E. Utilities

1. Existing Conditions

a. General Utilities

The existing RPC Campus has an extensive internal utility system. This includes sanitary sewers, water mains, storm drains, electrical distribution, communication and data, steam lines and street lights. All of these systems are private systems that serve the buildings within the RPC Campus. There is also a series of utility tunnels that are located between some of the buildings. Based on conversations with RPC personnel, these tunnels are no longer in use.

When the Town of Orangetown obtained portions of the RPC property, a study was performed by RPC to identify the utility services within the land to be conveyed that were necessary to be maintained so as not to interrupt the service to the buildings and facilities on the campus. Easements were established for these utilities within the Town property. The utilities to remain or to be relocated that impact the proposed project are discussed below.

b. Sanitary Sewers

The Project Site is served by the Town of Orangetown sewerage system. The Orangetown Sewer Department operates and maintains the Wastewater Collection and Treatment Systems for the Town of Orangetown, as well as transporting and treating the wastewater from the Villages of Nyack, Upper Nyack, South Nyack, Grandview, Upper Grandview and Piermont. In addition, the Town treats sewerage from a portion of the Boroughs of Rockleigh and Old Tappan in New Jersey. The Orangetown Wastewater Treatment Facility (OWTF) is located along Route 303 in Orangeburg, N.Y. and has a capacity of 12.75 million gallons per day. Its September 2008 flow was 7.5 million gallons per day (MGD). The OWTF provides primary and secondary treatment utilizing module plastic trickling filter media. The collection system within the Town consists of over two hundred miles of sewer pipe and 39 individual pump stations.

Sewer flow from the RPC Campus is currently pumped to a gravity manhole in Lester Drive. From this manhole, sewage flows by gravity to a siphoned system and then to a wastewater treatment plant (WWTP) in Orangeburg. See Exhibit III.E-1.

The RPC facility's original sewage disposal system was an underground disposal (septic) system with sewage settling tank and leaching area. After a 1989 fish kill in Lake Tappan, the NYSDEC required RPC to stop the subsurface discharges and connect the system to a municipal sewer system. RPC constructed a pump station in early 1990 which included the construction of over a mile of 10 inch force main to lift the sewage and discharge it to the existing sanitary manhole in Lester Drive. Based

on records provided by the Town, the existing average daily flow from the RPC pump station is 160,000 gallons per day (GPD).

Also as part of the NYSDEC action, RPC installed monitoring wells and pumps to extract ground water and treat it. The system is still in operation and the extracted water also is being discharged to the sanitary pump station.

The onsite RPC sanitary collection system was built in the early 1930s. (See Exhibit III.E-2, Existing Sanitary Sewer System). The topography of the area divides the existing system into two sub-areas designated as north and south areas. The flow from the north area is being collected by a main that consists of a series of 12 inch to 18 inch pipes along 3^{rd} Avenue and connects to the pump station. The Children's Psychiatric Center along Convent Road, also flows to this system by a force main and connects at a manhole on the 18 inch main.

The sewage from the south area flows northward along 3rd Avenue and Oak Street and to the pump station. These mains consist of 10 inch to 12 inch mains.

Along Blaisdell Road an 8 inch sewer collects the flows from residential houses. This main connects to a manhole in 3rd Avenue. This main also conveys sewer flow from the existing NYS Cook/Chill facility west of Blaisdell Road and south of Old Orangeburg Road. A sewer from this building is located in the rear of the existing residences.

These sewer mains are generally clay tile pipes, which was the standard material at the time of construction. This clay tile pipe can withstand the corrosive action of sewer waste, however, due to its pipe joints and material brittleness, the pipe tends to have a high infiltration rate and may need further investigation for its integrity.

c. Water Supply

Water Service to the Town of Orangetown is served by United Water New York (UWNY). UWNY supplies drinking water to approximately 90 percent of Rockland County's residents and draws about 80 percent of its water supply from wells throughout Rockland County while the remaining 20 percent is supplied from a surface source. The existing water supply is composed of: 1) the Ramapo Valley Well Field in Ramapo; 2) 47 active system wells located throughout the County; 3) the Lake DeForest Water Treatment Plant in Clarkstown; and 4) the Letchworth Village Water Treatment Plant in Haverstraw. The distribution system is composed of approximately 1,000 miles of pipe and 14 storage tanks.

The average day demand for the UWNY system is approximately 30 million gallons per day (mgd). The system's peak sustainable supply capacity is 45.5 mgd, and the short term peak supply capacity is 48.5 mgd. Of the supplies, the Ramapo Valley Well Field is the most susceptible to periodic dry spells or short term droughts and prolonged water shortage since its available supply is linked to the flow in the

Ramapo River. UWNY has taken efforts to bolster the reliability of the Ramapo Valley Well Field by purchasing Potake Pond, which is used to supplement flow in the Ramapo River; however, the available flow from Potake Pond does not provide sufficient volume to ensure the reliability of the Ramapo Valley Well Field. Over the past 25 years, Rockland County residents have faced water use restrictions five times.

It is estimated that water demand will increase over the next 20 years. By 2015 the estimated peak day water demand will be 52.6 mgd. United Water New York filed a Long-Term Water Supply Project with the New York State Public Service Commission in January 15, 2007. UWNY has implemented a two-tiered approach to meet the supply commitments and projected water demand. The first tier, a near term strategy, will be implemented to develop new supplies and improve and maximize the use of existing sources. Near term improvements may include the conversion of test wells to production wells, expansion of the Letchworth Village Water Treatment Plant, the installation of new wells, well optimization, Potake Phase 2, and aquifer storage and recovery. The first tier improvements will assure that the available water supply is adequate to satisfy the projected peak demands through 2015.

The second tier of the strategy is the development of a long term water supply project, which will include the Hudson River Desalination Project. The project is anticipated to have an ultimate capacity of 7.5 mgd; however it would be implemented incrementally to keep pace with water demands for the next 20 years.¹

The existing transmission mains surrounding the RPC site include a 12 inch pipe along Convent Road, and 16 inch pipe along Old Orangeburg Road. UWNY has indicated that the static pressure of the water system is 135 pounds per square inch (PSI) at Convent Road and 160 PSI at Old Orangeburg Road.

The RPC Campus is currently being serviced from the public water system as follows:

- A northern 8 inch service connection from the 12 inch main in Convent Road to a meter building east of 3rd Avenue at the Convent Road entrance. This meter and building were upgraded during the rehabilitation of the Children's Psychiatric Center in 2000.
- A southern connection 8 inch service from the 16 inch main in Old Orangeburg Road to a meter building along 1st Avenue, north of Old Orangeburg Road.
- A connection from the site system to the RPC Staff Court facilities located south of Old Orangeburg Road, including residences and public restrooms.
- Individual connections and meters from the water main along Blaisdell Road to the existing single family residential houses along Blaisdell Road. This main is connected to the 16 inch along Old Orangeburg Road and terminates at Veterans Memorial Highway.

¹ "Long Term Water Supply Project United Water New York", January 2007.

Except for the single family homes along Blaisdell Road, the Project Site is served by a private water system owned and maintained by RPC. Service to the individual buildings and fire hydrants are from the private water system. The majority of these mains is 10 inch pipe and made of either transite pipe (cement lined asbestos) or unlined cast iron. See Exhibit III.E-3, Existing Water System.

The Broadacres Golf Course uses the existing pond in the northern portion of the site for irrigation. The golf course does not use water from the RPC system for irrigation.

d. Electric, Gas and Communications Service

The Orange and Rockland (O&R), a subsidiary of the ConEdison, Inc., supplies Rockland and North New Jersey with electric and gas including the site. O&R operates a distribution system of electric to 300,000 customers and gas to 126,000 customers. The detailed description of the system supplying the existing RPC Campus is presented below.

Electric

The service to the existing RPC facility is the overhead lines along Convent Road to the north and along Old Orangeburg Road to the south. All these lines are three phase systems. The main power supply to RPC is by two overhead 3-Phase lines from Convent Road and to the Power House, on 3^{rd} Avenue, where the meters are located. The system inside the RPC is privately owned and maintained. O&R provides street light services to some parts of 3^{rd} Avenue, 2^{nd} Avenue, and North Street. These street lights are connected to the Convent Road line.

A second minor connection is along Old Orangeburg Road through 2nd Avenue. This connection is a 3-Phase overhead line for Building No.19 only. This is metered inside the building.

Along Blaisdell Road, the residential houses are connected to an overhead line along Blaisdell Road with individual meters. This line is connected to the main line along Old Orangeburg Road. See Exhibit III.E-4, Existing Electric Services.

Gas

The existing RPC Campus is being supplied with gas along Convent Road and Old Orangeburg Road. The gas mains in Convent Road are 4 inch plastic, 8 inch wrap steel and 6 inch plastic. The RPC site is connected to this main by a meter that is located on 3rd Avenue. This meter is connected to the Power House by an 8 inch warp steel pipe main. See Exhibit III.E-5.

The two mains along Old Orangeburg Road are 8 inch steel main from the west of Veterans Memorial Highway to 1st Avenue and a 4 inch plastic gas main from 3rd Avenue to New Orangeburg Road eastward.

Along 3rd Avenue a 4 inch plastic gas main serves Building No. 33 with meter inside the building. This pipe is connected to an 8 inch steel main in Old Orangeburg Road. Along 1st Avenue, a 2 inch plastic gas main services Building No. 19 and the Administration Building. This service is metered at each building.

The private residences along Blaisdell Road are serviced from the 4 inch plastic gas main with individual meters.

Communications

The existing RPC facility currently has a private data and communication system (including telephone and cable telephone service) within the complex that serves the existing buildings. The system is generally underground through the RPC Campus.

e. Steam

The existing buildings within the RPC campus are provided steam for heating from a central plant located west of 3^{rd} Avenue near Oak Street. The steam is distributed to the building in underground pipes throughout the campus.

2. Anticipated Impacts

a. Sanitary Sewer

Design Flows

The proposed project will consist of approximately 575 dwelling units, including approximately 478 townhouse/condominium age-restricted (55+) units; 33 age-restricted single family homes; 32 age-restricted affordable units; 20 units for community volunteers; and 12 market rate single family homes. The project will also include a community building and pool. The average domestic daily sewer flow from the project is projected as 143,824 gallons per day (GPD) (see the table IIIE-1).

Type of Use	Unit	Total Units (Bedrooms)	Unit Flow Rate (Gallons Per Day/unit) ¹	Daily Flow Rate (Gallons Per Day)
Northern Portion				
478 - 2 Bedroom Townhouse	Bedroom	956	150	143,400
33 - 3 Bedroom Detached	Bedroom	99	150	14,850
Clubhouse	Patrons	50	10	500
Club Employees	Employees	2	15	30
Southern Portion				
12 - 3 Bedroom Single Family Residence	Bedroom	36	150	5,400
20 - 2 Bedroom Apartment	Bedroom	40	150	6,000
32 - 2 Bedroom Apartments	Bedroom	64	150	9,600
	Daily Flow (D	F)		179,780
Average Daily F	low (ADF less 2	O%) = ADF (GP)	PD) ²	143,824
Maximum Daily	287,648			
Peak	Hourly Flow (4 ti	mes ADF)		0.58 MGD (399 GPM)

Table IIIE-1 Projected Sewage Flows

¹ Existing water usage is based on the NYSDEC Design Standards for Wastewater Treatment Works, 1988, Table 3, and Expected Hydraulic Loading Rates.

² A 20 percent flow reduction for the use of water conserving fixtures has been applied. Section 15-3014 of the Environmental Conservation Law mandates the use of water conserving fixtures in new or renovated facilities.
MGD = million gallons per day; GPM = gallons per minute

b. Proposed Sewer System

The existing sewer system within the Project Site will be abandoned and removed, except as follows (see Exhibit III.E-6):

- The sewer main in Maple Street connects to the golf clubhouse and building on the RPC property along 1st Avenue. This main will either need to be relocated along the north edge of the new golf holes, south of the residential development, or connected to the sewer system within the new street system to maintain the service.
- An investigation will be required to determine if the main along 3rd Avenue provides service to the water meter building. This main will either need to be maintained or all active services connected to the new sewer system.
- The sewer system serving the RPC facilities to remain along Old Orangeburg Road, will need to be maintained to continue to service the facilities east of the new development. An existing sewer may be located on the volunteer multifamily parcel. This sewer will need to be maintained and relocated if it conflicts with the proposed development. Also, the sewer serving the Cook/Chill facility to the west, south of Old Orangeburg Road, will need to be maintained. Appropriate easements will need to be provided for RPC sewers remaining on the development parcel.

The Town has indicated that it will be necessary to construct a new pump to service the new development and the existing RPC facility. The pump station would be constructed on Town property to the west of 3^{rd} Avenue. The proposed pump station will have an approximately 1.4 MGD capacity. An access road to the pump station will need to be from 3^{rd} Avenue. Appropriate easements would be required from RPC. Metering of the RPC connection would continue similar to the present condition.

The force main from the pump station to the manhole in Lester Drive would become a public facility and would be maintained by the Town. Appropriate easements for the portion of the force main through RPC property would be required.

New sanitary sewers would be constructed within the new development. These sewers would be connected to the new pump station. The alternates for connecting to the existing sewers are as follows:

- The northern development area will have new public sanitary sewers within the new streets. This system will flow to 3rd Avenue. From 3rd Avenue the system will need to be routed to the new pump station either by a new sewer along the southern portion of the development parcel west of 3rd Avenue and then south through the Town property to the pump station or by connection to the existing RPC sewers. If the RPC sewers are used, a study will be required to determine if they have capacity to convey the total flow to the sewer or if they will need to be reconstructed or rehabilitated to meet current design standards. Any RPC sewers that are used for flow from the proposed development and the RPC facilities would need to be dedicated to the Town for maintenance as public sewers. Appropriate easements for sewers within the RPC site would be required.
- The southern development parcel will need to be connected to the RPC sewers in 3rd Avenue or a new sewer constructed from 3rd Avenue to the pump station. If the RPC sewers are used, a study will be required to determine if they have capacity to handle the total flow to the sewer or if they need to be reconstructed or rehabilitated to meet current design standards. Any RPC sewers that are used for flow from the proposed project and the RPC facilities would need to be dedicated to the Town for maintenance as public sewers. Appropriate easements for sewers within the RPC site would be required. An alternative to using the RPC sewers would be to construct a new sewer system from Old Orangeburg Road to the new Town pump station to convey only flows from the proposed development. This alternative would also require easements within the RPC property for construction, and maintenance.

c. Water Mains

Design Flows

The proposed development will have an average daily water demand of 179,780 GPD. The peak hourly domestic water demand is approximately 499 GPM. Based on the proposed configuration of the development, the required ISO fire flow demand will be 1,000 GPM. See Table IIIE-2 below.

Domestic Water Flow	
Domestic Water Flow	
Average Domestic Sewer Daily Flow (Gallons Per Day, GPD), see Table III.E-1	143,824 GPD
Average Daily Water Flow = Average Domestic Sewer Daily Flow X 1.25 1 (GPD)	179,780 GPD
Maximum Daily Domestic Water Flow = Average Daily Water Flow X 2.0 (GPD)	359,560 GPD
Peak Hourly Domestic Water Flow = Average Daily Water Flow X 4 (Million GPD)	0.719 MGPD
Peak Hourly Domestic Water Flow (Gallons Per Minute, GPM)	499 GPM
Fire Flow FFN ²	1,000 GPM

Table IIIE-2

¹ Average Daily Water Flow = 1.25 X Average Domestic Sewer Daily Flow to adjust for water that is not directed to the sewer such as Landscaping, Vehicle Washing, etc.

² Fire flow demand for the one and two-family dwellings which are spaced 11- 30 feet apart is 1000 gpm based on ISO Guide for determination of Needed Fire Flow, Chapter 7.

Distribution

The water system serving the RPC facilities to remain will be isolated from the water system for the proposed project. The mains along 3rd Avenue, Oak Street, and 1st Avenue will remain and the two meters will continue to supply the RPC system in two locations. The system will continue to be a private water system.

The water mains within the project area will be abandoned and removed, except as follows (see Exhibit III.E-6):

- The 10 inch water main in Maple Street provides a loop water system to the RPC facilities east of 1st Avenue. This main will need to be located along the north edge of the new golf holes, south of the age-restricted residential development to maintain the service.
- The location of the 12 inch main west of 3rd Avenue, in the area of the proposed residential cluster will need to be determined during final design, and it will need to be relocated if it conflicts with the proposed site development.
- The water main along Old Orangeburg Road, servicing the properties south of the road, will need to be maintained to continue to service the facilities east of the development.

The proposed water system serving the proposed development will be public water mains within the street system. The northern development area will be connected to the 12 inch transmission main along Convent Road. Each proposed building and facilities will be connected and metered separately to the street mains. The new public mains will be provided with fire hydrants for fire protection and spaced as required by the Orangeburg Fire Department. The size of the proposed water mains will be determined during the detailed design of the project. The capacity and pressure of the 12 inch main along Convent road is sufficient to supply the domestic and fire protection water to the site.

The redesign of the Broadacres Golf Course will include the construction of a new irrigation pond. This irrigation pond will likely be located in the northeastern portion of the relocated golf holes, to the south of the proposed age-restricted community. The runoff from the drainage area to the north will need to be routed to the pond to provide an inflow of water. Also, stormwater discharge from the northern development may also be routed to the pond, or ponds, to provide an additional source of water.

d. Gas, Electric and Communications

Gas

The existing 8 inch gas service to the RPC facility from Convent Road along 3^{rd} Avenue will need to be maintained. The residential development west of 3^{rd} Avenue may impact the gas main. If the proposed buildings or roads impact the gas main, it will need to be relocated. The existing 4 inch gas main in Blaisdell Road may need to be relocated in conjunction with the realignment of the road to align with 3^{rd} Avenue. See Exhibit III.E-6.

The new homes in the northern development area will be served by new mains within the streets. The new mains will connect to the existing mains in Convent Road.

Electric

The existing electric service to the RPC facility from Convent Road along the west side of 3^{rd} Avenue will need to be maintained. The residential development west of 3^{rd} Avenue may impact the electric service. If the proposed buildings or roads impact the electric line, it will need to be relocated. The overhead electric line in Blaisdell Road may need to be relocated in conjunction with the realignment of the road to align with 3^{rd} Avenue. See Exhibit III.E-6.

All new electric service will be underground within the proposed development. The new services will connect to the existing O&R electric facilities in the adjacent public street.

Communications

The existing communications and data service to the RPC facility within Maple Avenue will need to be relocated and maintained. All new telephone and cable TV will be from the existing facilities in the adjacent public streets. All new facilities will be underground. See Exhibit III.E-6.

e. Steam

The existing steam lines within the Project Site are presently not in operation. They will be removed or abandoned as part of the site development. The easement for the tunnel in the area of the new golf holes will need to be abandoned. (See Exhibit III.E-6.)

3. Proposed Mitigation

a. Sanitary Sewers

The project will require the construction of a new pump station with an emergency power generator. The maximum capacity of the new pump will be approximately 1.4 million gallons per day. This pump will service the new development as well as the existing RPC facility. The responsibility for the cost of the pump station will need to be negotiated between the Town, RPC and the Developer.

The routing of the proposed sewers from the pump station will need to be determined based on additional studies to be prepared as part of the site plan approval process. These studies will include the evaluation of the requirements for new sewers or reconstruction or refurbishment of existing sewers. Use of existing RPC sewer for joint use of the development and the Town will require such sewers to be dedicated and maintained by the Town.

New sewers will be constructed within the proposed development area. These sewers will be owned and maintained by the Town and will be located within easements within the private streets. The routing of the new sewers from the Project Site to the new pump station, the existing force main, or reuse of existing RPC sewers will require negotiating easements with RPC.

b. Water Supply

The proposed development will be serviced by the existing United Water New York (UWNY) facilities in the adjacent streets. The new water mains within the project area will be owned and maintained by UWNY and will require appropriate easements to accommodate the new water service. The proposed water service system will be separate from the existing RPC private water system, and will not adversely affect the existing RPC water facilities.

Portions of the existing RPC water service system to remain may be within the Town property. Appropriate easements will be required to accommodate the final water configuration. With the improvements noted above, adequate water service can be provided to the project and there will be no impact to the existing RPC water service. To reduce the water demand, mitigation measures should be considered to include water conservation opportunities. Such measures would include the following:

- Use of high-efficiency irrigation technology or use of captured rain or recycled site water to reduce water consumption.
- Use of high efficiency fixtures to reduce the potable water demand.
- Use of appropriate landscape types and landscape design with indigenous plants to reduce or eliminate irrigation requirements.

The design for the reconstruction of the Broadacres Golf Course should include a new irrigation pond to supply the new irrigation system proposed for the course. Similar to the existing golf course, the course should not rely on a public supply of water for irrigation to the extent practical.

c. Gas and Electric

The Orange and Rockland (O&R), currently has adequate capacity to provide service to the new development, with no required additional upgrades to their existing infrastructure. New service lines will be installed underground within the new streets. The gas and electric distribution system will be owned and maintained by O&R and will be located within appropriate easements. All service connections to the main distribution lines will be underground and individually metered.





Saccardi & Schiff, Inc. - Planning and Development Consultants











Existing Utility Easements to be Maintained or Relocated

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Sanitary Sewer Water Line Distribution Steam Line Distribution Telephone/Data Distribution Electrical Distribution Natural Gas Distribution

Parcels to be Retained by New York State

Parcels Acquired by the Town of Orangetown

Other Parcels

Exhibit III.E-6 UTILITY EASEMENTS

FOUR SEASONS AT ORANGETOWN ROCKLAND PSYCHIATRIC CENTER Town of Orangetown, New York

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