

3.3 Utilities

3.3.1 Existing Conditions

The project site and nearby properties on Buena Vista Avenue are served by municipal water and sewer service, and by gas, electrical, telephone and cable service. Utility service has been discontinued for the five vacant buildings on the project site (Number 41 through 53 Buena Vista Avenue). Existing utilities are provided from the Buena Vista Avenue right-of-way and are shown in Drawing EX - Site Plan Existing Conditions, attached to this document. Specific utilities, potential project impacts and mitigation measures are described below.

Water Supply

The Buena Vista site is provided water by the City of Yonkers water supply system managed by the City Bureau of Water. According to the City of Yonkers 2009 Annual Water Quality Report¹, the City obtains drinking water from the New York City Water Supply System. The source of this supply is mostly from reservoirs in the Catskill and Delaware watershed areas located west of the Hudson River in the Catskill region. Water from the upstate reservoir system is conveyed to the Kensico Reservoir in Westchester County through two aqueduct systems. The City of Yonkers water supply enters Yonkers at several locations, including the Westchester County Water District #1 Kensico Line. According to the City of Yonkers Bureau of Water, the majority of water provided to the City of Yonkers, and to the project area specifically, is blended water from different reservoir systems that flow through the Kensico Reservoir².

In 2009, a total of 9.66 billion gallons of water entered the City of Yonkers water distribution system based on the City of Yonkers Annual Report. Average daily citywide consumption was 26.5 million gallons, with an average daily per capita usage of 135.1 gallons. Approximately 10 percent of annual usage was used for fire fighting purposes, hydrant flushing, street sweeping, and distribution system leaks.

According to a utility study completed by the project engineer, an existing 6-inch diameter water main currently services the portion of Buena Vista Avenue adjacent to the Project Site. As described above, the five occupied residential buildings on the property are served by the existing water line, while service to the five vacant buildings has been discontinued. The applicant is working with the City of Yonkers Water Department to assess the existing water supply infrastructure and to provide upgrades to the City infrastructure, as required, for the project. Proposed improvements to the existing water system are described under "Mitigation Measures" below.

Wastewater Treatment

Sanitary sewer lines and combined stormwater and sanitary sewer drains serve the Project Site as well as the surrounding neighborhood. The sewer lines are owned and maintained by the City of Yonkers Department of Public Works, Sewer Bureau.

According to the City of Yonkers website, the Sewer Bureau is responsible for the inspection, maintenance and repair of 400 miles of combined sanitary and storm sewers and associated catch basins and manholes. The majority of the sanitary system is very old, having been

¹ 2009 Annual Water Quality Report, City of Yonkers Bureau of Water

² Telephone communication, City of Yonkers Bureau of Water, October 20, 2010.

constructed in the early 1900's, resulting in the need for frequent maintenance. Infiltration and inflow of stormwater and groundwater and leaking pipes are problems resulting from aging infrastructure, and specifically for the City of Yonkers system. Westchester county combined sewers also pass through the City of Yonkers and provide trunk sewer and stormwater collection.

An 18 inch vitrified clay sanitary sewer pipe, owned by the City of Yonkers, runs along the west side of Buena Vista Avenue. In the approximate center of the street is an 18 inch vitrified clay combined sewer stormwater pipe owned by Westchester County. The City sanitary pipe joins the County combined sewer line in a manhole located at the intersection of Buena Vista Avenue and Hudson Street. The combined sewer main has the capacity to serve the proposed development, according to Mr. James Moran, P.E. at a meeting held on September 13, 2010. The location of sanitary sewer, combined sewer, catchbasins, as well as other utilities are shown in site plan sheet GR "Grading and Utilities".

According to utility information provided in the *River Park Center, Cacace Center, Larkin Plaza and Palisades Point DEIS (Struever Fidelco Cappelli LLC (SFC), March, 2008)*, the 18-inch County combined sewer line flows to a 72-inch brick combined County sewer trunk line on Main Street at the base of Buena Vista Avenue. This 72-inch trunk sewer flows to the Westchester county-owned North Yonkers Pump Station which is located west of the Metro North rail lines near the Hudson River. The pump station pumps septic and stormwater flow through a 54-inch force main to the Westchester County Yonkers Joint Wastewater Treatment Plant, located approximately one-half mile south of the site along the Hudson River.

The Westchester County Yonkers Joint Wastewater Treatment Plant (WWTP) was originally designed to accommodate a maximum flow rate of 330 million gallons per day (MGD) and treat up to 92 MGD according to the Westchester County Department of Environmental Facilities Annual Report (2005). The plant serves a population of approximately 500,000. Upgrades to the plant have increased its capacity to treat sanitary flow and the plant is permitted to treat 120 MGD, by the New York State Department of Environmental Conservation (NYSDEC). The current average daily flow is approximately 90 MGD, according to Mr. Marion Pompa, Westchester County Department of Environmental Facilities³. A written request has been sent to Westchester County Department of Environmental Facilities to confirm the current plant capacity and determine how much of this capacity is available for additional intake (see Appendix B Correspondence).

The applicant is working with the City of Yonkers Sewer Department to assess the existing sewer infrastructure and to provide upgrades to the City infrastructure to serve the project. Proposed investigation and improvements to the existing sewer system are described in Section 3.3-3 Mitigation Measures, below.

Private Utility Providers

Electric and Natural Gas Service

Electrical service to the Buena Vista Teutonia property and environs is provided by Con Edison through underground and overhead electrical lines located in the Buena Vista Avenue right-of-way. The project engineer has contacted Con-Edison regarding the project's anticipated

³ Telephone communication, October 19, 2010.

electrical needs and the capacity of Con-Edison to service the project (see Appendix B - Correspondence).

Con Edison also provides natural gas service to the City of Yonkers and the project site. Natural gas is provided through an underground pipe located in Buena Vista Avenue. The project engineer has contacted Con Edison regarding the project's anticipated natural gas needs and the capacity of Con Edison to service the project (see Appendix B - Correspondence).

Telecommunications Service

Verizon provides telephone and data service to the City of Yonkers and the Project Site. Cablevision/Optimum Cable currently provides cable service as well as telephone and data services to the City of Yonkers and the Project Site. These utilities are located both below ground and aboveground in the Buena Vista Avenue right-of-way. The applicant will work with telephone and cable service providers to ensure capacity to serve the project and to identify any needed facility upgrades.

3.3.2 Potential Impacts

The Project Description (Section 2.0) provides a discussion of the proposed building and project components. The project includes a 25-story building consisting of 412 apartment units and supporting facilities, including an automated clean-tech parking garage, with three levels below grade, a pool, leasing area, fitness center, and storage rooms and utility rooms. A hydroponic garden in a greenhouse is proposed over the garage. Utilities will be required for the proposed residences and supporting common areas, including municipal water and sewer service and electric, gas and telecommunications service for all project components.

The proposals for wastewater treatment and water supply improvements are based on discussions held with representative of the various City agencies responsible for overseeing and maintaining the improvements. Specifically, a meeting with the City of Yonkers Water Bureau and Engineering Department was held on March 24, 2010, and again with the Engineering Department on September 12, 2010.

Water Supply

The projected water demand is estimated to be approximately 29,099⁴ gallons per day (gpd), according to Edwards & Zuck, P.C., mechanical engineers. Water saving fixtures are proposed for all residential units and throughout the building.

The installation of water saving fixtures through out the building will reduce water consumption by approximately 59.5 percent when compared to standard type fixtures and an approximate reduction of 74 percent when compared to the American Water Works Association (AWWA) guidelines. The daily water consumption using standard type fixtures was estimated to be 71,918 gallons. The daily water consumption according to AWWA guidelines is estimated to be

⁴ *The water demand estimate uses conservative dwelling unit occupancies based on standard engineering practice and data - the projected occupancy will vary from the population estimate derived using demographic multipliers set forth in Section 3.8 of this DEIS.*

112,080 gpd. A comparison of water consumption for standard fixtures and water saving fixtures is provided in Table 3.3-1 Water Usage Estimates.

Table 3.3-1 Water Usage Estimates		
Fixture Type	Standard Fixtures	Water Saving Fixtures
Water Closet	1.6 gpf	1.0 gpf
Shower Heads	2.5 gpm	0.5525 gpm
Bathroom Sinks	2.2 gpm	0.375 gpm
Kitchen Sinks	2.2 gpm	1.25 gpm
Total Estimated Water Use	71,918 gpd	29,099 gpd
Source: Edwards & Zuck, P.C., May 2010.		

Estimates of water usage can vary but are based upon actual metered water usage surveys. These water usage estimates are used and relied upon by planners and municipalities to plan for infrastructure and utility investments. While the applicant cannot control the future water use of individual residents, the installation of water saving fixtures will reduce water consumption, as compared to standard fixtures.

The overall peak domestic water flow is estimated to be 535 gallons per minute (gpm). The first eight floors of the building will be supplied by street pressure. The upper floors of the building will be supplied by a domestic booster pump. The duplex booster pump will be sized to provide a total flow of 385 gpm at an output pressure of 130 pounds per square inch (psi). The booster pump is sized to provide adequate pressure for domestic flow to all upper portions of the building, including to the top floor.

Given the City of Yonkers average daily use of approximately 26.5 MGD, the estimated project water demand of 29,099 gpd is not expected to adversely impact the City water supply services.

The project is proposed to have a geothermal heating and cooling system to augment the Combined Heating and Power (CHP) system and reduce the consumption of traditional electricity, and natural gas. The geothermal system will be a stand alone looped water system that will not be connected to the City of Yonkers municipal water supply. Wells specifically drilled for the geothermal system will utilize natural groundwater and recirculate that water. The geothermal system is further described in Section 3.1 Geology, Soils and Topography.

The project will also have a hydroponic garden located above the proposed parking garage as described in Section 2.0 Project Description. Irrigation water supply for the hydroponics garden will come solely from stormwater run-off stored in the stormwater detention and treatment system located below the parking garage. City of Yonkers municipal water will not be utilized for garden irrigation. No separate water storage tanks for the garden will be required beyond the subsurface stormwater detention system. Details of the internal water distribution system for the proposed hydroponics garden and geothermal heating and cooling system will be provided at the time of project permitting.

The domestic water service for the building and residences will be a 6-inch line connected to a new 12-inch water line in Buena Vista Avenue. The location of the service connection to the City water main is shown in Drawing GR Site Plan Grading and Utilities. In consultation with the City of Yonkers Bureau of Water, a new 12-inch water service line is proposed to be installed in Buena Vista Avenue to provide both domestic and fire service for the project. A meeting between the applicant's engineers and the City of Yonkers Water Bureau and Engineering Department was held on March 24, 2010 and with the Engineering Department on September 13, 2010. Based upon those meetings, the City of Yonkers Water Bureau has accepted the conceptual proposal to construct a new 12-inch water main loop between Prospect Street and Main Street. According to the project engineer, the installation of a new looped 12-inch water main in Buena Vista Avenue will substantially improve water service over existing conditions. The new service will provide the water flow and pressure required for the domestic use as well as for fire fighting purposes. Fire protection and water demand below and the new water line is further discussed in Mitigation Measures below.

Cross Contamination Prevention

Cross contamination of water resources will be prevented by installation of backflow prevention devices in accordance of New York State Department of Health requirements. The building's fire water service will be protected by an approved double check detector assembly (DCDA) backflow preventer. The buildings domestic water service will protected by an approved reduced pressure principle (RPZ) backflow preventer. All make up water connections to hydroponic garden and geothermal systems will be provided with dedicated approved reduced pressure principle (RPZ) backflow preventers.

Domestic water will be supplied to the building by a domestic water service protected by an approved reduced pressure principle (RPZ) backflow preventer. The building will be broken into three domestic water pressure zones. The lowest of the three zones will be fed from street pressure and the upper two zones will be fed from a triplex domestic booster pump system. The system will be fed by horizontal distribution feeding vertical risers on the lowest floor of the pressure zone. The vertical risers will run the entire height of each pressure zone and the hot water risers will be circulated by horizontal circulation piping on the second floor from the top of the each pressure zone.

Water will be provided to the hydroponic garden from a storm water retention tank. The water from the tank will be pumped and distributed to the hydroponic garden by horizontal mains and branch piping with drops to all fixtures and equipment requiring water. A domestic water make up connection will be provided to the retention tank. The make up water connection will be provided with dedicated approved reduced pressure principle (RPZ) backflow preventer.

Fire Protection

A separate dedicated fire protection water service connection will be provided from Buena Vista Avenue. The maximum flow rate for the building's fire protection system will be 1,000 gpm. The building's fire protection water service is proposed to be an 8-inch line and the location of the proposed connection is shown in Drawing GR - Site Plan Grading and Utilities. The building's fire protection system will be supplied by a fire pump sized to provide a total flow of 1,000 gpm at an output pressure of 160 psi. The pump will provide adequate fire pressure throughout the building including to the top floor of the building.

Currently, two City hydrants are located in the vicinity of the project site; one near the southern portion of the site, at the corner of Buena Vista Avenue (east side) and Prospect Street and the second near the northern portion of the site, on the east side of Buena Vista Avenue. A single new hydrant is proposed on the west side of Buena Vista Avenue, at the front of the residential building. The location and number of proposed hydrants will be finalized in consultation with the City of Yonkers Water Bureau. The locations of existing and the proposed hydrants are shown in Drawing GR - Site Plan Grading and Utilities.

The City of Yonkers Water Bureau recently conducted a fire flow test in the vicinity of the project site, at the request of the applicant. Tests were done on both pressure and flow hydrants on Prospect Street and on Main Street and both hydrant systems are served by 12 inch cast iron water mains. The Prospect Street flow hydrant tested is located near the intersection of Prospect Street and Hawthorne Avenue. The Main Street flow hydrant tested is located in the front of the Post Office approximately 100 feet west of Market Street. A summary of the testing results is provided in Table 3.3-2, below.

Table 3.3-2 Fire Flow Testing Results				
Location - Hydrant Number	Static pressure (psi)	Residual Pressure (psi)	Flow Rate (gpm)	Calculated fire Flow (gpm)
Prospect Street Pressure Hydrant # 1860	85 psi	80 psi	NA	NA
Prospect Street Flow Hydrant # 1967	NA	NA	1350 gpm	5,373 gpm
Main Street Pressure Hydrant # 1825	105 psi	100 psi	NA	NA
Main Street Flow Hydrant # 1949	NA	NA	1500 gpm	6,900 gpm

Source: City of Yonkers Water Bureau, Correspondence June 8, 2010
 Note: NA - not applicable

A flow test is conducted using two hydrants - one hydrant has a pressure gauge and the second has the flow gauge. The pressure measured pre flow is the static pressure and the residual is the pressure measured under flow. That information is then used to estimate the available fire flow at 20 psi because that is the lowest pressure at which the fire pumps in the building and on the trucks should draw water from the system. Based on the flow tests that were conducted, the project engineers indicate that there will be adequate water available for fire fighting operations. The test conducted by the Water Bureau indicated the fire flow at 20 psi ranged from about 5,000 to 6,900 gallons per minute, so with the fire pump running at full capacity (1,000 gpm) there will be approximately 4,000 gpm remaining for the fire department. The applicant and the applicant's engineers will continue to work with the City of Yonkers Water Bureau and the Fire Department to assess existing hydrants and other fire protection infrastructure in the vicinity of the site.

Geothermal System

A geothermal system will be installed to heat and cool residential and common areas associated with the new apartment building. The system will tap groundwater from a series of wells to be drilled in the City right-of-way. The wells are drilled vertically into bedrock

approximately 1,500 feet below ground level. Ten (10) wells will be drilled and spaced 20 feet apart within the City sidewalk in front of the proposed development, on the west side of Buena Vista Avenue.

The system will operate on an open loop system pumping groundwater at approximately 52 degrees Fahrenheit, using a heat exchanger to either heat or cool the building and then recirculating the water back into the ground at approximately 90 degrees Fahrenheit. The wells will pump a combined volume of approximately 50 gallons per minute of water for the geothermal system.

Geothermal systems provides a reliable, energy efficient system of heating and cooling, based on capturing the energy between the outdoor and building temperatures in the winter and summer months and the stable constant temperature of groundwater. The geothermal system will be utilized in conjunction with the combined heat and power (CHP) system. In the summer months, excess heat from the CHP system can be reduced by the geothermal system, reducing energy demand for cooling. In the winter months the geothermal system will augment the heating of the building and reduce heating energy needs. A diagram which shows the water and power flows for the geothermal system and the CHP system is provided as Figure 3.3-1.

Based on the Applicant's experience with the installation and maintenance of geothermal wells at Main Street Lofts, it is anticipated that the system would require maintenance once per year for approximately two days to clean the system. The geothermal wells are not anticipated to adversely impact underlying soils, since steel casing will be used through the overburden material. The exchange of natural groundwater via the geothermal system is not expected to adversely impact the underlying bedrock.

Wastewater Treatment

The project's mechanical engineering consultant Edwards & Zuck has estimated a project sanitary sewer discharge rate of approximately 29,099 gpd. This estimate corresponds to the daily water consumption as calculated above and thus utilizes the same assumptions. The estimated daily sewer discharge for a baseline building with standard type fixtures is calculated to be approximately 71,000 gallons.

The buildings sanitary sewer is to be either 12 inches at 2% pitch or 15 inches at 1% pitch depending on site conditions and is based upon a total of 5,139 drainage fixture units (dFU) as outlined by the Plumbing Code of New York State.

Wastewater from the project will be discharged to the existing 18-inch County combined sewer located in the approximate center of Buena Vista Avenue. A new manhole is proposed at the connection of the project sewer line and existing combined sewer line. It should be noted that existing stormwater flow from the site largely flows to the 18-inch combined sanitary/ stormwater line in Buena Vista Avenue. The project proposes to detain stormwater volumes up to the estimated 100-year stormwater volume. In addition, the stormwater storage system has been designed with capacity to offset the proposed sanitary sewer system, thereby reducing the potential impacts to the combined sewer system. An offset storage volume of 112,080 gallons has been designed into the storage system (see SWPPP, Appendix E). A portion of this detained water, estimated to be 46,300 gallons every 30 days, will be used for irrigation of the proposed hydroponic garden. Therefore, peak stormwater flows to the 18-inch combined sewer will be reduced following construction of the project.

December 9, 2010

To mitigate the potential impacts of the anticipated increase in wastewater discharge to the existing infrastructure, the applicant has proposed remote television inspection of the existing combined sewer line and to provide spot repairs, as appropriate. Inflow and infiltration will be reduced in the existing combined sewer adjacent to the site. The applicant is working with the City of Yonkers Sewer Bureau to determine specific mitigation measures (see Section 3.3-3 Mitigation Measures, below).

The wastewater flow from the proposed project is estimated to be approximately 29,099 gpd. Based upon the estimated 30 MGD available capacity of the Westchester County Yonkers Joint Wastewater Treatment Plant (WWTP), the project is not expected to result in adverse impacts to the County treatment plant.

Other Utility Providers

Electric Service

The proposed 412 residential units and supporting commons areas, including automated parking garage, pool, fitness center and leasing center will require electrical service. The project mechanical engineer has estimated the projected electrical demand in a letter transmitted to Con Edison dated March 10, 2010 (see Appendix B Correspondence). The electric demand in the residential portion of the building would include: lighting and outlets, appliances, heat pump units, ranges, washer and dryers, and electric water heaters. Total demand for the residential units is estimated to be 12,285 kva. Common area electrical demand would include: common area lighting and power (parking and administration), HVAC loads, plumbing loads including pumps, elevators and pool equipment. Total demand for common areas is estimated to be 1,144 kva. Total demand using a residential connected load (23% demand factor) would be 3,830 kva or 4,615 Amps.

The project mechanical engineer has requested from Con Edison: (1) 2,000 Amp 277/480 volt, 3 phase, 4 wire service and (3) 3,000 Amp 120/280 volt, 3 phase, 4 wire service, provided to meter banks feeding the apartment units. The location of the proposed service connection lateral is shown in Drawing GR - Site Plan Grading and Utilities. The proposed building transformers are proposed to be located between the street and the front of the residential tower. The project engineer has provided a tentative location for the two proposed transformer vaults, as shown in the diagram attached to the letter provided by ConEdison (see June 24, 2010 letter, Appendix B). Based upon information provided by ConEdison, the transformers will require a space of approximately 39 feet by 7 feet and ConEdison is prepared to "supply the standard three phase, four wire, alternating current service at approximately 60-cycles and 120/280 volts". The project is not expected to result in adverse impacts to local electrical service.

Natural Gas Service

As described above, the project mechanical engineer has contacted Con Edison regarding the estimated project demands for natural gas service and formally requested service for the project (see May 24, 2010 letter, Appendix B Correspondence). The engineer requested new gas service with one gas meter. The new gas meter assembly will be located in a gas meter room in the building cellar level. Natural gas demand will be limited to the proposed combined heat and power system (CHP) consisting of gas-fired micro-turbines. The estimated natural gas demand is as follows:

<u>Load Component</u>	<u>Unit Gas Load</u>	<u>Quantity</u>	<u>Total Gas Load (MBH)</u>
Gas Micro Turbine	842	6	5,052 MBH

The applicant will work with Con Edison to provide any required infrastructure improvements to service the project. The project is not expected to result in adverse impacts to local natural gas service.

Telecommunications Service

It is anticipated that each of the proposed 412 residences, as well as building management and leasing offices will require telephone and cable service. The applicant will work with the telecommunications service providers, Verizon and Cablevision/ Optima to provide appropriate service connections and infrastructure to service the building.

3.3.3 Mitigation Measures

Water Supply

The City of Yonkers Bureau of Water was contacted to evaluate existing water infrastructure conditions, capacity, and maintenance issues. The project engineer has determined that the existing 6-inch water main located in Buena Vista Avenue is not adequate to service the proposed project. In coordination with the City of Yonkers, the applicant proposes to extend the existing 12-inch water main at the intersection of Prospect Street and Hawthorne Avenue easterly to Buena Vista Avenue. The 12-inch main would be extended to the north along Buena Vista Avenue, past the project site to Main Street where the main would be connected to an existing 12-inch line. Approximately 950 feet of water main would be replaced. All existing service laterals currently supplied by the 6-inch main will be reconnected to the 12-inch main including existing fire hydrants. According to the project engineer, the installation of a new looped 12-inch water main in Buena Vista Avenue will substantially improve water service over existing conditions. The new service will provide the water flow and pressure required for the domestic use as well as for fire fighting purposes.

The costs and details of the proposed water service upgrades will be determined in consultation with the City of Yonkers as the project advances through the SEQRA process. The location and extent of the proposed water main replacement is shown in Drawing GR - Site Plan Grading and Utilities. The City of Yonkers Water Bureau has accepted the conceptual proposal to construct the new 12-inch water main loop between Prospect Street and Main Street.

Wastewater Treatment

As described above, the project will discharge wastewater to a new sanitary sewer manhole in Buena Vista Avenue, connecting to an existing 18-inch combined sewer pipe. The new sewer manhole will be constructed by the applicant, in coordination with the City of Yonkers Engineering Department. As mitigation for the anticipated increased flow, the existing sewer main in Buena Vista Avenue will be inspected by remote television cameras and the condition of the pipe will be documented. The inspection is proposed from a manhole near Main Street along Buena Vista Avenue to the project site. The applicant is not proposing system wide improvements to the City wastewater or combined sewer systems related to inflow and infiltration.

December 9, 2010

On-site stormwater management infrastructure will also mitigate and reduce the peak stormwater flows to the combined stormwater / sewer line in Buena Vista Avenue. As described above, the existing 18-inch combined line in Buena Vista Avenue collects and conveys both sewer and stormwater. The project will detain stormwater from the site in a subsurface detention and treatment system. The stormwater storage system has been designed with capacity to offset the proposed sanitary sewer system, thereby reducing the potential impacts to the combined sewer system. An offset storage volume of 112,080 gallons has been designed into the storage system (see SWAP, Appendix E). Peak flows to the system will be reduced by detaining stormwater during peak flow periods and releasing stormwater during off-peak periods. Given the anticipated peak flow reductions, the project's design mitigates any potential impacts to City sewer infrastructure.

Other Utility Providers

Based upon correspondence with ConEdison, the applicant will provide for the installation of two transformer vaults, and ConEdison will install the transformers, network protectors, and service cables to the customer point of entry (See June 24, 2010 letter, Appendix B). No other private utility improvements have been identified.

Energy Conservation

The Buena Vista Teutonia project has been designed as a sustainable residential development. Energy use and conservation measures for the project are fully described in Section 8.0 Energy. The project includes a number of design features that would reduce the project's operational and long term energy use, including:

- Geothermal heating and cooling system
- Combined Heat and Power (CHP) system using microturbines
- Automated garage system
- Hydroponic garden
- Proximity to public transportation
- Use of energy efficient building materials
- Use of water conservation fixtures that exceed building code requirements
- Collection and reuse of rain water for hydroponic garden irrigation
- Redevelopment of brownfields site to minimize vegetation loss on undeveloped land
- Minimize building footprint to conserve land for alternative uses or preservation

Given these energy reducing design features, the Project's proposed use of energy and the related generation of greenhouse gases have been reduced to the extent practical.



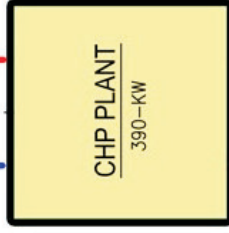
SUMMER

WINTER

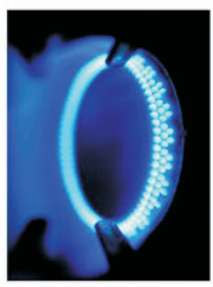
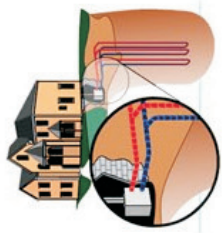


CHILLED WATER(COOLING)
LOBBIES AND COMMON AREAS

HOT WATER (HEATING)
-GREEN HOUSE
-DOMESTIC HOT WATER PRE-HEAT



ELECTRICAL POWER FOR:
GEOTHERMAL PUMPS-
PARKING GARAGE-



NATURAL GAS FUEL SOURCE

Figure 3.3-1: CHP Plant Flow Diagram
Buena Vista Teutonic PUR
City of Yonkers, Westchester County, New York
Source: Edwards & Zuck Consulting Engineers, 9/28/10