

### **3.13 Utilities – Water**

#### **3.13.1 Proposed Water System**

The project site will be served by the Village of New Paltz Water System, which obtains its water supply from a connection to the New York City Catskill Water Aqueduct. A pump station draws water from the Aqueduct to a water treatment plant (WTP) located one-quarter mile northwest of the Aqueduct near Mountain Rest Road in the Town of New Paltz. The Village also maintains four reservoirs in the vicinity of the water plant for back-up flow when water from the Aqueduct is not available.

Water is treated through one of three Trident Microfloc rapid sand filters, each of which is rated for a capacity flow of one million gallons per day (mgd). The permitted limit of the plant assumes that one of the filters will be off line at any given time; therefore, water flow capacity of the WTP is rated at two million gallons per day. The WTP also provides disinfection and pH adjustment for corrosion control. Treated water is piped to the Village of New Paltz Water Distribution System where it enters storage tanks for potable water and fire suppression; water storage capacity is 2.4 million gallons.

The WTP has excess water capacity based on monthly averages of daily flow and peak day flow between January 2003 and May 2005. The highest average daily flow was recorded in February 2005 at 897,200 gpd, and the highest peak daily flow was in October 2003 at 1.33 mgd, leaving excess water capacity at approximately 700,000 gpd based on worst case scenario peak daily flow.

#### **3.13.2 Potential Impacts**

The Stoneleigh site will connect to the Village of New Paltz Water System via a 12-in. diameter line along Bonticou View Drive. A 12-in. line is necessary to service Stoneleigh and the Woodland Ponds site. The water line will enter the Stoneleigh site where an 8-in. diameter single line loop system will be installed to serve the site. A 12-in. line will continue across the site and service the Woodland Ponds site.

The proposed distribution system will consist of about 3,500 linear feet of Class 52, 8-in., cement-lined, ductile iron pipe complying with American Water Works Association (AWWA) Standards C151 and C104. Water mains will be pressure tested and disinfected with chlorine solution prior to installation.

The connections will conform to requirements defined in the New York State Sanitary Code 10 NYCRR Subpart 5-1, design standards in the “Recommended Standards for Water Works” by the Great Lakes Upper Mississippi River Board of State Public Health & Environmental Managers, 1997, also known as the “Ten States Standards for Water”, and the National Fire Protection Association (NFPA) standards for fire protection.

Water lines will be installed 48 inches to 60 inches below grade and will generally be located on one side of the roadways. Hydrants and valves will be installed as per Ten State Standards. The Ulster County Department of Health (UCDOH) will be responsible for review of the water systems.

The project water demand is the same as the wastewater projected flow presented in section 3.13.1; 72,000 gpd (avg.).

### **Water Pressure**

Data provided by the Village Engineer and Chazen Companies suggest the static residual pressure at Bonticou View Drive is 80-100 psi. The highest floor elevation at the site is about 330 ft EL and the connection at Bonticou View Drive is at 275 ft EL for a difference of 55 ft or 25 psi +/- . With residual pressure at 80 psi, a drop of 25 psi results in a site pressure of 55 psi. Ten State Standards recommends normal working pressures of 35 psi. Therefore, no intermediate pressure booster stations are needed and the site will have a working pressure of 55 psi up to 70 psi in some areas particularly on the south side, which is at elevation 280-300 ft EL.

### **Fire Flow**

Fire flow water demand requirements are based on National Fire Protection Association (NFPA) 13 and ISO Guide for Determination of Needed Fire Flow (08-2005 editions.). NFPA Section 11.2.2 table 11.2.2.1 recommends fire flow for ordinary hazard classifications is between 850 and 1,500 gpm at 60 to 90 minutes. ISO is used to calculate the flow based on construction class and classification. The calculation below determined the fire flow to be 1,000 gpm. Therefore, the recommended fire flow is 1,000 gpm for this application.

#### Assumptions:

- 1,000 S.F. exposure
- Sprinklered buildings
- 30' separation, minimum
- Frame construction Class 1 use  $F = 1.5$
- Residential use, habitational occupancy, limited combustibility Class 2,  $O_i = 0.85$

#### Where:

$C_i$  = Factor related to type of construction (see below). Round to the nearest 250.

$O_i$  = Factor related to type of occupancy (0.85)

$X$  = Factor related to exposure of buildings

$P$  = Factor related to communication between buildings

#### Where:

$F$  = Frame construction Class (Class 1,  $F = 1.5$ )

$A_i$  = Effective area:

- Assume acceptable division wall (one-hour fire rating) between units.
- Assume 1,000 S.F. per unit, 2 floors per building.
- Effective Area = 100% 1<sup>st</sup> Floor + 50% 2<sup>nd</sup> Floor

$$A_i = 1,000 + 0.5(1,000)$$

$$A_i = 1,500$$

Use:

$$C_i = 1,000 \text{ (to nearest 250)}$$

$$[1+(X+P)^i] = \text{Exposure \& Communication Factor}$$

Where:

X depends on:

- Construction class and the product of length of wall in feet, and height of building in stories
- Assume 30 feet distance between buildings, end to end and side to side.
- 25 ft width x 6 units x 2 stories = 300
- From Table 330A ISO 08-2005 Edition: X = 0.19
- Assume no communication between building units. (i.e.: continuous firewall). P = 0

Round to nearest 1,000 GPM = **1,000 GPM**

### **3.13.3 Mitigation Measures**

Any new water infrastructure proposed to be provided beyond the existing public system is planned to be private, at the request of the Village Engineer. A New York State Transportation Corporation is proposed to be established to manage the operation and maintenance of new water lines that would be proposed to connect with the existing public water line on Bonticou View Drive.

In the condominium units double headed sprinkler systems will be provided, with the upper sprinkler unit providing fire suppression between floors, and the lower sprinkler unit providing suppression within the living space of the apartment unit itself. This is based on the requirements of the New York State Building Code for wood framed structures.

#### ***Water Quality***

Water quality data is registered quarterly by the Village in accordance with UCHD requirements. The municipal water quality is deemed acceptable by the Village. During construction, installation of new lines will be disinfected as per applicable AWWA standards prior to being put into service.

In order to supply the proposed Woodland Pond site and Stoneleigh with adequate water, the existing 6-in. diameter water line at the intersection of NYS Route 32 and Mulberry Street to the end of Bonticou View Drive will need to be replaced with a 12-in. line at a cost of \$550,000 (4000 ft @ \$137/foot).

The UCHD will oversee the design of the proposed system and corrections on behalf of the NYS Dept. of Health.