disposal during construction will be minimized through the employment of a recycling program that will focus on scrap metal and reusable timber. Solid waste generation is more fully described in Section 3.2.8. Because in-migrating workers would be so few, they will not alter Town sanitation routes or significantly affect costs. An example of cost recovery is as follows: for a one-family house, the charge for waste collection services in 1996 was $208.[18] Present fees are of the same order of magnitude. Thus, this service would be separately paid for by in-migrating workers and their households.

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17 Based on Statement of Gas and Pipeline Cost Adjustment, February 2001, available via Internet at http://delivery.keyspanenergy.com/ps_business/rates/eastrates.cfm.

18 Dept. of Waste Management web site, at http://www.brookhaven.org/Main.htm.

12.7 Real Property Taxation

This section addresses Stipulation 7, Clauses 14 and 15 – an identification of all jurisdictions (including benefit assessment districts) that levy real property taxes or benefit assessments upon the Project site, its improvements and appurtenances, and an identification of the most recent tax rate for each. It likewise addresses Stipulation 7, Clauses 16 and 17 – an identification of the most recent assessed value for the Project site, and the most recent annual taxes levied on it.

The Project site consists of 28 acres, but appears in Town Assessors' listings as various parcels consisting of a total of 30 acres. Property values are assessed uniformly across jurisdictions, while property taxes are levied by various taxing jurisdictions on the basis of that assessment. The total property values (full and assessed) are presented in Table 12-6. Tax rates and total levies for the most recent fiscal year (December 1, 2000 through November 30, 2001) are presented in Table 12-7.

Table 12-6: Assessed Property Value of Project Site

Section	Block	Lot	Acreage	Full Value ($)	Assessed Value ($)
663	3	1	17.42	79545	1750
663	3	27.3	.58	9090	200
663	3	27.4	.58	9090	200
663	3	27.1	.18	2727	60
663	3	27.2	.58	9090	200
704	2	1.1	2.72	37500	825
704	2	2	3.81	18180	400
704	2	30	.58	9090	200
704	2	31	.58	9090	200
704	2	32	.58	9090	200
704	2	33	.58	9090	200
704	2	34	.58	9090	200
704	2	35	.58	9090	200
704	2	36	.29	4545	100
704	5	1	.06	909	20
704	5	2	.06	909	20
704	4	1	.18	2727	60
704	4	2	.06	909	20
TOTAL			30.00	229761	5055

Table 12-7: Tax Jurisdictions and Associated Tax Rates and Levies

Tax Jurisdiction	Tax Rate per $100 of Assessed Value	Assessed and Full Value (all parcels)	Total Tax Levy (all parcels)	Tax Rate per $1000 of Full Value
Suffolk County	$2.648	$229,761 (full)	$133.86	$40.82
Yaphank Fire District	$ 15.941	$5,055 (assessed)	$805.82	
Suffolk County Police	$ 21.433		$1,083.44	
Town – Outside Inc. Villages	$4.725		$238.85	
Highway – Outside Inc. Villages	$8.475		$428.41	
Clean Air/Water Bond Act	$0.284		$14.36	
Longwood School District	$120.541		$6,093.35	
Lighting District	$1.270		$64.20	
Longwood Public Library	$7.061		$356.93	
Real Property Tax Law – Art. 7	$1.259		$63.64	
Real Property Tax Law	$1.885		$95.29	
Combined Tax Rate	$185.522		$9,378.14	

12.8 Safety and Emergency Response

This section addresses Stipulation 7, Clauses 18 and 19, which require: (1) a description of all on-site equipment and systems to be provided to prevent or handle fire emergencies and hazardous substance incidents; and (2) a description of all contingency plans to be implemented in response to the occurrence of a fire emergency or a hazardous substance incident.

The Safety Plan and Environmental Compliance Plan for the site (for both direct O&M employees and contractors) will be based on the plans successfully implemented at other projects being constructed by affiliates of American National Power, Inc., modified and amended as required by the plant technology and environmental permits. Brookhaven Energy is dedicated to achieving world class safety and environmental performance. The draft emergency plan is provided for reference purposes as Appendix O. This document has been circulated and then reviewed by the Fire Chiefs of the Yaphank Fire District (under the umbrella of the Suffolk County Department of Fire, Rescue and Emergency Services) and Town of Brookhaven Division of Public Safety. As documented in Appendix O, the plan reflects the Fire Chiefs' input to date.

A comprehensive list of plant emergency equipment, including quantity and location within the various plant buildings, is provided in Appendix O, and more briefly described in Section 3.2.10. (For prevention of hazardous substance incidents, see also the discussions in Section 3.2.8, related to hazardous waste generation; Section 3.2.9, regarding chemical storage and handling; Section 9.4.2, regarding fuel oil storage; and Section 10.4, regarding local laws, including the Suffolk County Sanitary Code.)

The purpose of the emergency plan is to define both the preventive measures and the response measure for various types of emergencies, in order to ensure maximum preparedness for various

unlikely emergency events such as oil spills, release of chemical or hazardous materials, medical emergencies, fire emergencies, law enforcement emergencies, weather emergencies, plant evacuation and other emergencies at nearby facilities. Attachments within the plan include emergency phone numbers, oil spill response and emergency checklist, chemical/hazardous material release emergency response checklist, medical emergency response, fire emergency response, law enforcement/security response emergency, severe weather emergency response, plant evacuation emergency response, other emergency response, hazardous material/oil spill report form, listing of plant emergency equipment, tank bulk storage/spill flow diagram and emergency incident investigation report.

13. SOILS, GEOLOGY AND SEISMOLOGY

13.1 Applicable Regulatory Requirements

This section addresses constructibility issues – soils, bedrock location, topography and slopes, groundwater depth, and other geotechnical conditions. Because there are few regulatory standards specific to earth resources, the significance of such impacts are assessed according to the needs of facility design and engineering, and any resulting impacts on other environmental systems. A preliminary on-site geotechnical investigation has been conducted (see Appendix S), and this summary is based in part on that study. The Siting Board regulations also explicitly require an evaluation of geology and seismology. 16 NYCRR 1001.3(b)1(v). Furthermore, the Public Service Law requires that an Application contain, "as appropriate, geological... tsunami, [and] seismic" data. PSL §164.1(a). Therefore, the potential for active seismological faults and earthquakes that could cause ground motion, liquefaction, slope instability and deformation is also addressed in this section.

13.2 Soils and Topography

This section addresses Stipulation 8, Clauses 2(a) and 2(b). Clause 2(a) requires a map delineating soil types on the Project site and interconnections. Clause 2(b) requires a description of the characteristics and suitability for construction purposes of each soil type identified above, including recharge/infiltration capacity, especially as it relates to dewatering.

13.2.1 Soil Types in Areas of Disturbance

Information related to soils was obtained through a limited geotechnical investigation conducted in November 2000. The geotechnical investigation consisted of an electric cone penetration test (CPT) conducted at four locations surrounding the power plant footprint. The locations are shown in Figure 13-1. Locations were chosen so as to avoid any tree clearing, while at the same time covering different portions of the site. The CPT soundings, within the depth of the exploration, revealed predominantly granular soils. Cobbles or other obstructions were encountered several times at depths of 6 to 12 feet. Also, a small pit was hand-dug at the northern and southern portions of the site, in wooded areas. Topsoil thickness was noted between 1 and 3 inches. Based on the Soil Survey of Suffolk County, new York, surficial soils across the Project site, laydown area and interconnections consist of Haven load, Plymouth loamy sand, Riverhead and Carver and Plymouth sands. (See Table 13-1.)

Soils along the off-site interconnections are those found in the shoulders and/or bed of Sills Road and the Long Island Expressway (South Service Road). These soils presently provide structural support for these roadways and the loads that truck and light vehicle traffic exerts on them. For the Project's interconnections (gas, water, and sewer), the soils will be excavated and then backfilled.

For the Project's laydown areas, soils will not carry loads such as buildings, and therefore are described on the basis of the Suffolk County Soil Survey.

Figure 13-2 shows the soils for the Project site, laydown areas, and interconnections on the basis of the geotechnical study, as well as the Suffolk County Soil Survey. Table 13-1 described the soils and their characteristics on the basis of the soil survey, to complement the results of the geotechnical investigation presented here.

Table 13-1: Soil Characteristics*

Soil Unit	Slope %	Water Table/ Kind (feet below surface)[1]	Hydro-logical Group[2]	Perme-ability (in/hr)[3]	Suitability for Pipelines [4]	Suitability for Streets [4]	Suitability for Foundations for Low Buildings [4]
HaA – Haven loam	0-2	>4/apparent	B	0.63 - >6.3	Moderate: Stability	Slight	Low compressibility
PlA – Plymouth loamy sand	0-3	>4/apparent	A	>6.3	Moderate: Stability	Slight	Low compressibility
RdA – Riverhead sandy loam	0-3	>4/apparent	B	2.0 - >6.3	Moderate: Stability	Slight	Low compressibility
RdB – Riverhead sandy loam	3-8	>4/apparent	B	2.0 - >6.3	Moderate: Stability	Moderate: Slopes	Low compressibility
CpE – Carver and Plymouth sands	15-35	>4/apparent	A	>6.3	Severe: stability	Severe: Slope	Low compressibility Large settlement possible under vibratory load

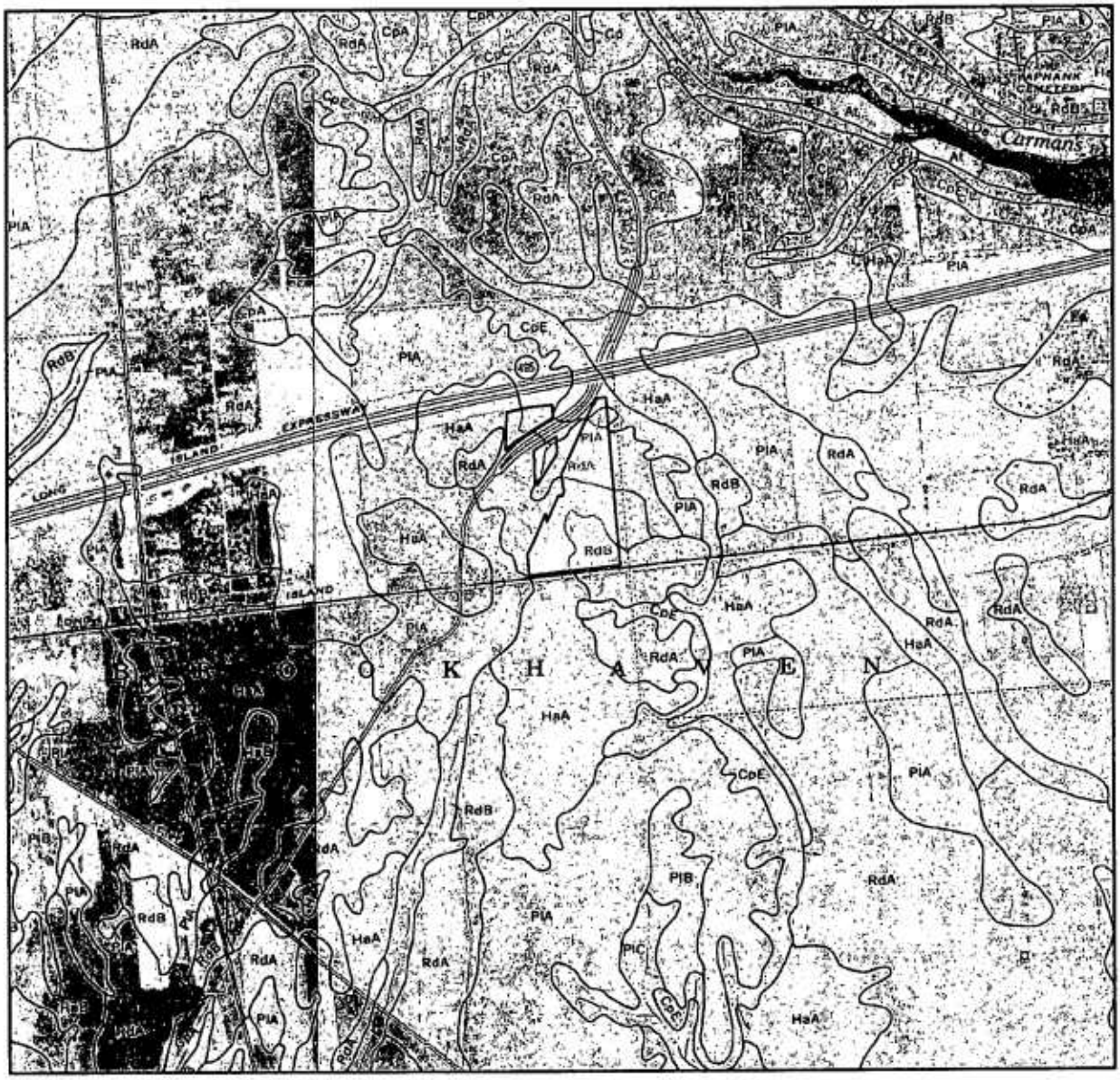
(1) Water table is the highest level at which a saturated zone more than 6 inches thick appears for a continuous period of more than 2 weeks during most years.
Apparent Water Table: A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. *Perched Water Table:* A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

(2) Refers to soils grouped according to their runoff-producing characteristics. Group A soils have a high infiltration rate (i.e., 0.3-0.45 in/hr), when thoroughly wet, and a slow runoff potential. Group D soils, at the other extreme, have a very slow infiltration rate (i.e., 0.00-0.05 in/hr), and a high runoff potential. Primarily, soils on the site are Group B, with Group A soils toward the northern tip and in a portion of the laydown area. These soils generally have a high infiltration rate, and are well drained.

(3) Permeability is the quality that enables a soil to transmit water or air. Terms used to describe permeability of the soils for this site include:
Moderate: 0.63 to 2.0 in./hr.; Moderately rapid: 2.0 to 6.3 in./hr.; Rapid: >6.3 in./hr.

(4) The degree of soil limitation on shallow excavations, dwellings, and roads is as follows:
Slight: Soil has few or no limitations for a particular use or that any limitations that are present can be overcome at little cost.
Moderate: Soil properties on site and site features are unfavorable for the specified use, but the limitations can be overcome or minimized by special planning and design.
Severe: Soil properties on site and site features are unfavorable or difficult for use. The costs to overcome the limitations are excessive.

* Information, in part, taken from Soil Survey of Suffolk County, New York, USDA Soil Conservation Service, April 1975, and web site www.statlab.iastate.edu/soils/osd.



MAY SYMBOL	SOIL NAME
RdA, RdB	Riverhead
PIA, PIB, PIC	Plymouth
HaA, HaB	Haven
CpA, CpC, CpE	Carver

KEY

Site and Laydown Areas

Portion of U.S. Soil Conservation Service, Suffolk County Soil Survey 1975, Sheet 68

0 2000 4000

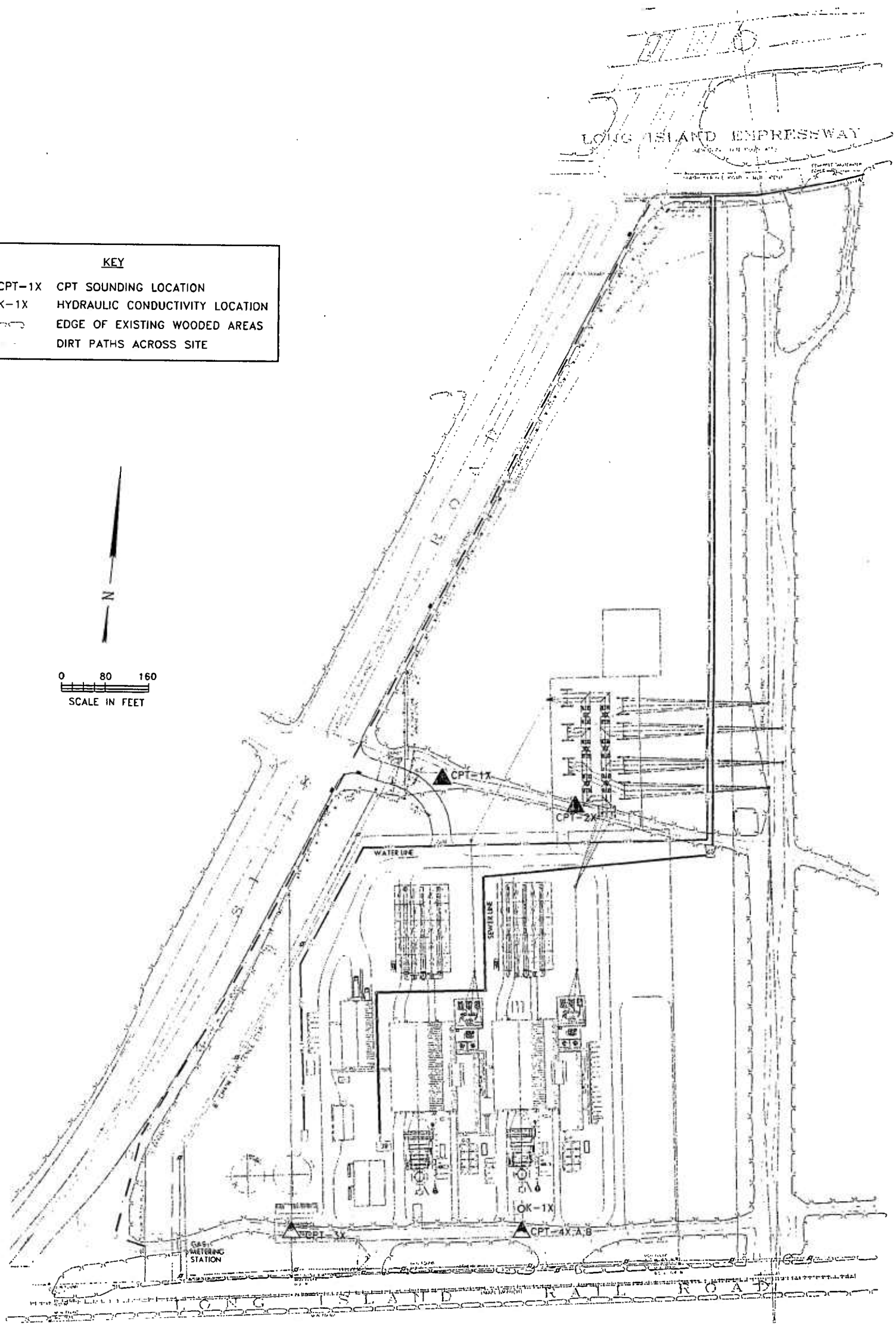
Feet

26587/SOILS

Figure 13-2
Soils Map

KEY

△ CPT-1X	CPT SOUNDING LOCATION
o K-1X	HYDRAULIC CONDUCTIVITY LOCATION
	EDGE OF EXISTING WOODED AREAS
	DIRT PATHS ACROSS SITE



BROOKHAVEN ENERGY LP
65 BOSTON POST ROAD WEST, SUITE 300
MARLBOROUGH, MA 01752
TEL 508-786-7200 FAX 508-786-7201

PREPARED:	CHECKED:	APPROVED:	STD.CHECKED:
DERIVED FROM:	SUPERSEDES:	SUPERSEDED BY:	

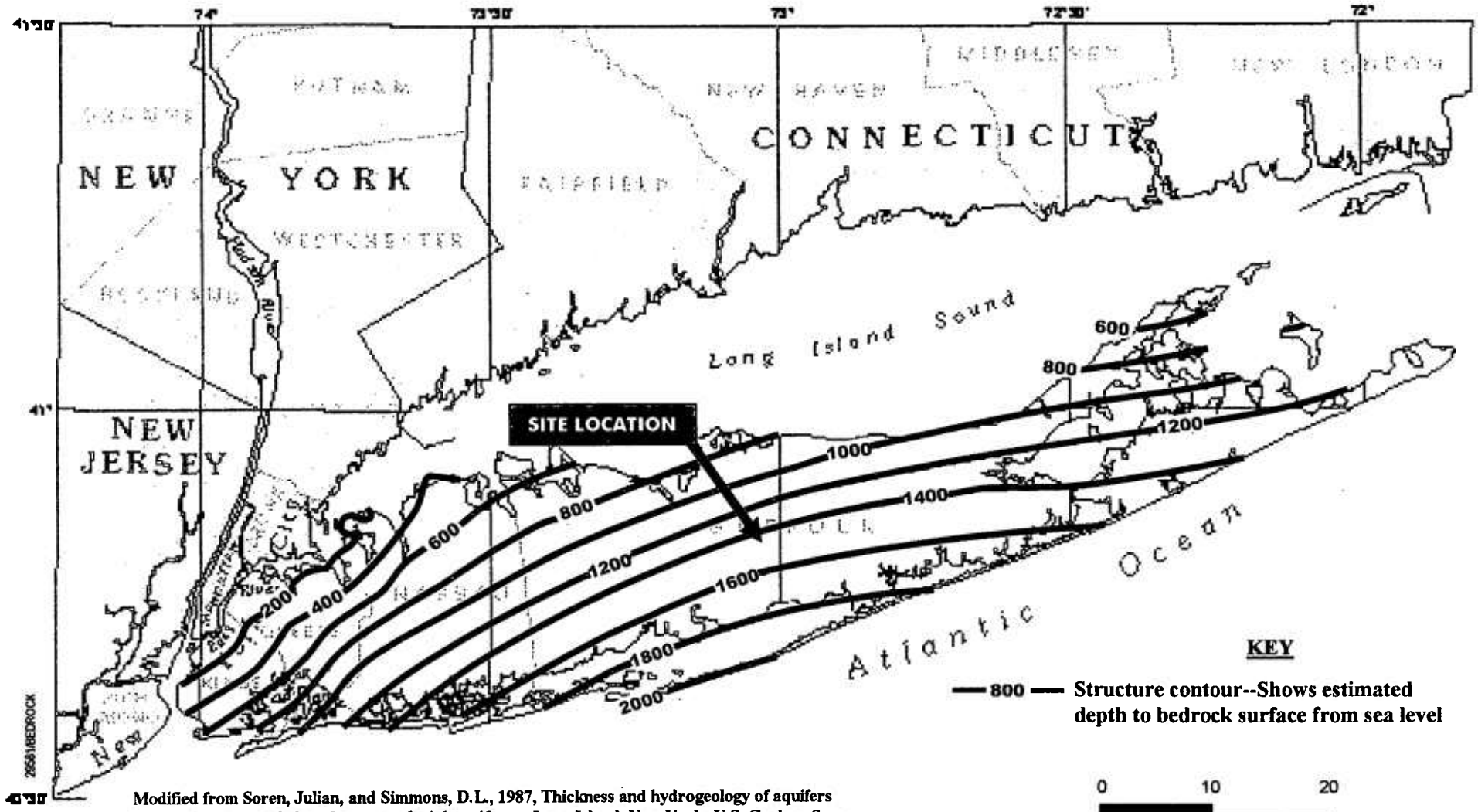
Title

FIGURE 13-1

CONE PENETRATION TEST SOUNDING LOCATIONS

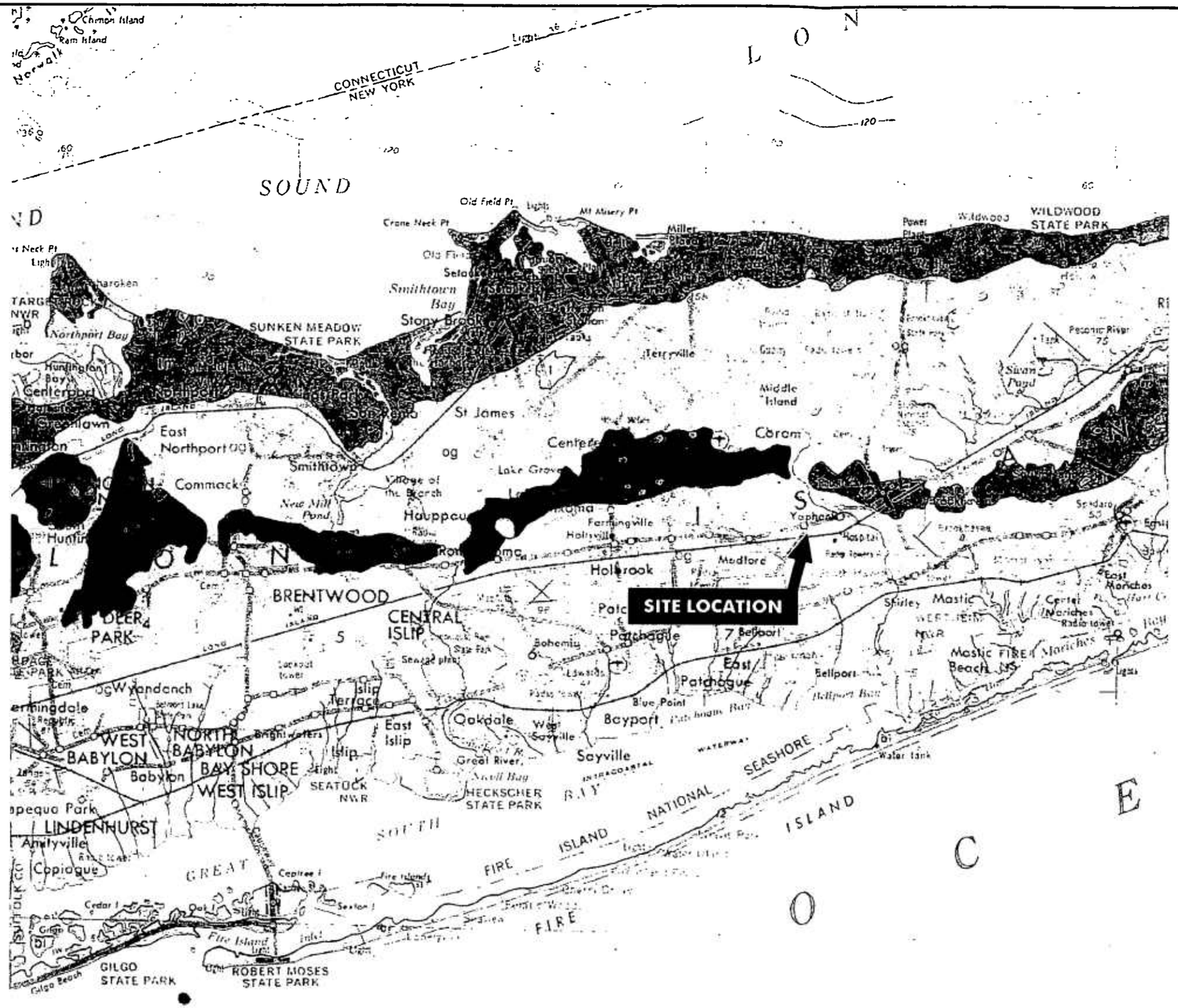
ALSTOM
ALSTOM POWER INC.

Scale	Cadd File No.	
Format B	Parts List - Yes / No Separate ☐ ☐	
	Dept. Resp.	Takeover Dept.
Language	Sheet No.	No. Sheets
Drawing No. T:\E_CAD\29581(BROOKHAVEN)\CPT LOCATIONS		Rev.



Modified from Soren, Julian, and Simmons, D.L., 1987, Thickness and hydrogeology of aquifers and confining units below the upper glacial aquifer on Long Island, New York: U.S. Geology Survey Water-Resources Investigations Report 86-4175, 3 sheets

Figure 13-4
Crystalline-Bedrock Surface Contours



Base Map is a Portion of the Following:
The University of the State of New York, The State Education Department,
Surficial Geological Map of New York, Compiled And Edited 1989, Lower Hudson Sheet

29581/GEO

Brookhaven Energy LP

Legend:

bi - Barrier Island
Sand and gravel deposit as barrier island,
south shore of Long Island,
may have associated dunes,
thickness variable.

og - Outwash sand and gravel
Coarse to fine gravel with sand,
proglacial fluvial deposition,
well rounded and stratified,
generally finer texture away from ice border,
thickness variable 2-20 meters).

fg -Fluvial sand and gravel
Deposits of sand and gravel,
occasional laterally continuous lenses of silt,
deposition farther from glacier,
age uncertain.

k -Kame deposits
Includes kames, eskers, kame terraces, kame deltas,
coarse to fine gravel and/or sand,
deposition adjacent to ice,
lateral variability in sorting, coarseness and thickness,
locally firmly cemented with calcareous cement,
thickness variable (10-30 meters).

k -Kame moraine
Variable texture (size and sorting) from boulders to sand,
deposition at an ice margin during deglaciation,
positive constructional relief,
locally cemented with calcareous cement,
thickness variable (10-30 meters).

tm -Till moraine
More variable sorted than till,
generally more permeable than till,
deposition adjacent to ice,
more variably drained,
may include ablation till,
thickness variable (10-30 meters).

t -Till
Variable texture (e.g. clay, silt-clay, boulder clay),
usually poorly sorted diamict,
deposition beneath glacier ice,
relatively impermeable (loamy matrix),
variable clast content - ranging from abundant well-rounded
diverse lithologies in valley tills to relatively
angular, more limited lithologies in upland tills,
tends to be sandy in areas underlain by gneiss or sandstone,
potential land instability on steep slopes,
thickness variable (1-50 meters).

Figure 13-3
Surficial Geology Map

0 5 10
Miles

13.2.2 Soil Suitability and Dewatering Needs

On the basis of preliminary geotechnical investigation activities to date, the soils at the Project site consist of two types: the upper finer, silty sand and clayey sands and the lower granular soils. The lower granular soils are volumetrically the dominant soil type. They are very likely suitable as structural fill. The upper soils are suitable for general site grading and berm construction, but may or may not be suitable for use as structural fill under foundations or other load-bearing areas, at least until further testing can be performed (after appropriate authorization under Section 70 of the Brookhaven Code is granted).[1]

Three principal aquifers underlie Long Island. The aquifers are within unconsolidated deposits of the last glacial event, known as the Upper Glacial Aquifer, and in older underlying surficial deposits known as the Magothy Aquifer and the Lloyd Aquifer. Ground waters within the Upper Glacial and Magothy aquifers are unconfined and act hydraulically as one unit, with ground water moving downward from the Upper Glacial Aquifer to recharge the Magothy Aquifer. A discontinuous clay-sand confining unit is located between the Upper Glacial Aquifer and the Magothy Aquifer.

The movement of groundwater through these aquifer units is a function of hydraulic conductivity, which is the capacity of the deposit to transmit water. The hydraulic conductivity of the Upper Glacial Aquifer is documented as approximately six times greater than the underlying Magothy Aquifer. The horizontal hydraulic conductivities of the Upper Glacial Aquifer (270 feet per day) and the Magothy Aquifer (50 feet per day) are greater than each corresponding vertical hydraulic conductivity (27 feet per day, Upper Glacial; 1.4 feet per day, Magothy); thus, groundwater moves faster horizontally than vertically through these units.[2]

The EPA identified the aquifer system underlying the proposed site, as well as all of Nassau and Suffolk Counties, as a Sole Source Aquifer (43 FR 26611, 21 June 1978). Brooklyn and Queens also received this designation in 1984. A Sole Source Aquifer is defined by EPA as a sole or principal drinking groundwater source whose contamination would pose a significant hazard to public health.

Depth to groundwater at the site was estimated based on evaluation of the pore pressure response during the CPT soundings. Pore pressure dissipation tests were performed at different depths and in all soundings to assist with the groundwater data collection. Table 13-2 lists the approximate depth to groundwater from the existing ground surface and the estimated water table elevation relative to mean sea level. The results show that groundwater in the southern portion of the site flows toward the southeast.

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1 As detailed in Section 10.4, Brookhaven Energy applied for such a test hole exemption application, with appropriate supporting documentation and fees, on August 19, 2000. Town of Brookhaven officials have not acted upon the application because typically test hole permits are issued during the detailed engineering phase (*after* Site Plan Review). In the case of the Project, the information is required as part of the Article X permitting process. For this reason, Brookhaven Energy seeks to receive Siting Board authorization to complete the geotechnical study.

2 Ground Water Atlas of the United States (Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont), HA 730-M, by Perry G. Olcott, 1995, http://capp.water.usgs.gov/gwa/ch_m/index.html. See Table 10.

Table 13-2: Depth to Groundwater at Project Site

Sounding	Groundwater Depth (feet)	Approximate Groundwater Elevation (feet above msl)
Location 1 (NW)	76.8 to 77.0	36.7 to 36.5
Location 2 (NE)	70.6 to 73.6	39.4 to 36.4
Location 3 (SW)	77.0 to 77.7	35.0 to 34.3
Location 4 (SE)	66.0 to 69.0	34.0 to 31.0

Dewatering should not be required because the excavations associated with the Project are not anticipated to approach the depth to groundwater. Perched groundwater was not encountered within the upper soils of the site. If perched groundwater is encountered, dewatering would not be continuous.

Hydraulic conductivity of granular soils (the dominant soil type) was estimated at 0.1 cm/s (12 ft./hr, on the order of 283 ft./day) or more, indicating very high permeability. This is consistent with the estimate of 270 ft./day for the Upper Glacial Aquifer cited above.

For the laydown area, no excavation would occur, and no dewatering is necessary. Groundwater depths in the laydown area are expected to be similar to the depths determined on the site. For the interconnections, dewatering is also not expected. These conclusions are based on the proximity of the laydown area and interconnection corridor, and the general characteristics of the water table in this area, as further documented in Section 17.3. The shallowest depth to groundwater at any location within the interconnection corridor is at the east end of the sewer line (LIE South Service Road, west of Yaphank Ave.). At that location, it is estimated that groundwater depth is about 33 feet (27 feet above msl), well below the depth of the proposed sewer force main (see Figure 17-6).

13.2.3 Depth to Bedrock

Depth to bedrock is approximately 1500 feet in the area, and the CPT tests showed no evidence of bedrock to depths of 150 feet, according to the Project's geotechnical report (Appendix S). Note that the temporary construction laydown area and all underground interconnections (gas, water, sewer) will be located in close proximity of the Project site or through the north portion of the site, and thus any variability in depth to bedrock is not expected to have any impact on the laydown area or interconnections.

13.2.4 Existing Topography

This section addresses the requirements of Stipulation 8, Clauses 2(c) and 2(d) – a map of existing topography (2 foot contour intervals) and a delineation of existing slopes (0-3%, 3-8%, 8-15%, 15-25%, 25-35%, 35% and Over) on the Project site and interconnections.

The site topography is shown in Site Development Plan, Sheet 2. Topographically, the Project site is nearly level, with slopes typically between 0-3 percent. Only at the northern portion of the Project site do slopes occur in the 15-35 percent range. The elevation rises from the LIE at the northeast

portion of the site, with steep slopes along the northwest side (the Sills Road frontage). Terrain along the northern half of the site is undulating but relatively flat. As one travels to the middle of the site (toward a LIPA distribution line), the site is at grade with Sills Road. Most of this interior portion of the site is flat. Toward the south, the elevation falls again, such that the lowest portion of the site is to the south. There is also, in the southern half of the site, a gentle downward slope as one moves toward the east.

For the laydown area, the topography is also quite flat, as shown in Site Development Plan, Sheet 18. The interconnection corridor follows the slope of Sills Road (downward slope toward the north), and the very flat LIE South Service Road.

Slopes on the Project site, laydown area, and interconnections are primarily in the 0-3 percent range, as shown in Site Development Plan, Sheets 20 and 21.

Grading and stability of slopes, other than those in temporary construction cuts and fills, is not a concern since the Project will be constructed in the middle and southern portions of the site. Erosion controls are described in the storm water pollution prevention plan (SWPPP) in Appendix Z.

13.3 Geological Analysis

13.3.1 Regional Surficial Geology

The topography of Long Island is a direct result of the unconsolidated surficial deposits located on Long Island. The unconsolidated deposits nearest the surface of Long Island are a result of the last glacial event to affect the northeastern United States, ending approximately 10,000 years ago, during the Pleistocene Epoch. During this last glacial event, ice advanced approximately north to south across the Northeast, terminating at Long Island, Block Island, and Cape Cod and its associated islands. These areas are composed of thick sedimentary materials deposited during this advance, termination, and retreat of the glacial ice sheet.

The proposed site is located in a glacial outwash plain, which is composed of sand and gravel deposited by melt-water streams in front of a glacial terminal moraine located north of the Project site. This terminal moraine is a ridge-like accumulation of till, an unstratified mix of clay, silt, sand, gravel, and boulders that mark a standstill of the retreating glacial ice sheet. The local and regional glacial deposits sit upon much older coastal plain sediments dating back up to approximately 100 million years ago. The surficial geology of the proposed site and region, including the outwash and terminal moraine deposits, is presented in Figure 13-3. The depth to bedrock in the area of the proposed site has been estimated at approximately 1500 feet below ground surface (see Figure 13-4).[3]

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3 Ground Water Atlas of the United States, HA 730-M, http://capp.water.usgs.gov/gwa/ch_m/index.html.

13.3.2 Type of Foundation

This section addresses the requirements of Stipulation 8, Clause 2(j) – a description of foundation support techniques to be employed by the Project.

The soils within the Project site are generally competent in density, varying from dense to very dense, except in the upper 5 to 10 feet. Under static loads, these soils are capable of providing adequate support for the Project buildings using shallow slab foundations. The upper 5 to 10 feet of the lower density/consistency soils, however, may be suitable for general site grading, berming, and for use in non-load bearing areas only. After further testing it may be determined that this soil can be improved for use, if necessary, in load bearing areas by amending it with various materials. The Project foundations are not anticipated to require pile driving. Also, blasting is not expected, as detailed below. The above conclusions are contingent upon the seismic conditions at the site not having overriding influence over the static conditions, and will be verified during subsequent site investigations.

13.3.3 Proposed Site Plan

This section addresses Stipulation 8, Clause 2(e), which requires the Application to include a site plan showing existing and proposed contours at two-foot intervals, for the Project site and interconnections, at a scale sufficient to show all proposed buildings, structures, paved and vegetative areas, and construction areas.

Brookhaven Energy has included a complete Site Development Plan meeting not only the above-referenced standard, but also the Town of Brookhaven site plan application requirements, located in the oversize roll accompanying the Article X application. See Sheets 2, 14 and 21.

13.3.4 Cut and Fill Analysis

This section addresses Stipulation 8, Clauses 2(f) through 2(i). These clauses require a preliminary calculation of the quantity of cut and fill necessary to construct the Project, the amount of fill or cut to be brought to or from the Project site, and a delineation of temporary cut or fill storage areas to be employed.

The current topography of the Project site is relatively flat. To construct the Project facilities, some excavation and fill activity is needed to achieve a site level enough for construction, and to remove, if necessary, soils unsuitable as structural fill. However, based on the results of the preliminary geotechnical investigation, Brookhaven Energy anticipates that soils will not need to be removed from the site, including the upper silty clay subsoil layer described above, which can be exchanged with suitable material on-site or can be rendered suitable for load-bearing purposes. Once the appropriate tree clearing authorization is granted, Brookhaven Energy will be able to determine the quantities and suitability of this upper subsoil layer for load-bearing purposes definitively. On the basis of the preliminary geotechnical investigation, the calculation of cut and fill is as follows. Approximately 45,000 cubic yards of soil will be excavated within the Project site. Approximately

39,000 cubic yards of fill will be necessary. The site grading design (base elevation 110 feet above msl) is designed to generate a neutral cut and fill to the maximum extent possible. It is estimated that transportation of cut material or fill material from or to the site will not be necessary, as any excess material will be spread over the site or bermed as part of the landscaping plan.

Excavation of soil in cut areas is expected to be completed using a scraper and earthmoving equipment. The soil will be moved to the fill areas and deposited in lifts, with each lift compacted using bulldozers and heavy roller equipment. The areas around the processing station will be used for temporary storage of any fill material that cannot be immediately used as fill. Topsoil for use in final grading will be stored on-site until needed. Proposed cut/fill storage areas are labeled in the Site Development Plan, Sheet 2, and are located in northeast and southwest corners of the site.

For the Project's underground interconnections (natural gas, water, and sewer), the total soil displacement is estimated to be only about 200 cubic yards or less. It is expected that these soils will be backfilled along the undergound interconnection routes.

13.4 Blasting Contingency Analysis

Based on the preliminary geotechnical investigation, Brookhaven Energy is very confident that no blasting will be necessary for any construction at the Project site or interconnections. Given the great depth to bedrock at the Project site, blasting is viewed as extremely unlikely. However, in accordance with the stipulation regarding blasting (Stipulation 8, Clauses 2(n), 2(o), and 2(p)), Brookhaven Energy is outlining its blasting procedure in the event that blasting is required due to an unexpected circumstance.

Using modern blasting techniques, rock excavation by blasting can be completed without vibration damage to structures, including adjacent ones. Blasting is specialized work, and only pre-qualified contractors would be allowed to bid the work. The blasting contractor would be provided with a technical specification covering the blasting work that details allowable vibration levels at the nearest structures. It would be the blasting contractor's responsibility, based on the specifications, to develop a proposed final plan.

13.4.1 Blasting Plan

Stipulation 8, Clause 2(n) calls for a "preliminary plan describing all blasting operations including location, blasting contractor qualifications, charge sizes and limits, quantity of discrete blasts, hours of blasting operations, estimates of amounts of rock to be blasted, warning measures, measures to ensure safe transportation, storage and handling of explosives, use of blasting mats, a plan for a pre-blasting videotape condition survey of nearby buildings and improvements, and coordination with local safety officials."

A sample blasting plan from the Ramapo Energy Project is provided in Appendix U. The Ramapo Energy Project (Siting Board case no. 98-F-1968) is a proposed four-unit natural gas fueled power plant in Rockland County, New York. The developer is an indirect subsidiary of Brookhaven Energy's parent, American National Power. It is being sited in a location where blasting will be

necessary, and therefore significant attention has been paid to this issue as part of the Ramapo Energy proceedings. The following presents details specific to the Project site.

Location. Blasting would only occur at points within the Project site where rock is found – which is not expected.

Blasting contractor qualifications. The minimium requirement for blasting contractors is a New York State license for blasting. According to the sample blasting report in Appendix U, the blasting contractor would be required to have a central blasting coordinator ("blaster-in-charge"). This person would be required to have successfully completed at least three blasting projects of similar character. Brookhaven Energy would adopt these or similar criteria for its blasting coordinator.

Charge sizes and limits. Charge sizes and limits would be determined by the selected blasting contractor based upon field conditions. It is important to grant the blasting contractor the flexibility to exercise his judgment, based upon site-specific conditions and the type of equipment the contractor utilizes. Detailed field operations, if necessary, would be planned and managed to limit vibrations at identified nearby sensitive receptors, so as to safeguard on-site personnel and the general public. It is anticipated that charge sizes will range from one pound to 500 pounds per blast.

Quantity of discrete blasts. The expected quantity of discrete blasts is zero. However, to demonstrate a hypothetical scenario, one may assume the following example, cited in Appendix U – a maximum 40-fut cut depth and a drill hole diameter of 6 inches, with a typical spacing and burden of 9 feet by 9 feet. This would yield approximately 120 cubic yards per 40-foot hole. Thus, to blast a hypothetical 1,000 cubic yards of rock, 9 discrete blasts would be necessary.

Hours of blasting operations. Hours of blasting would be limited to the daylight hours, during the earth moving/civil works shift (7 AM to 6 PM). Blasting times, if any blasting were to occur, would be further specificied during site preparation activities, in coordination with the on-site Project engineer, the blasting contractor, and a designated local official.

Estimates of amounts of rock to be blasted. No rock is expected to be blasted.

Coordination with local safety officials, Notification, and Warning measures. Blasting will only occur between 7 AM and 6 PM. All earth moving activities would occur during that time. All specific times would be coordinated with the appropriate Town officials. Signs will be posted at points clearly visible to all traffic approaching the area. Access to the Project site will be controlled in advance of blasting, and restricted to only authorized personnel. Audible blast warning procedures would also be established, to ensure proper warning to all area personnel of an impending detonation.

Safe transportation storage and handling of explosives. Transportation, storage and handling of explosives would be conducted in compliance with all applicable state and local regulations, as well as appropriate federal safety guidelines. In New York State, this matter is carefully regulated under the New York State Industrial Code, Rule 39. The federal agency responsible for regulation of the

possession, storage, and transporation of explosives is the U.S. Bureau of Alcohol, Tobacco and Firearms.

Use of blasting mats. Blasting mats are one of several techniques used to control flyrock, which could occur if a blast were improperly designed or loaded. Flyrock can also be caused by geologic conditions. Flyrock would be minimized through proper burden, stemming and placement relationships. If additional flyrock controls are needed, blasting mats or soil cover will be used to reduce flyrock, to safeguard on-site personnel, the general public and nearby structures.

Pre-blasting and post-blasting videotape survey. Pre-blasting inspection would take place at identified sensitive receptors. Permission would first be obtained from property owners as outlined in Appendix U, Section VI. After permission is obtained, a video or photographic inspection would take place. The inspection would consist of documenting the existing condition of the interior/exterior of the structure through either tape-recorded narrative description supplemented by photographs or by videotape with soundtrack. The inspection of appurtenances, such as pipes, cables, transmission lines, etc., will be conducted to the extent possible. All areas inspected pre-blast will also be inspected post-blast during initial production blasts.

Sensitive Receptors. Areas of concern specific to construction at the Project site are as follows:

- Closest overhead electric transmission line tower (LIPA 138 kV corridor)
- Keyspan Energy 20" natural gas pipeline
- Closest residential structure to blast – 109A Long Island Avenue.
- Closest public water supply wells – Patchogue-Yaphank well field.

These four points are proposed to be the monitoring points for pre- and post-blast inspection during initial production blasts.

Particle Velocity Limits. On the basis of existing applicable ground vibration criteria (see examples in Appendix U, Section V), peak particle velocity would be established by the blaster-in-charge. If the blasting operations at the Brookhaven Energy Project were to exceed 80% of these limits for any single axis of any blast, Brookhaven Energy and its blasting contractor would cease all blasting activities until corrective action is implemented.

13.4.2 Potential Impacts

Stipulation 8, Clause 2(o) relates to an "assessment of potential impacts of blasting to environmental features, above-ground structures and below-ground facilities such as pipelines and wells."

Blasting generates energy, most of which is expended fracturing rock, while some excess of which escapes into surrounding terrain as elastic waves and into the air as noise or vibration. These impacts are controlled through standards that limit displacement, velocity, and acceleration from a blast.

Aboveground structures and belowground structures differ fundamentally in terms of potential blasting impacts because aboveground structures are able to respond to ground motion, while buried structures are limited to movement identical to the soil or rock that surrounds them. Criteria established to protect underground structures and aboveground structures (both those made out of reinforced concrete and residential/commercial buildings) are presented in Appendix U, Section III. Based on the application of these criteria, adverse impacts to nearby aboveground structures are not expected to occur. It should be noted that in the case of the Project the nearest belowground structure is the Keyspan Energy pipeline, located approximately 1,000 feet from footprint area. The nearest well (Patchogue-Yaphank well field) is located approximately 3,000 feet from the footprint area. Concerns have also sometimes been raised about landfills, which have underground lining/leachate systems. However, the nearest landfill (Brookhaven Landfill) is more than 10,000 feet from the Project site. Given these distances, impacts to these underground structures are not anticipated.

Environmental features in the vicinity of the Project site are not expected to be affected even in the unlikely event that blasting were to occur. There are no seismological faults on Long Island. There are also no unique or special habitats for protected species in the Project vicinity (as described in Section 14), and consequently there would be no blasting-related impacts to such areas.

13.4.3 Blasting Mitigation Measures

Stipulation 8, Clause 2(p) requires an "identification and evaluation of reasonable mitigation measures regarding blasting impacts, including the use of alternative technologies and/or location of structures, and including a plan for securing compensation for damages that may occur due to blasting."

Controlled blasting techniques. Controlled blasting techniques would be used to ensure that nearby structures are not damaged by blasting vibrations. Controlled blasting techniques include limiting the amount of explosives detonated at any one time to ensure that excessive vibrations are not created. A blast is actually a series of discrete, smaller explosions timed far enough apart to ensure the vibrations created by a single explosion have a chance to dissipate before the next explosion begins. By detonating a series of smaller explosions instead of one large one, vibrations are reduced to acceptable values.

Blasting plan implementation. The blasting plan is designed to ensure that impacts are minimized. In particular, coordination with local officials and neighbors, as well as limiting blasting to daytime hours, are basic methods to mitigate potential blasting impacts.

Use of alternative technologies. In subsurface conditions where bedrock or glacial till is absent, blasting is not necessary. However, where subsurface boulders are encountered, there are no cost-effective alternative methods to eliminate significant amounts of rock. Alternative methods such as chipping are much longer in duration, and also produce additional noise. In terms of other types of alternative technologies, there appears to be no method or technology that minimizes the need for

blasting. For example, neither fuel choice, nor cooling technology choice would be expected to affect the probability that any blasting would be required at the Project site.

Location of structures. At some sites, location of structures could help to avoid blasting. At the Project site, however, the soils and geology are considered highly uniform. The site is within an outwash plain, and blasting appears to be equally unlikely in all portions of the site.

Compensation for damages. The blasting plan would ensure that no damage is caused to the nearest sensitive receptors. A pre-blast and post-blast survey is made part of the plan in order to be able to demonstrate this in practice. If any damages were to occur as documented through the pre-blast and post-blast survey, Brookhaven Energy would enter into bilateral settlement discussions with the affected party. It should be stressed that this is viewed as an extremely unlikely contingency.

13.5 Seismological Analysis

13.5.1 Regional Geology, Tectonics and Seismology

This section addresses the requirements of Stipulation 8, Clause 2(k) – a description of the regional geology, tectonic setting and seismology of the Project vicinity.

The site is located in the Atlantic Coastal physiographic province and is underlain by Quaternary till, gravel, sand, and mud (glacial and proglacial). This recent deposit overlays Monmouth-Magothy sand and mud, Raritan sand and mud; Jurassic deposits of Ladentown basalts, Passaic conglomerate, and arkose; and Triassic Palisades diabase and Passaic mudstone and siltstone. According to the Suffolk County Soil Survey, the bedrock under Suffolk County varies in depth from 400-2,000 feet below sea level.

Glacial deposits, laid down at the end of the Pleistocene Epoch, overlay the bedrock in this area. The varieties of overburden formed by the advance and retreat of the various glaciers that overlaid this area ultimately determined the kinds of soils, stratigraphy, and most of the topographic features currently found throughout the region.

The predominant glacial deposit in which the soils on-site formed was glacial outwash consisting of sorted sands and gravels. The Carver and Plymouth soils (located near the northern tip of the site) are examples of soils formed in deep stratified sandy material containing little or no silt. Haven soils are formed in silty deposits over stratified sand and gravel. Riverhead soils formed from a mantle of sandy loam or fine sandy loam which overlayed the thick layers of coarse sand and gravel.

Long Island is located in the middle of a tectonic plate. Earthquakes at plate boundaries are more frequent and more intense than earthquakes in the middle of a tectonic plate. However, moderate energy earthquakes are possible in mid-plate regions such as where the proposed site is located.

An historical earthquake data search was obtained from the New York State Geological Survey via its web-site at [http://www.nysm.nysed.gov/geosie.html]. Specifically acquired was an article entitled "Significant Historical Earthquakes in New York State." According to the New York State

Geological Survey, damaging earthquakes have occurred in New York State on average once every 20 years, and earthquakes of up to magnitude 6.0-6.5 are possible anywhere in New York.

As a measure of magnitude of an earthquake, seismologists use a magnitude scale developed by Charles F. Richter to express the seismic energy released by each earthquake. Typical effects of earthquakes in various magnitude ranges are as shown in Table 13-3.

Table 13-3: Richter Magnitude Scale of Relative Earthquake Severity

Richter Magnitudes	Earthquake Effects
Less than 3.5	Generally not felt, but recorded.
3.5-5.4	Often felt, but rarely causing damage
Under 6.0	At most, causing slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1-6.9	Can be destructive in areas up to about 100 kilometers across residential areas.
7.0-7.9	Major earthquake. Can cause serious damage over larger areas.
8 or greater	Great earthquake. Can cause serious damage in areas several hundred kilometers wide.

The most damaging earthquake in New York occurred on September 5, 1944 near Massena Center in northern New York State. It had a magnitude of 6.0. Significant earthquakes in New York State between 1737 and 1996 are as shown in Table 13-4.

Table 13-4: Significant Earthquakes in New York State, 1737-1996

Date	Locality	Latitude (North)	Longitude (West)	Magnitude
December 18, 1737	Rockaway Beach (NYC)	40.60	73.80	5.0(1)
March 12, 1853	Lowville	43.70	75.50	4.8(1)
October 23, 1857	Buffalo	42.90	78.30	4.6(1)
December 18, 1867	Canton	44.05	75.15	4.8(1)
December 11, 1874	Tarrytown	41.00	73.90	4.8(1)
August 10, 1884	Rockaway Beach (NYC)	40.50	73.80	5.3(1)
May 28, 1897	Plattsburgh	44.50	73.50	–
March 18, 1928	Saranac Lake	44.50	74.30	4.5(1)
August 12, 1929	Attica	42.84	78.24	5.2
April 20, 1931	Warrensburg	43.50	73.80	4.5
April 15, 1934	Dannemora	44.70	73.80	4.5
September 5, 1944	Massena	45.00	74.85	6.0
September 9, 1944	Massena	45.00	74.85	4.5
January 1, 1966	Attica	42.84	78.25	4.6
June 13, 1967	Attica	42.84	78.23	4.4
October 7, 1983	Newcomb	43.94	78.26	5.1
October 19, 1985	White Plains	40.98	73.83	4.0

(1) Estimated magnitude.

The seismic zoning map for New York State was completed in 1993 as part of the technically approved but not yet legally adopted draft for the seismic provisions of the New York State

Uniform Fire Prevention and Building Code. According to this map (http://nceer.eng.buffalo.edu/faqs/nysszmap.html), the site area is situated in Seismic Zone C. The state is subdivided into four Zones, A through D, with Zone A having the lowest effective peak horizontal accelerations (i.e., the lowest earthquake damage potential), and Zone D the greatest. Most of New York State is within Zone C, including Long Island, New York City, the Hudson Valley, east central New York, and most counties along Lake Erie and Lake Ontario.

Seismic Zone C has an effective peak acceleration determined to be 0.15g ("g" is the acceleration due to gravity). This value corresponds to a 10 percent exceedance probability in 100 years exposure time to ground motion in zones of lowest seismic hazard. This value is used in accordance with the appropriate design code to determine the seismic forces imposed on structures during an earthquake.

13.5.2 Potential Geologic Impacts

This section addresses the requirements of Stipulation 8, Clause 2(l) – an analysis of the expected impacts of construction and operation of the Project with respect to regional geology, if such can be determined.

No unique or unusual geologic resources exist on the site, as discussed in Section 13.5.1. Furthermore, the preliminary geotechnical investigation activities indicate that the soils at the site are competent to support the loads associated with the Project without the need for bedrock support. Therefore, the Project will not affect any such resources.

13.5.3 Potential Impacts of Seismic Activity on Project Operation

This section addresses the requirements of Stipulation 8, Clause 2(m) – an analysis of the impacts of typical seismic activity experienced in the Project area on the operation of the Project.

Although a number of earthquakes have occurred in New York State since 1737, only 17 of significance (magnitude 4.0-6.0) have been noted (Table 13-4). Of these, only the earthquake at Massena in 1944 has exceeded a magnitude of 5.0. Of the 17 earthquakes noted in Table 13-4, only 4 have occurred within 75 miles of the Project site (i.e., Rockaway Beach (NYC) – 1737 and 1884, Tarrytown – 1874, and White Plains – 1985).

Algermissen et al. (1990) conducted a probabilistic study to develop maps indicating the expected seismic-induced or earthquake-caused maximum horizontal ground acceleration (i.e., motion on bedrock surfaces) and velocity in the contiguous United States. Based on these maps, the following maximum values of ground acceleration (expressed as a percentage of the acceleration of gravity indicating motion on bedrock surfaces) and velocity (expressed as centimeters per second) are statistically predicted at the site with a 90 percent confidence level, not to be exceeded within 50 and 250 years, respectively.

- 50 – Year Exceedance, Velocity: 10-12 cm/sec
- 50 – Year Exceedance, Acceleration: 10-15% of g
- 250 – Year Exceedance, Velocity: 20-25 cm/sec
- 250 – Year Exceedance; Acceleration: 20-30% of g

More recently, for the area surrounding the Project site, the National Seismic Hazard Mapping Project of the United States Geological Survey has estimated a 10% percent probability of exceedance every 50 years of a peak ground acceleration at 0.04g, and a 0.2 second spectral acceleration at 0.09g (g equals force relative to gravity)[4]. Peak acceleration is a measure of the maximum force experienced by a small mass located at the surface of the earth during an earthquake.

When loose, saturated granular soil or a highly sensitive clay is exposed to cyclic motion sufficient to increase soil pore water pressure and thus significantly reduce shear strength, the soil may flow or settle significantly. This phenomenon is known as soil liquefaction. Soil liquefaction can result in surface settlement where the ground surface is flat, or soil flow/slope instability (lateral movement) where the ground surface is sloped. Construction can increase the potential for soil liquefaction by increasing the overburden stress in a loose saturated sand through imposition of surface loads associated with new buildings or embankment fill. Although sands make up the Project site, the risk of soil liquefaction is low because the likelihood of an earthquake at the Project site is minimal.

Ground failure or subsidence due to karst terrain or underground mining, slumping due to slope instability, or landslides have the potential to do damage. Degree of slope, soil conditions, and soil moisture are the major factors affecting slope stability. Karst landscapes are broad and regional in nature. Landscape features of karst include caves fissure, tubes, underground streams, sink holes, blind valleys, and springs. According to Davies et al. (1976), there are no known karstic features present at the Project site. Therefore, no ground subsidence from these conditions is anticipated.

A tsunami is a series of waves generated by an undersea disturbance such as an earthquake. Landslides, volcanic eruptions, and even meteorites can also generate a tsunami. Throughout recorded history, tsunamis have occurred and have impacted primarily coastal communities. Recent tsunami events have occurred primarily in the Pacific Ocean region. A survey of great tsunamis dating back to 1929 shows most tsunamis have occurred in the Pacific Ocean region (http://www.geophs.washington.eud/tsunami/general/historic/historic.html). It is not anticipated that tsunamis will be an issue for the location of the power facility at the Project site given the minimal history of tsunamis occurring in the Atlantic Ocean region.

At this time the current legally adopted New York State Uniform Building and Fire Prevention Code does not have requirements for seismic design. As a minimum, if, at the time that a turnkey contract for the Project is signed, the legally adopted building code requires that buildings account for seismic activity experienced in the Project area, it will be accounted for in Project design. For the Project site, the technically approved but not legally adopted draft seismic provisions of the building code require a design parameter for a peak ground acceleration of 0.15 g. This corresponds to the 50-year exceedance on the basis of the probabilistic maps created by *Algermissen et al.* This can be accounted for on the basis of Seismological Zoning Map in the draft seismic provisions of the building code.

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4 National Hazards Mapping Project, 2001, http://geohazards.cr.usgs.gov/eq/html/ceusmap.shtml.

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14. TERRESTRIAL ECOLOGY AND WETLANDS

This section addresses Stipulation 9, which relates to terrestrial ecological resources, as well as Stipulation 12, Clauses 31 through 37, which address wetlands.

14.1 Applicable Regulatory Requirements

Protection of terrestrial resources, including wetland resources, is circumscribed by federal, state and local law, and is also referenced explicitly in the Siting Board regulations, as described below.

14.1.1 Public Service Law

The Public Service Law requires the Siting Board to issue a Certificate only if it finds that the Project "minimizes adverse environmental impacts, considering... the interest of the state" with respect to wildlife. PSL §168.2(c)(i). Furthermore, the Siting Board regulations require an analysis of "significant ecosystem resources," including "wetlands... unique old-growth forests, trees listed in the Registry of Big Trees in New York State, populations of critical... terrestrial organisms, habitats with documented extant occurrences of rare, threatened or endangered species, forest stands or tree farms managed for timber production and active or developing sugarbushes." 16 NYCRR 1001.3(b)1(ii).

14.1.2 Clean Water Act, Section 404

Section 404 of the Clean Water Act requires authorization from the U.S. Army Corps of Engineers (ACOE) for work in waters of the United States, which includes wetlands. By Jurisdictional Determination dated March 19, 2001, there are no wetland areas jurisdictional to the ACOE on the Project site. Section 404 authorization is not required.

14.1.3 Federal Endangered Species Act

The Endangered Species Act imposes prohibitions and requirements with regard to endangered or threatened species of plants and animals ("listed species") and the habitats of such species that have been designated as "critical habitat." The United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) share the responsibilities of administering the Federal Endangered Species Act of 1973. All activities which are likely to jeopardize the continued existence of any "listed species" or which may result in the destruction and/or adverse modification of "critical habitat" are prohibited under the Federal Endangered Species Act without a license or permit from the USFWS or the NMFS.

14.1.4 Environmental Conservation Law

The New York Natural Heritage Program is responsible for analyzing existing sources of information, monitoring and taking censuses of plant and animal populations, and cooperating with other public agencies and scientific and educational institutions to identify the location and status of rare, threatened or endangered plant and animal species and various ecological communities within

the state of New York. Under the New York Fish and Wildlife Law (ECL §11-0535), "the taking, importation, transportation, possession or sale" of any endangered or threatened plant or animal species is regulated by the state. All these activities are prohibited without a license or permit. Furthermore, ECL §9-1503 regulates protected plants "by reason of their endangered, rare, threatened or exploitably vulnerable status." "Exploitably vulnerable" plants are species which are not currently threatened or endangered, but which are commonly collected for flower arrangements or other uses. Under ECL §9-1503.3, no person may "knowingly pick, pluck, sever, damage by the application of herbicides or defoliants or carry, without the consent of the owner thereof, protected plants". Thus, since Brookhaven Energy will own the site and utilize it for its intended purpose, the presence of protected plants under ECL §9-1503 would not restrict use of the site.

Article 24 of the Environmental Conservation Law (also referred to as the Freshwater Wetlands Act) regulates activities in and around state-regulated wetlands. Pursuant to ECL §24-0301, all wetlands above 12.4 acres in area and other wetlands of unusual local importance have been mapped in New York State. As shown in Figure 14-1, the nearest state-regulated wetlands are the Carmans River and surrounding wetland areas. Since none of these state-regulated wetlands are on or near the Project site, no delineation of state-regulated wetlands has been conducted.

14.1.5 Brookhaven Tree Preservation Ordinance

The Brookhaven Tree Preservation Ordinance at §70-3 generally requires a permit to destroy or remove any tree (defined as a perennial living woody plant at least 6 feet high and greater than 3 inches in diameter measured 3 feet from ground level) from an industrial site. This permit is only issued after a site plan has been approved or a building permit issued. Compliance with this ordinance is described in Section 10.4.

14.1.6 Brookhaven Wetlands and Waterways Ordinance

Regulated wetlands are determined by the Town Division of Environmental Protection on a case-by-case basis, with Town-mapped wetlands, the presence of wetland vegetation, perched ponds, and submerged lands being listed as determining factors pursuant to this Ordinance (Section 81-3 of the Brookhaven Code). By letter dated December 14, 2000, following an inspection by Town staff, it was determined that the isolated depressions on-site (the only areas within the site, laydown area, or interconnection corridor potentially exhibiting characteristics of a town-regulated wetland) are not subject to the Brookhaven Wetlands and Waterways Ordinance (see Appendix Q).

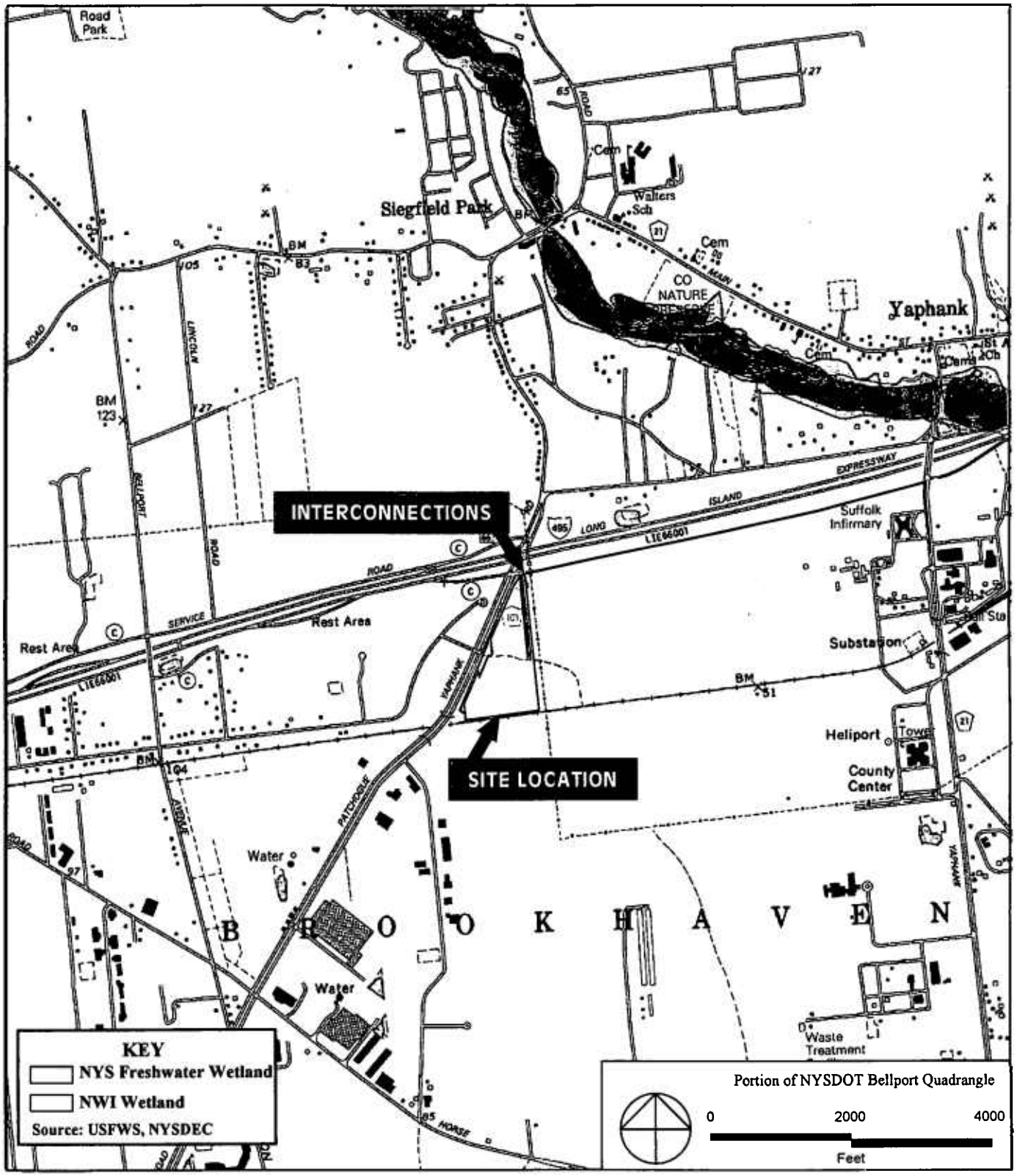
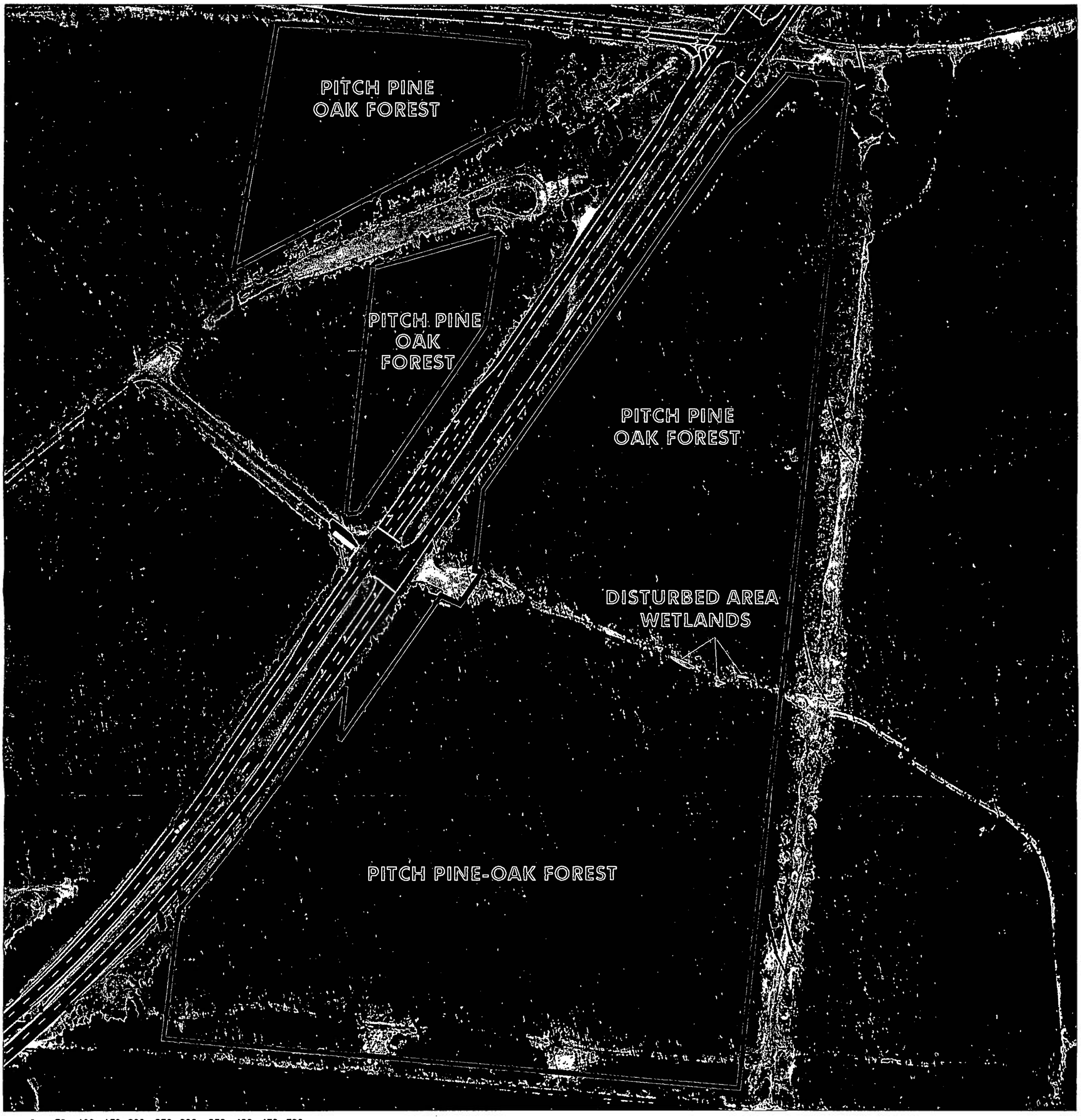
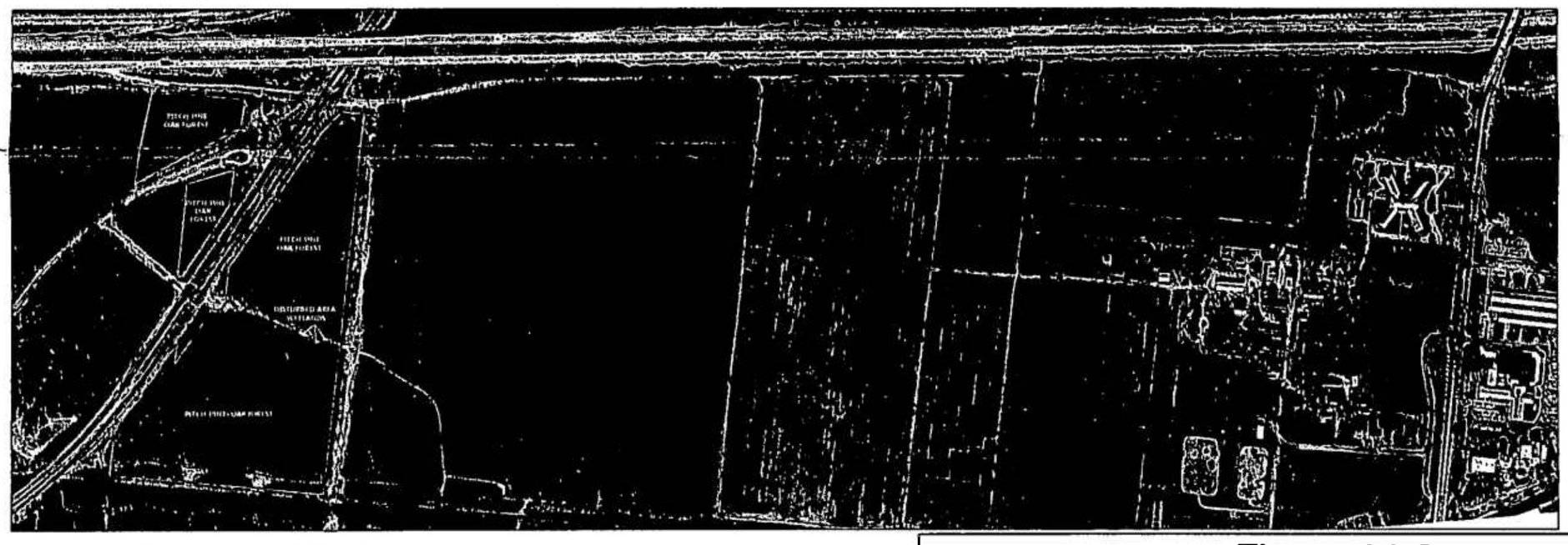


Figure 14-1
State Freshwater Wetlands and NWI Wetlands near Project Site



0 50 100 150 200 250 300 350 400 450 500

SCALE IN FEET



0 400 800 1200 1600 2000

SCALE IN FEET

Figure 14-2
EXISTING HABITAT COVERAGES
Project Site and Interconnections
Brookhaven Energy Project
Town of Brookhaven, Suffolk County, New York

PROJ: 99281	SCALE: As Noted	DATE OF PHOTO: SPRING 1999	SOURCE: GEOMAPS, INC.

Brookhaven Energy LP

NELSON POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

14.2 Vegetation Communities

14.2.1 Vegetation Community Survey

This section addresses Stipulation 9, Clause 1, which directs that ecological communities will be described according to *Reschke*, Ecological Communities of New York State (1990). It also addresses Stipulation 9, Clause 4, which requires, in part, a delineation of the vegetation communities or cover type present on the Project site and interconnections on the basis of recent aerial photography and field observations, mapped at a scale of not more than 100 feet per inch (for the site) and 500 feet per inch (for interconnections).

A preliminary site visit was conducted in October 1999 (as reported in the Preliminary Scoping Statement). Further site visits were conducted in May 2000, August 2000, September 2000, and October 2000. During the field visits, the existing vegetation cover types on the Project site were documented using systematic surveys. In addition, wildlife species encountered during the visit were recorded. In accordance with Stipulation 9, Clause 1, on-site ecological communities are described below according to a habitat classification developed by the NYS Department of Environmental Conservation (NYSDEC).[1]

Figure 14-2, included in the oversize roll that accompanies this application, presents a map of the vegetation community types found at the site. Per the stipulations, the map shows the Project site, laydown area, and gas and water interconnection corridor at 100 feet per inch. The sewer interconnection east of the site is mapped at 500 feet per inch. These vegetation coverages were determined by aerial photography (1999) and field inspections. A reduced version of the figure is presented below.

14.2.2 Upland Vegetation Communities – Classification and Description

This section (see more specifically *14.2.2.2* and *14.2.2.3*) addresses Stipulation 9, Clause 2, which requires, in part a characterization of the Project site and interconnections as to the type of plant communities present and the structure of these communities based on summer and spring reconnaissance or systematic surveys. Species composition is addressed in Section 14.2.4 below.

14.2.2.1 Regional Ecosystem

From a broad regional perspective, the extensive pine barrens of Long Island are a result of the interacting effects of fire, drought and soil character. The pine barrens habitat is subject to relatively high degrees of disturbance due to periodic fires, and all except the Dwarf Pine Plains appear to be successional stages maintained by fires. Fire "sets back" the vegetation to an earlier phase of succession, and the pine barrens habitats appear to be a series of successional stages that follow fires or other disturbance, although soil conditions may also affect the species composition at some sites. Pitch pine and scrub oak are fire tolerant, and are generally the first species to recover after a fire.

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1 *Ecological Communities of New York State*, NYSDEC, by Carol Reschke, March 1990.

Individual pitch pines can withstand heat levels which destroy other types of trees. This species is dependent on fire to open its pine cones to release seeds. Therefore, pine barrens habitats with high fire frequency, such as pine-oak-heath woodland, are typically dominated by pitch pine and scrub oak. As the period between fires becomes longer, less fire tolerant trees such as white and scarlet oaks become dominant, and few pine seedlings reach maturity, resulting in a Pine-Oak forest habitat. Fertilization and the absence of drought also favors dominance by oaks, and the presence of pine barrens habitats in some areas may be determined more by soil conditions than fire frequency.

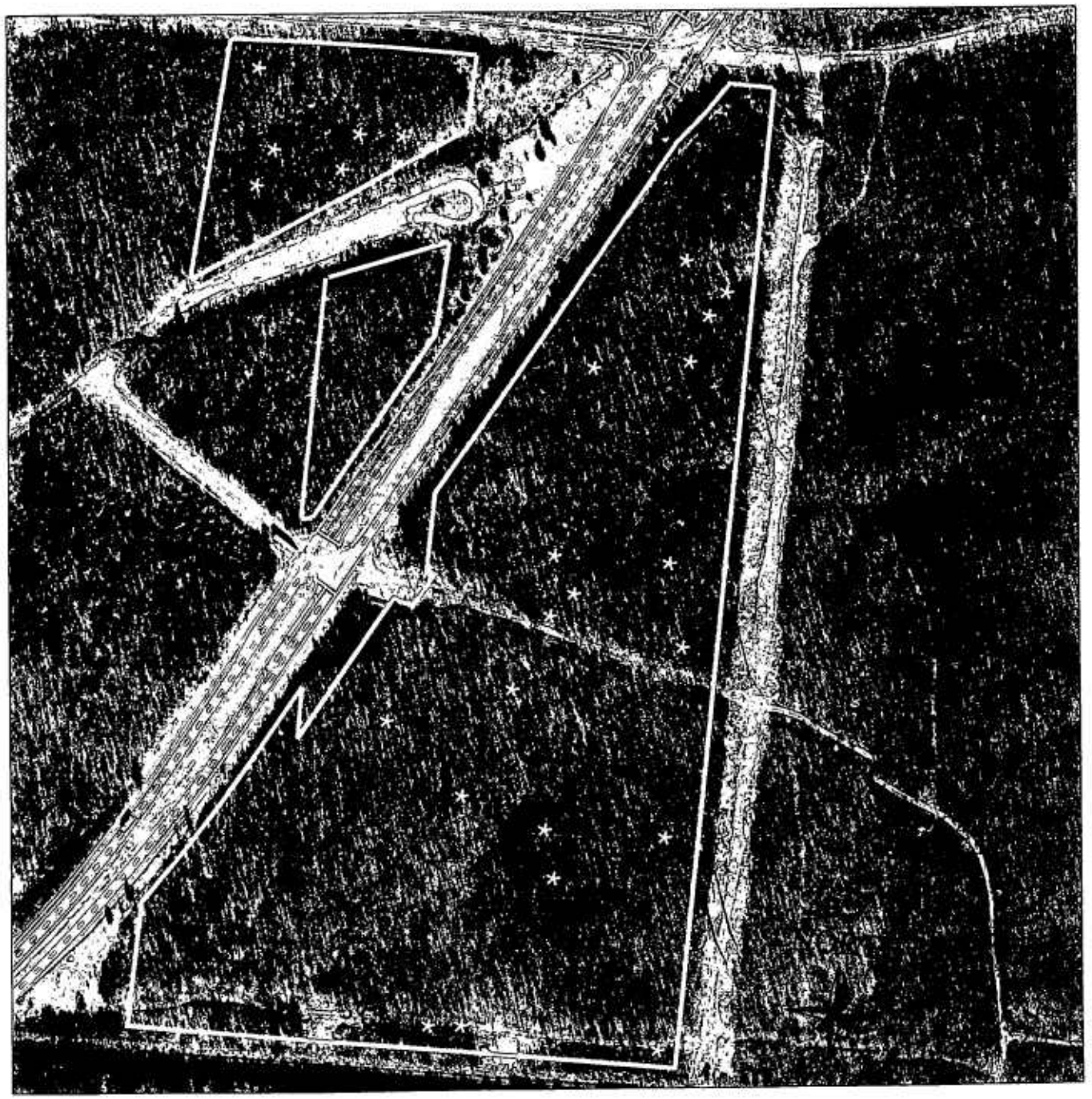
Pitch Pine-Oak forest, the habitat at the Project site and laydown area, has the lowest fire frequency of the pine barrens habitats defined by *Reschke*, and typically burns only once in several decades. Pitch Pine-Scrub Oak Barrens have a fire frequency of 6 to 15 years, and Pitch Pine-Oak-Heath Woodland probably experiences more than 15 years between fires. In the absence of fire, oaks would be expected to dominate, and few, if any, pitch pines would exist in the canopy. Understory species would be limited to those that are able to withstand shade conditions or require less moisture. The domination of oak species within this habitat is likely due to the absence of fire. There is evidence of a somewhat recent burn in a small area located in the central portion of the site near Sills Road. The origin of the fire is unknown, and appears to have been a high intensity fire, as scarring is extensive and few live trees survived the fire. Re-growth within this area is evident.

In addition to the periodic "setback" of vegetative succession in the pine barrens and associated habitats, fires also affect soil conditions. Little humus is present in most pine barrens habitats due to the high acidity caused by the release of tannic acid from fallen pine and oak leaves. Because of the poor moisture retention, pine barrens tend to experience longer and drier drought conditions than other habitats on Long Island. This creates conditions that favor more frequent and potentially more severe forest fires. Ground fires burn the thick accumulations of organic material that overlies mineral soil. The coarse sand-loam soils of Long Island's outwash plains have a lower moisture and nutrient retention capacity than soils in other areas of Long Island. Following a fire, the amount of available minerals is increased, at least temporarily. However, the soil acidity and the supply of total nitrogen is reduced. The change in soil moisture and temperature and the availability of necessary nutrients directly affect the plant species that recolonize the area.

The forest may have originally resembled a pitch pine-scrub oak barrens habitat, but through long periods of fire suppression, has more increasingly become dominated by oak species. As defined by *Reschke*, Pitch Pine-Oak Forest is "a mixed forest that typically occurs on well drained, sandy soils of glacial outwash plains or moraines. The dominant trees are pitch pine, mixed with one or more of the following oaks: scarlet oak, white oak, red oak or black oak. The relative proportions of pines and oaks are quite variable within this community type." *Reschke* includes a range of assemblages within this habitat type, including oak dominated forests with only scattered emergent pines as well as nearly pure stands of pitch pine. Mature, oak-dominated woodlands commonly found in central Suffolk County do not fit well within *Reschke's* (1990) classification. *Milazzo* (1995) acknowledges this issue, adding that the best description of the hardwood forests in the pine barrens is Pine–Oak Forest with pitch pine absent.

FIGURE 14-3

APPROXIMATE LOCATION OF TREES WITH 12" DBH OR GREATER



Source: Aerial Photography, 1999
Scale: 1" = 300'

Brookhaven Energy LP

The shrub layer of the Pine-Oak Forest is a well developed heath layer, with scattered clusters of dense scrub oak. In more mature, oak dominated stands, the understory may be sparse due to interception of light by oaks in the canopy. Other typical understory species include oak seedlings, black huckleberry and blueberry, while bracken fern, wintergreen, trailing arbutus, bearberry, Pennsylvania sedge and mosses are typical of the sparse herbaceous layer.

14.2.2.2 Upland Habitats on Site and Laydown Area

The site under review is approximately 28 acres in size, and primarily consists of native pitch pine-oak forest as defined under the *Reschke* classification system. The property is surrounded by four transportation/utility corridors – Long Island Expressway (LIE) (I 495) to the north, Long Island Power Authority (LIPA) transmission lines to the east, Long Island Railroad (LIRR) to the south, and Sills Road (CR 101) to the west. The Project site is a relatively flat area dominated by a forested community of oaks and pines. Off-site interconnection areas are all proposed to be within disturbed corridors (Sills Road, LIPA transmission lines, LIE South Service Road). The site is located within a large tract of woodland, the majority of which is transected by transportation and/or utility corridors in the general vicinity. The additional laydown area is located across the street – north of Old Town Road, west of Sills Road, and south of the LIE. The laydown area is very similar in terms of vegetation to the Project site.

The majority of the woodland on site is mature, albeit of limited height (generally about 30 feet) and limited diameter. A historical review of the subject property using available aerial photography (from the years 1957, 1966, 1976, 1980 and 1994) identified the site as undeveloped woodland. As seen in Figure 14-2, the site is transected by two cleared driveways, which have existed prior to 1957 and the edges of which are beginning to be colonized by early successional vegetation. Several puddles were identified which are located entirely within the two existing driveways. The water features identified are characterized by barren soil, and are likely present due to soil compaction and subsequent formation of localized impervious soils. Three small areas containing some wetland vegetation were identified adjacent to the puddles in the northern driveway. These features and associated regulatory jurisdictions are further discussed below. A small burn area was also identified along the western property boundary in the central portion of the site. The current ecological site conditions and habitat classifications are described in greater detail below.

The Project site is located within the Coastal lowlands of New York State. The predominant community is a terrestrial upland forest categorized as a pitch pine-oak forest. The subject site is located outside the state-designated Central Pine Barrens (ECL Article 57). As described above, pitch pine-oak forest habitat and similar pine barrens habitats occur in dry areas where a high degree of disturbance and nutrient poor soils exist. These habitats are characterized by pitch pine, oaks and other vegetation which are tolerant of dry, acidic conditions. The habitat types found within the pine barrens of Long Island include Dwarf Pine Plains (or Barrens), Pitch Pine-Scrub Oak Barrens, Pitch Pine-Oak-Heath Woodlands, Pitch Pine-Oak Forest and various wetlands. Species composition varies little between the upland habitats.[2] The relative abundance of each species

2 *Vegetation Gradients of the Pine Plains and Barrens of Long Island, NY*, by Olsvig *et al.*, 1979.

within a community is a result of influences such as fire frequency, soil moisture, soil fertility and type, exposure to salt spray, and depth to groundwater. The forest habitats such as the Project site are defined by at least 60 percent tree cover, while the woodlands and barrens are dominated by shrubs and scrub trees and have less than 60 percent cover by full sized trees.

The Project site is dominated by pitch pine mixed with red, scarlet, black and white oak. The diameter at breast height (dbh) of the trees generally ranges from approximately 2 to 5 inches. However, several of the pitch pines on site are somewhat larger in diameter, presumably due to the ability to withstand fire conditions. The shrub layer is well developed with scattered clumps of scrub oak and a nearly continuous cover of low heath shrubs such as blueberries and black huckleberry. The herbaceous layer consists of bracken fern wintergreen and Pennsylvania sedge.

The laydown areas are very similar to the Project site in terms of vegetative species and are also characterized under the *Reschke* system as a pitch pine-oak forest as described above. However, this area is dominated by oak species, with very few pitch pines in the canopy.

14.2.2.3 Upland Habitats along Interconnections

Interconnections have been defined in Section 3 as the extension of water, wastewater, gas, and electric infrastructure to the site. The gas line is proposed to run along the east side of Sills Road, and the water and sewer lines will extend along the eastern property boundary from the middle to the northern tip of the property. The water line will connect to an existing municipal line just north of the site, and the sewer line will extend along the LIE South Service Road right-of-way between Exists 66 and 67, and then will connect to an interceptor sewer line in Yaphank Avenue. The electric interconnection will occur within the Project site and a small portion of the LIPA corridor adjacent to the site.

The Sills Road corridor abuts the western property boundary of the site. It is a four-lane asphalt roadway that acts as a major north-south transportation arterial. Vegetated areas exist within both the eastern and western rights-of-way, in addition to a small vegetated median strip. The extreme eastern and western perimeters of this corridor contain similar species composition to that of the subject site, and would be included within the pitch pine-oak forest classification discussed above. The remaining vegetated portions consist of early successional vegetation, which is regularly mown and maintained. Based on species composition, this community would best be described by *Reschke* as a "Successional Old Field." This area contains species such as goldenrods, dandelions, grasses and other herbaceous vegetation.

Successional old field is the initial sage in the process of succession, which is the reversion of disturbed habitats to a climax forest. The habitat generally supports a wide variety of weedy species that colonize readily, such as goldenrods, grasses, timothy, ragweed and asters. *Reschke* defines an old field as "a meadow dominated by forbs and grasses that occurs on sites that have been cleared or plowed, and then abandoned." Woody species may be present, but coverage by trees and shrubs is less than 50 percent.

The LIPA corridor is located east of the site, and is mainly dominated by a driveway that runs parallel to the transmission lines. Early successional vegetation also exists along the eastern and western perimeters of this corridor, with small areas undergoing succession and becoming more dominated by woody shrubs. This community type would also be characterized by *Reschke* as a "Successional Old Field", because domination by shrubs is less than 50 percent. The dominant vegetation in this community consists of bluestem, panic grass, scrub oak, goldenrods, bayberry, honeysuckle and small oak saplings.

The LIE South Service Road is a future road alignment bordering the northern boundary of the Project site, and extends east toward Exit 67. It has not yet constructed, but the majority of the roadway extension has been cleared. Prior to any construction on site, it is expected that this area will have been entirely disturbed to allow for final construction of the roadway. Vegetated areas within this corridor are located between the LIE and the proposed service road, and generally consist of later stages of succession. This area is best characterized as a "Successional Forest", or could further be classified as first growth woods. This area is dominated by small diameter pitch pines, Russian olive, and oak species. It is anticipated that the sewer interconnection will be laid in the previously disturbed areas, pending NYSDOT review of this application.

Successional (hardwood) forest is "a hardwood or mixed forest that occurs on sites that have been cleared or otherwise disturbed." Trees occupy at least 60 percent of the canopy of woodland habitat. Any one of a number of species may dominate the canopy of successional forest habitat, depending on the original forest and nearby tree species. Successional hardwood forest habitat is generally characterized by small sized trees and dense understory, although large specimen trees may be present if the site was originally landscaped. The dense understory exists because the tree canopy is open, allowing high levels of light penetration. Given sufficient time, the trees more fully occupy the canopy, and the dense understory will no longer exist.

14.2.2.4 Structure and Delineation of Vegetation Communities

This section addresses Stipulation 9, Clause 5, which relates, in part, to the structure (canopy, under story, and ground cover) of identified vegetation communities through visual observations of either representative sample plots or sampling transects, identifying the structure and composition of the plant communities identified based on dominant species. This section also addresses Stipulation 9, Clause 4, which requires, in part, a delineation of the vegetation communities on the basis of recent aerial photography and field observations, mapped at a scale of not more than 100 feet per inch (for the site) and 500 feet per inch (for interconnections).

The community types found on the Project site consist primarily of Pitch Pine-Oak woodland. They also include two dirt driveways, a very small portion of which includes disturbed areas with wetland vegetation (described in more detail below). The site and laydown area contains a fairly closed canopy, allowing little light to reach the understory. The understory is typically of a pitch pine-oak community mainly dominated by oaks, and the herbaceous layer is relatively sparse. Species composition is addressed in the following section. Leaf litter is abundant, although structural groundcover is somewhat sparse. The existing site habitat quantities are listed in

Table 14-1. Figure 14-2 showed a delineation map of these communities, overlain onto 1999 aerial photography.

Table 14-1: Acreage of Vegetation Cover Types on the Project Site

Vegetation Cover Type	Acres	Percent of Total Acreage
Pitch Pine-Oak Forest	26.7	95.3%
Dirt Driveways	1.3	4.7%
Total	**28**	**100%**

14.2.2.5 Protected Vegetation Species

This section addresses Stipulation 9, Clause 4, which requires, in part, an identification and delineation of any unusual habitats or natural communities which could support listed species or species of special concern.

As reported in the Preliminary Scoping Statement for the Project, Brookhaven Energy undertook to document whether there are any federal and/or state protected plant or wildlife species in the vicinity of the Project. This effort is pursuant to the federal Endangered Species Act and state law, as described in Section 14.1 above. Brookhaven Energy contacted the US Fish and Wildlife Service (USFWS) and the New York Natural Heritage Program within NYSDEC for information on the presence of any documented occurrences of federal and/or state listed plant and wildlife species on the Project site.

The USFWS indicated as follows: "Except for occasional transient individuals, no federally listed or proposed endangered or threatened species under our jurisdiction are known to exist in the Project impact area." NYSDEC responded with "a report of rare or state-listed animals and plants, significant natural communities, and other significant habitats, which our databases indicate occur, or may occur, on your site or in the immediate vicinity of your site." This report contains species and the locations where they were found. NYSDEC considers this information to be "sensitive" to avoid the protected species from being disturbed and the report may not be released to the public without permission from the New York Natural Heritage Program. However, NYSDEC authorizes the identification of the species without the locational information (see Appendix P)

Table 14-2 lists the plant species reported in the Natural Heritage Report on Rare Species and Ecological Communities. This table lists species noted in the general area of the Project site. The report from NYSDEC did not identify any species, under its jurisdiction, as having known populations on the Project site. During spring, summer, and early fall site inspections, no rare or endangered species were observed on site.

Table 14-2: NYSDEC Reported Rare Species in the Vicinity of the Project Site, Interconnections and Construction Laydown Area

Scientific Name:	*Lechea tenuifolia*	*Crataegus uniflora*
Common Name:	Slender Pinweed	Dwarf Hawthorn
New York Legal Status:	Threatened	Endangered
Ecological Occurrence:	Historic without any recent field information	Historic without any recent field information
Date Last Seen:	09/01/1912	07/14/1907
Habitat:	Dry open places, dry sandy or rocky open woods	Sandy soils
Flowering Time:	July – August	April - May

Slender pinweed was not observed on the Project site, interconnections, or laydown areas during any of the field inspections. Slender pinweed is a vascular plant, classified as a threatened species in New York State. Globally, this species is listed demonstrably secure, although it may be quite rare in parts of its range, especially at the periphery. Statewide, however, there have been few occurrences, and there are few remaining individuals, making the species vulnerable in New York State. This species prefers dry open places, specifically dry sandy or rocky open woods. Dwarf hawthorn is a New York State listed endangered species that is also listed as demonstrably secure on a global scale. This species is only historically known from New York State, but has not been seen in the past 15 years.

Striped wintergreen was the only "exploitably vulnerable" species identified on the site and within the laydown area, and bayberry was identified within the LIPA corridor. "Exploitably vulnerable" plants are species which are not currently threatened or endangered, but which are commonly collected for flower arrangements or other uses. As described in Section 14.1.4, the presence of such plants does not restrict the use of the site under the NYS Environmental Conservation Law.

14.2.2.6 Unique Trees and Silviculture

The Siting Board regulations, 16 NYCRR 1001.3(b)1(ii), require identification of:

- unique old-growth forests,
- trees listed in the Registry of Big Trees in New York State[3],
- forest stands or tree farms managed for timber production, and
- active or developing sugarbushes.

[3] The NYSDEC and the New York State Forest Practice Board recognize trees of record size and promote an interest in their care and preservation. Trees are nominated and listed on the State Register of Big Trees. This register lists only native and naturalized species and does not include hybrid species.

The Project site and laydown area is a pitch pine-oak forest typical of Long Island, as described in Section 14.2.2.2 above. It does not constitute old-growth forest. Based on correspondence with NYSDEC, the nearest Registered Big Tree in New York State is located in East Islip. There are no Registered Big Trees in the Town of Brookhaven. The Project site and laydown area is not classified as a tree farm, nor is it managed for timber production. The site and laydown area does not support vegetation which would be characteristic of a sugarbush. No maple vegetation has been observed on site.

14.2.2.7 Tree Preservation

This section addresses the requirements of Stipulation 9, Clause 6, which requires an estimate of the species and number of all trees 12 inches or greater in diameter at breast height, if any, within the Project site.

A survey of the site identified nineteen (19) pitch pines 12 inches or greater at breast height. The approximate location and diameter of these species is identified in Figure 14-3. Note that some of these pitch pines are within the areas to be undisturbed and retained as a buffer within the site.

The Brookhaven Tree Preservation Ordinance at §70-3 generally requires a permit to destroy or remove any tree (defined as a perennial living woody plant at least 6 feet high and greater than 3 inches in diameter measured 3 feet from ground level) from an industrial site. This permit is issued only after a site plan has been approved or a building permit issued. The regulations allow for tree removal in accordance with a tree removal plan approved by Commissioner of Planning, Environment, and Development. The criteria to be considered with respect to such applications are: the location and size of trees to be removed; the condition of trees with respect to disease and potential for creating hazardous conditions; the proximity of trees to existing or proposed structure and utility appurtenances; the necessity of the removal for the proposed project; the environmental effect of the removal (including stabilization and preservation of the soil, the absorption of air pollutants and the provision of oxygen, natural barrier to noise, habitat for wildlife and intrinsic aesthetic quality). The Project will comply with the Brookhaven Tree Preservation Ordinance as outlined in Section 10.4. The analysis presented in Section 10.4 has been the subject of consultation with the Town of Brookhaven.

14.2.3 Disturbed Areas with Wetland Vegetation

14.2.3.1 Wetlands Identification

This section addresses addresses Stipulation 12, Clauses 31 and 32, which relate to the extent of wetlands that may be impacted by the Project and interconnections. It also addresses Stipulation 12, Clause 36, which requires an analysis of all wetlands within 200 feet of the Project site and within 200 feet of any wetlands that may be affected by the Project.

The Project site, laydown areas, and interconnections were inspected to identify the possible presence of any wetland vegetation and/or water surfaces that would sustain wetland vegetation. As previously stated, several puddles exist within the two cleared driveways on-site. The puddles identified are characterized by barren soil, although a small area of vegetation containing some wetland species was identified adjacent to the puddles in the northern driveway.

A review of the NYSDEC Freshwater Wetlands Map verified that the subject property does not contain designated wetlands; therefore, the NYSDEC does not maintain regulatory authority under ECL Article 24, the Freshwater Wetlands Act. Furthermore, the US Fish and Wildlife National Wetland Inventory maps and the Town of Brookhaven wetlands maps were reviewed, which also did not indicate the presence of freshwater wetlands. Because of the absence of site plan review for projects being permitted through Article X of the Public Service Law, Town review has been fulfilled on a consultation basis. The Town has determined that these areas are not Town-jurisdictional wetlands under Section 81 of the Brookhaven Code. Correspondence received from the Town is contained in Appendix Q. Finally, the isolated vegetated areas that exhibit wetlands characteristics do not fall under the jurisdiction of the US Army Corps of Engineers (ACOE) under Section 404 of the Clean Water Act in light of the recent Supreme Court decision in Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, No. 99-1178 (January 9, 2001) (SWANCC). In the SWANCC case, the Supreme Court struck down the ACOE's "Migratory Bird Rule" because it extended to isolated intrastate wetlands that are non-navigable or do not lie adjacent to navigable waters.[4] On January 19, 2001, the ACOE issued a guidance memorandum to confirm the scope of its jurisdiction over wetlands in light of the SWANCC decision. The ACOE memorandum confirms that the agency will no longer assert jurisdiction over wetlands areas that are "non-navigable", "isolated" and "intrastate" solely by virtue of their use as habitat by migratory birds. However, the ACOE guidance states that the Supreme Court decision "did not specifically address what other connections with interstate commerce might support the assertion of CWA jurisdiction over 'non-navigable, isolated, intrastate waters'" under 33 CFR 328.3(a)(3) (part of ACOE's definition of "water of the United State" describing various "intrastate" features). The ACOE advised consultation with the agency on a case-by-case basis to determine ACOE jurisdiction over non-navigable, isolated, intrastate waters. Brookhaven Energy therefore requested a jurisdictional determination by the ACOE for the depressions identified on the site in light of the SWANCC decision. On March 19, 2001, Eastern Permits Section Chief James W. Haggerty determined that these areas are not ACOE-jurisdictional wetlands.

The wetland areas no longer deemed jurisdictional (pursuant to the SWANCC decision) were identified through a field study. There are three small isolated depressions on the site that exhibit wetland vegetation. These are the only areas exhibiting wetland vegetation within the site, laydown

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4 Prior to the SWANCC decision, the ACOE asserted jurisdiction over filling of wetlands that exhibit characteristics that define the surface waters of the United States, which under the ACOE's Migratory Bird Rule included isolated intrastate wetland areas that are non-navigable. Limited filling of such wetlands was permitted under certain restrictions, as outlined in Nationwide Permit 39 and associated permit-specific and general conditions. While the nationwide permit conditions no longer apply to the wetland areas located on-site, Brookhaven Energy intends to follow these requirements in order to ensure minimization of environmental impacts in general.

areas, or interconnections. The Project's storm water management system recharges the aquifer directly, and will not affect surface waters or wetlands. No other wetland areas, except for these three depressions, could potentially be affected by the Project or its interconnections.

The field study also addressed wetlands within 200 feet of the Project site. Such areas were observed in the field to determine their general characteristics and relationship, if any, to the wetlands that will be affected by the Project. No wetlands were observed along the Long Island Expressway or Sills Road (north and west of the site, respectively). No wetlands were observed along the Long Island Railroad or areas to the south of the LIRR corridor. To the east of the Project site, within the Long Island Power Authority corridor, several puddles containing standing water were identified. These puddles are similar to those found on site, and are generally characterized by barren soil. While the majority of these ponded areas are barren and would not be classified as wetlands, small areas adjacent to some of these puddles contain wetland species. The establishment of ponded areas in these locations is attributable to poor drainage and resultant soil compaction. Additionally, similar to those ponded areas on site, the ponded areas in the LIPA right-of-way have no hydrological connection to any other nearby surface waters and/or the underlying groundwater.

14.2.3.2 Wetland Delineation and Description

This section addresses Stipulation 12, Clauses 33, 34, and 35. Clause 33 requires a description of the vegetation, soils, and hydrology data collected for each wetland that has been identified, based on actual on-site wetland observations. Clause 34 requires an "identification and delineation" of the wetlands. Clause 35 calls for a survey or coordinate map of all wetlands.

Wetlands, and thus wetland boundaries, are generally defined by hydrology, hydric soils and significant numbers of indicator plant species that are typical of wetland habitats. These three parameters -- hydrology, soil and vegetation -- are used by the ACOE to determine wetland areas, except that some isolated wetland depressions – including those on-site – are no longer held to be jurisdictional to the ACOE, as described in Section 14.2.3.1 above. (Note that the following discussion is an analysis of on-site areas against the ACOE methodology irrespective of the jurisdictional issues pursuant to the SWANCC decision.) To define a wetland in terms of hydrology, "the area is inundated either permanently or periodically at mean water depths of less than 6.6 feet, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation". Hydric soils are soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation. Hydric soils that occur in areas having positive indicators of hydrophytic vegetation and wetland hydrology are wetland soils. When referring to wetland vegetation, an indicator species is a plant species that typically characterizes a prescribed environment or situation and determines or aids in determining whether or not certain stated circumstances exist (*ACOE Wetlands Delineation Manual*, 1987).

The wetland indicator categories are assigned by the US Fish and Wildlife service for wetland plants within the Northeast, and are intended to help standardize the process of wetland delineation, as

well as provide information on the degree to which each species is dependent on hydric conditions. Facultative species are those which are found in both upland and wetland habitats, while obligate species are confined to hydric soils. The following abbreviations are utilized within the classification system, with "+" or "-" used for intermediate species:

OBL	Obligate, always found in wetlands under natural conditions (frequency > 99%)
FACW	Facultative Wetland, usually found in wetlands (67% to 99% frequency)
FAC	Facultative, sometimes found in wetlands (34% to 66% frequency)
FACU	Facultative Upland, seldom found in wetlands (1% to 33% frequency)

Wetland boundaries were determined through an evaluation of vegetation, hydrological features, and soils to a depth of at least 18 inches, as detailed in the ACOE 1987 *Wetlands Delineation Manual.* A total of three, small, isolated wetlands were identified and delineated on the site, all adjacent to the northern driveway. The establishment of wetland vegetation in these areas is attributable to poor drainage and resultant soil compaction. The wetland areas have no hydrological connection to any other nearby surface waters and/or the underlying groundwater. They are viewed as being of low value. Prior to the relinquishment of ACOE jurisdiction, they were classified by the ACOE as Disturbed Area Wetlands. "Disturbed area wetlands" are wetlands that have been modified to varying degrees by human activity or natural events. The total area of the three wetlands is 577 square feet (s.f.), or 0.01 acres. The wetlands are mapped on a survey plan, as shown in Figure 14-4. ACOE Data Sheets for the wetland areas are included in Appendix Q. The data sheets describe vegetation, soils, and hydrology. No other areas containing predominantly wetland vegetation were identified on the site. There are no other surface waters or wetlands on-site, in the laydown areas, or along any of the interconnection routes.

A request for jurisdictional determination was submitted to the ACOE on November 22; a letter of concurrence with the boundaries of the Waters of the United States was received on November 30, 2000. As this concurrence predated the SWANCC decision, a supplemental request for jurisdictional determination was sent to the ACOE on February 8, 2001. The jurisdiction determination, relinquishing ACOE jurisdiction, was sent on March 19, 2001. Correspondence relating to the Corps' jurisdiction is provided in Appendix Q.

14.2.3.3 Wetland Evaluation

Freshwater wetlands are important ecological communities. These habitats are generally more productive than upland habitats, and are typically high in both plant and animal diversity. Wetlands are also vital in controlling floodwaters and filtering pollutants, and are valuable as recreation areas and as *refugia* for rare species. As the intrinsic value of wetlands has become recognized, they have received increasing protection from Federal, State, and local regulations and are often prioritized for public acquisition and preservation. Wetland function can be evaluated in terms of:

- Life Support Functional values
- Water Quality Improvement Values/Nutrient Recycling Values
- Groundwater Recharge Values

- Erosion Protection and Natural Flood Control Values
- Recreational and Economic Values
- Open space and Aesthetic Values

As previously stated, the isolated depressions on site are small in size (0.01 acres) and the establishment of wetland vegetation is attributed to poor drainage and soil compaction. These areas have no hydrological connection to any other nearby surface waters and/or the underlying groundwater. The depressions are present due to the modification of the natural environment by human activity. They do not support recreational and economic values, nor do they function in terms of open space and aesthetic values. They are isolated and created as a result of soil compaction. Therefore, they do not function in terms of groundwater recharge and do not aid in water quality improvement, flood control and erosion protection. In terms of ecological resources, they do not support a diverse habitat which supports an abundance of vegetative and wildlife species. The vegetation within the wetland boundaries contains species typically found in both upland and wetland habitats, and do not contain any unique or State "listed" species. The ponded areas do not support a large number of wildlife species and are not expected to function as critical habitats for wildlife species typically associated with wetland habitats. The ponded areas can be utilized for breeding by amphibians, and tadpoles were observed in these locations; however, they are not considered optimal habitat for amphibians.

In summary, the wetlands on the Project site contain minimal value in terms of the above outlined wetland functions.

14.2.4 Vegetation Communities - Species Composition

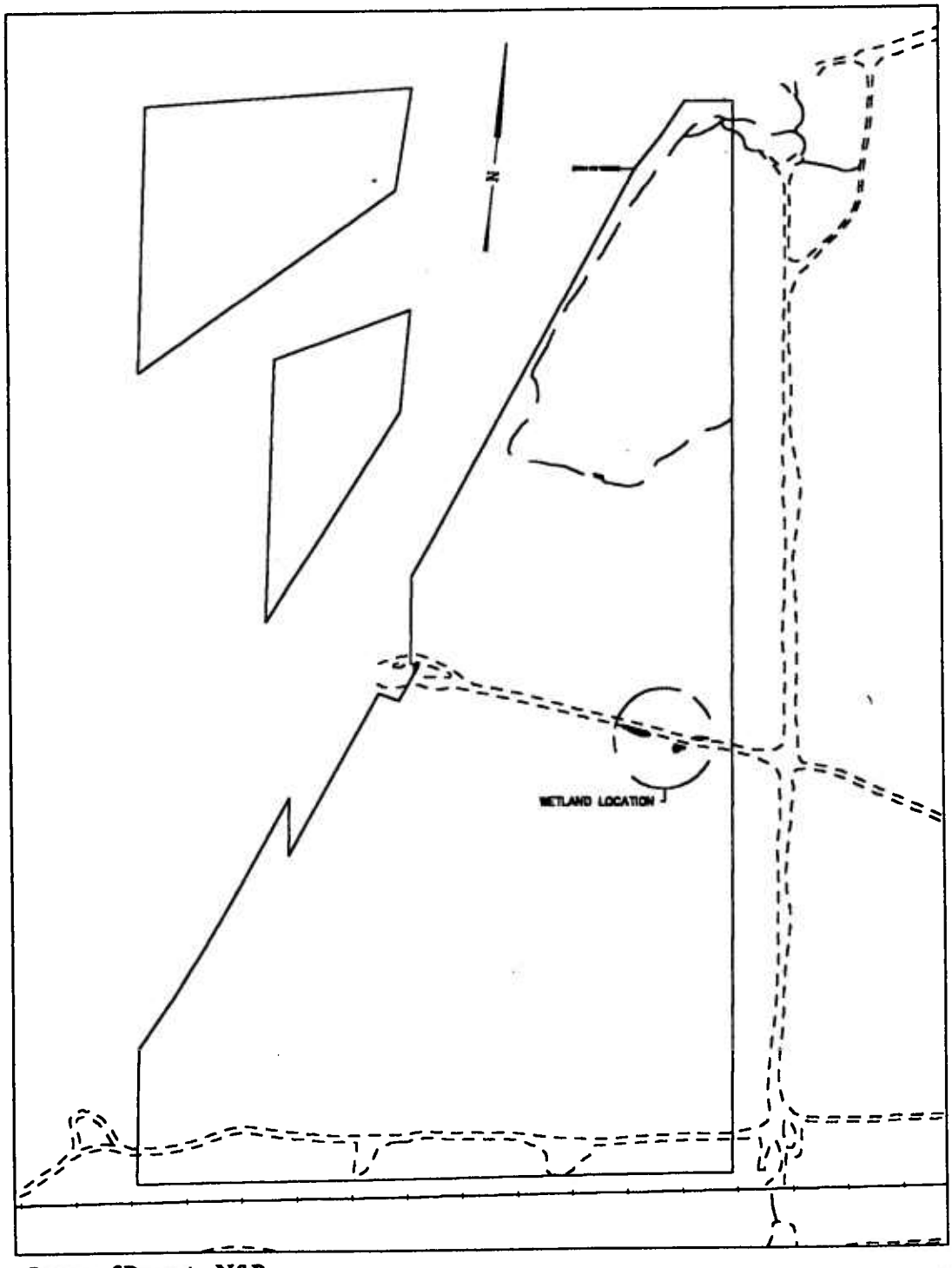
This section addresses Stipulation 9, Clause 2, which requires, in part, a list of the species composition of each affected vegetation community; Stipulation 9, Clause 3, which calls for a list of the species of flowering plants, ferns, and fern relatives occurring on the Project site and interconnections, and the relative abundance of each; Stipulation 9, Clause 5, which requires, in part, that all species observed be recorded for the purpose of site inventory.

Table 14-3 presents a list of both upland and wetland vegetation observed on the Project site, construction laydown areas, and interconnections. Table 14-4 is an additional list of vegetation species that could be expected to appear in these areas, given the habitats present. These lists were prepared as part of several field inspections to provide a detailed representation of vegetation found on and adjacent to the site. Where applicable, those species identified near the wetland areas also are identified as to the wetland indicator category previously discussed. Care was taken to identify any species that might be unusual for the area.

The relative abundance of flowering plants, ferns, and fern relatives is also identified in Table 14-3 for each species. Generally, of the tree species on site, oak species are dominant, or more relatively abundant, compared to other tree species and pitch pines. As previously stated, the domination of oaks in this habitat type is likely due to the absence of fire. The shrub layer is dominated by low heath shrubs such as blueberry and huckleberry, with scatter clumps of scrub oak. The herbaceous layer, consisting mainly of wintergreen, grasses, and bracken fern, is also found in scattered clumps throughout the site.

FIGURE 14-4

DISTURBED WETLAND AREA LOCATION MAP



Source: Survey of Property, N&P
Scale: 1" = 300'

NORTH

Table 14-3: Plant Species Located at Project site, Laydown Areas and Interconnections

Common Name	Scientific Name	Relative Abundance
Tree species		
eastern red cedar	*Juniperus virginiana*	uncommon
pitch pine	*Pinus rigida*	common
black cherry	*Prunus serotina*	common
white oak	*Quercus alba*	abundant
scarlet oak	*Quercus coccinea*	common
scrub (bear) oak	*Quercus ilicifolia*	common
northern red oak	*Quercus rubra*	abundant
black oak	*Quercus velutina*	common
sassafrass	*Sassafras albidum*	uncommon
Shrub species		
sweetfern	*Comptonia peregrina*	common
black huckleberry	*Gaylussica baccata*	abundant
northern bayberry	*Myrica pensylvanica* [p]	uncommon
Virginia creeper	*Parthenocissus quinquefolia*	uncommon
winged sumac	*Rhus copallina*	uncommon
black locust	*Robinia pseudoacacia*	uncommon
brambles	*Rubus* sp.	uncommon
poison-ivy	*Toxicodendron radicans*	uncommon
low bush blueberry	*Vaccinium angustifolium*	abundant
Herbs and Groundcover Species (includes flowering plants, ferns and fern relatives)		
common milkweed	*Aesclepias syriaca*	uncommon
ragweed	*Ambrosia artemisiifolia*	uncommon
little bluestem	*Andropogon scoparius*	uncommon
aster sp.	*Aster* sp.	common
small white aster	*Aster vimineus*	uncommon
Beggar ticks	*Biden fondosa*	uncommon
Pennsylvania sedge	*Carex pensylvania*	uncommon
spotted knapweed	*Centurea maculosa*	uncommon
spotted wintergreen	*Chimaphila maculata* [p]	uncommon
chicory	*Cichorium intybus*	uncommon
umbrella sedge	*Cyperus strigosus*	uncommon
barnyard grass	*Echinochloa crusgalli*	uncommon
spike rush	*Eleocharis* sp.	uncommon
wood strawberry	*Fragaria vesca*	common
soft rush	*Juncus effuses*	uncommon
panic grass	*Panicum* sp.	uncommon
deer tongue grass	*Panicum clandestinum*	uncommon
plantain	*Plantago major*	uncommon
dwarf cinquefoil	*Potentilla canadense*	common
bracken fern [fr]	*Pteridium aquilinum*	common
goldenrod	*Solidago* sp.	uncommon

Note: All of the above listed species are flowering plants with the exception of coniferous trees and ferns
[p] NYS exploitably vulnerable protected plant; [fr] fern relative

Table 14-4: Plant Species Not Found on Site but Indicative of Vegetation Community

Common Name	Scientific Name
Tree species	
white pine	*Pinus strobus*
mossycup (bur) oak	*Quercus macrocarpa*
blackjack oak	*Quercus marilandia*
pin oak	*Quercus palustris*
chestnut oak	*Quercus prinus*
post oak	*Quercus stellata*
Shrub species	
chokeberry	*Aronia* sp.
bittersweet	*Celastrus scandens* [p]
meadowsweet	*Spiraea corymbosa*
golden heather	*Hudsonia ericoides*
beach heather	*Hudsonia tomentosa*
mountain laurel	*Kalmia latifolia* [p]
honeysuckle	*Lonicera* spp.
stagger-bush	*Lyonia mariana*
buckthorn	*Rhamnus* spp.
smooth sumac	*Rhus glabra*
highbush blueberry	*Vaccinium corymbosum*
Herbs and Groundcover Species	
big bluestem	*Andropogon gerardii*
bearberry	*Arctostaphylos uva-ursi*
eastern silvery aster	*Aster concolor* [e]
Stiff-leaved aster	*Aster linariifolius*
stripped pipsissewa	*Chimaphila umbellata* [p]
ladyslipper	*Cypripedium* sp.
trailing arbutus	*Epigaea repens* [p]
wintergreen	*Gaultheria procumbens* [p]
orange grass	*Hypericum gentianoides*
pinweed	*Lechea villosa*
round-headed bush clover	*Lespedeza capitata*
hairy bush clover	*Lespedeza hirta*
trailing bush clover	*Lespedeza procumbens*
Club moss	*Lycopodium* spp. [p]
Wild lupine	*Lupinnus perenis*
Indian pipe	*Monotropa uniflora*
cinnamon fern [fr]	*Osmunda cinnamomea* [p]
bluegrass	*Poa* sp.
Christmas fern [fr]	*Polystichum acrostichoides* [p]
jointweed	*Polygonella articulata*
milkwort	*Polygala nuttallii*
Hair cap moss	*Polytrichium sp.*
Indian grass	*Sorghastrum nutans*
Goat's-rue	*Tephrosia virginiana*
periwinkle	*Vinca minor*

Note: All of the above listed species are flowering plants with the exception of coniferous trees and ferns
[e] NYS endangered species; [p] NYS exploitably vulnerable protected plant; [fr] fern relative

14.3 Wildlife Resources

Sections 14.3.1 through 14.3.5 address Stipulation 9, Clauses 9 and 10. Clause 9 requires, in part, a characterization of the Project site and interconnections as to the wildlife and wildlife habitats. The study can be based on reconnaissance or systematic surveys, supplemented by available data from the New York State Amphibian and Reptile Atlas Project, the NYS Breeding Bird Atlas and range maps, and other similar reference sources. Clause 10 requires that Application include a list of the species of mammals, birds, amphibians, and reptiles reasonably likely to occur at and around the Project site and interconnections, based on observations and supplemented by publicly available sources.

14.3.1 Wildlife in Pitch Pine-Oak Communities

The woodland habitat found on site and in the general area provides habitat for a number of wildlife species. The site is not near surface waters or wetland areas that support a diverse set of species, and is not situated in any identified wildlife travel corridor of concern. Indeed, the habitat is fragmented on all sides – LIE to the north, Sills Road to the west, LIRR to the south, and LIPA right-of-way to the east.

Most wildlife species found in woodland habitats adjust well to human activity. The species present on site are likely to be relatively common suburban, forest, and edge species, with little potential for forest interior and/or "sensitive" species, as the site is generally fragmented by the surrounding transportation/utility corridors. Appendix P presents a computer-generated list of species expected on site given the habitat available. This list is provided as a supplement to site-specific species discussions contained also in Appendix P, and also includes information on the biological needs of each species. Nelson, Pope & Voorhis, LLC, developed the model as a tool to supplement site specific inventory and discussions, and the value of this tool is described more fully in the introductory statements.

14.3.2 Survey Methodology

The following text discusses the wildlife survey conducted and wildlife species that would be expected to breed on site, as well as those species that might be expected during migrations or as winter residents.

As previously mentioned, a preliminary site visit was conducted in October 1999, and further site visits were conducted in May 2000, August 2000, September 2000, and October 2000. During the field visits, habitat assessments were performed, and the wildlife species observed were recorded. In addition to randomly traversing the site, which accounted for a large number of inventoried species listed in the following sections, several systematic assessments of the property were performed to determine species presence on site, each of which explained in detail below. A copy of the appropriate NYSDEC collection license is contained in Appendix P.

Figure 14-5 provides a location map documenting wildlife point observation stations and indicates the location of the set wildlife traps. Live box traps, or cage traps (i.e., Havahart traps), were utilized to determine presence of mammalian wildlife on site. Four trap sizes were used and numbered during data collection. The dimensions are as follows:

- Trap "A" - 30" x 11" x 12", single door, open Havahart
- Trap "B" - 24" x 7" x 7", double door, open Havahart
- Trap "C" - 16" x 5" x 5", (two were utilized) double door, open Havahart
- Trap "D" – 8" x 2" x 2", single door, closed Tomahawk

Traps were placed randomly throughout the property for a period of roughly 1 week and were monitored at least once every 24 hours. Traps were typically set in the evening between the hours of 4:00 PM - 5:00 PM and monitored the following morning (6:00 AM - 8:00 AM), and subsequently relocated and rebaited. A variety of bait was used and consisted of canned cat food, sardines and/or peanut butter mixed with oats. Traps were baited to exclude species known to utilize the site. Animals captured utilizing this methodology are discussed in Appendix P.

It should be noted that bait was removed from traps on several occasions, and traps were often sprung without capturing an animal. This is not uncommon when trapping in the wild, especially when utilizing smaller traps. The smaller traps are very sensitive and easily sprung. Animals attempting to reach bait from the outside of the trap may spring the trap without capture, and species not large enough to spring the trap may quickly remove the set bait.

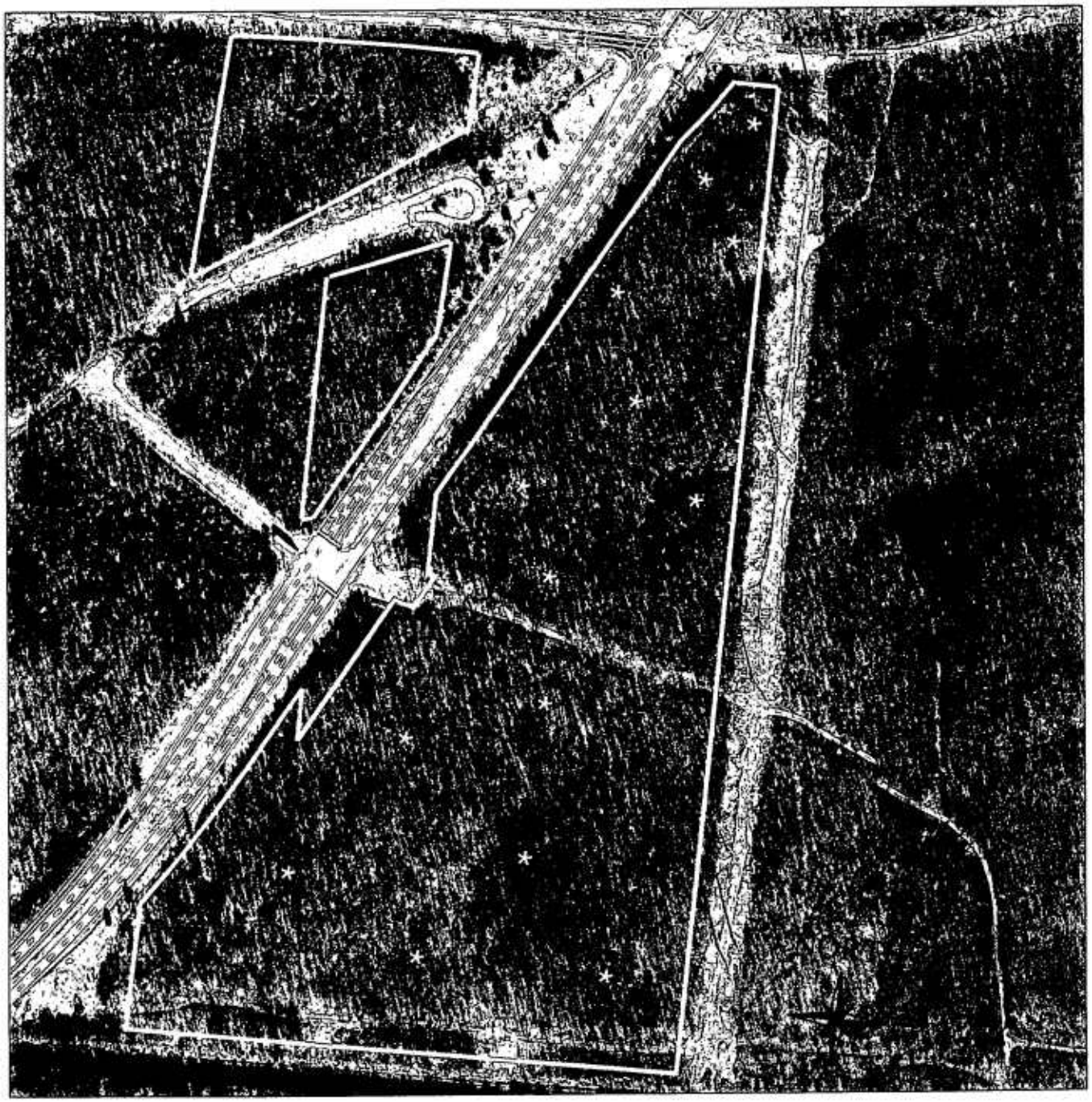
Additionally, several bait stations were set and monitored, particularly to target those species and/or individuals who are "trap shy" and will not enter box traps, or those species who are either too large or too small for capture in the traps utilized. Bait stations consisted of smoothed earth with bait placed at the center, with determinations of species presence based on track identification. Stations were located at various points along the existing dirt trails.

14.3.3 Reptiles and Amphibians

Due to the limited quality of the disturbed area wetlands, fully aquatic reptiles and amphibians are not expected, although the site and laydown areas may support a limited number of terrestrial species. However, several tadpoles were observed within the puddles on site and within the LIPA corridor. A discussion of the presence of adult amphibian species on-site is contained in Appendix P.

FIGURE 14-5

LOCATION OF WILDLIFE STUDIES MAP



Source: Aerial Photography, 1999
Scale: 1" = 300'

Brookhaven Energy LP

Table 14-5 is a list of amphibian and reptile species that are reasonably likely to occur on site given the existing habitat. This list is not intended to be all-inclusive but provides a detailed representation of what is likely to be found on site. It should be noted that no reptiles or amphibians were noted within the construction laydown area or interconnections (the Sills Road Corridor and LIE South Service Road corridor).

Table 14-5: Reptiles and Amphibians Observed or Reasonably Likely to Occur on the Site, Interconnections and Construction Laydown areas

Common Name	Scientific Name
Fowler's Toad	*Bufo woodhousei fowleri*
eastern spadefoot toad	*Scaphiopus holbrooki* [s]
*red-backed salamander	*Plethodon cinereus cinereus*
*wood frog	*Rana sylvatica*
common garter snake	*Thamnophis sirtalis*
eastern hognose snake	*Heterodon platyrhinos* [s]
eastern milk snake	*Lampropeltis triangulum*
Eastern box turtle	*Terrepene carolina* [s]

* Species observed on site by NP&V staff
[s] NYSDEC special concern species

14.3.4 Birds

Reschke notes several characteristic bird species within this type of community, including the rufous-sided towhee, common yellowthroat, field sparrow, prairie warbler, pine warbler, blue jay, and whip-poor-will. In general, the composition of the avian community in the area is typical of this part of New York State. None of the species recorded are uncommon, and all are reported as inhabitants of Suffolk County. Data from the 1988 Breeding Bird Survey for the census block which contains the site were obtained from the New York State Department of Environmental Conservation (Appendix P). This study surveyed the entire state by 25 km^2 (approximately 10 mi^2) census blocks over a five year period to determine the bird species which breed within the State. Most of the species listed by the NYSDEC breeding bird survey are likely to be found on site, with the exception of species restricted to habitats not found on site. Birds that prefer a mix of woodland, edge and urban habitats may be present on the property.

Table 14-6 is a list of the bird species observed or reasonably likely to occur on site given the habitats present; it is based upon field investigations conducted by NP&V during 2000. Additional information regarding these species habitat needs and other characteristics can be found within Appendix P. It should be noted that the species listed below marked with an asterisk were observed on site, within the construction laydown area, and/or within the LIPA corridor. Minimal avian species would be expected to utilize the Sills Road corridor, although some may utilize the edge habitat created by the LIE corridor. However, following final construction of the LIE South Service Road, minimal species would be expected to utilize the remaining vegetation along that corridor.

Table 14-6: Bird Species Observed and or Reasonably Likely to Occur on the Project site, Interconnections and Construction Laydown Area (page 1 of 3)

Common Name	Scientific Name	Status	Breeding Bird Survey Status
*gray catbird	*Dumetella carolinensis*		Confirmed
red-winged blackbird	*Agelaius phoeniceus*		Confirmed
Eastern bluebird	*Sialia sialis*		
*black-capped chickadee	*Parus atricapillus*		Confirmed
northern bobwhite	*Colinus irginainuse*		Confirmed
indigo bunting	*Passerina cyanea*		Probable
*Northern cardinal	*Cardinalis cardinalis*		Confirmed
brown-headed cowbird	*Molothrus ater*		Confirmed
brown creeper	*Certhia familiaris*		
*American crow	*Corvus brachyrhynchos*		Confirmed
yellow-billed cuckoo	*Coccyzus americanus*		Confirmed
black –billed cuckoo	*Coccyzus americanus*		Probable
*mourning dove	*Zenaida macroura*		Confirmed
*rock dove	*Columba livia*		Confirmed
American goldfinch	*Carduelis tristis*		Probable
house finch	*Carpodacus mexicanus*		Confirmed
purple finch	*Carpodacus purpureus*		
*Northern flicker	*Colaptus auratus*		Confirmed
least flycatcher	*Empidonax minimus*		
great-crested flycatcher	*Myiarchus crinitus*		Confirmed
blue-gray gnatcatcher	*Polioptila caerulea*		Confirmed
*common grackle	*Quiscalus quiscula*		Confirmed
ruffed grouse	*Bonasa umbellus*		
ring-necked pheasant	*Phasianus colchicus*		Confirmed
American redstart	*Setophaga ruticilla*		Confirmed
rose-breasted grosbeak	*Pheucticus ludovicianus*		Probable
red-tailed hawk	*Buteo jamaicensis*		Probable
broad-winged hawk	*Buteo platypterus*		Confirmed
ruby throated hummingbird	*Archilochus colubris*		Probable
American kestrel	*Falco sparverius*		Confirmed
*blue jay	*Cyanocitta cristatta*		Confirmed
*Northern (dark-eyed) junco	*Junco hyemalis*		
Eastern kingbird	*Tyrannus tyrannus*		Confirmed
golden-crowned kinglet	*Regulus satrapa*		
Eastern meadowlark	*Sturnella magna*		Confirmed
ruby-crowned kinglet	*Regulus calendula*		
*Northern mockingbird	*Mimus polyglottos*		Confirmed
white-breasted nuthatch	*Sitta carolinensis*		Confirmed
Northern oriole	*Icterus galbula*		
Ovenbird	*Seiurus aurocapillus*		Confirmed
Common nighthawk	*Chordeiles minor*	[s]	
Eastern screech owl	*Otus asio*		Probable

[s] special concern species
* species observed by NP&V staff

Table 14-6: Bird Species Observed and or Reasonably Likely to Occur on the Project site, Interconnections and Construction Laydown Area (page 2 of 3)

Common Name	Scientific Name	Status	Breeding Bird Survey Status
great-horned owl	*Bubo virginianus*		Probable
long-eared owl	*Asio otus*		
American robin	*Turdus migratorius*		Confirmed
pine siskin	*Carduelis pinus*		
chipping sparrow	*Spizella passerina*		Confirmed
field sparrow	*Spizella pusilla*		Confirmed
Savanah sparrow	*Passerculus sandwichensis*		
white-crowned sparrow	*Zonotrichia leucophrys*		
grasshopper sparrow	*Ammodramus savannarum*	[s]	Confirmed
vesper sparrow	*Pooecetes gramineus*	[s]	Probable
fox sparrow	*Passerella iliaca*		
house sparrow	*Passer domesticus*		Confirmed
song sparrow	*Melospiza melodia*		Confirmed
*white-throated sparrow	*Zonotrichia albicollis*		
*European starling	*Sturnus vulgaris*		Confirmed
eastern phoebe	*Sayornis phoebe*		Confirmed
barn swallow	*Hirundo rustica*		Confirmed
tree swallow	*Tachycineat bicolor*		Probable
purple martin	*Progne subis*		Possible
chimney swift	*Chaetura pelagica*		Probable
brown thrasher	*Toxostoma rufum*		Confirmed
rufous-sided towhee	*Pipilo erythrophathalmus*		Confirmed
hermit thrush	*Catharus guttatus*		Confirmed
*wood thrush	*Hylocichla mustelina*		Confirmed
*tufted titmouse	*Parus bicolor*		Confirmed
*wild turkey	*Meleagris gallopavo*		
Veery	*Catharus fuscescens*		Confirmed
red-eyed vireo	*Vireo olivaceus*		Confirmed
yellow-throated vireo	*Vireo flavifrons*		
white-eyed vireo	*Vireo griseus*		Confirmed
chestnut-sided warbler	*Dendroica pensylvanica*		Confirmed
blue-winged warbler	*Vermivora pinus*		Confirmed
black-and-white warbler	*Mniotilta varia*		Confirmed
black-throated blue warbler	*Dendroica caerulescens*		
pine warbler	*Dendroica pinus*		Confirmed
prairie warbler	*Dendroica discolor*		
yellow-rumped warbler	*Dendroica coronata*		
yellow warbler	*Dendrocica petchia*		
horned lark	*Eremophila alpestris*	[s]	
Killdeer	*Charadrius vociferus*		Confirmed
cedar waxwing	*Bombycilla cedrorum*		Probable
whip-poor-will	*Caprimulgus vociferous*	[s]	Probable

[s] special concern species
* species observed by NP&V staff

Table 14-6: Bird Species Observed and or Reasonably Likely to Occur on the Project site, Interconnections and Construction Laydown Area (page 3 of 3)

Common Name	Scientific Name	Status	Breeding Bird Survey Status
American woodcock	*Philhela minor*		Probable
Eastern wood-peewee	*Contopus virens*		Confirmed
downy woodpecker	*Picoides pubescens*		Confirmed
hairy woodpecker	*Picoides villosus*		Confirmed
red-bellied woodpecker	*Melanerpes carolinus*		Confirmed
yellow bellied sapsucker	*Sphyrapicus varius*		
Carolina wren	*Thryothorus ludovicianus*		Confirmed
house wren	*Troglodytes aedon*		Confirmed
common yellowthroat	*Geothlypis trichas*		Confirmed

[s] special concern species
* species observed by NP&V staff

14.3.5 Mammals

The habitats found on the Project site are expected to support a number of mammal species. Small rodents and insectivores such as mice, shrews, moles and voles are expected to be the most abundant mammals, but the property and surrounding area should also support larger mammals. Several tunnel entrances under the accumulated leaf litter were found, although only the short-tailed shrew was captured. A discussion of the presence of each mammalian species on-site is contained in Appendix P.

Table 14-7 contains a list of the mammal species which were observed and or reasonably likely to occur on site because of existing conditions in the area or immediately surrounding it. This list is not meant to be all inclusive, but was prepared as part of several field inspections to provide a detailed representation of what was or may be found on site.

It should be noted that the species listed below marked with an asterisk were directly observed on site, within the LIPA corridor, or within the laydown area. Minimal mammal species would be expected to utilize the Sills Road corridor, although some may utilize the edge habitat created by the LIE corridor. However, following final construction of the LIE South Service Road, minimal species would be expected to utilize the remaining vegetation along that corridor as the area will have been disturbed.

14.3.6 Protected Wildlife Species

This section addresses Stipulation 9, Clause 9, which requires, in part, an identification and delineation of any unusual habitats or natural communities which could support listed species or species of special concern.

No protected, rare, threatened or endangered wildlife species were observed during wildlife and vegetation surveys on-site and within the laydown area and interconnections.

Table 14-7: Mammals Observed and or Reasonably Likely to Occur on the Project Site, Interconnections and Construction Laydown Areas

Common Name	Scientific Name
eastern cottontail	*Sylvilagus floridanus*
big-brown bat	*Eptesicus fuscus*
hoary bat	*Lasiurus borealis*
Keen's bat	*Myotis keenii*
little brown bat	*Myotis lucifugus*
red bat	*Lasiurus borealis*
eastern pipistrelle	*Pipistrellus subflavus*
silver-haired bat	*Lasionycteris noctivagans*
eastern chipmunk	*Tamis striatrus*
eastern mole	*Scalopus aquaticus*
house mouse	*Mus musculus*
white-footed mouse	*Peromyscus leucopus*
*short-tailed shrew	*Blarina breuicauda*
masked shrew	*Sorex cinereus*
least shrew	*Cryptotis parva*
pine vole	*Microtus pinetorum*
*woodchuck	*Marmota monax*
*raccoon	*Procyon lotor*
Virginia opossum	*Didelphis virginiana*
*eastern gray squirrel	*Sciurus carolinensis*
red fox	*Vulpes vulpes*
*white-tailed deer	*Odocoileus virginianus*
*domestic cat	*Felis domestica*

* species observed by NP&V staff

As reported in the Preliminary Scoping Statement, Brookhaven Energy consulted with the US Fish and Wildlife Service and NYSDEC's New York Natural Heritage program regarding endangered, threatened, or rare animal species. The USFWS indicated that there are no federally listed animal species on or in the immediate vicinity of the Project site. USFWS generally notes the potential presence of occasional transient individuals. NYSDEC, in its response, indicated one species historically noted in the general vicinity, but no occurrences on the Project site. (see Appendix P).

The wildlife species noted somewhere in the vicinity of the Project site is the Persius Dusky Wing (*Erynnis persius persius*), a butterfly/skipper. This species is listed as endangered by New York State. There was no known date of the last known occurrence of this species, although the last known sighting was considered historic. NYSDEC has indicated that an historic occurrence would be at least 15 years before present. The potential to support Persius Dusky Wing would require host plants (i.e., *Lupinus*, *Thermopsis*, *Lotus*, or other legumes). Legumes generally occur in field environments, not forested area, and no such plants have been found on-site or in the laydown area. The surveys also concentrated on the boundary with the LIPA corridor, an open environment, and no plants supporting the Persius Dusky Wing were found. The Persius Dusky Wing is listed as

demonstrably secure on a global scale, although it may be quite rare in parts of its range, especially at the periphery.

Of the species listed as being likely on the site, the common nighthawk, whip-poor will, eastern hognose snake, eastern spadefoot toad, eastern box turtle and worm snake are listed as special concern species. The grasshopper sparrow and vesper sparrow are also listed as special concern species potentially present in the vicinity. Special concern species are native species that are not recognized as endangered or threatened, but for which there is documented concern about their welfare in New York State as a whole. Unlike threatened or endangered species, species of special concern receive no additional legal protection under Environmental Conservation Law §11-0535. This category is intended to enhance public awareness of those species.

While invertebrate species are not discussed in detail in this document, one insect of concern on Long Island is the buck moth (*Hemileuca maia*). The buck moth has been used as an indicator species for pine barrens communities, and has recently identified as a species of special concern by NYSDEC.

The buck moth is a diurnal moth found exclusively in pine barrens habitat, and prefers areas of open Pine Barrens which have burned within the past 20 years. Important host plants to the developing caterpillars include the scrub oak and dwarf chestnut oak. The moth prefers areas where these trees are less than 10 feet in height for both food and reproduction. Scrub oak is found on site although only a very small area may have burned in the past 20 years. The species is generally not expected to utilize the site, although portions of the undeveloped woodland in the vicinity contain buck moth habitat requirements.

Buck moths can be identified in the field in one of three ways: by the detection of larval caterpillars in May and June during which time they feed on the unfolding leaves of their host plant; by detection of adults in flight during autumn; and by detection of egg masses deposited on the twigs of their host plants. Unlike most moths, the buck moth mates in the fall and overwinters in the egg stage, rather than as a pupae. The eggs are laid in a tight spiral on the twigs of scrub oaks, and are identifiable during the winter months. No egg masses were observed and evidence of buck moth use was not found during field investigations on the property. The species is a special concern species, and as such is not granted any special protection status under New York State law.

14.4 Impacts to Vegetation and Wildlife

This section addresses Stipulation 9, Clause 7, which requires an analysis of the impact of the construction and operation of the Project and interconnections on the vegetation identified, including a delineation of the vegetation areas to be removed or disturbed, mapped at a scale of not more than 100 feet per inch (for the site) and 500 feet per inch (for interconnections). It also addresses the requirements of Stipulation 9, Clause 11, which calls for an analysis of the impact of the construction and operation, including air emissions, of the Project and interconnections on the wildlife, wildlife habitats, and wildlife travel corridors, as identified above.

14.4.1 Clearing of Vegetation

The impacts to ecological resources at the Project site are generally a direct result of land clearing (habitat loss), increase in human activity, and habitat fragmentation. A total of approximately 23.4 acres of natural vegetation will be removed from the 28-acre site to allow for the proposed development. A vegetated buffer zone, totaling approximately 4.6 acres will be preserved on the west and north sides of the site (facing Sills Road and the Long Island Expressway, respectively). Of the 23.4 acres to be disturbed, a total of 5.5 acres will be replanted with native species after construction is complete. Thus, following revegetation of the disturbed areas, a total of approximately 10.1 acres of vegetated area will remain following development (4.6 acres of undisturbed buffer area and 5.5 acres of revegetated area). The construction laydown areas total 5.45 acres in size, of which approximately 0.82 acres, or 15%, will remain undisturbed. Following completion of the project, the remaining 4.63 acres will also be allowed to undergo succession and will be supplemented with native species to allow this area to begin to revert back to a pitch pine-oak forest.

In summary, a total of 5.4 acres will remain natural within the project site and construction laydown areas, and a total of 10.1 acres will be revegetated. This represents approximately 16% preservation of natural vegetation and approximately 30% revegetation. A buffer strip will remain along Sills Road, as well as the entire northern portion of the site, and is proposed to be undisturbed during both construction and operation. The subject property is part of several large tracts of woodland in the immediate area, and thus relatively slight impacts are expected as a result of the proposed clearing and development. The majority of the woodland in the area is transected by transportation and utility corridors, and the site itself does not form a contiguous connection with the remaining woodland habitat. The following sections examine in detail the impact of the proposed site use and development with regard to both vegetation and wildlife.

Table 14-8: Summary of Areas to be Disturbed (Project Site including on-site interconnection areas)

Cover Type	Existing	Proposed	Difference
Building/Pavement	0.0 acres	4.2 acres	+4.2 acres
Pervious Gravel or Dirt	1.3 acres	10.7 acres	+9.4 acres
Non-Fertilizer Dependent Landscaping	0.0 acres	8.5 acres	+8.5 acres
Pitch Pine-Oak Forest	26.7 acres	4.6 acres	-22.1 acres
TOTAL (Site)	**28 acres**	**28 acres**	---

Table 14-9: Summary of Areas to be Disturbed (Laydown Areas)

Cover Type	Existing	Proposed	Difference
Pervious Gravel or Dirt	0.0 acres	4.6 acres	+4.6 acres
Pitch Pine-Oak Forest	5.4 acres	0.8 acres	-4.6 acres
TOTAL (Site)	**5.4 acres**	**5.4 acres**	---

14.4.2 Description of Impacts by Major Component

The Project's power block and water tank areas will be located entirely within the pitch pine-oak habitat found on site. The construction of the power block and associated roadway will result in the loss of forested upland. Following the construction of these facilities, additional edge habitat will be created which will provide habitat for some edge species.

Similarly, the area in the vicinity of the air-cooled condensers is primarily pitch pine-oak forest and will be cleared. Wildlife species which nest, feed or take cover within the canopy and understory of this area will be affected. Although local impacts are expected, similar habitat exists in the general area. Regional impacts would be expected to be negligible.

The area in the vicinity of the proposed switchyard and transmission lines consists primarily of pitch pine-oak woodland, the development of which requires some clearing. The existing central dirt roadway extends through this location, in addition to the disturbed area wetlands. The switchyard will require filling these wetlands. Since the wetlands on-site were formed due to human disturbance and contain minimal ecological value, minimal impacts are expected as a result of the fill action (see Section 14.5 below regarding wetlands impact evaluation). Additionally, the remaining portion of the existing dirt road will be allowed to undergo succession and revert back to the original pitch pine-oak forest. Permanent closure of this road will result in a significant decrease the amount of unauthorized dumping of debris in this location, as well as trespassing by unauthorized individuals.

As previously stated, the proposed additional construction laydown area is located on the northwest side of Sills Road. Approximately 4.6 acres of land will be cleared for this additional construction laydown area. Following construction, this area will be allowed to revert back to its vegetated state.

14.4.3 Impact Quantification

Potential types of direct impacts to vegetation/habitat cover types as a result of construction of the Project are the permanent loss of vegetation, a temporary loss of vegetation, and the alteration of vegetation.

Construction of portions of the proposed power block, switchyard, and interconnections will require an area of approximately 17.9 acres to be permanently cleared from the 28 acre site. This includes those areas to be covered by impervious surfaces, gravel and/or dirt, and non-fertilizer dependent vegetation. Additional laydown and construction parking areas within the site will require disturbance of 5.5 acres. Thus a total of 17.9 + 5.5 = 23.4 acres within the site will be disturbed during construction. Also, additional laydown areas are planned west of Sills Road (both north and south of the old Patchogue-Yaphank Road cul-de-sac), and these will result in disturbance to approximately 4.6 acres of upland pitch pine-oak forest. This laydown areas will be cleared of vegetation and utilized during construction under a temporary arrangement. Following construction, the off-site laydown areas will be left in a greenfield condition, or in a similar fallow condition, as specified by the landowner. The disturbed areas within the site will be allowed to naturally revegetate as pitch pine-oak forest. Certain areas (such as between plant buildings), may be

revegetated with shrub plantings. Other areas (such as between the switchyard and the existing transmission line corridors) will be allowed to revegetate, but not as pitch-pine oak forest.

A description of the acreage of impact for each of the vegetation communities is included in the following tables (covering the Project site, proposed laydown area, and interconnections). Per the stipulations, Figure 14-6 indicates the proposed construction disturbance areas overlain on a 1999 aerial photograph. Per the stipulations, the map shows the Project site, laydown areas, and gas and water interconnection corridor at 100 feet per inch. The sewer interconnection east of the site is mapped at 500 feet per inch. These vegetative coverages were determined by aerial photography (1999) and field inspections. A reduced version of the figure is presented below.

It should be noted that the proposed project will require clearing the majority of the natural vegetation on the property, some of which will be replanted with native vegetation and allowed to revert back to forested uplands. Establishing native plantings will supplement the remaining woodland buffers, in addition to accelerating the process of succession such that invasive species are not able to colonize formerly disturbed areas. Planting is recommended to include native tree species such as pitch pine, white and gray birch, sassafras, eastern red cedar, American holly, quaking aspen, black cherry, red oak, white oak, scarlet oak, bay berry, black cherry, beach plum, blackberry and blueberry. A limited amount of turf may be planted, with native and/or fertilizer independent species utilized.

As previously stated, 4.6 acres of the additional construction laydown area west of Sills Road will be cleared initially, and allowed to undergo succession following completion of the proposed project. This area will also be supplemented with landscape plantings such that invasive species are not readily able to colonize the areas.

14.4.4 Habitat Loss

The extent to which land clearing will affect the wildlife species identified in Section 14.3 above depends upon the use each species makes of these areas to be impacted and, to some extent, on the size of home range characteristics of each species. The habitat use of each species is described in Appendix P. Similar habitat is available in abundance in the immediate vicinity. Considering the abundance of forested habitat in the area, the permanent loss of 17.90 acres of forested area in Suffolk County represents a negligible reduction in forested habitat. Furthermore, no rare, threatened, or endangered species occurs on the Project site. For these reasons, none of the species listed above as being reasonably likely to be on the site would be significantly and adversely affected by the proposed land clearing.

14.4.5 Erosion and Sedimentation

This is a potential impact of concern only during construction. The Project will institute erosion and sedimentation control measures (detailed in Section 17.5).

The habitat adjacent to any major construction project can be diminished as a result of the effects of erosion and sedimentation. The deposition of material in vegetated areas first affects herbaceous species by covering the base of plants, resulting in the depletion of oxygen from the root zone and the death of the plant. Woody species, including trees, can also be affected in this manner, although the species involved and the extent, duration, and nature of the deposited material influence the severity of the impact. In addition, the deposited material from erosion is usually heavier subsoils, which makes it difficult for natural reclamation to take place.

A loss of vegetation as a result of erosion and sedimentation can also indirectly affect wildlife species. A reduction in the quantity and quality of wildlife food and cover within the area of actual construction is the inevitable result of any construction project. Typically, small mammals, reptiles, amphibians, and birds that feed or nest on the ground are affected. Since most of the area surrounding the construction zone is either developed or wooded, examples of wildlife species that could be impacted in this manner include the wood frog, garter snake, white-footed mouse, short-tailed shrew, ovenbird and wood thrush. Since such impacts will be properly controlled, they will be limited to the area immediately adjacent to construction activities.

Erosion and sedimentation are easily controlled by practical construction techniques and control measures, as discussed in Section 17.5. With the proper installation and erosion control barriers and other control measures, the extent of any indirect impacts from erosion and sedimentation should be minor to non-existent.

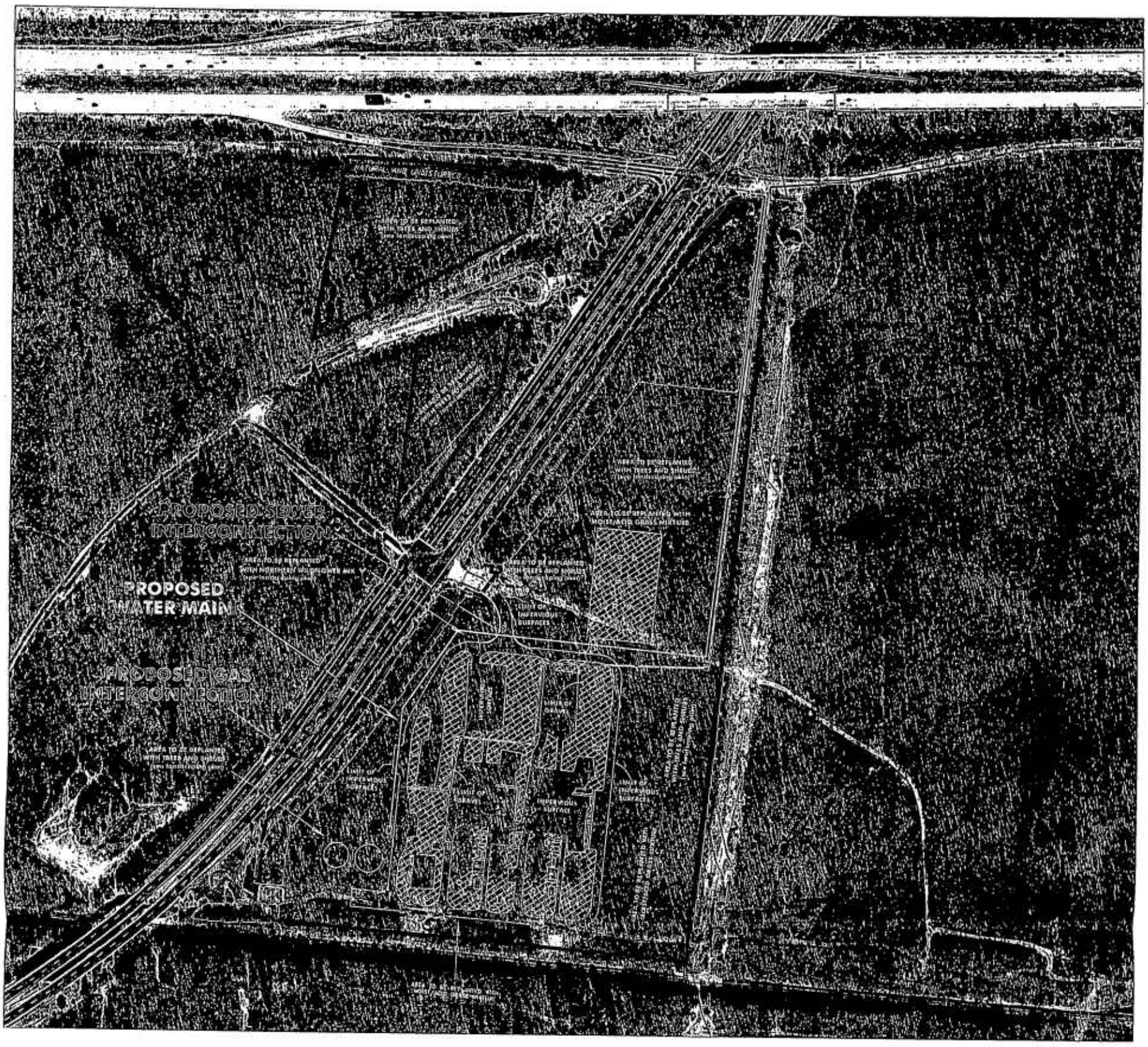
14.4.6 Air Emissions

14.4.6.1 Combustion Source Emissions

Emissions from the proposed facility will have no measurable impact on botanical or wildlife resources. Pollutant emissions will be dispersed over a large area, with the resulting deposition at any one point on the ground being limited in magnitude. Given the very low predicted levels of pollutant emissions from the Project and the dispersion of these pollutants over a large area, plant or animal species will not be adversely affected. As discussed in Section 6.12.3, maximum potential concentrations of pollutants expected to occur, including existing background levels, are below vegetation sensitivity thresholds and animal dietary screening values. Furthermore, the secondary National Ambient Air Quality Standards (NAAQS) are protective of the environment and ecological resources, including wildlife. In Section 6, the Project's compliance with all NAAQS (primary and secondary) is demonstrated.

14.4.6.2 Fugitive Dust

Fugitive dust will be controlled by measures such as wetting of exposed soils on a regular basis and stabilizing storage piles by wetting and/or seeding. These measures will be implemented as standard practice for the construction effort. Fugitive dust impacts related to the construction effort are not expected.



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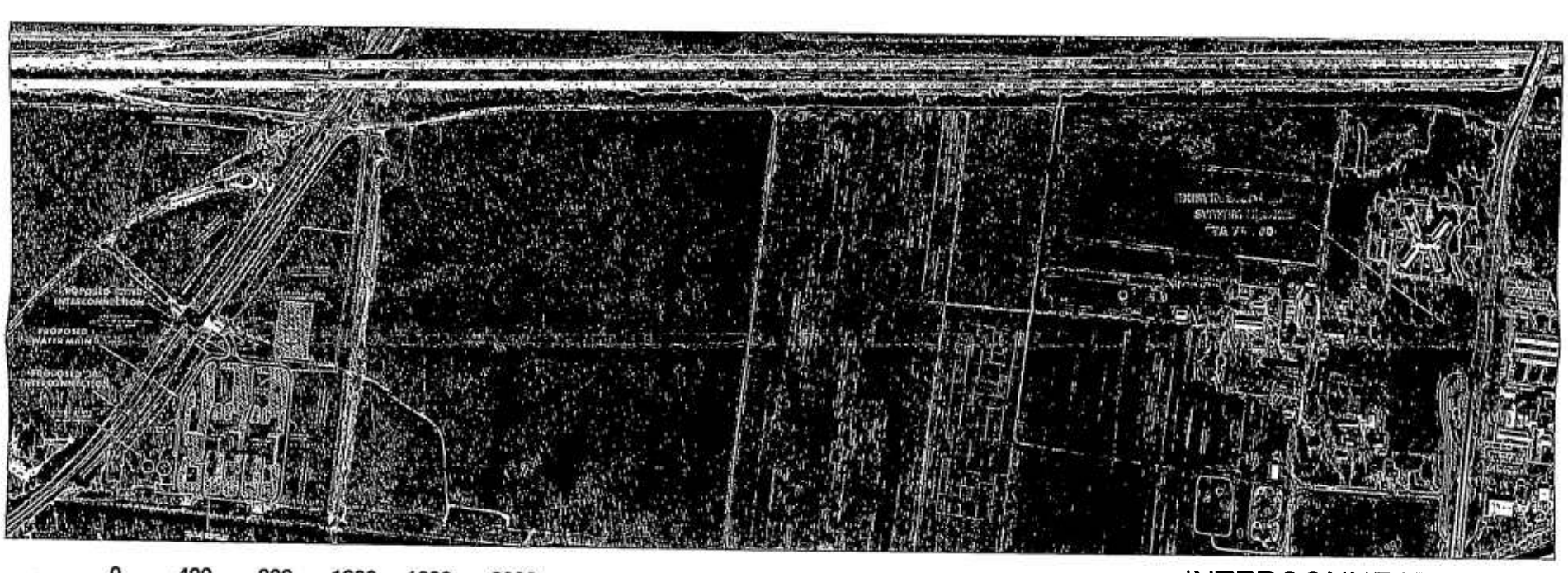
SCALE IN FEET

PROPOSED SITE CONDITIONS



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SCALE IN FEET

INTERCONNECTIONS

Figure 14-6 (Reduced Scale)
PROPOSED SITE CONDITIONS
Project Site and Interconnections
Brookhaven Energy Project
Town of Brookhaven, Suffolk County, New York

PROJ: 99281	SCALE: As Noted	DATE OF PHOTO: SPRING 1999	SOURCE: GEOMAPS, INC.

Brookhaven Energy LP

NP&W
NELSON POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

14.4.6.3 Vehicle Emissions

As is the case with fugitive dust, the potential impact of vehicle emissions on vegetation will be temporary, and minor in nature. (The vicinity of the site already includes a Long Island Expressway interchange with a major county highway.) Short-term exposure to emissions from construction vehicles is unlikely to have any noticeable impact on botanical or wildlife resources.

14.4.7 Noise

Background noise data presented in Section 11 indicate that traffic noise from the Long Island Expressway and Route 101 (Sills Road) contributes to the ambient noise levels on the Project site and interconnections. With the exception of some wilderness species, most wildlife species have a high tolerance for noise resulting from human activity after a certain amount of exposure. Given the proximity of the Long Island Expressway and Sills Road, all wildlife reasonably expected to occur on the Project site and interconnections would properly be assumed to be noise tolerant. Depending on the season, it is possible that some nest abandonment may occur for individuals nesting immediately adjacent to construction areas. Construction noise is described in Section 11.5.

No additional impacts to wildlife would be anticipated as a result of noise generated during operation. In fact, since the noise during operation will tend to be constant and predictable, no disruption to the established and successional habitat areas (and wildlife) would be expected.

14.4.8 Traffic

No impacts to vegetation are expected as a result of construction vehicle traffic. Section 15 summarizes anticipated construction vehicle traffic. The primary potential for traffic to affect wildlife is due to collisions with animals crossing roadways. Most car/wildlife accidents, especially those involving deer, occur at night, while the projected increase in traffic will occur mostly during daylight hours. Since the incremental change in construction traffic is modest, the added potential for any significant impact on wildlife as a result of Project construction is also modest. Similarly, the incremental traffic change during operation is minimal, and any potential for significant impacts is therefore minimal.

14.4.9 Protected Species

As shown in Sections 14.2.2.5 and 14.3.6 above, no federal or state rare, threatened, or endangered species (plant or animal) have been found on the Project site. Coordination with US Fish and Wildlife Service and NYSDEC's Natural Heritage Program reveals no known presence of such species. Therefore, no impact to such species is expected.

14.5 Impacts to Wetlands

The loss of 0.01 acres of disturbed wetland areas on-site will be insignificant. The disturbed wetland areas are both very small and of very low value. The following paragraphs relate to each type of impact that will result from filling these areas, and states why each is insignificant.

14.5.1 Loss of Wetland Vegetation

As shown in Table 14-3 above, the following hydrophytic species are found on the Project site: spike rush, soft rush, beggar ticks, and umbrella sedge. (Note that small white aster, barnyard grass, and plantain are also listed species that occurred within the wetland boundary, but are typically species associated with upland habitats.) Loss of 0.01 acres of this type of vegetation is considered an insignificant loss of wetland vegetation, and does not require any pre-construction notification to the US Army Corps of Engineers.

14.5.2 Habitat Loss

No wildlife that is identified primarily with wetland areas has been observed on-site or would be expected on-site. Tadpoles were observed during the summer reconnaissance within the puddle adjacent to (and crossing into) the vegetated disturbed wetlands area. Filling the wetland will remove this habitat. Puddles are ubiquitous in the vicinity of the site, wherever poor drainage has resulted in soil compaction. Loss of 0.01 acres of this type of habitat is considered an insignificant impact.

14.5.3 Hydrology and Nutrient Retention

The areas on-site that exhibit wetland vegetation are isolated and are not connected to a system exhibiting surface water flow. The areas are the result of soil compaction, and as such, retard recharge of water into the aquifer. At the same time, the site is not paved and therefore generally free of those pollutants that are associated with developed properties, so that the small wetland areas on-site do not fulfill a pollutant retention function. For this reason, the loss of these wetlands is considered an insignificant hydrological impact.

14.5.4 Flood Attenuation

The disturbed wetland areas on-site serve a minimal flooding retention function, and in fact retard the recharge of precipitation into groundwater, being located on a site whose soils have a high to very infiltration capacity. For this reason, the loss of these wetlands is considered an insignificant impact to flood attenuation capacity.

14.6 Mitigation Measures

This section addresses Stipulation 9, Clauses 8 and 12; and Stipulation 12, Clause 39. The clauses require, in respective order: (1) an identification and evaluation of reasonable mitigation measures, including the use of alternative technologies, regarding vegetation impacts identified; (2) an identification and evaluation of reasonable mitigation measures, including the use of alternative

technologies, regarding wildlife impacts identified; and (3) an identification and evaluation of reasonable mitigation measures, including the use of alternative technologies and control of potential phosphorus and nitrogen sources from the Project, to avoid or minimize wetlands impacts.

The following sections present the practical forms of mitigation that will be employed to avoid, minimize or compensate for impacts on upland and wetland vegetation and on wildlife both during Project construction and its operation.

14.6.1 Facility Siting Considerations

In order to reduce the amount of permanent loss of vegetation, the Project has been located adjacent to natural gas, water, and electric transmission rights-of-way. Likewise, wastewater services are available near the site and are accessible via existing rights-of-way, thus reducing the extent of interconnection impacts.

The isolated ponded depressions on-site were only formed due to human intervention (construction and subsequent poor drainage of a dirt driveway). Greater impact would occur if these depressions were avoided than if they were filled, because they are situated in the east-central portion of the site. Preserving them would prevent access in a north-south direction, necessitating a circuitous route for trucks. This could result in several acres of additional laydown requirement and a proportional increase in land clearing. Preserving them could also result in a significant decrease or elimination of the buffer zones that the existing upland vegetation would otherwise provide between the power block and the adjacent roadways. Given the extremely low functional value of these depressions, and given the need to enhance tree preservation, the proposed Project footprint eliminates the depressions and the wetland vegetation they contain. Siting the facility to avoid the disturbed wetland areas was not viewed as feasible or desirable from an environmental standpoint.

14.6.2 Erosion and Sedimentation

Best management practices, as outlined in Section 17.5, will be utilized in order to prevent any adverse impacts to vegetation or wildlife as a result of potential erosion or sedimentation during Project construction. Following construction, surfaces will be appropriately graded, stabilized and vegetated to minimize erosion and sedimentation potential. Following construction, surfaces will be appropriately graded, stabilized, vegetated, or graveled to minimize erosion and sedimentation potential.

14.6.3 Air Emissions

The Project includes extensive air pollution control equipment to ensure that is protective of human health with as plentiful a margin as possible. It has been demonstrated that there will be no significant impacts to vegetation or wildlife from air emissions. Also, fugitive dust will be controlled by measures such as wetting of exposed soils on a regular basis and stabilizing storage piles by wetting and/or seeding. Because it is unlikely that any plant or wildlife species will be negatively affected by pollutant emissions from the Project, no further mitigation is needed.

14.6.4 Noise

As demonstrated in Section 14.4 above, construction and operation noise is not expected to adversely affect wildlife in any significant way. Therefore, no further mitigation beyond the noise abatement measures described in Section 11 is proposed.

14.6.5 Traffic

As demonstrated in Section 14.4 above, construction and operation vehicle traffic is not expected to impact either vegetation or wildlife. Since projected increases in traffic will occur mostly during daylight hours there is limited potential for impact in wildlife. Because impacts, if any, would be negligible, no mitigation for wildlife with respect to traffic is necessary.

14.6.6 Alternative Technologies

Of the alternative technologies outlined in Section 5, the only one that is potentially relevant to minimizing impacts on vegetation (both upland and wetland) and wildlife is the choice of cooling technology. Using an alternative technology -- evaporative cooling -- could marginally decrease the required clearing of vegetation and habitat areas. It also could be a more practical approach to avoiding any impacts to three disturbed wetland areas. However, indirect effects of evaporative cooling would cause a similar or greater impact on vegetation; a similar or greater impact on wildlife; and a similar impact on wetlands. Viewed more comprehensively, evaporative cooling would have a much greater impact on water supply and would also constitute an additional source of air emissions as well as visible water vapor. Thus, use of evaporative cooling is not recommended as a strategy to avoid, minimize, or mitigate wetland impacts.

14.6.7 Phosphates and Nitrates

Nitrogen has been identified as a source of contamination primarily from sanitary discharge and nitrogen and phosphorus typically can be associated with lawn fertilization. The Project intends to minimize the use of any landscaping requiring fertilizer application on the ground through reduction of the area of fertilizer dependent vegetation as well as through the controlled use of fertilizer. Additionally, the facility will discharge sanitary wastes via connection with sanitary sewers; therefore, the proposed project is not expected to result in significant adverse effects to groundwater quality with regard to nitrogen loading. It should be noted that the wetlands presently on-site do not appear to provide any significant function in nitrogen or phosphorus retention. Based on the above listed mitigation measures, the potential sources of phosphorus and nitrogen to groundwater are minimized.

14.6.8 Wetland Replication

Wetland replication is a strategy that can be used when wetland impacts occur. Impact avoidance and minimization are generally held to be preferable to wetland replication, due to various factors, including the somewhat limited success rates of wetland replication. Since the Project will have no impact on Federal, State, or Town wetlands, wetland replication is not recommended or proposed.

14.6.9 Land Preservation (Offsets)

The primary mitigation effort that the Project proposes to undertake is land preservation. Preservation of agricultural land and forested areas in the pine barrens region of Long Island is viewed as an important priority in state, county, and town legislation. Because of the land clearing proposed for the Project, Brookhaven Energy will be required to purchase and convey to the Town of Brookhaven any land that is cleared in excess of 70% of the Project site. If 70% is cleared, no offsets need be purchased. If 85% is cleared – an area equivalent to 15% (85%-75%=15% of the site, or 4.2 acres) must be purchased. The Project intends to purchase the necessary acreage for conveyance to the Town. Brookhaven Energy will consult with the Town of Brookhaven to ensure that the best land in terms of cost as well as environmental value be identified.

15. TRAFFIC AND TRANSPORTATION

This section addresses Stipulation 10, Clauses 1 through 4. Included is a discussion on the characteristics of the study area with respect to traffic and transportation issues. The results of data collection and analysis and the identification of the incremental impact of traffic associated with the Project are identified. The study concludes that the traffic generated by the proposed Project will minimize impacts to the overall level of service at the study intersections during the peak construction period as well as the long-term operations period.

15.1 Applicable Regulatory Requirements

Traffic conditions are typically assessed according to potential changes in operational service level or safety. The Project will require an intersection modification onto a public road. Project interconnections are proposed to be placed, in part, within the rights-of-way of the Long Island Expressway (a state highway) and Sills Road (a county highway). Thus, highway work and occupancy permits are required, as detailed in Section 15.5.

This study describes existing conditions, future conditions, and Project impacts related to the traffic flow in the vicinity of the Project. The detailed study of traffic conditions and impacts is presented as Appendix T. Because of the voluminous nature of that analysis, a summary is presented in Sections 15.2 and 15.3.

15.2 Existing Conditions

15.2.1 Description of Study Area

As required by Stipulation 10, Clause 1(g), several intersections were identified as comprising the study area network. Those intersections, shown on Figure 15-1, are listed below:

- Yaphank Avenue/LIE Exit 67 Eastbound On-Ramp; and
- Long Island Avenue/Yaphank Avenue/LIE Exit 67 Westbound Off-Ramp;
- Long Island Avenue (north of LIE)/Sills Road;
- LIE Exit 66 Westbound On-Ramp/Sills Road (County Route 101);
- LIE Exit 66 Eastbound Off-Ramp/Sills Road (County Route 101)
- Sills Road (County Route 101)/State Street (a.k.a. Old Town Road);
- Sills Road or Patchogue-Yaphank Road (County Route 101)/Horseblock Road.

Stipulation 10, Clause 1(i) requires analysis of the number of approach lanes, lane widths, shoulder widths, traffic control devices by approaches, and sight distances for all seven intersections listed above.

Field visits were conducted to evaluate the overall pavement condition, sight distance, and adequacy of the study intersections to accommodate Project-generated traffic. The observations are noted in Table 15-1 below, and a general summary of each intersection, based on field investigations and professional judgement, is also provided in Appendix T.

Table 15-1: Study Intersection Configurations

Intersection	Approach lanes (no.)	Control Devices	Lane widths	Shoulder Widths	Sight distances
21 NB to I-495 Exit 67 EB On-Ramp	1	Yield	11	NA	Exceeds
21 SB to I-495 Exit 67 EB On-Ramp	1	Signal	10	NA	Exceeds
LI Ave. EB to 21/495 Exit 67 WB	NA	Signal	NA	NA	NA
495 Exit 67 WB Off-Ramp to LI Ave./21	1	Signal	12	10	Exceeds
21 NB to Exit 67 WB Off-Ramp/LI Ave.	1	Signal	12	6	Exceeds
21 SB to Exit 67 WB Off-Ramp/LI Ave.	1	Signal	12	10	Exceeds
LI Ave. WB to 101	2	Signal	12	10	Exceeds
Sills Rd. SB to LI Av.	2	Signal	11	NA	Exceeds
101 NB to LI Ave./ Sills Rd.	2	Signal	10	10	Exceeds
101 NB to 495 Exit 66 WB On-Ramp	3	NA	11	10	Exceeds
101 SB to 495 Exit 66 WB On-Ramp	3	NA	12	0	Exceeds
495 Exit 66 EB Off-Ramp to 101	3	Signal	11	1	Exceeds
101 SB to 495 Exit 66 EB Off-Ramp	3	Signal	12	1	Exceeds
101 NB to 495 Exit 66 EB Off-Ramp	2	Signal	12	10	Exceeds
101 SB to State Street	4	Signal	12	NA	Exceeds
State Street to 101	2	Signal	11	1	Exceeds
101 NB to State Str.	3	Signal	12	12	Exceeds
101 SB to 16	4	Signal	12	1	Exceeds
16 EB to 101	3	Signal	11	2	Exceeds
101 NB to 16	4	Signal	12	1	Exceeds
16 WB to 101	3	Signal	12	4	Exceeds

Note: "Exceeds" – indicates the AASHTO required sight distances

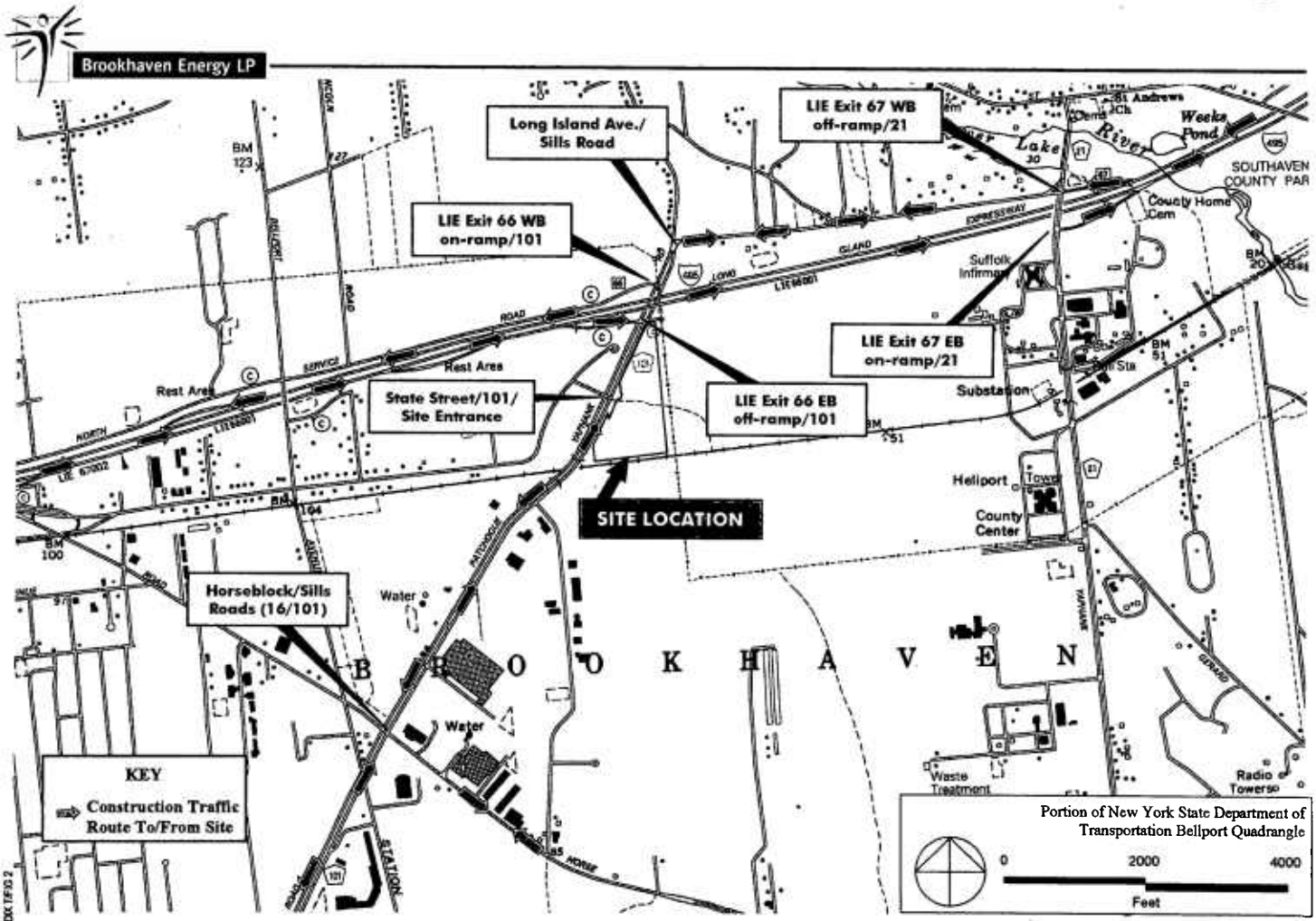


Figure 15-1
Study Intersections

15.2.2 Traffic Counting Program

15.2.2.1 Average Daily Traffic

This section addresses Stipulation 10, Clauses 1 (a), (b) and (c), which require, in part, a review of existing summary data on vehicle traffic and use levels obtained (as available) from the New York State Department of Transportation, Suffolk County and Town of Brookhaven. It also addresses Stipulation 10, Clause 1(h) -- results of 24-hour traffic volume counts, including a calculation of average daily traffic (ADT) for each study intersection. In Table 15-2, the ADT is listed for each road. These data have been collected by the government agency in charge of the road, and where recent data were not available – by Nelson & Pope.

Table 15-2: Average Daily Traffic

Roadway	**Annual Average Daily Traffic (vehicles/day)**	**Source**
Sills Road	10,400	Traffic Volume Report, Suffolk County Roads, 1998
Yaphank Avenue	7,800	Traffic Volume Report, Suffolk County Roads, 1998
Long Island Avenue	4,600	Nelson & Pope traffic counts, 2000
Long Island Expwy.	64,000	NYSDOT Traffic Volume Report, 1999
Horseblock Road	11,000	Traffic Volume Report, Suffolk County Roads
Intersection	**Imputed Avg. Daily Traffic (vehicles/day)**	**Calculation**
21/495 Exit 67 EB On-Ramp	9,860	Estimated at PM Peak hour total times 10
LI Ave./21/495 Exit 67 WB Off-Ramp	10,320	Estimated at PM Peak hour total times 10
LI Ave./101	20,960	Estimated at PM Peak hour total times 10
495 Exit 66 WB On-Ramp/101	17,280	Estimated at PM Peak hour total times 10
495 Exit 66 EB Off-Ramp/101	12,920	Estimated at PM Peak hour total times 10
101/State Street	12,920	Estimated at PM Peak hour total times 10
101/16	21,640	Estimated at PM Peak hour total times 10

15.2.2.2 Peak Hour Traffic

This section addresses Stipulation 10, Clause 1(g) -- peak hour turning movement counts for typical weekday morning and weekday afternoon peaks, to be conducted by Brookhaven Energy for all study intersections.

Traffic volume turning movement counts were collected at each study intersection during the weekday AM peak (7:00-9:00 AM) and PM peak (4:00-6:00 PM) periods. These volumes are depicted in Figures 15-2 and 15-3. Raw count data are also presented in Appendix T (see Attachment B, Turning Movement Diagrams). Counts were performed at key intersections on Saturday during the peak hour. It was determined that the peak hour volumes were 34% less than the weekday peak hours, and weekday peaks were therefore used for further analysis.

Figure 15-2: Existing AM Peak Hour Intersection Turning Movement Volumes

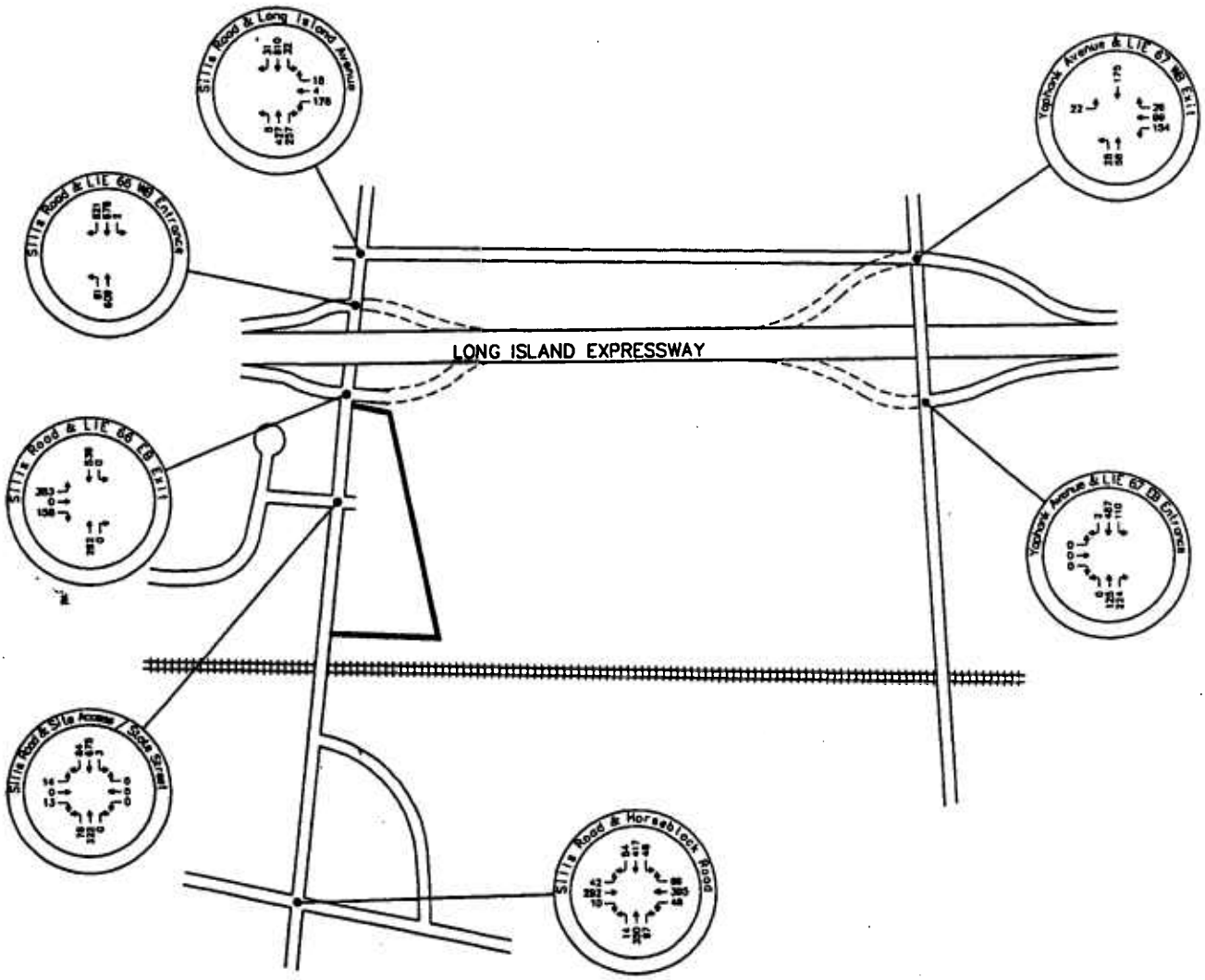
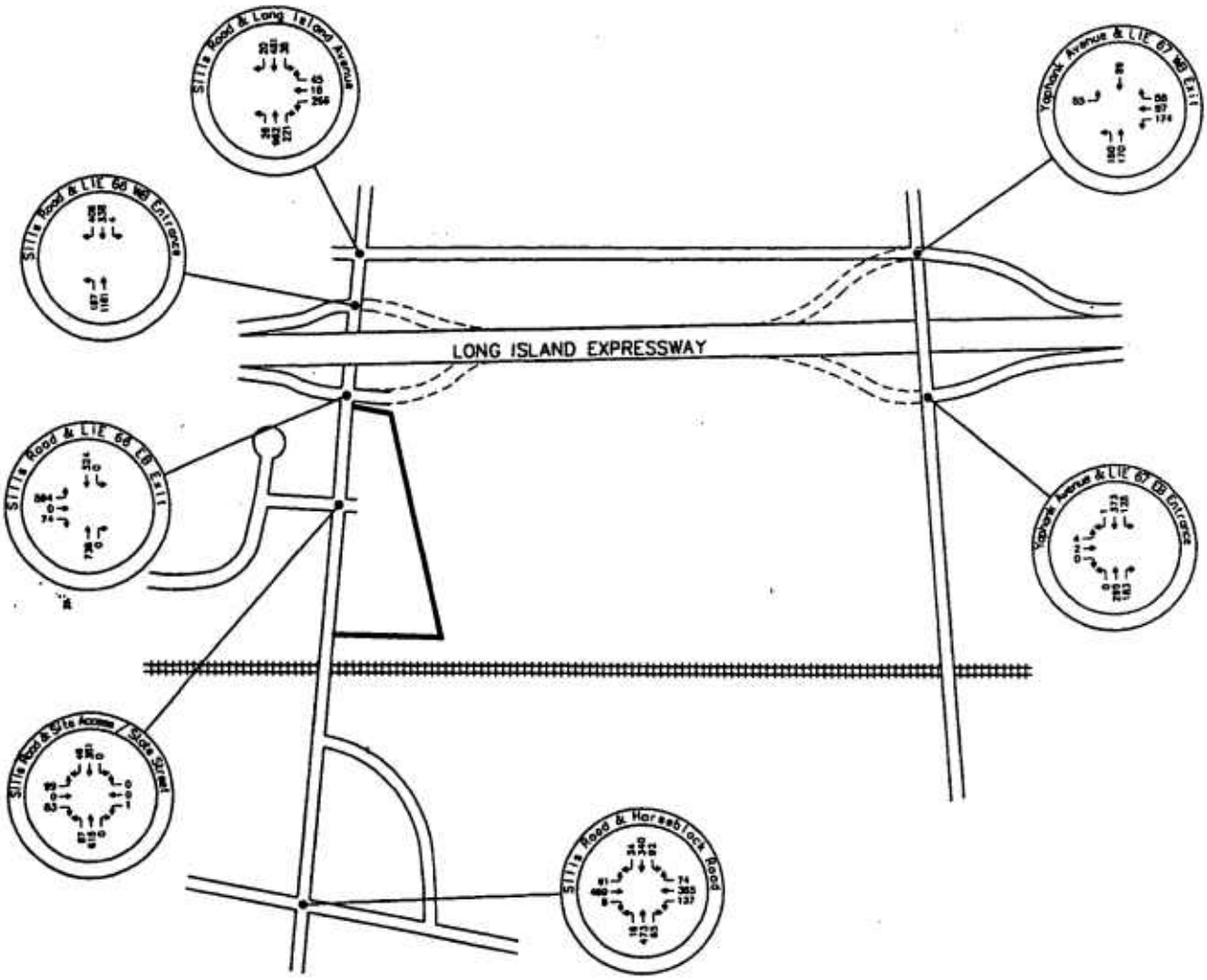


Figure 15-3: Existing PM Peak Hour Intersection Turning Movement Volumes



15.2.3 Accident Data

This section addresses Stipulation 10, Clauses 1 (a), (b) and (c), which require, in part, a review of existing summary data on traffic accidents obtained (as available) from the New York State DOT, the Suffolk County Department of Public Works, and the Town of Brookhaven.

The relevant agency for obtaining accident data at the study intersections is the Suffolk County Department of Public Works, since all study intersections involve a county highway. Accident data for the most recent five years available are presented in Table 15-3. They have been reviewed, and a specific trend does not exist although one intersection – Sills Road and Horseblock Road – has a traffic incidence more than twice as high as the other study intersections.

Table 15-3: Suffolk DPW Accident Data

Study Intersection	Total Accidents	Accidents/Year
North Service Road Long Island Expressway (L.I.E.) and Sills Road	4	1.33
South Service Road Long Island Expressway (L.I.E.) and Sills Road	9	3.0
Sills Road and Long Island Avenue (North of L.I.E.)	5	1.25
*Sills Road and State Street	8	2.67
*Sills Road and Horseblock Road	24	8.00
**Yaphank Avenue and Long Island Avenue	6	1.85
*Yaphank Avenue and South Service Road	0	0

* Accident information from 1/1995 through 12/1998

** 1/1995 through 3/1999 (Accident information 1996 not available)

All other accident information from 1/1995 through 12/1998

15.2.4 Existing Intersection Operations

This section addresses Stipulation 10, Clause 1(j), which requires a calculation of the Level of Service (LOS) for each intersection listed above, giving detail for each turning movement.

Intersection capacity analyses were performed for existing AM and PM peak hour conditions at study area intersections. The capacity analyses for the study intersections were performed using Highway Capacity Software (HCS) Release 3.2 prepared by the Federal Highway Administration. HCS is a series of computer programs strictly adhering to the guidelines set forth in the *1998 Highway Capacity Manual.* An explanation of level of service and delay criteria is provided in Appendix T, Attachment A.

The results of capacity analyses for existing AM and PM peak hour conditions at the various study area intersections are summarized in Tables 15-9 and 15-10 (in the impact assessment section below). Upon a review of these tables, it can be seen that the intersections presently operate at LOS "C" or better during the AM and PM peak periods.

15.3 Traffic Impacts

15.3.1 No Build Conditions

15.3.1.1 Peak Construction Period

This section addresses Stipulation 10, Clause 1(k), which relates to an estimate of the annual rate of traffic growth in the vicinity of the Project, incorporating general growth and growth from proposed projects, but not including Project-generated traffic, including the source and manner of calculation of the estimate. It also addresses Stipulation 10, Clause 1(l), which requires, in part, an estimate of additional traffic likely to be generated by the nearby Caithness Island Power and American Tissue projects, during the construction period.

In order to identify the incremental impact of Project-related construction traffic, a baseline, or Ambient No-Build, condition was established. The projection of these baseline volumes was conducted in the following manner.

A 5% annual growth factor was obtained from the Town of Brookhaven. The ambient growth factor projects the ambient growth in the surrounding area. The growth factor is applied to the existing traffic volumes to determine the general growth over the next 2 years (representative of the construction period).

In addition, traffic growth is contemplated from several proposed projects in the area. These have been described in Section 10.2, with minor projects being subsumed in the background growth level while major projects are analyzed in addition to background growth. Estimates for project-specific traffic growth were based on the average trip generation equations for the proper land use as presented in the manual, *Trip Generation, 6th Edition*, prepared by the Institute of Transportation Engineers (ITE, 1998). These calculations were used to estimate the traffic generated by the other planned projects. Where project-specific data were available, they were used instead of the calculations. Where neither project-specific data nor land use codes were available, the current zoning was used to estimate the maximum trip generation. The following projects have been included in the background traffic growth for the No Build condition, because they could potentially be generating traffic during the Brookhaven Energy construction phase.

- Adesa Auto Auction
- Regency Oaks Townhouse Complex
- Caithness Power Plant Construction Phase (assumed to be 1.4 times the Brookhaven Energy Project because Caithness installed capacity would be greater than Brookhaven's by that ratio; more specific information is not available in Caithness Preliminary Scoping Statement)

It should be noted that no construction traffic estimates are available in the American Tissue project's Draft EIS, as construction traffic for that project (unlike its operations traffic) is expected

to be minimal and did not require an analysis in the American Tissue Draft EIS. Thus, such traffic is subsumed in the background growth.

Tables 15-9 and 15-10 (together with the charts in Figures 15-12 and 15-13) show the contribution at each intersection of the background traffic growth, planned projects, and Caithness. Figures 15-4 and 15-5 are AM and PM peak hour diagrams of this condition (construction year No-Build).

Intersection capacity analyses were once again performed for the construction year No-Build condition, as shown in these tables. The results of capacity analyses for the construction year No-Build conditions indicate similar conditions to those described under present conditions, except for the following intersections:

- Sills Road/Long Island Avenue (north of the LIE). This intersection shows rapid degradation in both the AM and PM peak hour periods, such that with an increase in the intersection's throughput of 11%-10% (AM-PM) due to background growth traffic and other projects, combined with another 6%-3% (AM-PM) increase in throughput due to Caithness, the level of service decreases from "C" to "F".

- Sills Road/Exit 66 (north of the LIE). This intersection is affected in the AM peak hour period by a 67% increase in throughput due to Caithness and another 13% increase due to background growth traffic and other projects; the level of service decreases from "A" to "C".

- Sills Road/Exit 66 (south of the LIE). This intersection is affected in the AM peak hour period by a 34% increase in throughput due to Caithness and another 20% increase due to background growth traffic and other projects; the level of service decreases from "B" to "E".

- Sills Road/Horseblock Road. This intersection is affected in the PM peak hour period by a 15% increase in throughput due to background growth traffic and other projects, with an additional 4% increase due to Caithness; level of service decreases from "C" to "E".

15.3.1.2 Operation Phase

This section addresses Stipulation 10, Clause 1(k), which relates to an estimate of the annual rate of traffic growth in the vicinity of the Project, incorporating general growth and growth from proposed projects, but not including Project-generated traffic, including the source and manner of calculation of the estimate. It also addresses Stipulation 10, Clause 1(l), which requires, in part, an estimate of additional traffic likely to be generated by the nearby Caithness Island Power and American Tissue projects, during the operation period.

Brookhaven's 5% annual growth factor was used to calculate operations period traffic growth over a 7-year period. A 7-year forecast is typically required of traffic studies being submitted to the Town of Brookhaven, and since the stipulations did not prescribe a specific operations period year, this

Figure 15-4: Construction No-Build AM Peak Hour Intersection Turning Movement Volumes

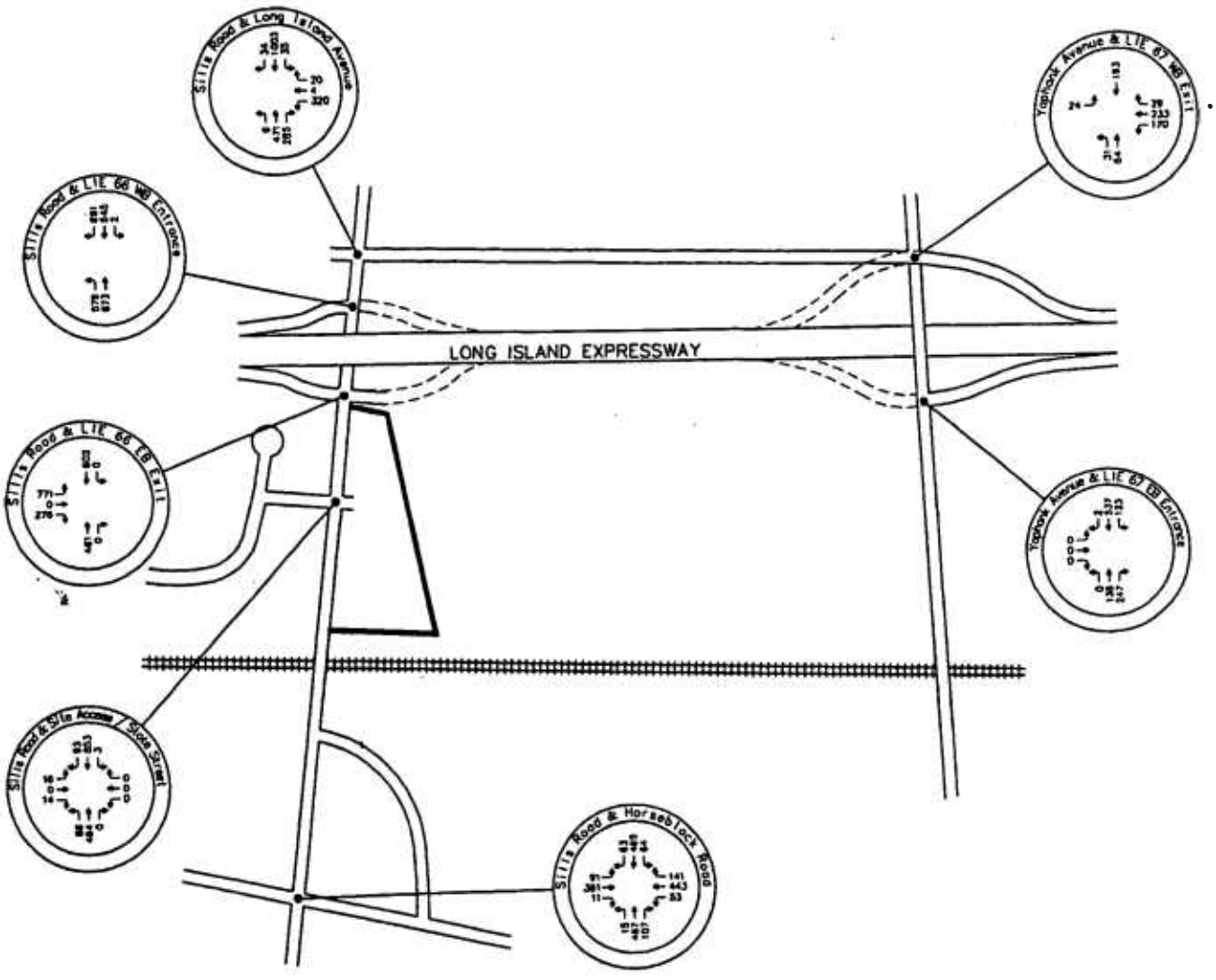
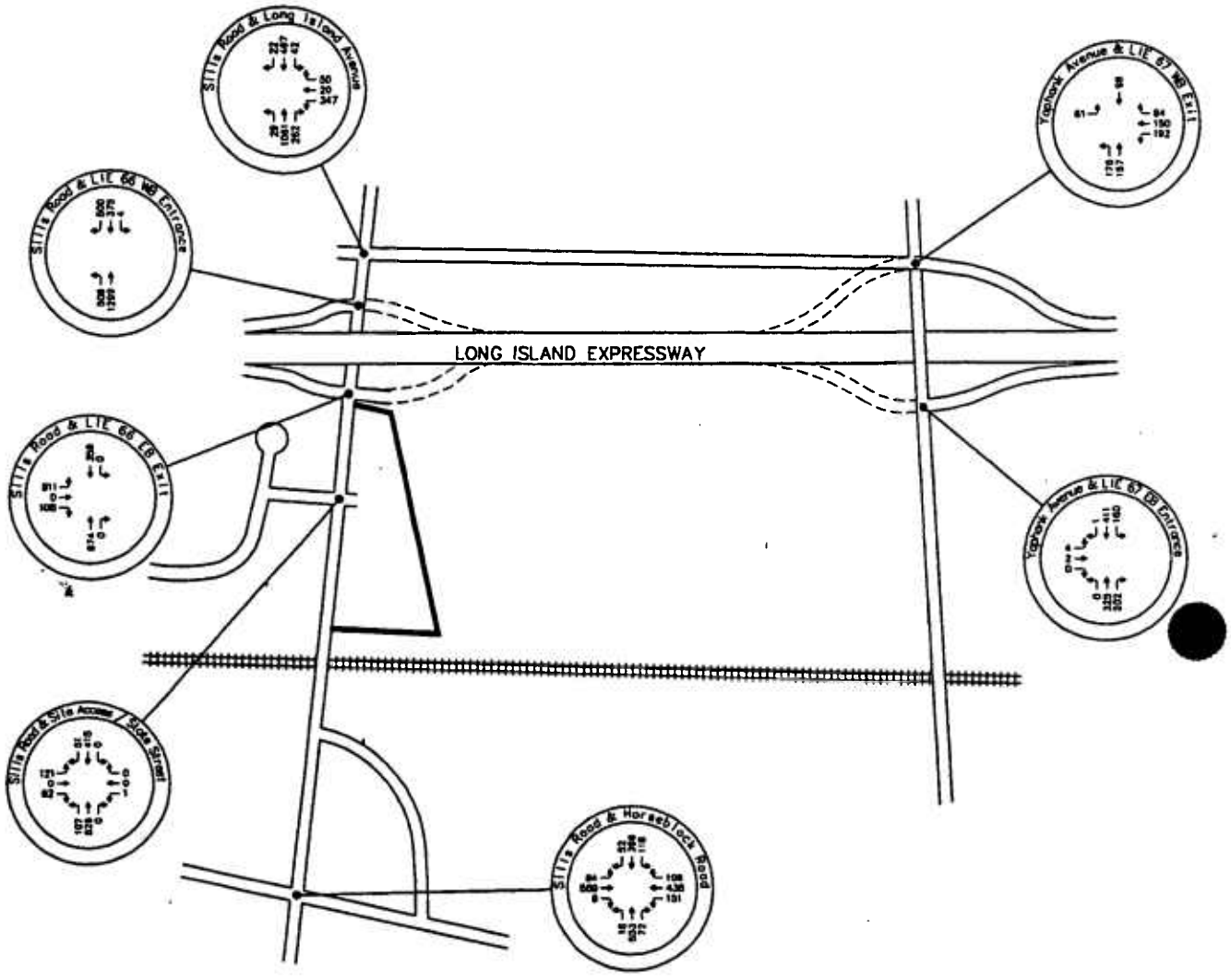


Figure 15-5: Construction No-Build PM Peak Hour Intersection Turning Movement Volumes



standard period was chosen. In addition, traffic growth is contemplated from several proposed projects in the area. Estimates for this type of traffic growth were generated in the same manner as for other planned projects during the construction period. The following projects have been included in the background traffic growth for the No Build operations year condition, because they could potentially be generating traffic during the Brookhaven Energy operations phase.

- Adesa Auto Auction
- American Tissue
- Caithness Power Plant Operational Phase
- Doral Woods Housing Development
- Estee Lauder Expansion
- Northeast Motor Cross Incorporated
- Former RDD Unlimited Sports Complex proposal
- Regency Oaks Townhouse Complex
- New York State Department of Transportation Highway Construction Project

Tables 15-11 and 15-12 (together with the charts in Figures 15-14 and 15-15) show the contribution at each intersection of the background traffic growth, planned projects, and Caithness and American Tissue. Figures 15-6 and 15-7 are AM and PM peak hour diagrams of this condition (operation year No-Build).

Intersection capacity analyses were once again performed for the operations period No-Build condition, as shown in these tables. The results of capacity analyses for the operations year No-Build conditions indicate very high background growth (41%), with an important secondary component being other planned projects. Caithness and American Tissue (most of which contribution is American Tissue, because Caithness will generate few operations trips) do not contribute as heavily to the traffic increase. On the other hand, the operations year No-Build condition also shows a significant *improvement* due to the construction of entrance and exit ramps between Exits 66 and 67. The following intersections are predicted to have a significantly degraded level of service, albeit based on conservative, high-growth assumptions:

- Sills Road/Long Island Avenue (north of the LIE). This intersection is projected to have extensive delays during both the AM and PM peak hour periods. These are caused almost entirely by the significant background growth (41%). Level of service remains at "F".

Figure 15-6: Operation No-Build AM Peak Hour Intersection Turning Movement Volumes

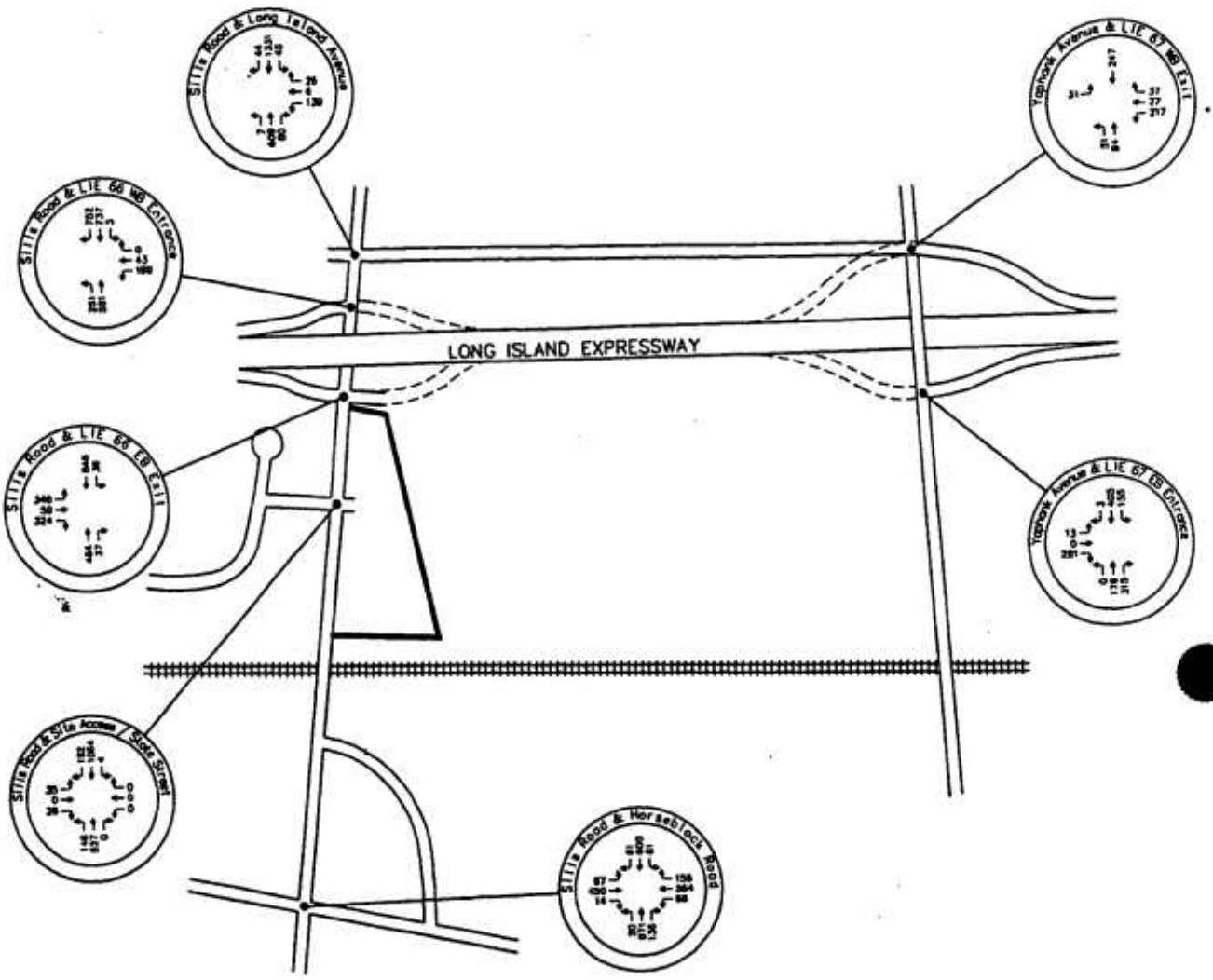
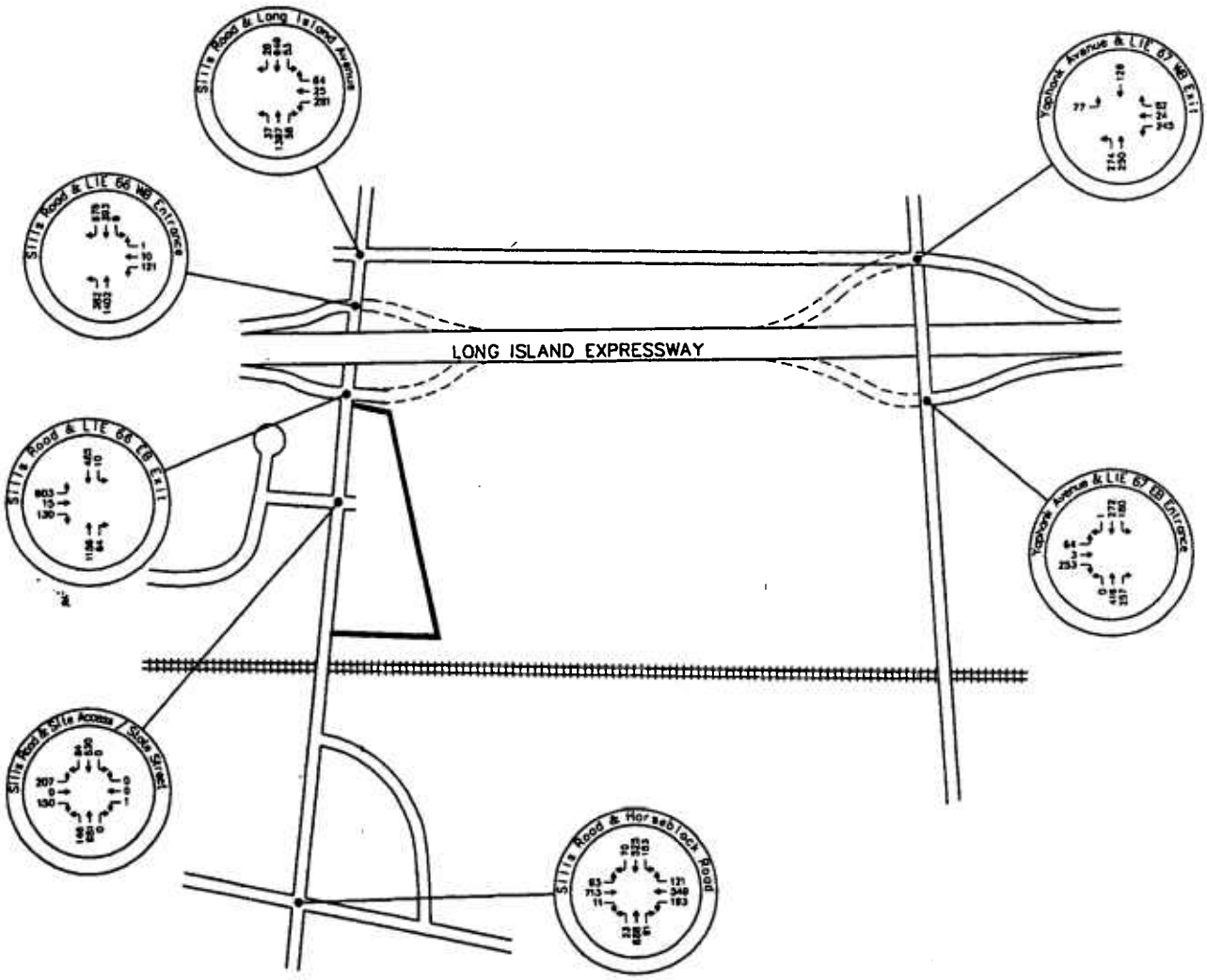


Figure 15-7: Operation No-Build PM Peak Hour Intersection Turning Movement Volumes



- Sills Road/Exit 66 (north of the LIE). This intersection is affected in the AM and PM peak hour periods. Delays are predicted for vehicles turning left from the Exit 66 westbound exit ramp (to be constructed). This will be a new traffic pattern. Predicted level of service is "F".

- Sills Road/Horseblock Road. This intersection is affected in the PM peak hour period by a 49% increase in throughput due to background growth traffic and other projects, with an additional negligible increase due to Caithness and American Tissue (7 vehicles per peak hour); level of service decreases from "C" to "F".

- Sills Road/State Street/Site Access. This intersection is affected during the AM and PM peak hour periods, with throughput increases of 66% and 72%, respectively; levels of service fall from "A" to "D" in the AM and from "B" to "D" in the PM.

- Yaphank Avenue/Exit 67. This intersection is projected to have delays during the PM peak hour period for traffic exiting the Long Island Expressway. Predicted level of service is "E".

15.3.2 Traffic Generated During Construction

15.3.2.1 Construction Phasing and Manpower Schedule

This section addresses Stipulation 10, Clause 2(a), relating to a description of each major phase of construction, including duration of construction, daily shift periods and Project totals, as well as Stipulation 10, Clause 2(f), calling for an estimate of the number of employees per shift for each major phase of construction.

The Project's construction period is expected to extend over 26 months. During these 26 months construction will proceed as follows. Months 1 to 4 will include site preparation, installation of temporary buildings and parking, and underground utilities (50 to 125 workers). Months 3 to 8 will include soil excavation and foundation pouring (115 to 190 workers). Months 7 to 13 will include erection of structural steel and delivery of major equipment (180 to 510 workers). Months 11 to 23 will include installation of equipment followed by labor-intensive installation of piping, wiring, and ductwork (260 to 650 workers). Commissioning will take place in months 20 to 26 (beginning with 560 workers and ending with 40 workers). Commercial operation is expected to commence 26 months after notice to proceed. See Table 15-4 for a summary of employees per shift on a month-by-month basis. (This is a more accurate than presenting by phase due to overlap in phases.)

Earth moving in the early months will occur during a single shift, 7 AM to 5:30 PM. After the civil works have been completed, most work will occur in two shifts: the main shift, lasting from 7 AM to 5:30 PM, and a second shift lasting from 6 PM to 4 AM. During finishing stages of construction, round the clock efforts are sometimes expected.

15.3.2.2 Construction-Related Trip Generation

This section addresses Stipulation 10, Clause 2(b), which states that for each major phase of construction, the Application will include an estimate of the number and frequency of vehicle trips, including time of day and day of week arrival and departure distribution, by size and type of vehicle.

The number and frequency of vehicle trips has been calculated as follows. For construction work, all tradesmen during a shift are assumed to come between 7 and 8 AM for the day shift; to both leave from day shift and come for night shift between 5 PM and 6 PM; and to leave the night shift at off peak hours. Even though these are modeling assumptions, they capture the most conservative scenario in terms of modeling potential worst-case traffic impacts.[1] Thus the peak hour traffic (not including deliveries) is equivalent to the total employees for the shift. The three-month peak construction period (months 15 through 18) was used. Furthermore, the volume of traffic generated is based on single occupancy vehicles, and no credit was taken for carpooling. This distribution is reflected in Table 15-4.

During the course of the day shift, there will also be delivery trucks, as detailed in Table 15-5 below. Delivery trucks are expected to be distributed evenly throughout the day, except for deliveries under the sole control of the Project, shuttling between laydown areas and the Project site. (Laydown areas have been identified on the west side of Sills Road. Such deliveries will not occur during the peak traffic hours.) Thus, a delivery component is included in the construction traffic modeling. Instead of an additive equation, this is achieved by conservatively assuming that 2% of all passenger vehicles entering the site are in fact trucks. Thus, as an example, for the peak hour of 447 vehicles entering the site, the traffic model assumes approximately 9 to be trucks, with the equivalent result of an additional approximately 6 vehicles for that peak hour (based on model coefficients).

Weekly distribution is expected to be uniform across the weekdays and Saturdays, with a lighter shift on Sundays during the most labor-intensive stages of the construction period if the construction progress warrants it.

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1 For example, according to the 24-hour machine counts provided by the Suffolk County Department of Public Works, the hourly volume along Sills Road at 6 to 7:00 AM is 390 vehicles, and the hourly volume at 7 to 8:00 AM is 881 vehicles – a significant difference. The construction workers will start work at 7:00 AM, meaning that workers will be traveling on the roads during the less congested 6 – 7 AM period. In order to provide a conservative analysis, however, the peak 7 AM – 8 AM hour of the roadway was used.

Table 15-4: Estimated Construction Worker Trip Generation During Construction

Project Month	Workers – Day Shift	Workers – Night Shift	AM Peak (entering)	AM Peak (exiting)*	PM Peak (entering)	PM Peak (exiting)
1	48	0	48	5	5	48
2	108	0	108	5	5	108
3	113	0	113	5	5	113
4	123	0	123	5	5	123
5	131	0	131	5	5	131
6	163	0	163	5	5	163
7	181	0	181	5	5	181
8	192	0	192	5	5	192
9	242	0	242	5	5	242
10	253	0	253	5	5	253
11	306	0	306	5	5	306
12	330	50	330	5	50	330
13	409	100	409	5	100	409
14	491	150	491	5	150	491
15	447	200	447	5	200	447
16	447	200	447	5	200	447
17	447	200	447	5	200	447
18	441	200	441	5	200	441
19	438	150	438	5	150	438
21	457	100	457	5	100	457
22	425	100	425	5	100	425
23	453	50	453	5	50	453
24	211	50	211	5	50	211
25	211	20	211	5	20	211
26	72	20	72	5	20	72

* A reasonable allowance of 5 miscellaneous vehicles exiting during AM peak hour and entering during PM peak hour is used whenever that value would otherwise be zero.

Table 15-5: Estimated Construction Deliveries

Month	Dump/ WW*	Concrete Trucks	Tractor Trailers	Misc. Del.Trucks	Heavy Transports	Total Trips	During AM Peak	During PM Peak
1	50	0	3	2	0	55	6	6
2	200	0	3	2	0	205	21	21
3	300	15	3	2	0	320	32	32
4	300	25	5	6	0	336	34	34
5	200	40	10	6	0	256	26	26
6	100	40	10	12	0	162	17	17
7	50	25	15	12	0	102	11	11
8	20	25	15	12	0	72	8	8
9	10	15	15	15	0	55	6	6
10	10	5	15	15	0	45	5	5
11	10	5	20	15 (+30)	0	80	5	5
12	10	0	20	15 (+30)	1	76	5	5
13	10	0	20	15 (+30)	2	77	5	5
14	10	0	15	12 (+30)	1	68	4	4
15	10/10	0	15	10 (+30)	2	76	5	5
16	10/10	0	15	10 (+30)	0	75	5	5
17	10/10	0	15	10 (+30)	0	75	5	5
18	10/15	0	10	10 (+30)	0	75	5	5
19	30/15	0	10	10 (+30)	0	95	7	7
20	30/20	0	10	10 (+30)	0	100	7	7
21	30/20	0	2	10 (+30)	0	92	6	6
22	5/20	0	2	10 (+30)	0	67	4	4
23	0/20	0	1	6 (+30)	0	57	3	3
24	0/15	0	1	6	0	22	2	2
25	0/15	0	1	4	0	20	2	2
26	0/15	0	0	2	0	17	2	2

* An allowance is made for dump trucks using conservative assumptions about soil suitability. In fact, the preliminary geotechnical analysis required by Stipulation 8 and presented in Section 13 indicates that removal of soil for the site will not be necessary. In the same column, wastewater trucks are listed during the commissioning stage, using worst-case assumptions as to the amount of wastewater generated. The "Miscellaneous Delivery Truck" category includes an allowance (in parentheses) for trucks crossing Sills Road between the laydown areas and the Project site. However, these deliveries are not expected to occur during either the AM peak hour or the PM peak hour.

15.3.3 Traffic Generated During Operation

15.3.3.1 Operations Schedule

This section addresses Stipulation 10, Clause 2(h), calling for a description of the operation of the Project, including the number of employees per shift operating shift periods and seasonal and annual totals.

The Project's operations period is uniform throughout the year, with occasional maintenance outages and other short-term planned work. The purpose of this analysis is to characterize the typical traffic during operations. Operations will occur over a peak shift (13 workers) and two

off-peak shifts (6 workers each). There is no expected seasonal variation in the typical workforce. Over an entire year, the Project will generate an estimated 12,910 vehicles. (Calculation based on 25 employees per day; 5 visitors per day; 4 deliveries per day; and a conservative allowance of 500 other trips related to maintenance outages.)

15.3.3.2 Operations-Related Trip Generation

This section addresses Stipulation 10, Clause 2(i), which states that the Application will include an estimate of the number and frequency of vehicle trips generated during operation of the Project, including time of day and day of week arrival and departure distribution, by size and type of vehicle.

The number and frequency of vehicle trips is based on the workers during the day shift and off-peak shifts. All employees leaving the night shift and coming for the day shift are assumed to do so between 7 and 8 AM (peak AM background hour). All employees leaving day shift and coming to the evening shift are assumed to do so between 5 PM and 6 PM (which is the peak PM background hour, even though in reality it is expected that this shift change will occur between 3:30 and 4:30 PM). All employees leaving evening shift and coming to night shift are expected to do so around midnight (an off peak hour). Even though these are modeling assumptions, they capture the most conservative scenario in terms of modeling potential worst-case traffic impacts. Thus the peak hour traffic is that during a shift change (not including deliveries) and is equivalent to the total employees for both the preceding and the following shift. The volume of traffic generated is based on single occupancy vehicles, and no credit was taken for carpooling. This distribution is reflected in Table 15-6.

Table 15-6: Estimated Operations Period Worker Trip Generation

Workers – Day Shift	Workers – Off-Peak Shifts	AM Peak (entering)	AM Peak (exiting)	PM Peak (entering)	PM Peak (exiting)
13±	6±	14 (1)	6 (1)	1 (1)	13 (1)

Note: Parentheses indicate number of trucks, which is a subset of the value not in parentheses.

During the course of the day shift, there also will be miscellaneous delivery trucks, estimated at approximately 4 per day (with 1 assumed in the AM peak hour and 1 in the PM peak hour). In the event that a sewer district is not formed during Project operation (see Section 17.2.6), an additional 1 to 4 trucks per day could be required. Under this scenario, the estimate that one truck would enter and exit the site during the AM and also during the PM peak hour remains adequate.

Weekly distribution is expected to be uniform across the weekdays. Weekend shifts will be similar to the off-peak weekday shifts. The plant will operate on all days of the week.

15.3.4 Traffic Impacts

This section addresses Stipulation 10, Clause 4(a) -- a comparison of projected future traffic conditions with and without the proposed Project, using future traffic growth levels, by method of a

calculation and comparison of the Level of Service (LOS) for each intersection listed above, giving detail for each turning movement, the analysis to be conducted separately for the peak construction impacts of the Project and for the typical operations of the completed Project. The trip assignment discussion in Section 15.3.4.1 is also responsive to Stipulation 10, Clause 2(g) -- an identification of the location of housing expected to be utilized by construction workers temporarily relocating to the area, as identified in the studies regarding socioeconomic effects, including a delineation of approach and departure routes from such housing to the Project site.

15.3.4.1 Trip Assignment and LOS Analysis

In order to properly assess the traffic impact of the proposed Project, it is necessary to determine, by direction of travel, the volume of site generated traffic each surrounding roadway would receive during the peak hours. The existing roadway network in the vicinity of the site was examined in conjunction with the surrounding land uses to determine the distribution of site-generated traffic at each intersection.

For the operations period, estimates of the trip distribution were made based on the proximity of the Long Island Expressway, Nelson & Pope's extensive knowledge of the roadway system and after a careful review of the existing traffic volumes on the adjacent roadway. For the construction period, estimates were obtained for the distribution of local tradesmen by town, based on interviews with labor representatives. Because available rental housing and hotels is more prevalent toward the west of the site than toward the east, the minimal population of in-migrating workers was assumed to travel from and to the west. (As noted in Section 12, there are adequate supplies of workers in the area and in-migration is expected to be limited, at most, to a relatively small number of boilermakers and construction managers). As a result, construction traffic from new workers living in the area will have no perceptible impact with respect to the trip distribution on approach and departure routes to and from the Project site.

This distribution was used to calculate the number of trips that would be added to each movement at the study intersections. The distribution of the site-generated traffic as it pertains to the study intersections is visually depicted in Figure 9 of Appendix T. The site-generated traffic was added to the No Build volumes using this distribution as a model, to determine the Build volumes.

Tables 15-7 and 15-8 (together with the charts in Figures 15-12 and 15-13) relate to the construction year Build condition. They show the contribution at each intersection of the background traffic growth, planned projects, Caithness and American Tissue, and the Brookhaven Energy Project. Figures 15-8 and 15-9 are AM and PM peak hour turning movement diagrams of the construction year Build condition.

Tables 15-9 and 15-10 (together with the charts in Figures 15-14 and 15-15) relate to the operations year Build condition. They show the contribution at each intersection of the background traffic growth, planned projects, Caithness and American Tissue, and the Brookhaven Energy Project. Figures 15-10 and 15-11 are AM and PM peak hour turning movement diagrams of the construction year Build condition.

Figure 15-8: Construction Build AM Peak Hour Intersection Turning Movement Volumes

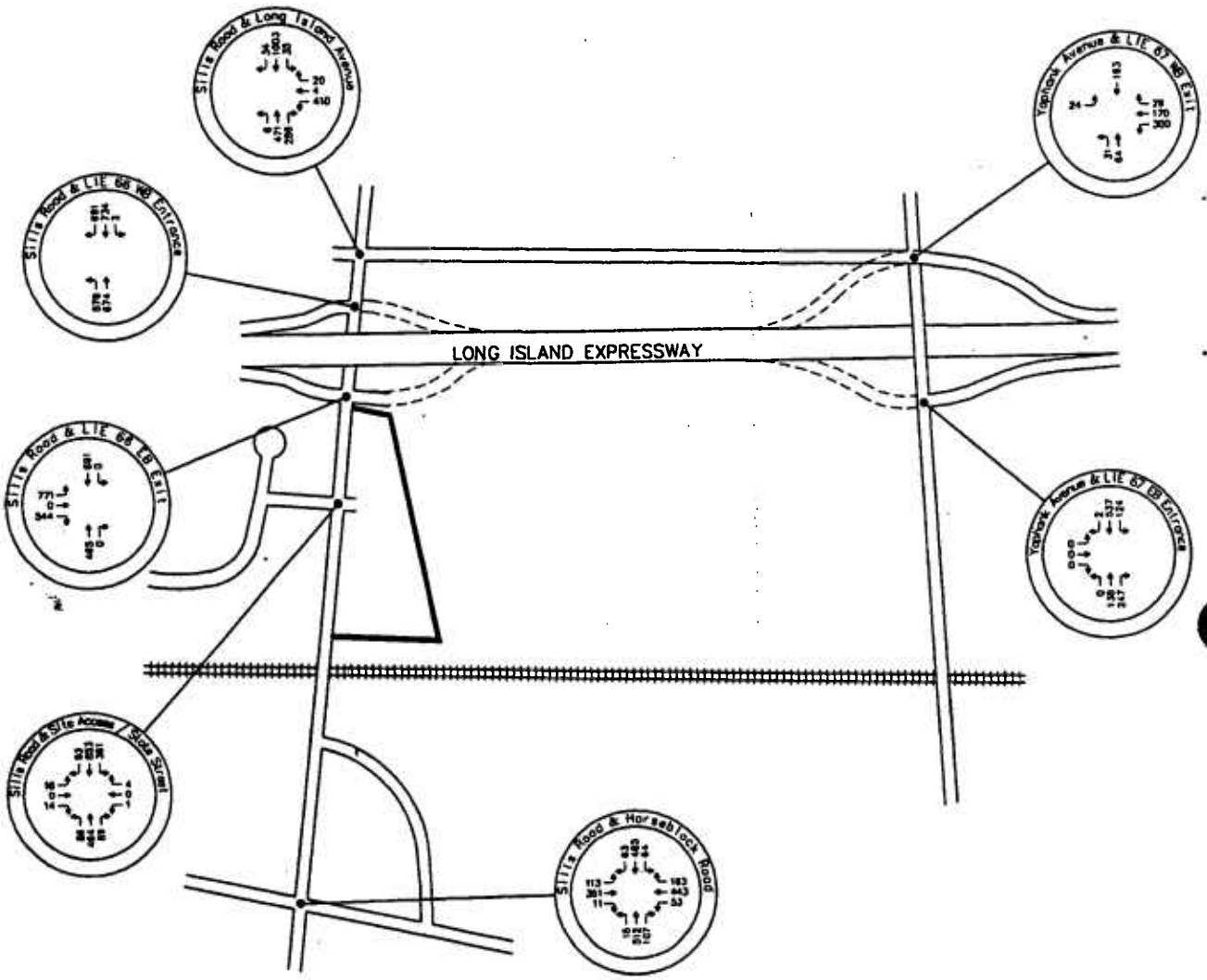


Figure 15-9: Construction Build PM Peak Hour Intersection Turning Movement Volumes

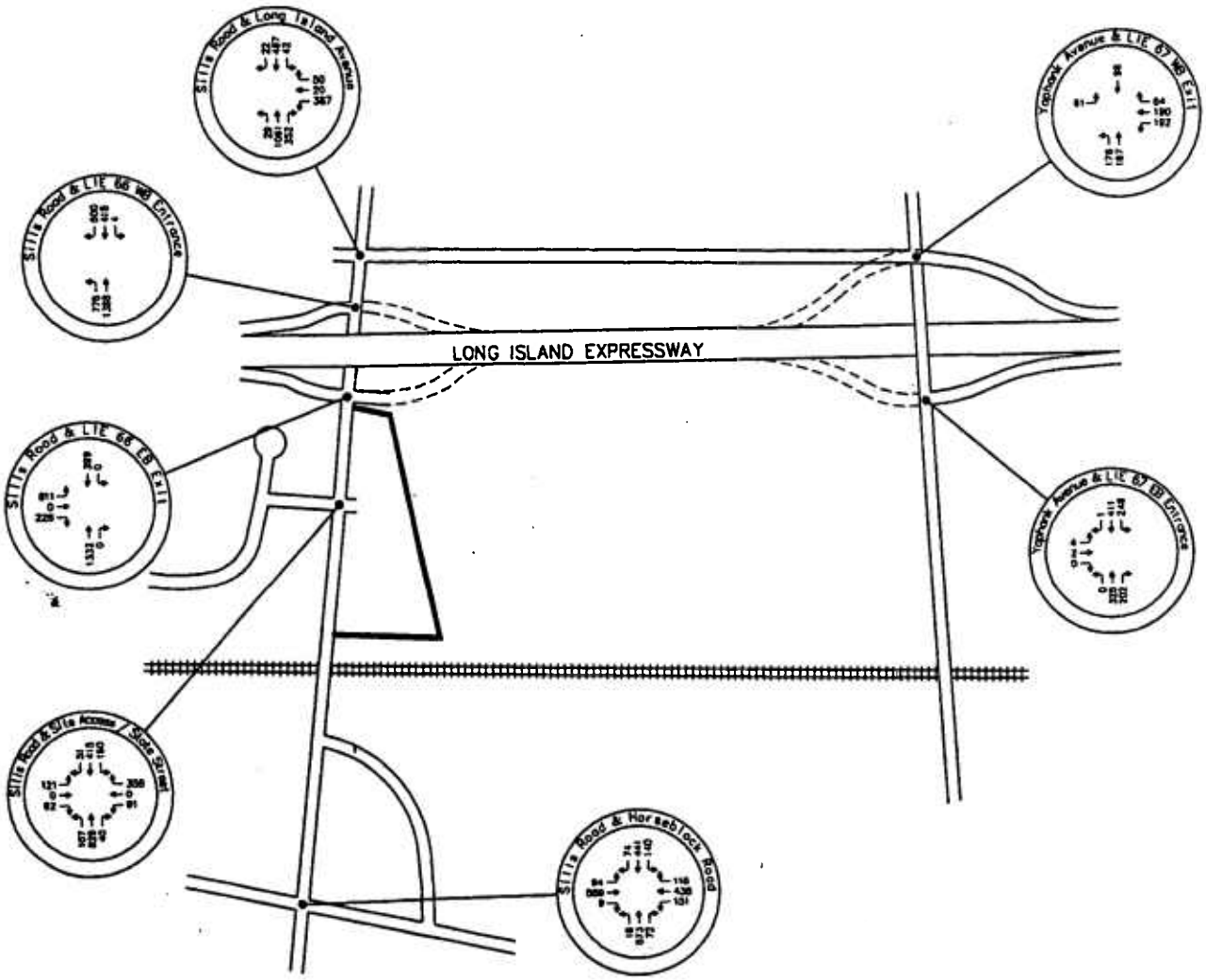


Figure 15-10: Operation Build AM Peak Hour Intersection Turning Movement Volumes

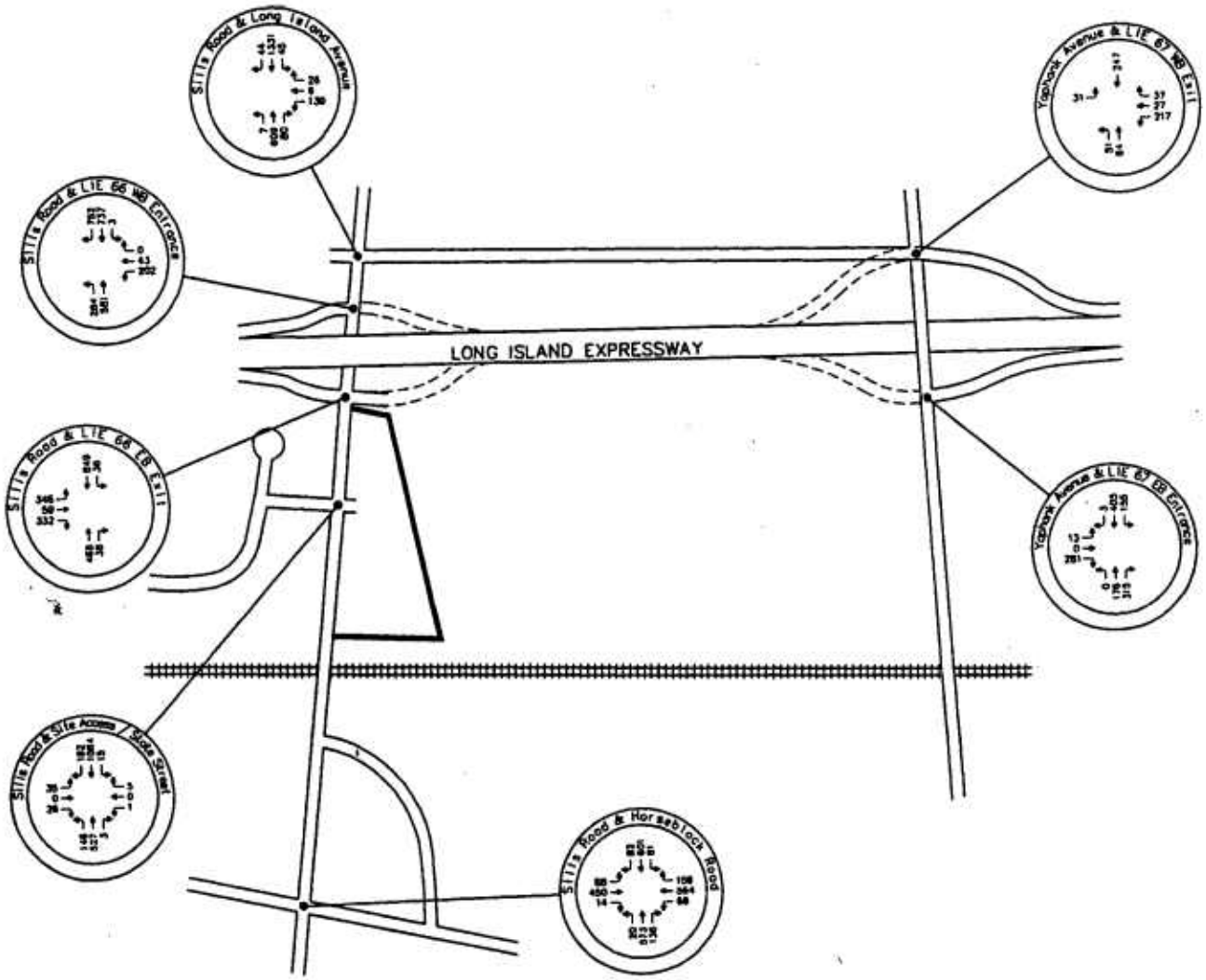


Figure 15-11: Operation Build PM Peak Hour Intersection Turning Movement Volumes

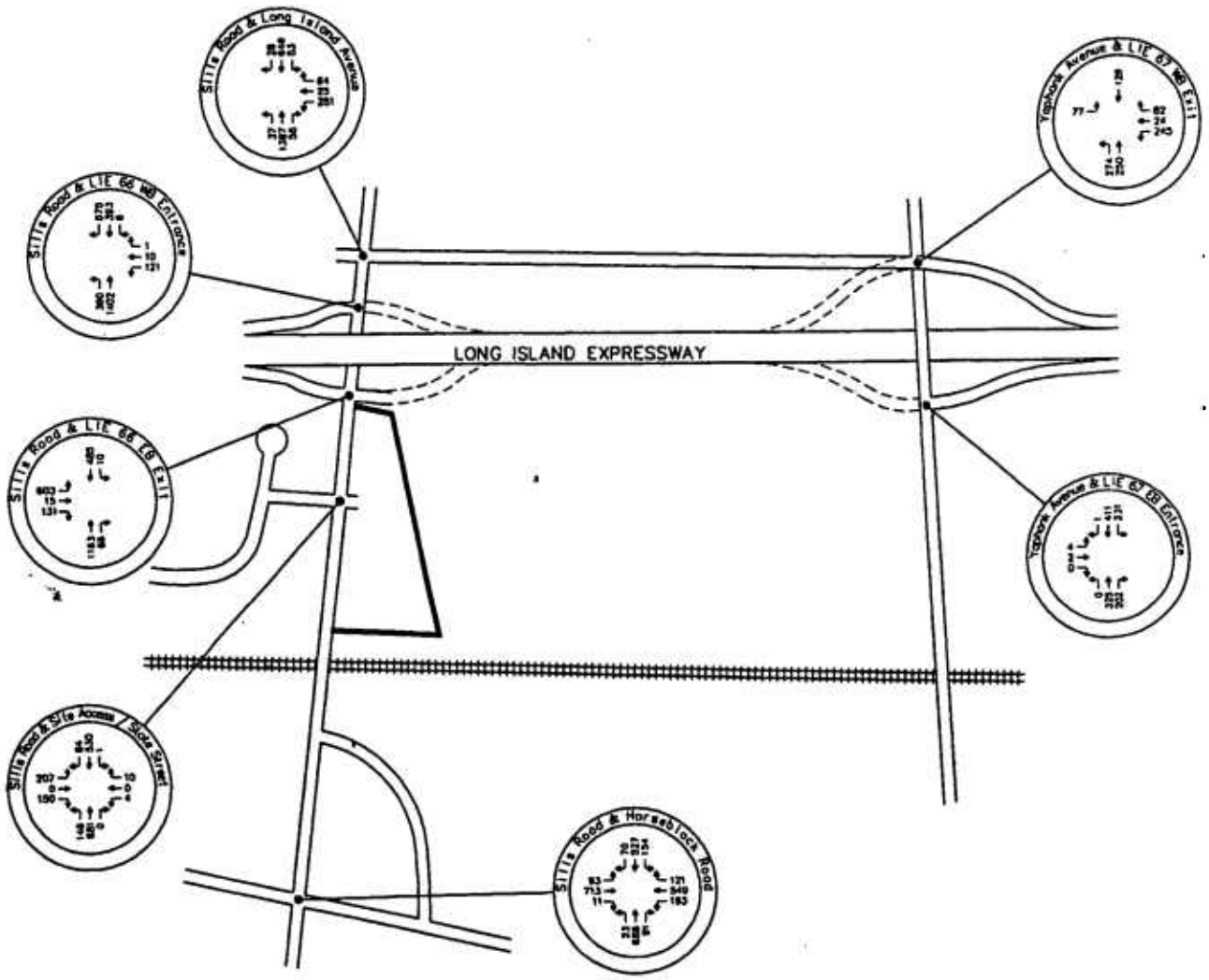


Table 15-7: AM Peak Hour Traffic -- Existing, No-Build, and Construction Impact

Study Area Intersection	Existing	Growth Traffic	Other Projects	Caithness	Ambient No-Build	Project Construction	Build
Sills Road/LI Ave., north of LIE	1,862	190	10	116	2,178	90	2,394
Delay/LOS or Percentage increase	28.2/C	10%	1%	6%	99.4F	5%	**92.3/F
Sills Road/LIE-66 EB off	1,372	140	133	465	2,110	361	3,069
Delay/LOS or Percentage increase	11.6/B	10%	10%	34%	62.2/E	26%	59.4/E
Sills Road/State St./Site Access	1,189	121	131	116	1,557	452	2,256
Delay/LOS or Percentage increase	7.2/A	10%	11%	10%	8.2/A	38%	**10.8/B
Sills Road/Horseblock Road	1,853	190	123	116	2,282	90	2,611
Delay/LOS or Percentage increase	25.0/C	10%	7%	6%	27.6/C	5%	28.2/C
Yaphank Ave./LI Ave./LIE-67 WB off	832	86	10	116	1,044	90	1,260
Delay/LOS or Percentage increase	11.6/B	10%	1%	14%	12.3/B	11%	13.0/B
Sills Road NB to LIE-66 WB on	690	70	23	465	1,248	4	1,740
Delay/LOS or Percentage increase	9.1/A	10%	3%	67%	21.6/C	1%	29.9/D
Sills Road SB at LIE-66 WB on	1,101	112	8	116	1,337	89	1,550
Delay/LOS or Percentage increase	9.1/A	10%	1%	11%	9.4/A	8%	9.5/A
Yaphank Ave. SB to LIE-67 EB on	599	61	9	-	669	1	679
Delay/LOS or Percentage increase	8.5/A	10%	2%	0%	8.7/A	0%	8.7/A

Notes: LOS – Level of Service; Delay – in seconds per vehicle.

** Includes proposed mitigation -- a second left turn lane from Long Island Avenue westbound to Sills Road southbound.

NA – Not applicable

Figure 15-12: AM Peak Hour Traffic -- Existing, No-Build, and Construction Impact

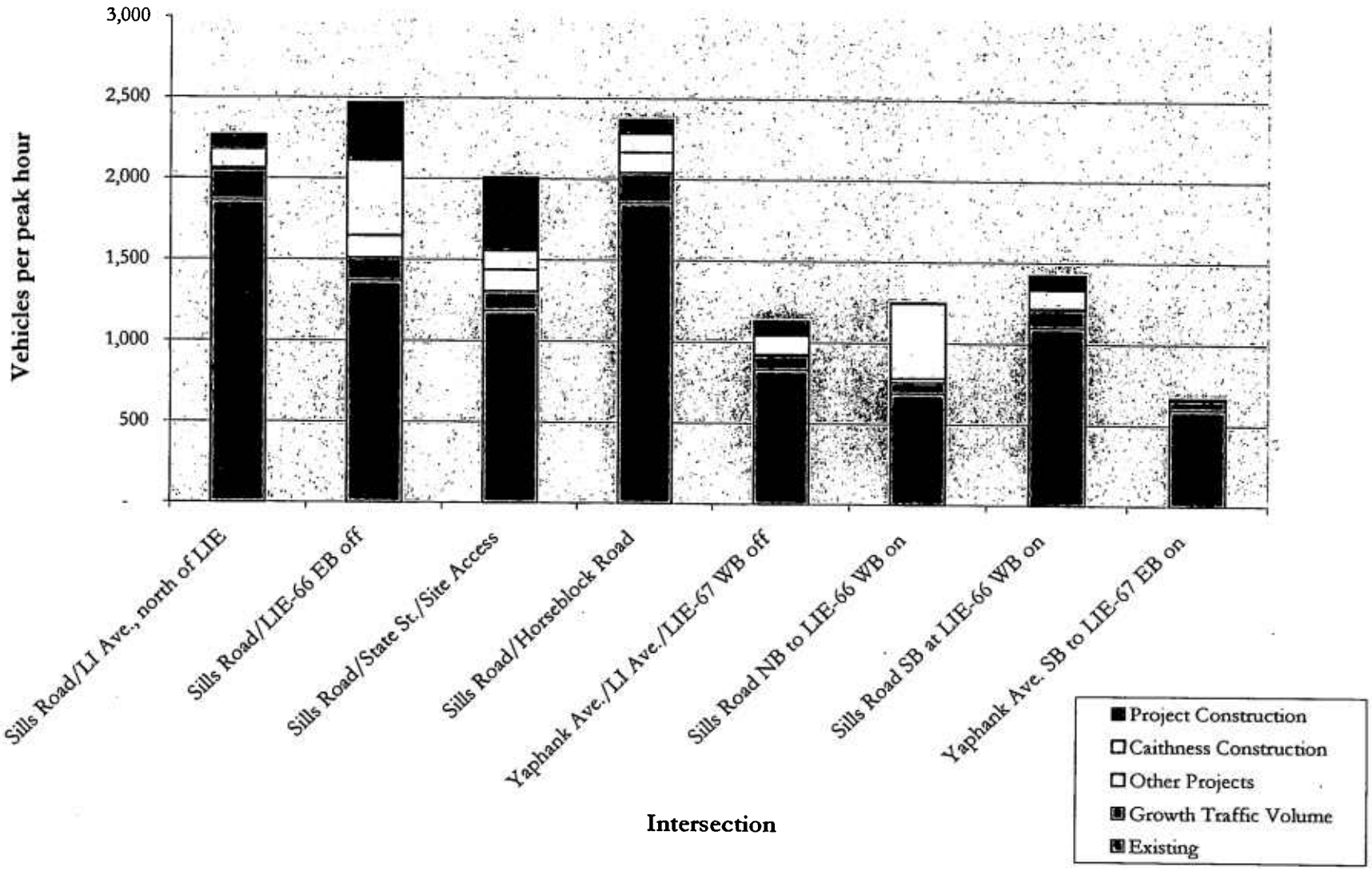


Table 15-8: PM Peak Hour Traffic -- Existing, No-Build, and Construction Impact

Study Area Intersection	Existing	Growth Traffic	Other Projects	Caithness	Ambient No-Build	Project Construction	Build
Sills Road/LI Ave., north of LIE	2,047	211	9	64	2,331	129	2,533
Delay/LOS or Percentage increase	31.2/C	10%	0%	3%	127.9/F	6%	**109.4/F
Sills Road/LIE-66 EB off	1,728	177	128	465	2,498	518	3,609
Delay/LOS or Percentage increase	12.8/B	10%	7%	27%	18.6/B	30%	20.9/C
Sills Road/State St./Site Access	1,291	133	127	64	1,615	647	2,453
Delay/LOS or Percentage increase	10.3/B	10%	10%	5%	11.1/B	50%	**17.9/B
Sills Road/Horseblock Road	2,164	221	118	81	2,584	131	2,914
Delay/LOS or Percentage increase	30.1/C	10%	5%	4%	67.2/E	6%	67.6/E
Yaphank Ave./LI Ave./LIE-67 WB off	1,032	105	9	64	1,210	129	1,412
Delay/LOS or Percentage increase	11.6/B	10%	1%	6%	12.0/B	13%	12.1/B
Sills Road NB to LIE-66 WB on	1,348	138	99	220	1,805	357	2,481
Delay/LOS or Percentage increase	8.6/A	10%	7%	16%	10.9/B	26%	17.6/C
Sills Road SB at LIE-66 WB on	748	77	2	52	879	40	973
Delay/LOS or Percentage increase	11.4/B	10%	0%	7%	12.5/B	5%	13.1/B
Yaphank Ave. SB to LIE-67 EB on	502	51	7	12	572	89	680
Delay/LOS or Percentage increase	9.1/A	10%	1%	2%	9.7/A	18%	10.4/B

Notes: LOS – Level of Service; Delay – in seconds per vehicle.

** Includes proposed mitigation -- a second left turn lane from Long Island Avenue westbound to Sills Road southbound.

NA – Not applicable

Figure 15-13: PM Peak Hour Traffic -- Existing, No-Build, and Construction Impact

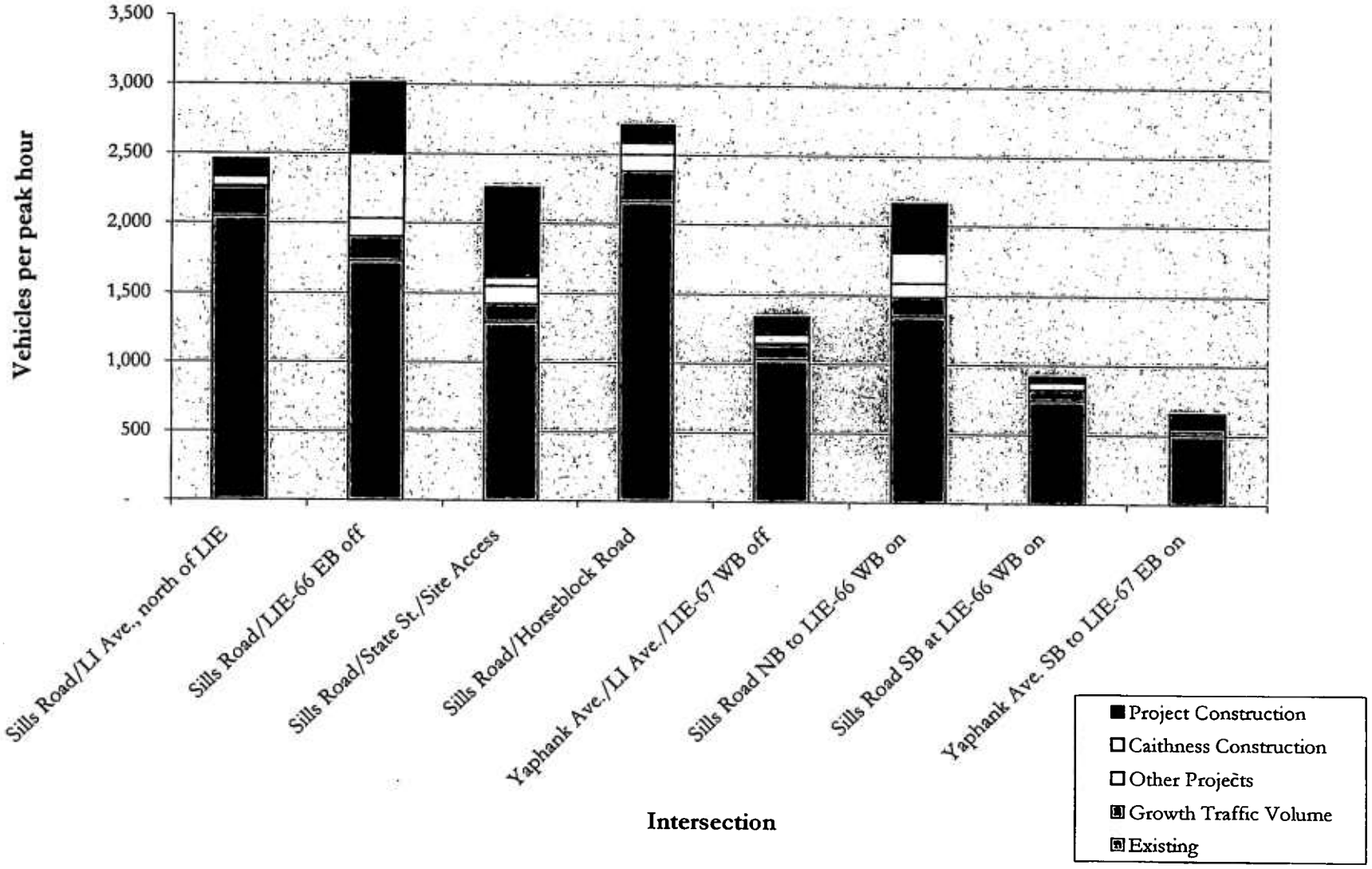


Table 15-9: AM Peak Hour Traffic -- Existing (Adjusted), No-Build, and Operation Impact

Study Area Intersection	Existing Volume*	Growth Traffic	Other Projects	Caithness, Amer. Tissue	Ambient No-Build	Project Operation	Build
Sills Road/LI Ave., north of LIE	1,582	644	45	16	2,287	-	2,287
Delay/LOS or Percentage increase	**28.2/C**	**41%**	**3%**	**1%**	**492.6/F**	**0%**	****492.5/F**
Sills Road/LIE-66 EB	1,172	476	348	116	2,112	16	2,128
Delay/LOS or Percentage increase	**11.6/B**	**41%**	**30%**	**10%**	**11.7/B**	**1%**	**11.7/B**
Sills Road/State St./Site Access	1,189	484	294	27	1,994	20	2,014
Delay/LOS or Percentage increase	**7.2/A**	**41%**	**25%**	**2%**	**35.3/D**	**2%**	**35.1/D**
Sills Road/Horseblock Road	1,853	755	194	28	2,830	4	2,834
Delay/LOS or Percentage increase	**25.0/C**	**41%**	**10%**	**2%**	**38.8/D**	**0%**	**38.9/D**
Yaphank Ave./LI Ave./LIE-67 WB	552	225	15	-	792	-	792
Delay/LOS or Percentage increase	**11.6/B**	**41%**	**3%**	**0%**	**11.9/B**	**0%**	**12.0/B**
Sills Road NB to LIE-66 WB on	490	33	194	115	832	4	836
Delay/LOS or Percentage increase	**9.1/A**	**7%**	**40%**	**23%**	**11.8/B**	**1%**	**11.9/B**
Sills Road SB at LIE-66 WB on	1,021	416	35	20	1,492	-	1,492
Delay/LOS or Percentage increase	**9.1/A**	**41%**	**3%**	**2%**	**9.0/A**	**0%**	**9.0/A**
LIE-66 WB to Sills Road SB	80	33	86	-	199	3	202
Delay/LOS or Percentage increase	**NA**	**41%**	**108%**	**0%**	***/F**	**4%**	***/F**
LIE-66 WB to Sills Road NB, LIE WB	-	-	4	39	43	-	43
Delay/LOS or Percentage increase	**NA**	**NA**	**NA**	**NA**	**164.3/F**	**NA**	**177.5/F**
Yaphank Ave. SB at LIE-67 EB	399	163	1	-	563	-	563
Delay/LOS or Percentage increase	**8.5/A**	**41%**	**0%**	**0%**	**9.4/A**	**0%**	**9.4/A**
LIE-67 EB off to Yaphank Ave.	-	-	13	-	13	-	13
Delay/LOS or Percentage increase	**NA**	**NA**	**NA**	**NA**	**20.3/C**	**NA**	**20.3/C**
LIE-67 EB off to Yaphank Ave. SB	200	81	-	-	281	-	281
Delay/LOS or Percentage increase	**NA**	**41%**	**0%**	**0%**	**18.6/C**	**0%**	**18.6/C**

Notes: LOS – Level of Service; Delay – in seconds per vehicle.

NA – Not applicable

* Existing Volume for Operations period is adjusted due to construction of ramps between Exits 66 and 67.

** Includes proposed mitigation -- a second left turn lane from Long Island Avenue westbound to Sills Road southbound.

Figure 15-14: AM Peak Hour Traffic -- Existing/Adjusted, No-Build, and Operation Impact

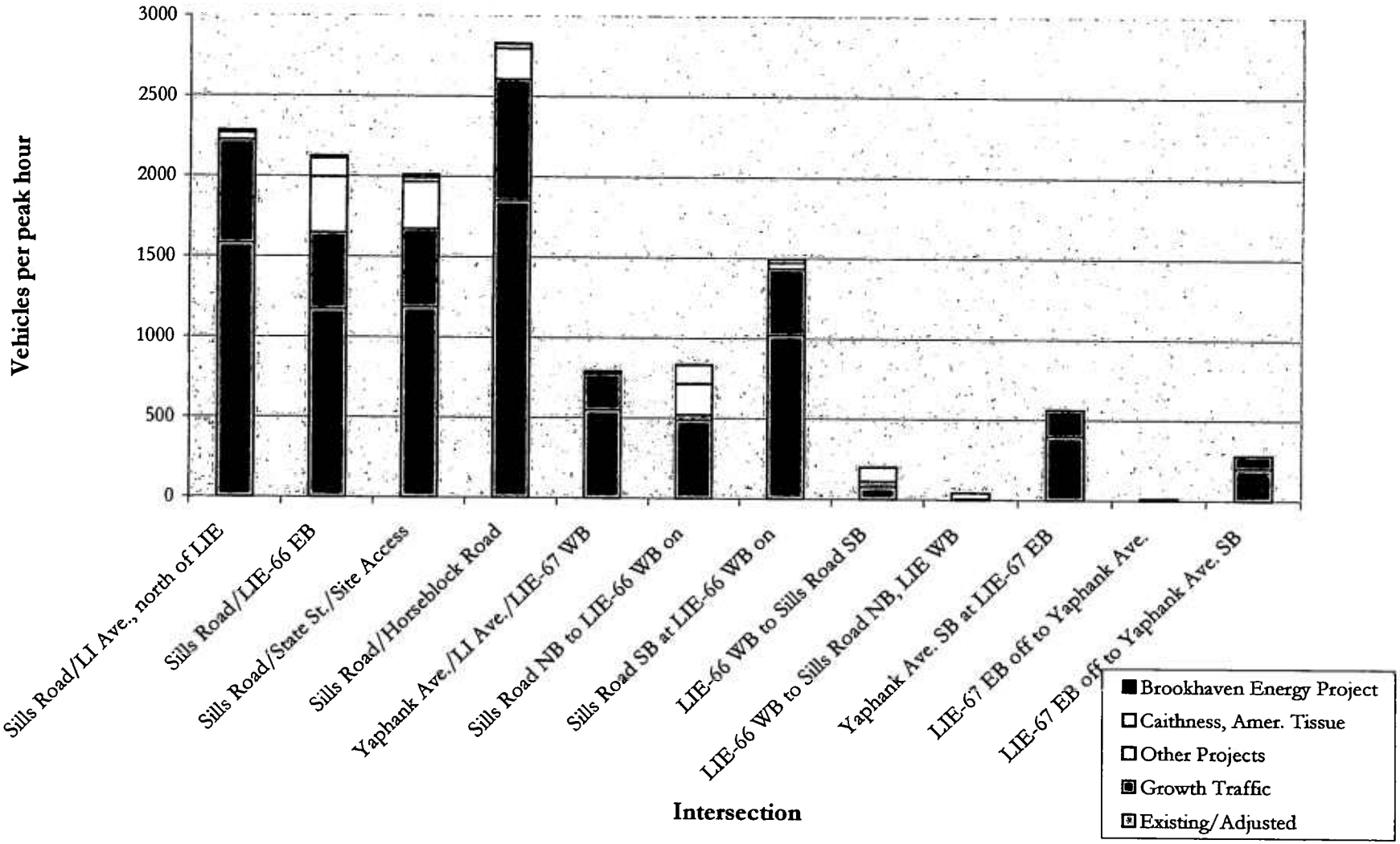


Table 15-10: PM Peak Hour Traffic -- Existing (Adjusted), No-Build, and Operation Impact

Study Area Intersection	Existing Volume*	Growth Traffic	Other Projects	Caithness, Amer. Tissue	Ambient No-Build	Project Operation	Build
Sills Road/LI Ave., north of LIE	1,797	732	49	4	2,582	-	2,582
Delay/LOS or Percentage increase	31.2/C	41%	3%	0%	468.7/F	0%	**466.5/F
Sills Road/LIE-66 EB	1,548	631	257	27	2,463	14	2,477
Delay/LOS or Percentage increase	12.8/B	41%	17%	2%	14.1/B	1%	14.1/B
Sills Road/State St./Site Access	1,291	525	397	6	2,219	14	2,233
Delay/LOS or Percentage increase	10.3/B	41%	31%	0%	47.5/D	1%	47.3/D
Sills Road/Horseblock Road	2,164	881	178	7	3,230	3	3,233
Delay/LOS or Percentage increase	30.1/C	41%	8%	0%	168.9/F	0%	169.1/F
Yaphank Ave./LI Ave./LIE-67 WB	782	318	60	-	1,160	-	1,160
Delay/LOS or Percentage increase	11.6/B	41%	8%	0%	13.0/B	0%	13.0/B
Sills Road NB to LIE-66 WB on	1,168	76	513	27	1,784	8	1,792
Delay/LOS or Percentage increase	8.6/A	7%	44%	2%	9.9/A	1%	10.0/A
Sills Road SB at LIE-66 WB on	678	276	16	4	974	-	974
Delay/LOS or Percentage increase	11.4/B	41%	2%	1%	13.3/B	0%	13.3/B
LIE-66 WB to Sills Road SB	70	28	23	-	121	-	121
Delay/LOS or Percentage increase	NA	40%	33%	0%	298.5/F	0%	319.3/F
LIE-66 WB to Sills Road NB, LIE WB	-	-	1	10	11	-	11
Delay/LOS or Percentage increase	NA	NA	NA	NA	137.1/F	NA	142.0/F
Yaphank Ave. SB at LIE-67 EB	322	131	-	-	453	-	453
Delay/LOS or Percentage increase	9.1/A	41%	0%	0%	10.8/B	0%	10.8/B
LIE-67 EB off to Yaphank Ave.	6	3	55	-	64	-	64
Delay/LOS or Percentage increase	NA	50%	91%	0%	37.2/E	10%	37.2/E
LIE-67 EB off to Yaphank Ave. SB	180	73	-	-	253	-	253
Delay/LOS or Percentage increase	NA	41%	0%	0%	14.6/B	0%	14.6/B

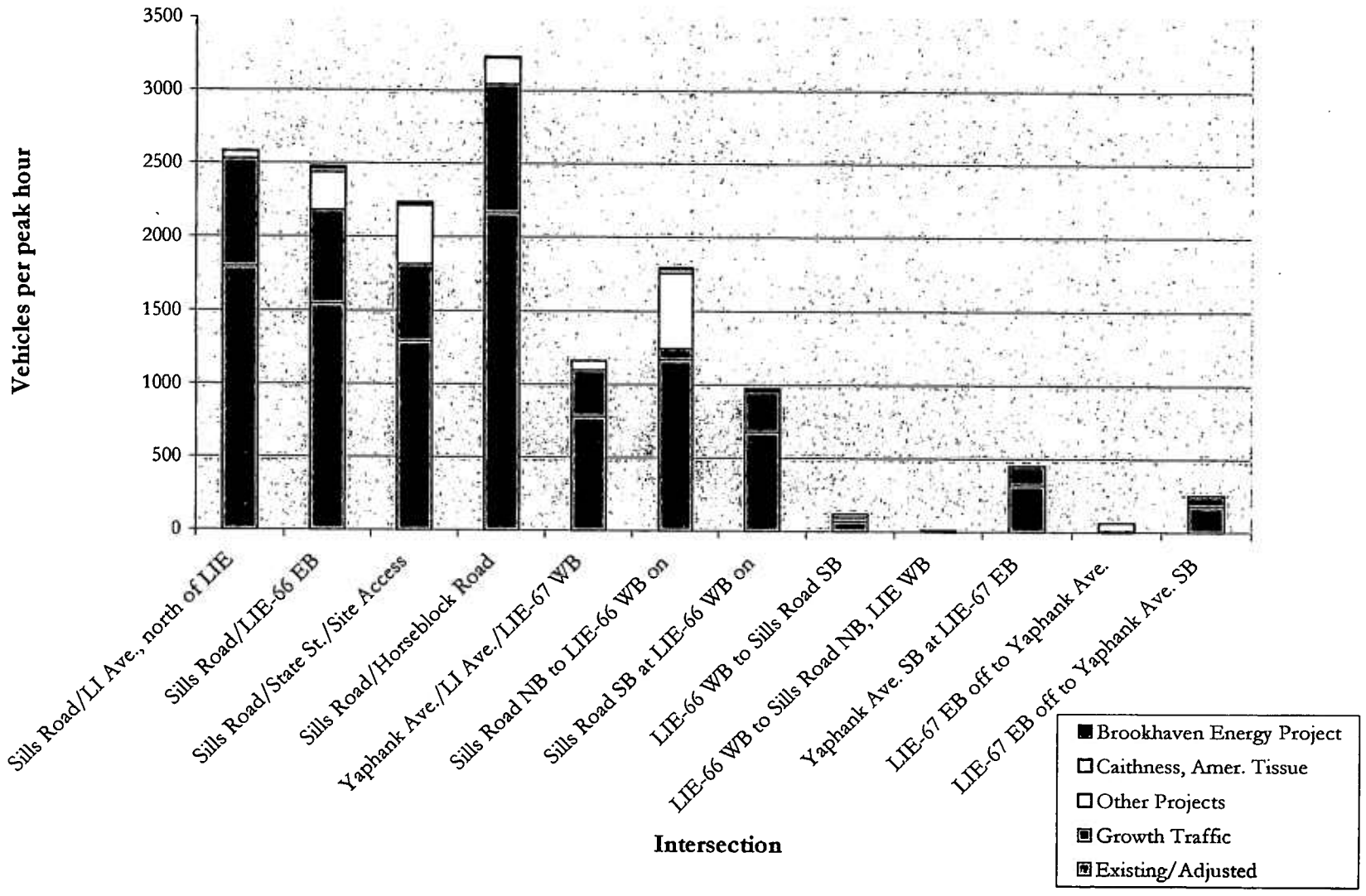
Notes: LOS – Level of Service; Delay – in seconds per vehicle.

NA – Not applicable

* Existing Volume for Operations period is adjusted due to construction of ramps between Exits 66 and 67.

** Includes proposed mitigation -- a second left turn lane from Long Island Avenue westbound to Sills Road southbound.

Figure 15-15: PM Peak Hour Traffic – Existing/Adjusted, No-Build, and Operation Impact



Capacity analyses were performed using the procedures outlined in the *1998 Highway Capacity Manual.* The procedures listed in the Highway Capacity Manual permit the computation of intersection capacity and level of service (LOS). The capacity and LOS of an intersection is defined in Appendix T.

15.3.4.2 Impact Assessment

Based on the LOS analysis results, traffic generated by the Project during the operations phase will have no adverse impacts on any of the study area intersections (no degradation in levels of service). This is because the Project's minimal operations-period traffic generation. The only impacts of concern are temporary impacts during the construction phase, as described below.

During construction, there is a level of service change at the intersection of Sills Road and Long Island Avenue on the westbound approach. This is an intersection that operates at level of service "C" under existing conditions, but is predicted to degrade to level of service "F" prior to construction of the Project. The installation of a dual left turn land at this location will not only mitigate the Project's incremental impact, but will in fact reduce the delays predicted for that intersection. American Tissue has proposed to install a dual left turn lane at this location. This improvement should be in place prior to the peak construction period, and Brookhaven Energy has agreed to pay for its installation if American Tissue is not built by the time of peak Brookhaven Energy construction.

The other study intersections show minor to no impact due to the traffic generated during the three-month peak construction period. Minor changes in level of service occur at Sills Road turning to the Exit 66 westbound on-ramp and at the Project site entrance. When the Project moves into the operational phase, the traffic that it generates will have negligible impacts on the study intersections.

15.3.5 Cumulative Traffic Impacts (Caithness and American Tissue)

This section addresses further Stipulation 10, Clause 4(b) -- a comparison of projected future traffic conditions with and without the proposed Project, and including the effects of the construction and operation of Caithness Power Project and the American Tissue Paper Plant.

As shown in Tables 15-9 through 15-12, the Caithness construction and operation traffic (assumed to be geographically distributed similarly to the Brookhaven Energy Project, but based on an understanding of the one way service roads, with a ratio to account for Caithness' larger scale) has already been included in the above analyses, since a standard traffic analysis must account for all significant proposed projects in an area. American Tissue-generated traffic has also been included for the operations phase, which is the only phase of concern, as documented in the Draft EIS for that project. Thus, the method of differentiating cumulative impacts is based on examining the delays and LOS reported above and determining if, for any of the No-Build conditions, the no-Caithness scenario (during construction and operation) and the no-American Tissue scenario (during operation) could alter conclusions related to level of service. The intersections where a

different conclusion could be reached are identified, and qualitative analysis results are reported. The following discussion presents the qualitative analysis that supports these results.

Upon review of Table 8 of Appendix T, it was determined that, for the construction period, there are only two intersections that meet the following criteria (it should be noted that the above criteria are not linear in their relationship, but they can be a useful tool substituting for detailed and voluminous highway capacity software modeling):

- They fall in the lower range (< 15%) of the level of service breakpoint -- from one LOS to the next;
- There is a large volume of traffic from Caithness construction (a percentage of traffic due to Caithness that is greater than the percentage difference between the with-Caithness delay and the LOS breakpoint).

As demonstrated in Table 15-11, the two intersections for which these criteria are met are (1) the LIE Exit 66 Eastbound off-ramp intersection with Sills Road in the AM peak hour and (2) the Sills Road northbound turning movement to LIE Exit 66 Westbound on-ramp during the PM peak hour.

Table 15-11: Caithness Traffic at Intersections near LOS Breakpoint

Study Area Intersection	AM w/ Caithn.	AM LOS Break point	% delay difference; Caithness % of traffic	PM w/ Caithn.	PM LOS Break point	% delay difference; Caithness % of traffic
Sills Rd/LI Ave. – Delay	99.4	80.0	24%	127.9	80.0	60%
Sills Rd/LI Ave. – LOS	F	(E)	6%	F	(E)	3%
Sills Rd/LIE-66 EB off – Delay	62.2	55.0	13%	18.6	10.0	86%
Sills Rd/LIE-66 EB off – LOS	E	(D)	19%	B	(A)	8%
Sills Rd/State/Site Access – Delay	8.2	none	NA	11.1	10.0	11%
Sills Rd/State/Site Access – LOS	A	(A)	6%	B	(A)	3%
Sills Rd/Horseblock Rd – Delay	27.6	20.0	38%	67.2	55.0	22%
Sills Rd/Horseblock Rd – LOS	C	(B)	5%	E	(D)	3%
Yaphank/LI Ave./LIE-67– Delay	12.3	10.0	23%	12.0	10.0	20%
Yaphank/LI Ave./LIE-67 – LOS	B	(A)	10%	B	(A)	5%
Sills Rd NB/LIE-66 WB on – Delay	21.6	15.0	44%	10.9	10.0	9%
Sills Rd NB/LIE-66 WB on – LOS	C	(B)	22%	B	(A)	9%
Sills Rd SB/LIE-66 WB on – Delay	9.4	none	NA	12.5	10.0	25%
Sills Rd SB/LIE-66 WB on – LOS	A	(A)	22%	B	(A)	9%
Yaphank Ave. SB/LIE-67 – Delay	8.7	none	NA	9.7	none	NA
Yaphank Ave. SB/LIE-67 – LOS	A	(A)	0%	A	(A)	1%

Notes: LOS – Level of Service; Delay – in seconds per vehicle; NA – Not applicable.

It is therefore possible that the construction period scenario without Caithness but with the Brookhaven Energy Project would yield an LOS of "D" instead of "E" at the first intersection, and an LOS "B" instead of "C" and the second intersection. It does not appear likely that eliminating Caithness construction traffic would have any effect on Level of Service designations at other intersections. As result, the conclusions of the traffic impact study would not be altered for a without-Caithness, with Brookhaven Energy case.

During operation, the Brookhaven Energy Project's own traffic impacts are so small, as shown in Tables 15-11 and 15-12 above, that the elimination of traffic impacts from American Tissue and/or from Caithness would have no effect on the conclusions of the traffic impact study, in terms of Brookhaven Energy potentially exacerbating any otherwise acceptable impacts.

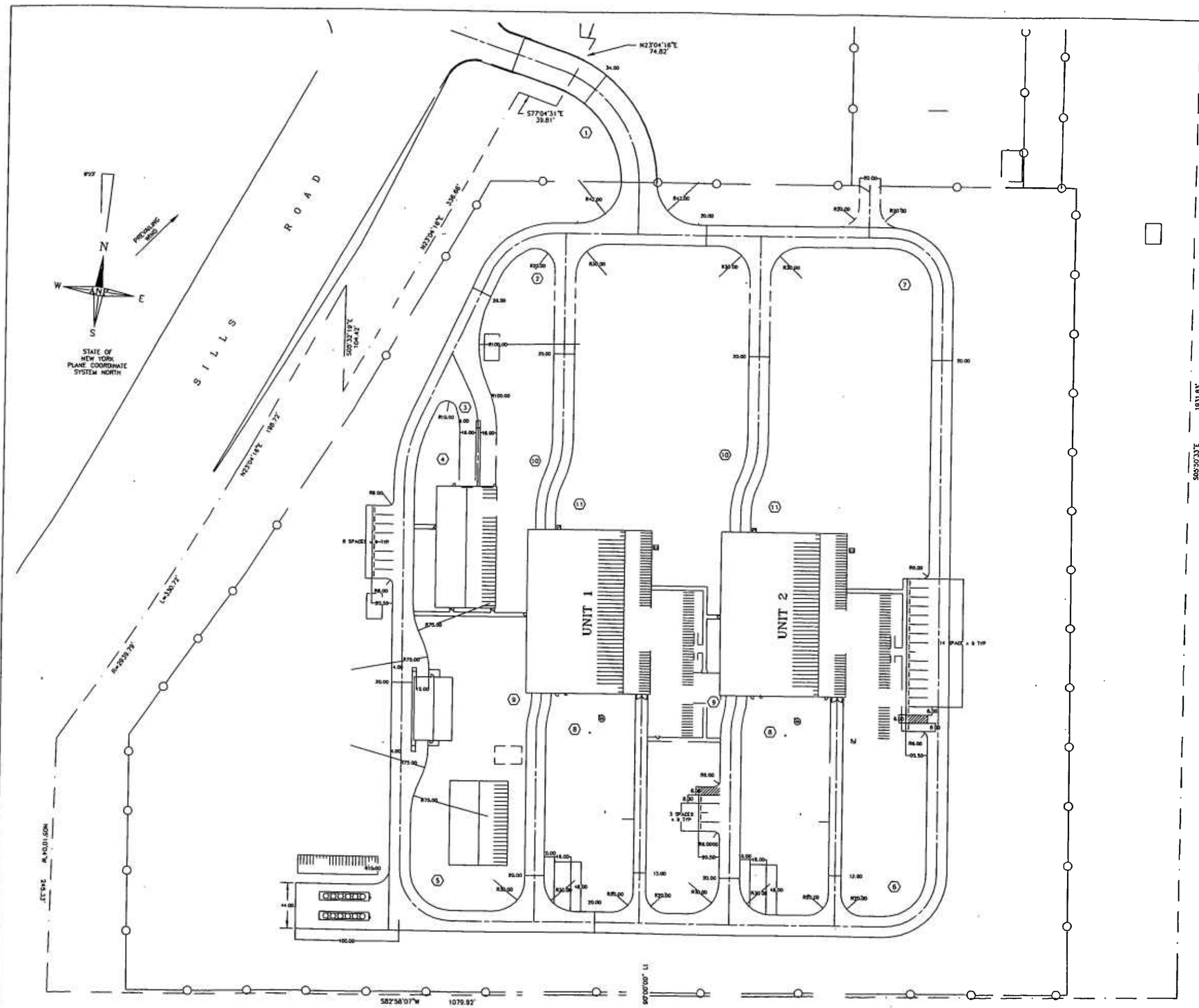
15.3.6 Project Site Roadway Geometry

This section addresses Stipulation 10, Clause 3, which calls for a conceptual site plan depicting all Project site driveway intersections with Sills Road and Old Town Road, showing horizontal and vertical geometry, the number of approach lanes, the lane widths, shoulder widths, traffic control devices by approaches, and sight distances.

Figures 15-16 through 15-18 depict the site driveway intersection with Sills Road and State Street (a.k.a. Old Town Road). Larger format plans are included as Site Development Plan, Sheet 12 (see also Sheet 6 for roadway details). There will be one site access, aligned perpendicular to Sills Road and end-to-end with State Street. This site driveway will be controlled by the existing traffic signal at all approaches for this intersection. The driveway will be configured for all entering and exiting movements (both left and right turns will be possible both into and out of the site). The site access road radius will be 115 feet. The driveway width will be 34 feet. The slope of the driveway and access road will vary between 0% and 2.5%. Curbs will be supplied along the edge of the access road from Sills Road to the plant entrance gate. Beyond the gate, 5-foot gravel shoulders will be utilized along the remainder of the access road. The sight distance from the intersection along the site access road will be in excess of AASHTO sight distance recommendations.

15.3.7 Traffic Signal Adjustment

The existing traffic signal at the site access on Sills Road will need to be modified to accommodate the new westbound approach. The signal timing at this location will need to be modified to allow for the demand created by the construction workers traveling to and from the site. In addition the traffic signal will be modified to provide the proper signal display and timing parameters. This is achieved by preparation of a traffic signal optimization plan that would be approved by the SCDPW. Brookhaven Energy proposes to submit the optimization plan to the Siting Board as part of a compliance filing, as well as to consult with the SCDPW.



0 20' 40' 80' 120' 160'

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STACK UNIT 2	N219447.33	E2293521.13

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② Δ = 65°00'00" Lt, D = 81°51'04", T = 44.59', L = 79.41', R = 70', PC 10+81.08, PT 11+60.50

③ Δ = 25°00'00" Lt, D = 69°52'23", T = 18.18', L = 35.78', R = 82', PC 10+43.92, PT 10+79.70

④ Δ = 25°00'00" Lt, D = 35°48'36", T = 35.47', L = 69.81', R = 160', PC 13+15.5, PT 13+85.32

⑤ Δ = 90°00'01" Lt, D = 11°d35'30", T = 50', L = 78.54', R = 50', PC 17+60.94, PT 18+39.48

⑥ Δ = 89°59'59" Lt, D = 11°d35'30", T = 50', L = 78.54', R = 50', PC 22+60.63, PT 23+39.17

⑦ Δ = 90°00'00" Lt, D = 11°d35'30", T = 50', L = 78.54', R = 50', PC 29+13.30, PT 29+91.84

⑧ Δ = 16°35'52" Rt, D = 95°29'35", T = 8.75', L = 17.38', R = 60', PC 11+87.84, PI 11+96.6, PRC 12+05.22

⑨ Δ = 16°35'52" Lt, D = 95°29'35", T = 8.75', L = 17.38', R = 60', PRC 12+05.22, PI 12+13.97, PT 12+22.6

⑩ Δ = 25°00'18" Rt, D = 67°24'25", T = 18.85', L = 37.1', R = 85', PC 12+02.6, PI 12+21.45, PRC 12+39.69

⑪ Δ = 25°00'18" Lt, D = 67°24'25", T = 18.85', L = 37.1', R = 85', PRC 12+39.69, PI 12+58.54, PT 12+76.79

BROOKHAVEN ENERGY LP
65 BOSTON POST ROAD WEST, SUITE 300
MARLBOROUGH, MA 01752
TEL 508-786-7200 FAX 508-786-7201

PREPARED:	CHECKED:	APPROVED:	STD.CHECKED:
DERIVED FROM:	SUPERSEDES:		SUPERSEDED BY:

Title: FIGURE 15-16 ACCESS ROAD PLAN

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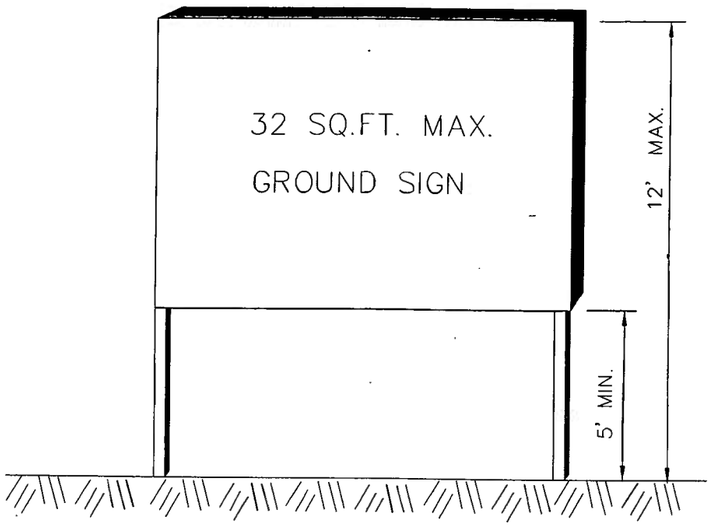
	Dept. Resp.	Takeover Dept.
Language	Sheet No.	No. Sheets
Drawing No. T:\E_CAD\29581(BROOKHAVEN)\DESIGN\SITEROADS.DWG		Rev.

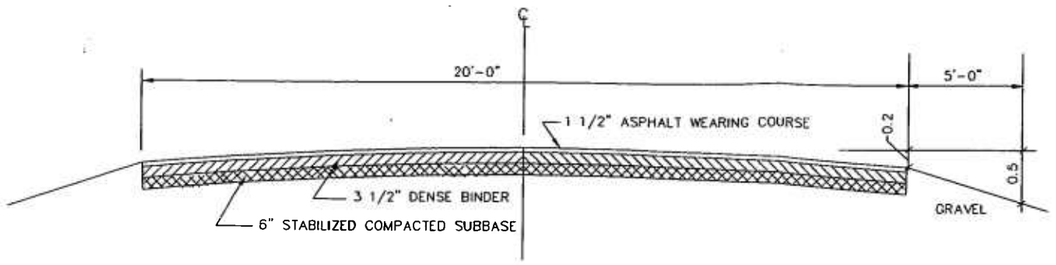
ALSTOM
ALSTOM POWER INC.



(1) GROUND SIGN AT SILLS ROAD FRONTAGE

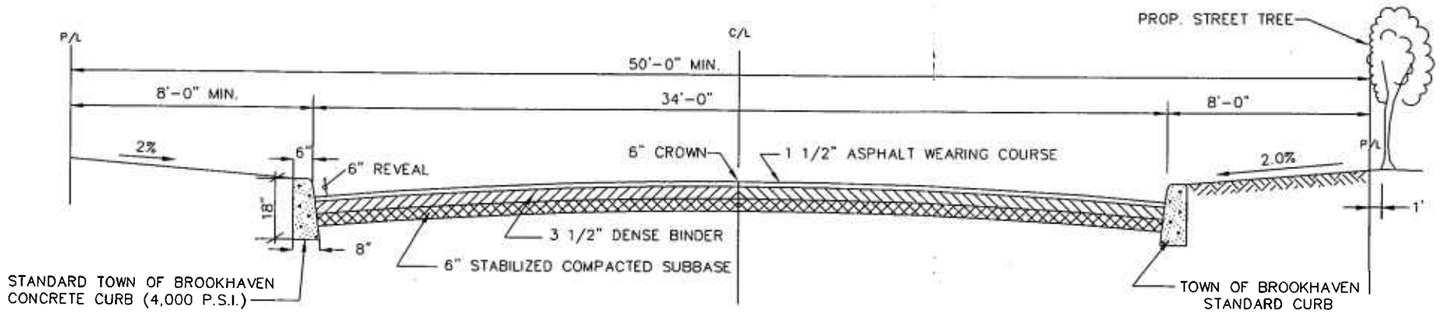
SIGN DETAIL

NOT TO SCALE



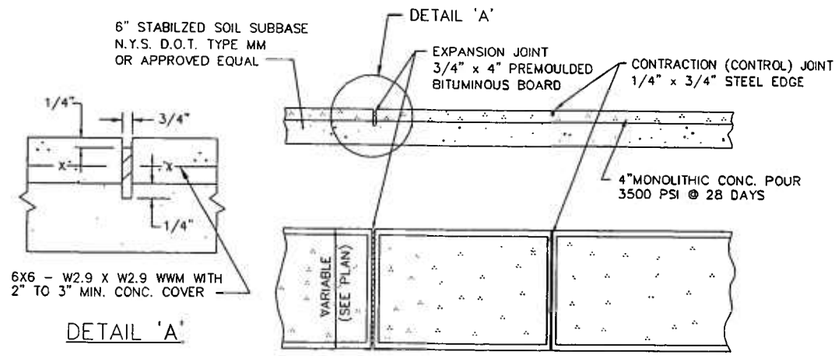
TYPICAL INTERIOR ROAD SECTION

NOT TO SCALE



ENTRANCE ROAD SECTION

NOT TO SCALE



CONCRETE SIDEWALK DETAIL

NOT TO SCALE

NOTE:

CONTROL JOINTS EVERY 4'-0" (MAX)
EXPANSION JOINTS EVERY 24'-0" (MAX)

BROOKHAVEN ENERGY LP
65 BOSTON POST ROAD WEST, SUITE 300
MARLBOROUGH, MA 01752
TEL 508-786-7200 FAX 508-786-7201

PREPARED:	CHECKED:	APPROVED:	STD.CHECKED:
DERIVED FROM:	SUPERSEDES:	SUPERSEDED BY:	

Title	Scale	Cadd File No.
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	Dept. Resp.	Takeover Dept.
	Language / Sheet No.	No. Sheets
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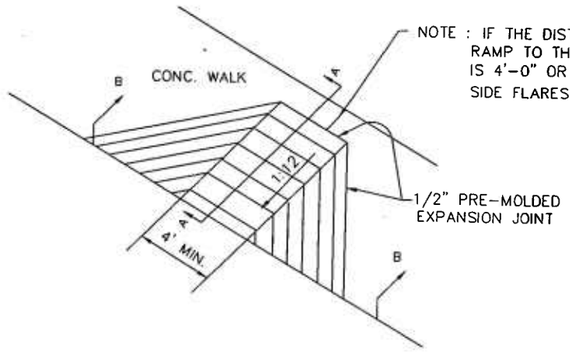
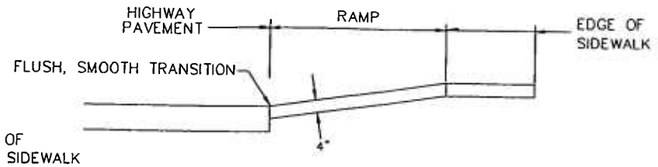
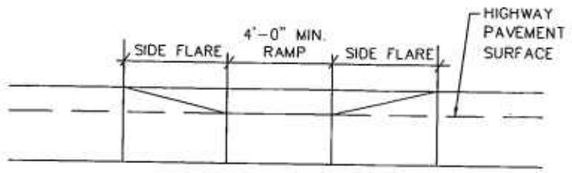


NOTE : IF THE DISTANCE FROM THE TOP OF RAMP TO THE BACK EDGE OF THE SIDEWALK IS 4'-0" OR GREATER THE SLOPE ON THE SIDE FLARES MAY BE 1:10

1/2" PRE-MOLDED EXPANSION JOINT



SECTION A - A



SECTION B - B

SIDEWALK HANDICAP RAMP DETAIL

TYPE A

N.T.S.

NOTE: 1. THE MAXIMUM SLOPE OF A SIDEWALK HANDICAP RAMP IN NEW CONSTRUCTION SHALL BE 1:12. IF SPACE LIMITATIONS ON EXISTING SITES PROHIBIT THE USE OF 1:12 THE FOLLOWING SLOPES AND RISES MAY BE USED:

A) STEEPER THAN 1:12 (8.33%) BUT NO STEEPER THAN 1:10 (10%) 6" MAX. RISE, 5' MAX. RUN
B) STEEPER THAN 1:10 (10%) BUT NO STEEPER THAN 1:8 (12.5%) 3" MAX. RISE, 2' MAX. RUN
C) A SLOPE STEEPER THAN 1:8 (12.5%) IS NOT ALLOWED

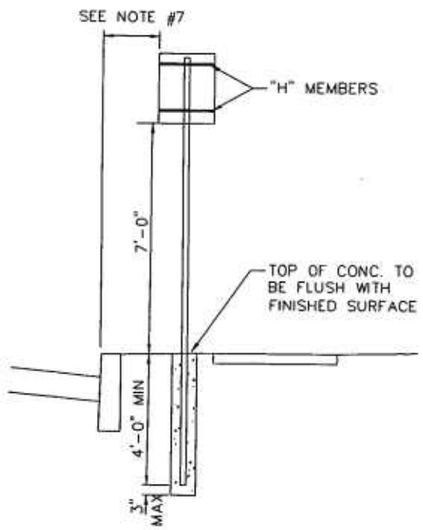
2. THE MIN. WIDTH OF A SIDEWALK CURB RAMP SHALL BE FOUR (4') FEET, EXCUSIVE OF FLARED SIDES

3. ALL SIDEWALK CURB RAMPS SHALL HAVE FLUSH, SMOOTH TRANSITIONS TO THE ADJACENT STREET OR HIGHWAY SURFACE.

4. A HANDICAP RAMP SHALL HAVE A DETECTABLE WARNING COMPLYING WITH THE CURRENT FEDERAL STANDARDS (ADA). DETECTABLE WARNINGS SHALL EXTEND THE FULL WIDTH AND DEPTH OF THE CURB RAMP.

5. EXISTING CONCRETE SHALL BE SAWCUT FULL DEPTH.

6. THE HANDICAP RAMP SIZE, COLOR, AND SURFACE TREATMENT SHALL CONFORM TO THE CURRENT FEDERAL AND STATE HANDICAP REQUIREMENTS ITEM 10502.5505



TYPICAL TRAFFIC SIGNS

INSTALLATION DETAIL

N.T.S.

NOTES

1. ALL POSTS SHALL BE IMBEDDED IN CONCRETE 4'-0" DEEP X 1'-0" DIA.
2. ALUMINUM 6061 LOCKBOLTS ARE CONSIDERED INTERCHANGEABLE WITH ALUMINUM 2024-T4 BOLTS WITH LOCKWASHERS OR STARWASHERS IN ANODIZED AND CHROMATE SEALED FINISH.
3. ALL STEEL POSTS TO BE HOT DIP GALVANIZED AFTER FABRICATION FOR FULL LENGHT AND TOTAL AREA.
4. ALL CONCRETE FOOTINGS TO BE OF CLASS A OR B CONCRETE.
5. ALL SIGNS MOUNTED OVER SIDEWALKS SHALL HAVE A MINIMUM CLEARANCE OF 7'-0".
6. CLEARANCE FROM EDGE OF SHOULDER TO EDGE OF SIGN SHALL BE 8'-0" ON EXPRESSWAYS AND OTHER HIGHWAYS WHEREVER FEASIBLE. ON OTHER HIGHWAYS, THIS CLEARANCE MAY BE REDUCED TO 2'-0" FOR INDIVIDUAL SIGNS WITH AN ABSOLUTE MINIMUM CLEARANCE TO EDGE OF PAVEMENT OF 6'-0".

BROOKHAVEN ENERGY LP
65 BOSTON POST ROAD WEST, SUITE 300
MARLBOROUGH, MA 01752
TEL 508-786-7200 FAX 508-786-7201

PREPARED:	CHECKED:	APPROVED:	STD.CHECKED:
DERIVED FROM:	SUPERSEDES:	SUPERSEDED BY:	

Title: FIGURE 15-18

ACCESS ROAD DETAILS, SHEET 2

Scale	Cadd File No.
Format B	Parts List - Yes / No Separate ☐ ☐
	Dept. Resp. / Takeover Dept.
Language	Sheet No. / No. Sheets

ALSTOM
ALSTOM POWER INC.

Drawing No. T:\E_CAD\29581(BROOKHAVEN)\DESIGN\DETS1 Rev.

15.3.8 Adequacy of Road System

This section addresses Stipulation 10, Clause 4(c) -- an evaluation of the adequacy of the road system to accommodate the projected traffic during both construction and operations.

The Project site is served by excellent roadway infrastructure. It is adjacent to the Long Island Expressway and is accessed via a four-lane separated county highway, Sills Road. There is already an existing traffic light at the intersection where the site access is proposed. The local roadway system will be further improved in the years 2004-2005 with the installation of entrance and exit ramps east of Sills Road and west of Yaphank Avenue. The Project will generate up to 647 vehicle trips during the peak construction period (PM peak hour) and approximately 14 vehicle trips during the operations period (AM peak hour). Brookhaven Energy will pay (unless another entity does so first) for the installation of a second left turn lane on Long Island Avenue westbound at Sills Road. Also, the traffic signal at the site entrance will be modified during detailed design. These mitigation measures address the problem intersections that were highlighted by the traffic study. In summary, the traffic generated by the proposed facility will have no impact to the overall level of service at the study intersections during the peak construction period as well as the long-term operations period.

15.3.9 Alternative Mitigation Measures

This section addresses the requirements of Stipulation 10, Clause 4(d) -- an identification and evaluation of reasonable mitigation measures regarding traffic and transportation impacts, including the use of alternative technologies, the construction of physical roadway improvements, and the installation of new traffic control devices.

The traffic impacts of alternative technologies can be summarized as follows. Not using backup fuel oil minimizes truck traffic and removes a substantial demand for winter oil deliveries. Using steam injection for power augmentation results in marginally more frequent deliveries of demineralization trailers to the Project site during summertime. Using air cooling minimizes trips associated with water treatment for cooling system maintenance. The preferred wastewater disposal method (sewer interconnection) produces no wastewater trucks, whereas the alternate method (wastewater trucking) can generate 1 to 4 trucks per day.

Construction of physical roadway improvements (marking a dual left turn lane) has been recommended at the Long Island Avenue/Sills Road intersection. New traffic control devices have been considered at Sills Road/LIE Exit 66 WB On-ramp. The level of service analysis showed that Project traffic volumes would not degrade levels of service at this intersection, and therefore a traffic signal is not recommended. The above traffic analysis shows no other reasons for physical roadway mitigation.

15.4 Special Considerations

15.4.1 Fuel Oil Trucks

This section addresses Stipulation 10, Clause 2 (j), which requires a description of the methods proposed for the transportation of backup fuel oil to the project, including an estimate of the number and frequency of tanker truck deliveries under expected operating conditions and under worst case scenario in which the plant is oil fired for a prolonged period.

As noted previously, and detailed in Section 9, the Project combustion turbines will not use backup fuel; thus no backup oil deliveries will be made. The only fuel oil deliveries will be for small tanks associated with emergency diesel engines (a backup firewater pump and two emergency shutdown generators). This equipment will operate only briefly for testing, and thus frequency of delivery can be conservatively approximated as follows: 11 MMBtu/hr. combined heat input of diesel-fueled sources; 128,400 Btu/gallon of diesel; and maximum annual operations of 100 hours per source yields maximum annual diesel consumption of approximately 8,600 gallons – approximately 2 oil trucks per year.

15.4.2 Chemicals and Hazardous Materials Transport

This section addresses Stipulation 10, Clauses 2(c) and 2(l), which require identification of approach and departure routes to and from the Project site for vehicles carrying chemicals or hazardous materials -- for construction and operation phases, respectively.

It is expected that most delivery routes of chemicals and hazardous materials (e.g., ammonia to the site, waste oil drums leaving site) as well as non-hazardous solid waste will be from/toward the west, and that access will be via the Long Island Expressway. All traffic to western Suffolk County, Nassau County, Brooklyn and Queens would be expected to use the Long Island Expressway, as would trucks going to of from New Jersey and Connecticut (via the Verrazano-Narrows and Throgs Neck bridges, respectively). For example, all hazardous waste treatment, storage disposal (TSD) facilities on Long Island are west of the Project site, except for Brookhaven National Laboratory's storage facilities. Ammonia deliveries and demineralization are also expected to come from the west via the Long Island Expressway. Local deliveries for miscellaneous chemicals such as emergency fuel oil, paint (during construction), solvents (primarily during construction), and gasoline (during construction) are also anticipated, but these will be neither regular nor numerous when compared to the deliveries from/to the west via the LIE. Therefore, it is expected that vehicles carrying chemicals or hazardous materials will generally avoid residences, schools, public institutions, or human services facilities.

15.4.3 Emergency Vehicle Routes

This section addresses Stipulation 10, Clause 1(e), which calls for an identification of approach and departure routes to and from the Project site for police fire, ambulance and other emergency vehicles.

Figure 15-19 shows Suffolk County Police Precinct 6 (the precinct for the Project site), Yaphank Fire Department, and Brookhaven Medical Center. Primary police, fire, and ambulance routes would be expected to come from and to these facilities, as shown in this figure. For more information regarding emergency response provisions, see Appendix O.

15.4.4 Cut and Fill Material

This section addresses Stipulation 10, Clauses 2(d) and 2(e), which require estimates of the number and frequency of vehicle trips associated with spoil removal and with deposition of fill at the Project site and interconnections, including time of day and day of week arrival and departure distribution, and including a delineation of approach and departure routes, by size, weight and type of vehicle.

As described in Section 13, it is not anticipated that the Project will transport any cut or fill material from or to the site. Based on the results of the preliminary geotechnical investigation activities to date, soils at the site appear to be adequate to support the on-site structures. Any inadequate topsoil/subsoil layers will be reused as backfill in the non-load bearing portions of the site or will be exchanged with suitable material on-site or rendered suitable for load-bearing purposes. Any excess material will be spread over the site or bermed as part of the landscaping plan. For the water, sewer, and natural gas interconnections, no removal of spoil is expected because the underground pipes to be constructed are negligible from a volumetric standpoint. Therefore, no trips associated with cut or fill are expected. Nonetheless, an allowance for dump trucks has been made, in case the final geotechnical study indicates that removal or replacement of any material will be needed, as well as to conservatively include any such traffic arising from work on the interconnections. Table 15-7 shows the phasing of such trucks in the construction process, if they should be required. With respect to time of day and day of week distribution, such traffic is assumed to be as evenly distributed across an approximately 10-hour workday as all other truck traffic. With respect to approach and departure routes, the Project's standard distribution is also assumed.

15.4.5 Structures and Load Bearings

This section addresses Stipulation 10, Clause 1 (f), which states that if Brookhaven Energy proposes to use secondary roads for the hauling of heavy equipment or the transportation of cut and fill materials, this Application will include a review of available load bearing and structural rating information for such secondary roads.

Brookhaven Energy expects that all heavy equipment will be hauled on primary roads and that there will be no cut or fill transportation from the Project site or interconnections. Deliveries of oversize equipment such as the turbines and generators are singular events in the construction process. They are expected to be made via water vessel at the Shoreham nuclear plant site and then by truck via State Route 25A and County Route 46 (William Floyd Parkway). From William Floyd Parkway, deliveries could be made via the LIE North Service Road, County Route 21, and Sills Road, or via Longwood Avenue, County Route 21, and Sills Road. Bridges with posted weight limits on County roads in the Town of Brookhaven are shown in Table 15-12 below. These bridges will be avoided with the planned equipment delivery route. Similarly, inquiries with NYSDOT's Structures Division

revealed that no bridges on State roads along these routes have lower than the maximum state legal load of 80,000 lbs.[1]

Table 15-12: Posted Bridge Load Limits, Town of Brookhaven

Bridge No.	Name	Posted Load	Year Built
18	Coreys Creek Bridge	No R Permit	1947
19	Tuthills Creek Bridge	No R Permit	1946
26	Yaphank Avenue Culvert/Spillway	40 tons	1943
46	Smith Point Bridge	No R Permit	1959

Source: Suffolk County Department of Public Works, Division of Highways, Structures, and Waterways.

Due to the height of some of these heavy equipment deliveries, the temporary relocation of overhead electrical and communication wires will be required. Where there are overpasses, the oversize deliveries will make detours, executing U-turns with the assistance of appropriate matting. All deliveries will be timed in a way so as to minimize interference with peak traffic hours. There will be coordination with appropriate public safety personnel prior to and during deliveries.

In further response to the requirements of the above-cited clause, Brookhaven Energy expects that there will be no cut or fill transportation from the Project site or interconnections. However, if transportation of cut and/or fill becomes necessary, this activity would involve standard regulation dump trucks. Dump trucks would be able to use the Long Island Expressway.

15.4.6 School Bus Routes

This section addresses Stipulation 10, Clause 1(d), requiring a review of local school bus routes and schedules obtained from the Longwood School District.

Several school bus routes operate through one or more of the study intersections. Exact school bus routes, stop locations, and turnarounds vary from year to year depending on the student populations. Therefore, Longwood School District provided its schedule in a general format, without specifying exact routes. However, the District advised that it should be assumed that school buses will make stops along Long Island Avenue between Exits 66 and 67 during the construction period, and that they will travel southbound along Sills Road to Horseblock Road (but without any stops near the site) in order to access Bellport Road and surrounding roadways. See Table 15-13.[2]

1 Information courtesy Edward Brower, New York State Department of Transportation, March 21, 2001.

2 Information courtesy Mary Augugliaro, Longwood School District, Transportation Section, January 22, 2001.