

18. Utilities

18.1. Existing Conditions

18.1.1. Water

The Suffolk County Water Authority supplies potable water to the County Complex through a Master Meter and the County owns the distribution piping within the Complex. The Water Authority has water mains on Yaphank Avenue and Horseblock Road.

18.1.2. Wastewater

The County Complex has its own municipal wastewater treatment facility and collection system on site. The County provided actual flow data for a twenty month period from January 2009 through August 2010 (Table 18-1). During this period the average flow ranged from approximately 80,000 gallons per day to 102,000 gallons per day.

Table 18-1: Average Daily Flow at Yaphank Treatment Plant

Month	Average GPD
01/01/2009	96,826
02/01/2009	96,682
03/01/2009	101,363
04/01/2009	103,078
05/01/2009	99,465
06/01/2009	97,578
07/01/2009	91,426
08/01/2009	80,847
09/01/2009	84,845
10/01/2009	88,382
11/01/2009	84,635
12/01/2009	89,380
01/01/2010	87,591
02/01/2010	90,420
03/01/2010	102,289
04/01/2010	101,971
05/01/2010	94,695
06/01/2010	90,034
07/01/2010	88,183
08/01/2010	87,043

18.1.3. Solid Waste

According to the Town of Brookhaven website, the Town is divided into 35 residential collection areas for the collection of garbage, recyclables, and yard waste from 1, 2, and 3 family homes by private carters under contract to the Town of Brookhaven. Collection of garbage, recyclables and yard waste is not provided to incorporated villages, condos, co-ops, multi-family housing units, businesses, schools, and institutions, although Town codes apply to these sectors. Therefore, it is anticipated that the proposed development would have private collection for all facilities.

The Town of Brookhaven has very proactive and comprehensive program to reduce waste disposal which includes waste reduction and recycling.

Waste Reduction

Waste reduction policies include a "Don't Bag It" campaign for grass clippings, a STOP program for household hazardous wastes, and waste reduction education programs.

The "Don't Bag It" program includes several possibilities to replace disposal of grass including use of a mulching mower, more frequent mowing with a conventional mower and letting the grass clippings lie on the lawn, composting of grass clippings and "xeriscaping" (a landscaping philosophy based on eliminating chemical and water intensive lawns where possible and plantings from local or regional sources).

The Town has a permanent Stop Throwing Out Pollutants (STOP) building at the Waste Management Facility in Brookhaven hamlet where residents can bring toxic and dangerous household chemicals for proper disposal.

The Town's waste reduction education program includes presentations to schools and other interested organizations

Recycling

All residents, businesses, and institutions in Brookhaven Town are required by law to source separate mandatory recyclables. Source separation requires that recyclables be separated from the garbage at the location where the garbage is generated and removed from that location, separately from the garbage, directly to a recycling facility.

Mandatory Paper Recyclables consist of:

- newspaper, color inserts, magazines,
- catalogs, mail, envelopes, greeting cards
- junk mail, office paper, post-its
- construction, school, & PC paper
- white ledger, fax paper, manila folders
- copy & shredded paper, yellow legal pads
- NCR paper, wrapping paper, index cards
- telephone books, sweepstakes forms
- books (no covers)
- kraft (brown bag) paper, corrugated cardboard

Mandatory Commingled Recyclables consist of:

- glass bottles, jars
- tin, aluminum, bimetallic cans
- aerosol spray cans
- aluminum foil
- aluminum food containers
- plastic containers (PETE and HDPE)

Non-Mandatory Drop-off recyclables consist of:

- used motor oil & filters
- scrap metal
- yard waste
- electronics
- car, truck, & boat batteries
- clothing
- turkey frying oil
- fishing line

18.1.4. Energy

Electric service is supplied to the County Complex by LIPA and gas is supplied to the County Complex by National Grid.

18.2. Potential Impacts of Proposed Project

18.2.1. Water

This project would result in increased withdrawal of groundwater from the Magothy aquifer. The daily water consumption by the proposed project is estimated to be 548,500 gallons per day before any water conservation methods are applied. This value is based upon the wastewater design flow estimate, i.e., 477,000 gallons per day, discussed in Section 18.2.2 plus an estimated fifteen percent, or 71,500 gallons of water per day that does not enter the sanitary system. This latter component includes water for irrigation and water consumed by persons within the proposed project's various homes, offices and other facilities.

As the project is anticipated to be LEED certified it is expected that the water consumption will be significantly less, but the actual amount cannot be quantified until the project is designed. At a minimum, LEED certification has as a prerequisite the requirement to employ strategies that in aggregate use 20 percent less water than the water use baseline not including irrigation. Beyond this prerequisite, credits towards certification levels can be earned for water efficient landscaping (either a 50% or 100% reduction), innovative wastewater technologies (reduce potable water use by 50% or treat 50% of wastewater to tertiary standards) and water use reduction (30%, 35% or 40%). Therefore it is likely that the projected water use and consequent wastewater generation can be reduced by a minimum of 20%, and as much as 50%. Water conservation strategies are discussed under Mitigation, Section 18.3, below.

18.2.2. Wastewater

The estimated wastewater design flow associated with the proposed project is approximately 477,000 gallons per day (Table 18-2). According to the Suffolk County Department of Public Works, the actual flow is usually approximately 75% of the design flow due to conservative factors used in the design of treatment facilities. In addition, as the project is anticipated to be LEED certified it is

expected that the wastewater flow will be significantly less, but the actual amount cannot be quantified until the project is designed. Water and wastewater conservation strategies are discussed under Mitigation, Section 18.3, below.

Table 18-2: Proposed Wastewater Design Flow

Housing	Quantity	Units	Rate	GPD
Unit Between 601-1200 sf gross floor area	72	1 br	225 gpd/unit	16,200
Homes	785	2 br	300 gpd/home	235,500
Homes with accessory apartment	215	total 3 br	300 gpd/home	64,500
Commercial				
Arena	5,500	seats	3gpd/seat	16,500
Arena Food Service	20,000	sf	0.12 gpd/sf	2,400
Hotel (70,000 sf)	90	rooms	150 gpd/> 400 sf unit	13,500
Restaurant (35,000 sf)	1,200	seats	30 gpd/seat	36,000
Retail (25,000 sf) assume 50% dry	12,500	sf	0.03 gpd/sf	375
Retail (25,000 sf) assume 50% Wet use	12,500	sf	0.12 gpd/sf	1,500
Office (50,000 sf) assume 50% medical	25,000	sf	0.1 gpd/sf	2,500
Office (50,000 sf) assume 50% non medical	25,000	sf	0.06 gpd/sf	1,500
Health Club (with showers)	50,000	sf	0.3 gpd/sf	15,000
Day Care (20,000 sf)	400	occupants	7.5 gpd/occupant	3,000
Outdoor Stadium	5,000	seats	3 gpd/seat	15,000
Outdoor Stadium Food Service (assume 20,000 sf)	20,000	sf.	0.12 gpd/sf	2,400
Light Industrial	1,200,000	sf	0.04 gpd/sf	48,000
Recreational Fields	170	parking space	15 gpd/parking space	2,550
Recreational Fields Food Service (assume 2,000 sf)	2,000	sf	0.12 gpd/sf	240
Total Wastewater Projection				476,665

18.2.3. Solid Waste

The estimated solid waste associated with the proposed project is approximately 43,000 pounds (22 tons) per day (Table 18-3).

As the project is anticipated to be LEED certified it is expected that the solid waste generated for disposal will be significantly less, but the actual amount cannot be quantified until the project is designed. Solid waste reduction and recycling strategies are discussed under Mitigation, Section 18.3, below.

The proposed development would have solid waste picked up by a private carter who would deliver the waste to a permitted solid waste management facility.

Table 18-3: Proposed Solid Waste

Use	Quantity	Units	Rate (lbs)	lbs/day
Housing				
Apartments	72	1 br. apt.	4/ br	284
Condos	785	2 br.	4/ br	6,280
Homes with accessory apartment	215	total 3 br.	4/ br	2,580
Commercial				
Arena	150,000	sf	assume 1/100 sf	1,500
Arena Food Service	20,000	sf	1.5/meal; assume 5500	8,250
Hotel	90	rooms	3.2/room	288
Restaurant	1,200	seats	1.5/meal; assume 6/day	1,098
Retail	50,000	sf	2.5/100 sf	1,250
Office	50,000	sf	1/100 sf	500
Health Club	50,000	sf	1/100 sf	500
Day Care	20,000	sf	1/100 sf	200
Outdoor Stadium	150,000	sf	1/100 sf	1,500
Outdoor Stadium Food Service	20,000	sf	1.5/meal; assume 5000	7,500
Light Industrial	1,200,000	sf	1/100 sf	12,000
Recreational Fields	3	fields	assume 100 per field	300
Recreational Fields Food Service	2,000	sf	1.5/meal; assume 200	300
Total				43,705

Source: National Solid Wastes Management Association – Technical Bulletin #85-6 and Consultant assumptions

18.2.4. Energy

An increase in energy consumption would occur as a result of the development. However, the County’s RFP required a minimum of 4 MW of solar capacity to be generated on site and the Selected Developer’s proposal indicated that the facility would produce all of its own energy. The specific details were not provided although the following was stated:

One of the most important attributes of the Legacy Village project is the creation of the largest Zero Energy Consumption development in the continental United States. The use of a four megawatt photovoltaic array, central plant geothermal heating and cooling systems and the replacement of the wastewater treatment plant with a Biomass Clean Energy Gasification Facility will place Suffolk County at the forefront of the proliferation of renewable energy research and development. Long Island

must distance itself from the use of fossil fuels and move quickly to the use of renewable energy sources. Such usage is not only important for our environmental and economic needs, it is essential to allow Long Island to meet the state's new renewable portfolio standard as set out in the February 2008 report of the Renewable Energy Task Force, chaired by then Lieutenant Governor David Patterson. The report provides a road map to allow New York State and Long Island to meet our need for clean, renewable power and the technology proposed by Legacy Village accelerates meeting these goals. In addition, Kevin Law, the President and CEO of the Long Island Power Authority has clearly created an energy vision for Long Island which includes the development of solar energy generation within the commercial/industrial sector. LIPA needs the Legacy Village Development to meet its renewable energy standards and Suffolk County should provide such an opportunity.

The electric requirements were estimated (Table 18-4) as 43 million kilowatt hours per year with an electric requirement of 20,000 KVA. The natural gas load was estimated by applying a 35BTU/hr per square foot load to the proposed building areas. This yields a heating load of approximately 1,100 therms for the entire development. Although it is intended that the project will be a Net Zero Energy Development project, for the purposes of this analysis it was conservatively assumed that alternative energy from on-site sources such as solar, wind and geothermal would provide at least 25% of the power demand. This will ensure that the analysis accurately considers whether off-site sources are available and adequate in the event off-site power is required. Accordingly, LIPA was asked to provide an availability letter for up to 75% of the electric requirement and National Grid was asked for an availability letter for the natural gas load.

National Grid and Keyspan have indicated that they have the capacity to serve the proposed development (Appendix B).

Table 18-4: Projected Electrical Requirements

Building Type	Est. kW/hr/sf/yr	Est. sf	Est. kW/hr/yr
Arena	12.5	160,000	2,000,000
Hotel	12	70,000	840,000
Retail	12	25,000	300,000
Restaurant	32	35,000	1,120,000
Office	17	50,000	850,000
Health Club	10	50,000	500,000
Day Care	8	20,000	160,000
Light Industrial	25	1,200,000	30,000,000
Housing	5	1,254,300	6,271,500
Stadium	-	-	750,000
Athletic Fields	-	-	10,000
Highway Yards	-	-	10,000
Office/ Dr Cottage	18	16,000	288,000
Salt Storage	0.25	16,000	4,000
Total kW/hr/yr			43,103,500
Estimated Total Square Feet			2,896,300
7W/SF Demand			20,274,100
KVA Estimate			20,274
Minus Electrical Savings from Solar (11.14) Geothermal (12) Usage- say 25%			15,206

18.3. Proposed Mitigation

One of the County's goals for this project is to create a sustainable project that would achieve LEED (Leadership in Energy and Environmental Design) certification, generate much of its own energy, and serve as an example of how a project could be built to minimize consumption of resources and reduce impacts to resources. While the Selected Developer's proposal did not indicate the specific details of design, it is anticipated that many LEED design criteria will be incorporated into the project. The following is a general description of LEED strategies that should be employed at this site.

18.3.1. Leadership in Energy and Environmental Design (LEED)

The project will be designed to incorporate a range of LEED strategies, but at this time the level of LEED certification is undetermined. The following potential strategies should be evaluated for inclusion in the project:

Sustainable Sites Strategies:

- Incorporate site stewardship practices to minimize the impact of construction activities utilizing erosion controls and minimizing the area of the site to be disturbed.
- Reduce and/or eliminate the need for irrigation with draught tolerant plants, drip irrigations systems and limiting conventional turf.
- Minimize heat island effects utilizing high albedo and/or garden roofs.
- Minimize heat island effect by providing shade trees and limiting dark pavements.
- Provide surface water management with permanent erosion controls, permeable pavements and roof run-off water controls/harvesting.
- Incorporate non-toxic pest controls.

Location & Linkages Strategies:

- Location outside of floodplains, wetlands, etc.
- Utilize existing utility (sewer, water, natural gas, electric, telephone/data) infrastructure to the extent possible.
- Incorporate existing transit systems into site area to serve community resources (malls, supermarkets, etc.).
- Provide additional transit (jitney, mini-bus, etc.) for extension of existing community resources (malls, supermarkets, etc.).

Water Efficiency Strategies:

- Reuse rainwater utilizing harvesting systems, thus minimizing stormwater run-off drainage systems required.
- Consider graywater technologies to capture shower, sink and laundry discharge for reuse, thus reducing waste water discharged into sewer system.
- Reduce potable water required for irrigation with graywater and/or harvested rainwater.

- Reduce potable water requirements within the building by incorporating high efficiency plumbing fixtures, sensor operated fixtures, graywater technologies and/or rainwater harvesting.

Energy & Atmosphere Strategies

The applicant would incorporate energy conservation into the building designs to promote conservation. Wherever economically feasible, energy-efficient technology and management methods would be incorporated into the design. Potential LEED Energy & Atmosphere Strategies include:

- Optimize energy efficiency with
 - high efficiency heating/cooling equipment that utilizes environmentally friendly refrigerants
 - programmable thermostats
 - Energy Star products/appliances
 - low wattage/fluorescent light bulbs
 - sensor operated light switches
 - lighting reflectors
 - timed/photo sensor operated outdoor lighting
 - potential photovoltaic technologies
 - high R-value insulating materials for building envelope, glass, ductwork, piping, etc.
 - high efficiency domestic hot water storage equipment
 - CO2 monitoring for public areas
- Utilize fundamental commissioning practices
- Utilize green power obtained through LIPA

Materials & Resources:

- Provide for the storage and collection of recyclables.

- Provide for construction waste management services.
- Utilize regional materials.
- Utilize forest certified wood and/or rapidly renewable materials.
- Provide for daylight and views in the architectural design.
- Utilize recycled content materials.

Indoor Environmental Quality Strategies:

- Provide indoor air quality management practices during and after construction.
- Use low emitting materials (paints, coatings, solvents, adhesives, composites wood products, carpets, etc.) that minimize off-gassing.
- Include indoor chemical and pollutant source requirements

Additionally, the County should ensure that the project is designed and operated so that the LEED strategies will be able to be maintained in a manner that the benefits remain over the life of the project.

18.3.2. Water

LEED strategies will be utilized to minimize water consumption as discussed in Section 18.3.1, above.

The Suffolk County Water Authority water supply and distribution system cannot, at present, meet the water demand for the entire project (Appendix B). However, this is based upon the limitations of the infrastructure and not the resource constraints of the aquifer as stated in the SCWA letter, as follows:

The limitation is due to the existing well and pump capacity in that area. The aquifer capacity is capable of supplying the required water. Therefore, additional well and pump capacity can be installed. When additional capacity is necessary beyond what is available from SCWA to meet the water needs of a development, the developer can contract with SCWA to construct the capacity needed to fully serve this project.

SCWA is continually improving the capacity of its water supply system. The time frame of this project has not been established. When the developer can forward a construction plan with a specific construction schedule, SCWA will review the system capacity at that time. It will be determined at that time if the developer will need to provide any funding for well and pump construction to serve the project.

Therefore, the SCWA can supply water for the entire development, however, may require a financial contribution from the developer.

18.3.3. Wastewater

LEED strategies will be utilized to minimize water consumption and wastewater generation as discussed in Section 18.3.1, above.

The Contract of Sale requires the Selected Developer to design and build necessary wastewater collection and treatment facilities, at its own cost, in accordance with the requirements of the County Sewer Agency, the County Department of Health Services, and the Town, based on the development as approved by the Town including installation of all sewer lines, sewer mains, and any necessary pump stations to transport waste to sewage treatment facilities; and to construct sewage treatment facilities sufficient to treat the projected gallonage from the Premises as development of the Premises is finally approved by the Town, under one of the following alternatives, as shall be determined by the Sewer Agency:

- construct a new privately owned sewage treatment plant, sufficient to treat the projected gallonage from the development at the Premises as finally approved, or
- increase the capacity of an existing publicly owned sewage treatment plant, and the Purchaser shall only be responsible to pay the cost and expense attributable to the projected gallonage from the development at the Premises as finally approved, or

- construct a new publicly owned sewage treatment plant, and the Purchaser shall only be responsible to pay the cost and expense attributable to the projected gallonage from the development at the Premises as finally approved.

In addition, the selected developer is responsible for payment of standard connection fees for connection to any existing publicly owned sewage plant, as required by law, if any such connection is made, based on the projected gallonage for the development as approved by the Town; execution of any and all necessary easements required by the Sewer Agency; and execution of all standard contracts required by the County Sewer Agency and compliance with all standard requirements for sewer construction, including posting of security and bonds.

18.3.4. Solid Waste

As discussed in Section 18.3.1, the site and buildings will be designed to incorporate LEED strategies which will reduce generation of solid waste.

18.3.5. Electricity and Natural Gas

As discussed in Section 18.3.1, the site and buildings will be designed to incorporate LEED strategies which will reduce consumption of utilities. While the exact energy design to be utilized by the selected developer is unknown at this time, several potential technologies including solar, wind, biomass gasification, and geothermal could be used.