O. Infrastructure and Energy

1. Additional Technical Studies

As detailed in the DEIS, the Applicant proposes to construct a community water supply system comprised of a series of groundwater supply wells to meet the project's estimated water demands. In order to respond to comments regarding methodology and findings of the preliminary well testing, supplemental well testing was performed in September 2009. After conducting this on-site well exploration monitoring program, the Applicant has identified six (6) potential well sites capable of supplying a combined yield of approximately 738 GPM. This well yield exceeds the project's estimated maximum day demand of approximately 622 GPM. The estimated maximum day demand has been calculated at 2 times the average day demand as defined by local regulatory authorities. Table II.O-1, Estimate of Project Wastewater and Water Demands, summarizes the project's water and sewer demands based upon based upon the changes to the development program as part of the modified FEIS plan. Estimated water demand, including irrigation, is projected to be 665,318 gallons per day. The project's wastewater demand is estimated to be 407,380 gallons per day.

The Applicant plans to drill an additional "back-up" well at the time of its filing of a Public Water Supply Application with NYSDEC and NYSDOH to meet the requirement of providing back-up flow for the best well out of service. The "back-up" well would be known as Well 18A and would drilled immediately adjacent to Well 18, the project's "best well" with an approximate yield of 323 GPM. Well 18A would be located within approximately 15 feet of Well 18 and would be expected to produce a similar yield by tapping the same aquifer conditions. The Applicant also has available for its use the existing on-site reservoir as a potential alternative back-up supply source. As such a Reservoir Safe Yield Analysis was commissioned by the Applicant and the reservoir was found to be capable of supplying a safe yield of in excess of 330 GPM under average year conditions. In drought conditions the safe yield supply capacity drops to approximately 170 GPM. However, this still results in a maximum day supply of approximately 1.9 times the average day demand if the reservoir's water supply were not to be supplemented with additional back-up wells.

Based upon the results of the well exploration and monitoring program, the proposed community well supply system could supply approximately 415 GPM, even with the "best well" out of service. Given this flow it would be possible to construct all proposed commercial development, community and recreational facilities, and approximately 775 of the 1376 proposed residential units before the need were to arise to develop an additional back-up supply source.

The Applicant does not plan on immediately implementing upon project approval any Water Treatment Plant upgrades required to bring the plant into regulatory compliance. The plant upgrades would only be undertaken in the event the Applicant was unsuccessful in developing either back-up Well 18A or other alternative back-up well supply sources and on-site development was ready to expand beyond construction of 775 residential units.

As part of the supplemental well testing program, a network of monitoring wells was installed and observed to determine whether the operation of the onsite ground water supply well system would have an adverse impact on neighboring private wells, on and off-site wetlands, or on and

off-site water bodies. The results of the 72-hour drawdown test conducted as part of the supplemental well testing produced no apparent drawdown on the shallow monitoring wells, including the wetland points, the stream points, and the two land fill wells. The conductivity monitoring of the pump test wells and the Swamp River indicates that there is no direct connection between the underlying bedrock aquifer and the surface water in the vicinity of the proposed production wells.

Water quality analyses were also completed as part of the supplemental well testing program. The test samples were collected at the very start of the pumping test and just before the conclusion of the pumping tests. Several volatile organic compounds were detected in the samples taken from the pre-test monitoring. However, with the exception of Well C-shallow which evidenced concentrations of naphthalene (2.6 ug/l) well below the drinking water standards (50 ug/l), all post-test samples had no volatile organic compounds. Both pump test wells' pre-test samples had toluene and Well 18 had tetracholorethene. These compounds could be from materials and equipment, such as electrician's tale, pipe joint material, and thread lubricants, needed to setup the wells for testing. Pump test wells are not normally sampled at the start of the pumping test because it is very likely that anomalous results are obtained. Both wells' samples were free of the volatile compounds and metals at the end of the pumping test, which better represents the aquifer water quality.

2. Plan Changes and Impact Summary

Beyond the confirmation of the project's proposed community well water supply, the modified FEIS plan would not result in any further impacts than identified in the DEIS. The Applicant does not plan on utilizing the existing reservoir to meet the project's water demands. It would remain available as a potential back-up water supply source. The wastewater treatment plant will be upgraded to demonstrate compliance with modified SPDES permit limitations stipulated by the NYSDEC. The Applicant expects to upgrade the plant to meet discharge requirements into an intermittent stream, the most stringent effluent standards found in NYS.

3. Comments and Responses

a. Sanitary Sewage

Comment O.1

A sewer system is expensive and hard to implement into new projects. Who is going to manage the sewer system? Is the Town going to end up being responsible for it? This could end up bankrupting the Town if this is not addressed.

(Constance I. DuHamel, Deuell Hollow Conservation Association, Public Hearing Transcript, 6/3/09, Pg. 165)

Response O.1

In New York State (NYS) public water and wastewater utilities are regulated by the NYS Public Service Commission (NYSPSC). It is anticipated that a special corporation (Transportation Corporation) will be organized with a defined service area. Under the Proposed Action, the Applicant will be responsible for establishing the respective transportation corporations for providing water and sewer service to the project site. Further,

each transportation corporation is required under NYS law to charge the utility users within its defined service area at a rate which will maintain the financial viability of the corporation. In NYS water rates are regulated by the New York State Public Service Commission. The same is true of the sewer corporation to be established by the Applicant, the difference being in NYS the rate regulator for a sewer company is the Town Board.

Comment O.2
The DEIS recognizes that the existing wastewater treatment plant will need significant maintenance and upgrades. However, there are only conclusory statements that it will meet its existing effluent limits without any discussion as to what those limits are or the need to make those limits more restrictive. Since it has been decades since the SPDES permit was renewed and given the massive investment in a new project, it is appropriate to consider whether the effluent limits themselves should be reevaluated to determine if they are consistent with current water quality standards.

(Jeffrey Baker, Young Sommer Ward Ritzenberg Baker & Moore LLC, Letter, 6/30/09, Pg. 6)

Response O.2
NYSDEC has advised the Applicant that it will be reevaluating the current SPDES permit limitations under which the existing wastewater treatment plant operates during its technical review of the permit. The Applicant will be required to submit detailed engineering plans to the Department of the proposed plant upgrades which demonstrate compliance with the modified SPDES permit limitations for review and approval.

Comment O.3
The existing SPDES permit must be modified per previous discussions with the project sponsor. However, DEC staff has confirmed that the receiving stream (Swamp River) is not a trout spawning stream; therefore, a waste assimilative capacity analysis will not be mandatory. However, the EIS should include a narrative description and discussion of the existing quality of the receiving water and potential impacts the proposed discharge will have. The sponsor should be aware that effluent limits contained in any SPDES permit eventually issued by the Department may be different from those contained in the existing SPDES permit.

(Scott Ballard, Environmental Analyst, NYSDEC, Letter, 6/30/09, Pg. 9)

Response O.3
The Applicant expects under the Proposed Action to upgrade the existing wastewater treatment plant to meet the discharge requirements into an intermittent stream, the most stringent effluent standards found in NYS. Thus the effluent from the upgraded plant is expected to meet or exceed any modified SPDES permit limitations issued by the Department.

Aquatic life in Swamp River is thought to experience minor impacts due to nutrient enrichment from agricultural activities and other nonpoint sources. A biological (macroinvertebrate) assessment of the Swamp River in Dover Plains was conducted in 2002. Sampling results indicated slightly impacted water quality conditions. The fauna was dominated by filter-feeding midges and algal-feeding riffle beetles, indicating nutrient

enrichment. Diatoms, macrophytes and filamentous algae were abundant in the stream. These conditions represent a decline from conditions found during 1992 sampling.

Comment O.4
The EIS should provide the projected wastewater flow for the proposed project by phase. Projected wastewater flows must be based on the number of residential units per phase, anticipated population counts, square footage of commercial space, etc.

(Scott Ballard, Environmental Analyst, NYSDEC, Letter, 6/30/09, Pg. 9)

Response O.4
It is estimated that the Proposed Action may generate upon full project build-out a total wastewater demand of approximately 407,380 GPD. Refer to Table II.O-1, Estimate of Project Wastewater and Water Demands.

Table II.O-2, Projected Wastewater Demands by Construction Sequence, allocates the total estimated wastewater demand to an anticipated sequence of construction activities.

Comment O.5
The DEIS states that the proposed project's anticipated average daily design flow is 0.467 million gallons per day (MGD). The EIS should note that the actual capacity of the wastewater treatment plant will be determined during the design phase of the upgrade to the WWTP, with the minimum capacity recommended at 0.6 MGD.

(Scott Ballard, Environmental Analyst, NYSDEC, Letter, 6/30/09, Pg. 9)

Response O.5
Comment noted.

Table II.O-1
Estimate of Project Wastewater and Water Demands
(Maximum Day Demands Based on 2 Times Average Daily Flow)

USE/DESCRIPTION	SIZE (sf)	NUMBER OF DWELLING UNITS	UNIT (1)	UNIT FLOW (gpd)	WASTEWATER (gpd)	WASTEWATER WITH WATER SAVING FIXTURES (2) (gpd)	WATER (3) (gpd)
Residential							
Single-Family, Large Lot (assume 5 BR)		29	DU	550	15,950	12,760	14,036
Single-Family, Other (assume 4 BR, 33%)		100	DU	475	47,500	38,000	41,800
Single-Family, Other (assume 3 BR, 67%)		202	DU	400	80,800	64,640	71,104
Townhomes (assume 4 BR, 33%)		47	DU	475	22,325	17,860	19,646
Townhomes (assume 3 BR, 67%)		95	DU	400	38,000	30,400	33,440
Other Res. Unit Types (assume 2 BR) (4)		703	DU	300	210,900	168,720	185,592
Apartments, 4-Story (Assume 2 Br, 67%)		133	DU	300	39,900	31,920	35,112
Apartments, 4-Story (Assume 1 Br, 33%)		67	DU	150	10,050	8,040	8,844
Total		1,376			465,425	**372,340**	**409,574**
					Average per Unit:	**271**	**298**
General Commercial/Retail/Office							
New	134,100						
Retained	103,900						
Total	238,000	NA	SF	0.1	23,800	19,040	20,944
Civic/Community							
Church (w/o Expansion)	29,200						
Recreation Facilities (5)	64,250						
Total (6)	93,450	NA	Each	12,500	12,500	10,000	11,000
Golf Facilities (6)	6,000	NA	Each	7,500	7,500	6,000	6,600

Average Daily Flow (gpd) - Excluding Irrigation				**509,225**	**407,380**	**448,118**
Average Daily Flow (gpm) - Excluding Irrigation						**311**
Maximum Day Demand (gpd) (7)						**896,236**
Maximum Day Demand (gpm) (7)						**622**
Peak Hour Demand (gpm) (8)						**1,089**
Irrigation						
Site Irrigation (Common Areas) (9)	5	Ac	5430	N/A	N/A	**27,150**
Golf Course Irrigation, 9 Holes (10)	35	Ac	5430	N/A	N/A	**190,050**
Irrigation Demand (gpm)				`		**151**
Total Project Flow (gpd) Including Irrigation			**Average Daily (gpd)**		**407,380**	**665,318**

(1) Unit Flow Rates based on NYSDEC Design Standards for Wastewater Treatment Works(1988).

(2) Water Saving Fixutures result in a 20% flow reduction

(3) Water demand estimated @ 110% of wastewater flow. Does not include fire demand.

(4) This category will consist primarily of Stacked Townhouse, Apartments 2-Story, Residential Over Retail, and Residential Conversion units.

(5) Includes existing Smith Hall recreation center/gym (49,100 SF) and other recreation facilities (15,150).

(6) The assumed wastewater flows for the Civic/Community components (12,500 gpd) and the existing golf facilities (7,500 gpd) are subject to additional program information.

(7) 2 Times the Average Daily Flow (Per NYSDOH Requirements)

(8) Population Density approximately 3000 persons. Peak flow ratio is 3.5, Recommended Standards for Wastwater Facilities, 2004 Edition.

(9) Assuming 5 acres @ 1" per week. Seasonal average over 5 days.

(10) Assuming 35 acres @ 1" per week. Seasonal average over 5 days.

Note: Program information presented above was obtained from FEIS Site Plan dated September 30, 2009.

Table II.O-2
Projected Wastewater Demand by Construction Sequence

Construction Sequence (or Phase)	Residential Units (No.)	**Residential Demand [1] (GPD)**	Commercial Space (GSF)	**Commercial Demand [2] (GPD)**	Community Facilities (Percent Complete)	**Community Facility Demand [3] (GPD)**	Golf Facilities (Percent Complete)	**Golf Facilities [4] (GPD)**	**Combined Wastewater Demand [5] (GPD)**
1A	140	**37,883**	74,000	**5,920**	38	**3,830**	100	**6,000**	**53,633**
1B	212	**57,366**	128,000	**10,240**	16	**1,550**	0	**0**	**69,156**
1C	103	**27,871**	0	**0**	0	**0**	0	**0**	**27,871**
2A	474	**128,262**	36,000	**2,880**	46	**4,620**	0	**0**	**135,762**
2B	19	**5,141**	0	**0**	0	**0**	0	**0**	**5,141**
2C	428	**115,815**	0	**0**	0	**0**	0	**0**	**115,815**
Project Build-Out	1,376	**372,340**	238,000	**19,040**	100	**10,000**	100	**6,000**	**407,380**

Notes:

(1) Residential wastewater demand based on approximately 270.6 GPD/Unit (or approximately 2.5 Bedrooms/Unit)

(2) Commercial wastewater demand based upon 0.1 GPD/Gross Square Feet Commercial Space

(3) Community Facility wastewater demand based on 10,000 GPD total project demand. See also FEIS Table II.O-1, Estimate Of Project Wastewater And Water Demands.

(4) Golf Facilities wastewater demand based on 6,000 GPD total project demand. See also FEIS Table II.O-1, Estimate Of Project Wastewater And Water Demands.

(5) Total wastewater demand assumes the use of water saving fixtures for an approximate 20% reduction in hydraulic loading.

Comment O.6
The Village of Pawling plant and other private sources should also be considered. "Wind Rose" will also add to the waste water load, and it is a project with proven favorable fiscal benefits to Pawling and Dover.

At the present time, with low levels of discharge from the HVPC, and existing sewer treatment plants in Pawling operating at normal functioning levels, the Swamp River is carrying a very heavy and excessive load of nutrients and water quality is poor.

We recommend considering individual wells and septic systems in some of the outlying areas of the development. This measure would also help to maintain the hydrology. It should certainly be considered in the vicinity of wetlands with sensitive hydrology.

(Christopher Wood, Chair, Oblong Land Conservancy, Letter, 6/30/09, Pg. 3)

Response O.6
As discussed previously, NYSDEC will review all water quality discharge requirements including Pawling's proposed improvements. Centralized water and sewer facilities for residential developments of 50 units or more are typically preferred by regulatory authorities. The clustering of units on the site allows for greater preservation of open space. The inclusion of septic systems would require an area allocation of between 5,000 and 15,000 square feet per unit and would disturb a considerable amount of land. The Applicant believes this would cause greater disturbance and is not in favor of such a change. A central well system is more efficient than individual wells and provides fire protection through a common distribution system.

Additional points of concern include that on-site soils do not lend themselves to point of use treatment like individual septic systems. In fact, the historical records actually show many failing septic systems in the watershed and is one of the reasons Wind Rose selected a central sewage system. Because the Swamp River was used as a water supply source, HVPC made regular inspections of the watershed to the south of the water intake facility. It was through these inspections that many issues with individual septic systems were identified. Individual septic systems leave the routine maintenance of the system to the homeowner which in some instances fails to properly maintain their system. Improper maintenance often leads to system failure and the discharge of high levels of septic nutrients to the surrounding water bodies. In contrast, a central sewer system is required by law to meet very stringent effluent requirements under the SPDES permit program.

Comment O.7
The upgraded sewage treatment system needs to be tertiary treatment to protect the health of the Swamp River and the Great Swamp. The DEIS presentation of flow rates and assimilation potential of the Swamp River seem at odds with previous understanding of the system and should be validated, especially for drought conditions.

(James Utter, Chairman, Friends of the Great Swamp, Letter, 6/30/09, Pg. 3)

Response O.7

The current SPDES permit was based on the water quality parameters of the Swamp River, the historical record is one of a wastewater facility that consistently produced high quality effluent that met or improved on the quality required in the facility SPDES permit. The basis of the NPDES/SPDES program is to regulate discharges and require WWTP effluent quality to exceed the quality of the receiving stream thus improving the overall stream quality over time.

Comment O.8

The Delaware Engineering report indicates that all of the lines for the sewage facility are leaking, releasing a large amount of water into the system, and that the plant is running at a low rate of capacity because of the leaking lines. Is it possible that some of the sewage has contaminated the local groundwater?

(Alan Surman, Public Hearing Transcript, 5/30/09, Pg. 70)

Response O.8

The discussion about extraneous water entering the collection system is based on the existing flow records which demonstrate that stormwater runoff is infiltrating the sewage collection system during storm events. This is a common issue with an aged infrastructure system. However, the recorded wet weather flows to the WWTP are well within the plant design capacity and the recorded flows do not exceed the SPDES permit limits of the plant. For collected wastewater to contaminate ground water it would require a spill or an overflow of the collection system. The Applicant is not aware of any such situation ever occurring.

Comment O.9

Although the sewage treatment plant is rated at 1.2 million gallons per day, the sand beds for sludge drying operate at a flow rate of only 385,000 gallons per day, limiting actual capacity to less than one third of the rated capacity. The DEIS does not commit the Applicant to anything but "possible" improvements.

(Alan Surman, Letter, 6/30/09, Pg. 3-4)

Response O.9

Under the NYSDEC Design Standards for Wastewater Treatment Works and The Recommended Standards for Wastewater Facilities, sludge management will be required to be sized for what ever the ultimate SPDES permit flow amount. Since no detailed design has been performed, it is too early to say what the process will entail; however, it will meet the standards as required by NYSDEC for what ever the ultimate flow will be.

Comment O.10

How will the wastewater impact the Swamp River? The Swamp River is a low gradient, slow flowing stream. We do not want to change the hydrology of the Great Swamp and affect our water supplies.

The Planning Board recently required a redundant septic disposal system for greater water purity when released into the environment.

(Sybill Gilbert, Vice Chair, Oblong Land Conservancy, Public Hearing Transcript, 6/3/09, Pg. 80-81; Donna Hearn, Letter, 6/3/09, Pg. 4)

Response O.10

The Swamp River has been the receiving water from the wastewater treatment facility at the Harlem Valley site since the 1930's. The treatment facility continues to produce an effluent that exceeds the limits of its existing SPDES permit. The effluent standards were taken into consideration during the design and construction of the existing facility and will be taken into consideration for any future improvements. Wastewater treatment technology has had major improvements over the past 5-10 years and it is now possible treat sewage to standards not possible just 5 years ago. Current NYSDEC design standards require process duplication and multiple levels of equipment. The wastewater treatment facility will undergo a detailed redesign process subject to the review and approval of NYSDEC.

Comment O.11

Contrary to statements in the DEIS, the discharge of nutrients from the upgraded wastewater treatment plant will increase significantly over current levels and will likely have a significant impact on the Swamp River and other downstream waterbodies like the Ten Mile River. While nitrogen and phosphorus loading might be less than the quantities allowed under the existing SPDES permit, they will be much larger than current loadings. The total maximum daily loading should be calculated for the Swamp River and compared to the total loading from all point and nonpoint sources associated with the project.

(Stephen P. Dolce, President, Mid-Hudson Trout Unlimited, Letter, 6/24/09, Pg. 3)

Response O.11

The existing SPDES permit will be reviewed by NYSDEC and will be updated to set new effluent limits for the WWTP discharge based on current standards and the water quality requirements of the Swamp River. The permissible amount of nutrients discharged is typically regulated by both a concentration parameter and the total mass of the discharge. The usual nutrients regulated are total phosphorous and nitrogen. It is not known at this time if either of these nutrients will be added to the SPDES permit but the removal of these nutrients is routinely handled by wastewater treatment facilities and would not be considered to be a difficult issue to solve if necessary.

Comment O.12

Will the discharge of the wastewater treatment plant represent a significant portion of the flow in the Swamp River during low flow periods? What percentage of the average flow of the Swamp River will be made up of discharge from the plant? What will be the increase in nitrogen nutrients in the Swamp River from the sewage treatment plant and non-point sources? Has the developer or Town Board studied what the nutrient impact might be or how to reduce eutrophication downstream from this project?

(Stephen P. Dolce, President, Mid-Hudson Trout Unlimited, Letter, 6/24/09, Pg. 3-4)

Response O.12

Based on an estimated average day flow of 467,600 GPD at the WWTP and the lowest average flow of the Swamp River taken at Dover Plains of 1.6 cu. ft./sec. or 1,030,000 GPD at a 7-day, 10 year reoccurrence interval, the projected average flow of the WWTP will equal approximately 45% of the Swamp River low flow rate. Similarly, the normal average flow of the Swamp River at Dover Plains, 90% of the time, is estimated at 6.6 CFS or 4.27 MGD, which means 90% of the time the WWTP will be equal to approximately 11% of the flow through the Swamp River. The Applicant will prepare a detailed engineering analysis for submission to NYSDEC in support of the proposed wastewater treatment plant upgrades which will establish discharge limits for acceptable effluent levels of ammonia and nitrogen. Both nutrients will be reduced from the current WWTP effluent levels as a result of plant modernization and improved aeration processes. It should also be noted that the future plant effluent is expected to attain higher levels of dissolved oxygen (levels of >7.0 mg/l), which should have a significant positive effect on the downstream Swamp River.

Comment O.13

The Connecticut Department of Environmental Protection is concerned with the proposed wastewater treatment facility. The DEIS does not appear to describe goals or measures to reduce phosphorous levels in the effluent from the facility. Consistency with Connecticut's "Nutrient Reduction Strategy" for phosphorous is encouraged, and would require capping the phosphorous load at current levels. LID best management practices to limit nonpoint contributions are strongly encouraged.

(Paul E. Stacey, Director of Planning & Standards Divison of the CTDEP Bureau of Water Protection and Land Reuse, Letter, 6/30/09, Pg. 2-3)

Response O.13

It is not practical to cap phosphorous load levels at present day levels given the site is at present underutilized. However, NYSDEC is expected to limit total phosphorous upon its issuance of a new SPDES permit for the future wastewater treatment plant upgrade and the Applicant will comply with all permit requirements.

Comment O.14

The proposed development would increase the discharge of nitrogen to approximately 0.467 mgd. This would be subject to the nitrogen controls consistent with the NYSDEC and CTDEP jointly released "A Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound" as enforced by the NYSDEC.

We encourage you to consult with the appropriate authorities.

(Paul E. Stacey, Director of Planning & Standards Divison of the CTDEP Bureau of Water Protection and Land Reuse, Letter, 6/30/09, Pg. 3-4)

Response O.14
The detailed design of the WWTP upgrades will be subject to the review and approval of NYSDEC.

Comment O.15
Greywater reuse will burden the sewage treatment plant.

(Peter Rostenberg, Public Hearing Transcript, 6/3/09, Pg. 131)

Response O.15
The wastewater treatment facility will be designed to meet the facility SPDES permit limitations as well as the projected uses of the effluent. Water reuse, in the form of greywater for irrigation, is not difficult and is not expected to add a burden to the wastewater treatment facility. The irrigation system will be used seasonally to supply water for irrigating the golf course and some common landscape areas

b. Water Supply

Comment O.16
The DEIS and the supporting documents are not consistent in defining the water supply plan. This makes it difficult to understand the actual water supply plan.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 40-41)

Response O.16
The Applicant proposes to construct a community water supply system comprised of a series of groundwater supply wells to meet the project's estimated water demands. After conducting an on-site well exploration monitoring program, the Applicant has identified six (6) potential well sites capable of supplying a combined yield of approximately 738 GPM. This well yield exceeds the project's estimated maximum day demand of approximately 622 GPM. The estimated maximum day demand excludes irrigation but has been calculated at 2 times the average day demand as defined by local regulatory authorities. Table II.O-1, Estimate of Project Wastewater and Water Demands, summarizes the project's water and sewer demands.

The Applicant plans to drill an additional "back-up" well at the time of its filing of a Public Water Supply Application with NYSDEC and NYSDOH to meet the requirement of providing back-up flow for the best well out of service. The "back-up" well would be known as Well 18A and would drilled immediately adjacent to Well 18, the project's "best well" with an approximate yield of 323 GPM. Well 18A would be located within approximately 15 feet of Well 18 and would be expected to produce a similar yield by tapping the same aquifer conditions. The Applicant also has available for its use the existing on-site reservoir as a potential alternative back-up supply source. As such a Reservoir Safe Yield Analysis was commissioned by the Applicant and the reservoir was found to be capable of supplying a safe yield of in excess of 330 GPM under average year conditions. In drought conditions the safe yield supply capacity drops to approximately 170 GPM. However, this still results in a

maximum day supply of approximately 1.9 times the average day demand if the reservoir's water supply were not to be supplemented with additional back-up wells.

Based upon the results of the well exploration and monitoring program, the proposed community well supply system could supply approximately 415 GPM, even with the "best well" out of service. Given this flow it would be possible to construct all proposed commercial development, community and recreational facilities, and approximately 775 of the 1376 proposed residential units before the need were to arise to develop an additional back-up supply source.

The Applicant does not plan on immediately implementing upon project approval any Water Treatment Plant upgrades required to bring the plant into regulatory compliance. The plant upgrades would only be undertaken in the event the Applicant was unsuccessful in developing either back-up Well 18A or other alternative back-up well supply sources and on-site development was ready to expand beyond construction of 775 residential units.

Comment O.17
I concur with the water demand estimates as presented by the Applicant in the DEIS. The estimate is a critical component. I think that the Applicant should include a concurrence letter from the Dutchess County Department of Health concurring that they agree with the water demand estimate provided in the DEIS.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 41)

Response O.17
The Dutchess County Health Department and NYSDEC are both responsible for the review and approval of the Applicant's water supply plan including any estimates which the Applicant presents with its Public Water Supply Application.

Comment O.18
The Applicant has proposed to utilize greywater reuse for the golf course irrigation. We endorse this and request that the Town encourage greywater reuse for the irrigation demands of this project. As proposed, if greywater reuse is approved by the NYSDEC, the NYS Department of Health would require the water supply for this proposed development to equal or exceed twice the average water demand of the residential, commercial, community and clubhouse component of this project. If the irrigation is going to be reused, we eliminate that. This would require the Applicant to demonstrate approximately a million gallons per day or about 714 gallons per minute with the best well out of service.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 41-42)

Response O.18
Comments noted. The Applicant does plan on recycling grey-water from the wastewater treatment plant for irrigating the golf course. Under the FEIS Site Plan the estimated maximum day demand without irrigation has been estimated at approximately 622 GPM.

Comment O.19
Most of the hospital is sitting in groundwater. It is built in a swamp.

What will be the impacts of using greywater for the irrigation of the golf course? That area is within the water table. Will the greywater impact the water supply?

(Donna Hearn, Town Historian, Public Hearing Transcript, 6/3/09, Pg. 63-65; Donna Hearn, Letter, 6/3/09, Pg. 3-4)

Response O.19
The Applicant proposes to use over time recycled grey-water from the Wastewater Treatment Plant to meet the irrigation needs of the golf course. The reuse of wastewater effluent for irrigation will be regulated by both NYSDEC and NYSDOH with water quality parameters established by each agency taking into consideration the use and location of the discharge. The grey-water quality will be such that it will be safe for applying to turf and landscaped areas. No impacts are anticipated with the use of grey-water for irrigation use.

Comment O.20
The Plan proposed by the Applicant was to demonstrate twice the average water demand of the project with the best well out. I concur with the safe yield estimates provided by the Applicant in the DEIS.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 40-41)

Response O.20
Comment noted.

Comment O.21
Wells 11A and 11B reported a significant loss in yield from the original reported yields at the completion of drilling. Well 11A reported the yield of approximately 200 plus gpm and only indicated a safe yield of 60 gpm following testing. Similarly, Well 15B reported over 300 gpm at completion of drilling. The safe yield, following the 72 hour pump test was only 140 gpm. The fracture in these wells was reported to have filled with fine sand material following drilling which plugs significant water-bearing fractures, and consequently reduced the yield of these wells. The concern is the potential for this to continue over time and further reduce the yields of these two wells and any other wells completed in the Stockbridge Marble. The Applicant should address this concern. This would support the request that the Applicant provide locations for future development of wells should the wells experience a loss in yield at any point in the future, resulting in water supply deficiencies according to the regulatory requirements.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 43-44; Scott Ballard, Environmental Analyst, NYSDEC, Letter, 6/30/09, Pg. 8)

Response O.21

The marble bedrock under the area that forms the valley bottom, the area that contains the Swamp River, the Metro-North train line and Route 22, is generally a massive bedrock with little weathering. However, in places that contain fracturing and faulting, those fracture planes can be subject to some weathering. The marble, which is a metamorphosed dolomitic bedrock that weathers to a fine calcareous sand, forms solution cavities that contain substantial quantities of ground water relative to other crystalline bedrock types. In the case of Well 11, the well produced over 200 GPM during drilling but only produced about 60 GPM during the pumping test. Well 15 [group] produced well over 300 GPM during drilling but was found to produce significantly less during the pumping test.

The change in productivity for these wells appears to be due to a collapse of the bedrock voids which subsequently filled with calcareous sand. However, the yield of the wells appears to have stabilized. It appears that when the bedrock voids are dewatered, as they were during the drilling process, the bedrock structure had been destabilized resulting in a collapse of the cavern ceiling. However, under normal pumping conditions the pumps are maintained above the level of the water producing fractures which prevents the dewatering of those fractures. When well 15 was first tested, it was assumed that that well would produce over 300 GPM, based on the well drilling and development. However, at that high pumping rate the water level fell to the pump and, out of necessity, the test was converted to a constant head test with a result that the final rate was 170 GPM, which was downgraded to 140 GPM to be conservative. However a subsequent 72 hour test conducted in September, 2009 has proven that this well is usable at a rate of 175 GPM.

Under operating conditions the efficiency of these wells would be monitored regularly to determine if further fracture collapse is occurring, although at this point it does not appear to be likely. The efficiency is determined by observing the well drawdown relative to the well productivity. If that ratio appears to be changing in a deleterious direction, it will provide sufficient warning to the well operator that some action will be necessary.

Comment O.22

The NYS Department of Health requires a 100 foot radius of ownership and a 200 foot radius of sanitation control around public water supply wells. This must be defined in the DEIS. In addition, a letter of support from the Dutchess County Department of Health should be included that states the department would accept these wells as public water supply wells as proposed in the build-out of the project.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 44)

Response O.22

The regulatory 100' radius of ownership and 200' radius of control is shown on the FEIS Site Plan drawings. Refer to the Site Orientation Plan, Drawing SP-0.1 found within the FEIS

Site Plan drawing set or any of the Site Geometry, Grading and Drainage, and Site Utility Plan drawings also contained therein.

Comment O.23
A well monitoring program was conducted during the pumping test events. It included monitoring onsite and offsite wells. I briefly concur with the findings presented in the report, except for the following. Of concern during the pump test on Wells 18 and 15B, 30 feet of drawdown was observed in onsite sand and gravel well adjacent to these two bedrock wells. This would strongly indicate hydraulic interconnection between the bedrock aquifer and the sand and gravel aquifer. The concern is if the bedrock aquifer is impacting the sand and gravel aquifer, then there is potential to impact adjacent surface water and wetland features. The DEIS must address this concern and provide supporting data that wetlands and surface water features will not be impact within close proximity of these wells.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 44-45)

Response O.23
Well 18 is a well that taps the bedrock aquifer both near the bedrock/overburden interface and the deep bedrock below 600 feet. The upper marble bedrock appears to be highly fractured and indirect hydraulic connection to the lower portion of the unconsolidated aquifer which is composed of fine calcareous sand. It was expected that a connection between the Well 18 pumping and the lower unconsolidated aquifer as observed in Well 13B existed, as was confirmed by the pumping test. However there exists a relatively thick lucustrine clay layer between the lower portion of the unconsolidated aquifer and the upper portion near the land surface. The supplemental pumping test conducted in September of 2009, in part was designed to address this issue. Please refer to the Supplemental Pumping Test Memorandum in FEIS Appendix 14.

Comment O.24
To eliminate future concerns of residents, I recommend that the Town consider requiring additional operational monitoring take place once the wells go into service, or if additional pump tests are conducted, to determine any significant impacts, if any, under normal operation of proposed well sources to meet the future water demands of the project.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 46)

Response O.24
The observed impacts to residential wells was restricted to the area south of the test well, Well 9. That impact was relatively minor and, considering that Well 9 was pumped at twice the rate that it is expected to be pumped, the Applicant does not believe that there will be a deleterious impact to the homes in that area. However, selected home wells could be monitored for a period of time during construction in which Well 9, which will be fitted with its permanent pump and power connection, will be used as the project supply well and will be pumped at the rate that it will be expected to be used under normal operating conditions.

Comment O.25
I request that the Applicant draft a compliant response and remediation plan for this project.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 46)

Response O.25
A compliant response and remediation plan is included in FEIS Appendix 14.

A compliant response and remediation plan is a document that describes the actions that would be triggered if it is discovered that a private well user is in danger of losing the use of their well due to the operation of the Knolls at Dover production wells. Typically those homes that are identified as being at risk as a result of the monitoring program for the well pumping test are further monitored during the construction and build-out phase of the project to determine if the regular use of the project wells will be detrimental to those identified off-site wells. However, since the Applicant has not identified any wells with significant risk, it is not believed that such extended monitoring will be required. Typically the remediation plan consists of possible methods to address the possible disruption in service for off-site wells due to the operation of the on-site wells. Possible actions could include: deepening of affected wells; replacement of affected wells; or the extension of the on-site community well supply system to include the affected homes.

Comment O.26
Wetlands and streams were monitored also monitored during pump tests. The data presented in the DEIS from the piezometers that were installed in the Swamp River is not typical for what occurs in this geologic setting. Therefore, I would request that support data be provided, being hand level measurements or the data log data from the piezometers. Typically, you would have a hydraulic gradient between a shallow water-bearing fracture in the surface water where the gradients change continually 24 hours a day. The Applicant reports no gradient. This is not typical for the geologic setting.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 46-47)

Response O.26
The data, as a matter of course, is set to a "0" reference. Given that all data is set to the same reference, a gradient will not be apparent to the observer. A subsequent pumping test completed during September of 2009 indicated relative gradients and included additional monitoring points in the wetlands and streams. Refer to the Supplement Pumping Test Memorandum in FEIS Appendix 14.

Comment O.27
The Applicant indicates that the wells that were sampled at the end of the pumping tests meet drinking water standards. I tend to concur with these findings, but I have the following concerns. The concern is that Wells 10A, 11A and 18 indicate the potential high risk that these wells are under the direct influence of surface water. This means that when these wells are pumped, that

there is a chance that the wells reduce surface water under pumping conditions. This presents a concern of drinking water standards set by the state.

Further, the combination of the risk associated with the above analysis and the direct hydraulic connection between the bedrock and the sand and gravel aquifer, it certainly seems that there is a potential risk that these wells are under the direct influence of groundwater. It does not preclude them from being used, but it should be addressed in the DEIS.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 47-48)

Response O.27

All the production wells completed for this project, except for Well 9, are completed in the marble [carbonate] bedrock. The New State Department of Health Subpart 5-1 clearly states that wells completed in carbonate bedrock should be tested for being under the influence of surface water. All production wells, including Well 9, were analyzed for micro-particles, with no micro-particles found but possible indicators of micro-particles were observed, possibly requiring retesting when the wells are placed on-line. The supplemental pumping tests on Wells 15B and 18 also included temperature and conductivity readings throughout the test, taken at one minute intervals. The test results are presented in FEIS Appendix 14.

Comment O.28

It is also assumed that since the report states that MPA samples were taken, that means that the wells were within 200 feet of a surface water or wetland feature. Regulatory guidelines will require piezometers be installed in these surface water features to determine direct hydraulic connections between the pumping wells and the wetland and surface water feature. This data is not provided in the DEIS.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 49)

Response O.28

A supplemental pumping test was conducted in September 2009 that included shallow monitoring wells and monitoring points in both the wetlands adjacent to the two test wells and in the Swamp River adjacent to the wetlands points. The data collected from the test is included in the Supplemental Pumping Test Memorandum in FEIS Appendix 14, however, the data does not show a direct hydraulic connection between the surface water and the bedrock formations. Please also see FEIS Response 0.27 above.

Comment O.29

Concerning the wells, since some of the wells were within close proximity to surface water features, temperature conductivity measurements should have been collected from the discharge water and from the river, Swamp River, or any other wetland feature to correlate the significance of the potential of these wells to be under the influence of groundwater.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 49)

Response O.29

The data collected as part of the first and supplemental pumping tests strongly indicate that the production wells are not directly under the influence of surface water. That data includes micro-particle analyses and conductivity and temperature monitoring of the production wells. However, all the test wells, excluding Well 9, are tapping carbonate bedrock. The New State Department of Health Subpart 5-1 considers carbonate bedrock aquifers as being potentially under the influence of surface waters and, therefore, we recommend that these wells be analyzed annually for micro-particles.

The detailed data collected is included in the Supplemental Pumping Test Memorandum in FEIS Appendix 14.

Comment O.30

The choice of Delaware Engineering by the Applicant was a great decision. However, the report that is provided in the DEIS is only a preliminary report. It does not have enough substance.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 50)

Response O.30

The defined scope of work was established only to identify the key issues related to the existing water filtration facility and the necessary improvements required to bring the facility into compliance with Part-5 of the NYS Sanitary Code. The Delaware Engineering report did provide a detailed overview of the existing facility as well as the historical operating records. The Applicant will be required to prepare a detailed design report for the review and approval of the respective regulatory agencies before any treatment facility upgrades can be implemented.

Comment O.31

The DEIS is not clear if the taking from either the Swamp River or Ten Mile River is proposed to augment the reservoir source. This must be clarified, and the safe yield and potential impacts must be addressed if taking from any surface water supply is proposed.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 51-52)

Response O.31

There are no plans to use either the Swamp River or Ten-Mile River as a surface water supply source. The Applicant is proposing to use the existing on-site reservoir as a potential back-up water supply source and, as recommended, Delaware Engineering was commissioned to perform a Reservoir Safe Yield Analysis. Refer to FEIS Appendix 14.

Comment O.32
Considering the CEA designation of the Swamp River, it is unlikely that taking water from the Swamp River would be approved by a regulatory agency.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 52)

Response O.32
The Applicant concurs with this opinion.

Comment O.33
Depending on the initial water demand, the Applicant is proposed to provide up to half a million gallons per day from the development of an onsite surface water supply source. This is proposed as a backup water supply source with the proposed well supply being the lead source. The Applicant is thus proposing to meet the initial phases of the development solely by groundwater sources. If this continues to be the plan, a much more detailed engineering, safe yield, cost feasibility and regulatory review should be conducted of the proposed surface water supply source.

Further, any final approval of this project must be conditional that the Applicant receive all regulatory permits and approvals to develop the proposed surface water supply source.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 52-53)

Response O.33
The Applicant does not plan on utilizing the existing reservoir to meet the water demands of the Proposed Action. This demand is to be met by the installation of a new community well supply system. Reservoir water will only be used as a temporary supply in the event no other back-up source is available. The applicant is required to and will file a public water supply application with both NYSDEC and NYSDOH. That application which will include detailed engineering plans and testing data must be approved by both regulatory agencies before any on-site development can be advanced.

Comment O.34
Water budget is a significant component of the hydrogeologic evaluation. I concur with the water budget analysis, which determines the recharge within the site boundaries and indicates that under normal precipitation conditions, the site could meet the proposed withdrawals. It marginally meets the withdrawals under drought conditions.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 53)

Response O.34
The water budget analysis is, at best, just an indicator of the water available to the project wells. In actuality the wells draw water from the bedrock fractures which not only underlie the

project boundary but are actually defined by the extent of the topographic features that are caused by the fracturing and faulting of the bedrock formation, the Harlem Valley. Therefore the water that is available to the project wells comes from an area that is many times larger than the property limits and, therefore, the impact to the ground water levels in the bedrock aquifer is moderated by the size of the source.

Comment O.35
The high side for recharge using the Chazen model was 808,000 gallons per day. During drought conditions they estimated a 30 percent reduction; 565,641 gallons per day. Another model was used based on the Swamp River Base Flow analysis and was within about one hundred gallons per minute of the Chazen model. These numbers were a little higher. The last model that was used was within 60 to 70 percent of the Chazen model. I doubt the accuracy of that model because it is based on rainfall amounts from Poughkeepsie, Brewster, West Point and Montgomery.

Using the Chazen model of 808,000 gallons on the high side of aquifer recharge and under dry conditions 565,000 gallons, far exceeds the projections in Table III.O-1, which shows potential of over 1,000,000 gallons per day. I can see your shortfall here.

(Alan Surman, Public Hearing Transcript, 5/30/09, Pg. 67-68; Alan Surman, Letter, 6/30/09, Pg. 2-3)

Response O.35
Rainfall estimates were taken from the four closest recording stations to provide the most realistic estimate using available data.

Table II.O-1, Estimate Of Project Wastewater And Water Demands has been revised to reflect changes to the Proposed Action which now constitute the FEIS Site Plan. Under the proposed FEIS Site Plan there has been an approximate 9-acre reduction in impervious area which is expected to increase on-site stormwater recharge. Average day water demands are now estimated at approximately 450,000 GPD with the maximum day demand projected at approximately 900,000 GPD. Using the prior Chazen model recharge estimates, even under drought conditions the site is expected to exceed its average daily water consumption level. Irrigation demands have not been included as it is the proposal of the Applicant to recycle effluent from the wastewater treatment plant for the purpose of irrigation. Maximum day demands may on occasion exceed the average daily recharge rate.

Further note the on-site recharge analysis is not a hard rule but a short hand method to estimate available water. Ground water recharge is likely obtained from a much larger area and not restricted to the water that falls within the property boundaries.

Comment O.36
The Swamp River Base Flow Analysis, which I think is the most critical component of the water supply impact in the DEIS, is flawed. To summarize, there are issues with basic unit conversion and methodology.

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 53-54)

Response O.36
Further review of the Swamp River Base Flow Analysis has found no unit conversion errors. The "issues… with methodology" have to do with the belief that the analysis should be an area based analysis that uses the entire property recharge rather than the analysis of the linear portion of the property that contains the Swamp River. The Applicant does not concur because the rate of recharge/discharge of the Swamp River through the site is a known quantity based on USGS stream gauging data, whereas a site-wide analysis will be based on short-hand figures derived from general, non-site specific, data that cannot be confirmed without extensive study.

Comment O.37
The DEIS fails to address onsite contamination concerns with the groundwater supply sources. Numerous onsite dump and landfill sites, including the dumpsites of ash and spills, have been documented to have impacted onsite groundwater. The DEIS does not address the potential impact on the onsite groundwater supply sources, if any. I do not think that these conditions necessarily preclude the Applicant from developing onsite water supply sources, but the DEIS should address potential impacts of these known environmental concerns onsite.

In addition, no specific onsite monitoring is included in the DEIS related to the onsite contamination areas and testing events as required by the scoping document. Further, Well 18 appears to be in an ash fill area. We believe this well should be removed from consideration as a potable water supply source. Other wells may need to be constructed and texted

(Thomas Cusack, Senior Vice-President, Leggette, Brashears & Graham, Public Hearing Transcript, Pg. 54-55; Scott Ballard, Environmental Analyst, NYSDEC, Letter, 6/30/09, Pg. 8-9)

Response O.37
These issues have been addressed in the Supplement Pumping Test Memorandum in FEIS Appendix 14.

Comment O.38
The DEIS text indicates MW-13, which is identified as an overburden gravel well, is located within the ash landfill, and is in close proximity to an NYSDEC spill area and several underground tanks. The pumping test discharge of water from the bedrock aquifer resulted in a reported 50 feet of drawdown in overburden well MW-13. The DEIS should include a discussion on the connectivity between the overburden and bedrock aquifers, and the potential to draw the documented contamination into the water supply.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 14)

Response O.38
Well 13 is a bedrock well. Well 13A is a well that monitors the lower portion of the unconsolidated aquifer which is found under a considerable thickness of lucustrine clay

which forms and aquaclude between the lower and upper portions of the unconsolidated deposits. A supplemental pumping test conducted in September, 2009 included the installation of a shallow well, Well 13B, to form a nested well set. The results of the September, 2009 pumping test are presented in the Supplemental Pumping Test Memorandum in FEIS Appendix 14.

Comment O.39
Table III.O-2 indicates MW-13 is a bedrock well and MW-13A is an overburden sand and gravel well. This should be clarified in the text.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 14)

Response O.39
See Response O.38 above.

Comment O.40
Our review of those sections of the DEIS and the supporting report entitled "The Knolls of Dover Well Supply and Aquifer Recharge Analysis" indicate that certain information was lacking, and that additional details regarding the potable water supply must be developed, including the following: raw drawdown data for all wells, including well identification numbers; pump yields during the pump test(s); and drawdown data for each well per test (length of time for each test and recovery period for each well). The EIS should also provide time/drawdown graphs in a more highly detailed scale.

(Scott Ballard, Environmental Analyst, NYSDEC, Letter, 6/30/09, Pg. 8)

Response O.40
This information has been collected and will be presented to the Department for its review as part of the Applicant's Water Supply permit application. Refer also to the Supplemental Pumping Test Memorandum in FEIS Appendix 14 for additional well data.

Comment O.41
According to the "Water Supply Fact-Sheet provided to DEC June 2, 2009, during a pre-application meeting with project representatives, the sponsor is claiming a yield of 225 gallons per minute from "other wells not included in primary system." However, the DEIS contained no information regarding pump tests of these wells. The EIS should provide pump test results for these wells which prove their safe yields. When application is made for the necessary Water Supply permit, DEC will require that these wells be pump tested in accordance with the attached pump test protocols.

(Scott Ballard, Environmental Analyst, NYSDEC, Letter, 6/30/09, Pg. 9)

Response O.41
The Applicant presented that supplemental well yield information as general information for the benefit of the agency. The Applicant has no plans at this time to include any of those other wells in the project's water supply plan. However, if the wells are ultimately included in

the Applicant's water supply application to the Department for a community well supply system, then the wells will be pump tested in accordance with Departmental protocol.

Comment O.42
Contrary to the DEC guidance document entitled "Recommended Pump Test Procedures for Water Supply Applications" the pump test on Well 15B did not use a stabilized pumping rate. When the pumping rate information is furnished, please include the exact rate used for the test and specify when the rate changes were made. When application to the DEC is made for the Water Supply permit, it is likely that we will require this well to be retested in conformance with the attached guidelines; new pump test data will also be required to be submitted.

(Scott Ballard, Environmental Analyst, NYSDEC, Letter, 6/30/09, Pg. 8)

Response O.42
Well 15B has been retested using "standard NYSDEC protocols" and the results are presented in FEIS Appendix 14. The re-testing of Well 15B produced a stabilized pumping rate of 175 GPM with a stabilized pumping level of 100 feet below the starting [static] water level.

Comment O.43
It appears some wells were installed in wetlands and were monitored during the pump tests. However, the report contained very little descriptive information regarding these well installations. The EIS should provide an expanded discussion of the relationship of the wetlands to the pumping wells and what impact, if any, there will be to the wetlands. If insufficient information is available, propose a testing strategy to DEC that will enable a solid understanding of this relationship. Exhibit III.O-4 should also be revised to show all proposed wells, including monitoring wells, in relation to wetlands located on site.

(Scott Ballard, Environmental Analyst, NYSDEC, Letter, 6/30/09, Pg. 8)

Response O.43
Wetland points were not installed during the first set of pumping tests. However, the supplemental pumping test completed in September 2009 did include the installation of three (3) wetlands points, three (3) stream monitoring points, and three (3) shallow wells in the overburden. The data shows that the use of the test wells, Well 18 and Well 15B, did not impact any of the shallow well points during the 72-hour testing. It is clear that the lucustrine clay layer between the upper portion of the overburden and the lower aquifer acts as aquaclude.

Comment O.44
Provide well logs and construction details, especially pump setting information.

(Scott Ballard, Environmental Analyst, NYSDEC, Letter, 6/30/09, Pg. 8)

Response O.44
Well logs and well construction details are provided in FEIS Appendix 14.

Comment O.45
The 180 day time/drawdown projections must include depth of pump setting, rate of pumping used for test, and a more detailed scale for legibility.

(Scott Ballard, Environmental Analyst, NYSDEC, Letter, 6/30/09, Pg. 8)

Response O.45
The requested data is provided in the Supplemental Pumping Test Memorandum in FEIS Appendix 14.

Comment O.46
Describe how the relatively heavy rainfall during the test impacted the results.

(Scott Ballard, Environmental Analyst, NYSDEC, Letter, 6/30/09, Pg. 9)

Response O.46
Although there were two rain events during the test period, there did not seem to be any short term impact [within the test period] to the groundwater as observed in the monitoring wells.

Comment O.47
As the existing reservoir is proposed to be used as a backup water supply, provide an estimate of the safe yield during drought conditions.

(Scott Ballard, Environmental Analyst, NYSDEC, Letter, 6/30/09, Pg. 9)

Response O.47
Delaware Engineering was retained to conduct a Reservoir Safe Yield Analysis. The results of its investigation found that the reservoir could provide a safe yield of approximately 171 GPM during drought conditions. Refer to FEIS Appendix 14 of this FEIS.

Comment O.48
Discuss whether the Swamp River is proposed for use as a source under drought conditions. If this is the case, then provide the safe yield for taking water from the Swamp River.

(Scott Ballard, Environmental Analyst, NYSDEC, Letter, 6/30/09, Pg. 9)

Response O.48
The Applicant has no plans to use the Swamp River as a water supply source even under drought conditions.

Comment O.49
Questions have been raised as to the capacity of the proposed well-water system to service the proposed development under drought conditions. It has been proposed that pumping water from the heavily stressed Swamp River could be an option. The feasibility of this should be fully explored since the low flow rate in the river may give rise to pollutant levels that would require

remediation. We recommend an exhaustive analysis of the Swamp River's capacity to meet demands in drought conditions.

(Chris Wood, Chair, Oblong Land Conservancy, Letter, 6/30/09, Pg. 2-3)

Response O.49
The Applicant has no plans to use the Swamp River as a water supply source.

Comment O.50
The DEIS indicates that when the reservoir's water surface dropped approximately 10 feet (during drought), the embankments eroded, thus causing deteriorated raw water quality and creating stress on the existing filtration plant. The EIS should expand on this discussion, and include a discussion of measures proposed to prevent such erosion in the future.

(Scott Ballard, Environmental Analyst, NYSDEC, Letter, 6/30/09, Pg. 9)

Response O.50
The Applicant proposes to construct a community water supply system comprised of a series of groundwater supply wells to meet the project's estimated water demands. After conducting an on-site well exploration monitoring program, the Applicant has identified six (6) potential well sites capable of supplying a combined yield of approximately 738 GPM. This well yield exceeds the project's estimated maximum day demand of approximately 622 GPM. The estimated maximum day demand excludes irrigation but has been calculated at 2 times the average day demand as defined by local regulatory authorities. Table II.O-1, Estimate of Project Wastewater and Water Demands, summarizes the project's water and sewer demands.

The Applicant plans to drill an additional "back-up" well at the time of its filing of a Public Water Supply Application with NYSDEC and NYSDOH to meet the requirement of providing back-up flow for the best well out of service. The "back-up" well would be known as Well 18A and would drilled immediately adjacent to Well 18, the project's "best well" with an approximate yield of 323 GPM. Well 18A would be located within approximately 15 feet of Well 18 and would be expected to produce a similar yield by tapping the same aquifer conditions. The Applicant also has available for its use the existing on-site reservoir as a potential alternative back-up supply source. As such a Reservoir Safe Yield Analysis was commissioned by the Applicant and the reservoir was found to be capable of supplying a safe yield of in excess of 330 GPM under average year conditions. In drought conditions the safe yield supply capacity drops to approximately 170 GPM. However, this still results in a maximum day supply of approximately 1.9 times the average day demand if the reservoir's water supply were not to be supplemented with additional back-up wells.

Based upon the results of the well exploration and monitoring program, the proposed community well supply system could supply approximately 415 GPM, even with the "best well" out of service. Given this flow it would be possible to construct all proposed commercial development, community and recreational facilities, and approximately 775 of the 1376 proposed residential units before the need were to arise to develop an additional back-up supply source.

The Applicant does not plan on immediately implementing upon project approval any Water Treatment Plant upgrades required to bring the plant into regulatory compliance. The plant upgrades would only be undertaken in the event the Applicant was unsuccessful in developing either back-up Well 18A or other alternative back-up well supply sources and on-site development was ready to expand beyond construction of 775 residential units.

In the event that it is necessary to utilize the reservoir as a primary or secondary water source, the Applicant will comply with all necessary DEC rules and regulations.

Comment O.51
The DEIS states the daily water demand for the project site in gallons per day, and the maximum day demand in gallons per minute. The DEIS should define the average daily demand and maximum daily demand in gallons per day and gallons per minute.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 13)

Response O.51
The project's average daily demand is estimated at approximately 450,000 GPD (or 311 GPM) and its maximum daily demand is estimated at approximately 900,000 GPD (or 622 GPM).

Comment O.52
The DEIS should explain why a safety factor of 1.7 times the average daily demand was used to calculate the maximum daily demand instead of 2.0 times the average daily demand.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 13)

Response O.52
The Applicant under the current water supply plan in this FEIS is using a factor of 2.0 times the average daily demand in its calculations. Refer to FEIS Table II.O-1, Estimate of Project Wastewater and Water Demands.

Comment O.53
The safety factor calculation is used to provide a buffer for the higher water demands of the summer months. The DEIS should explain why the safety factor was applied to the non-irrigation demand of 514,360 gallons per day, instead of 731,560 gallons per day, which is the average daily demand inclusive of irrigation requirements.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 13)

Response O.53
Irrigation demands were excluded since the Applicant proposes to meet this demand with recycled wastewater treatment plant effluent (grey-water).

Comment O.54
The DEIS should state any applicable State and Local Department of Health requirements for testing community well systems. These requirements may include, but are not limited to,

minimum pumping duration, simultaneous pumping of all wells in a community water system, the maximum daily demand requirement, the best well out of service requirement, and the parameters required to meet the stabilization criteria (i.e., duration and maximum allowable water level fluctuation to be considered "stable").

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 13)

Response O.54
The NYSDOH and NYSDEC provide guidelines for the testing of community well systems, in part based on the Ten States Standards – Recommended Standards for Water Systems. The NYSDEC further provides a pumping test protocol "Appendix 10, TOGS 3.2.1" which describes the recommended methodology the NYSDEC recommends. The NYSDOH outlines its recommendations in the NYSDOH Subpart 5-1. All of these recommendations are based on sound scientific reasoning however both agencies do allow the hydro-geologist to design the pumping tests to meet the site specific requirements. The primary pumping tests and the supplemental pumping tests were conducted in such a way to attempt to comply with the NYS recommendations, given the in the field limitations.

The recommendations include specifics such as the duration of the pumping test should be at least 72 hours and that a "max-day" demand should be met for the pumping test with the best well out of service. The "max-day" demand is assumed to be [by both NYSDEC and NYSDOH] twice the average daily demand for the project. The "best well" out of service back-up well may be a mechanical back-up well constructed in close proximity to the "best well" of the system. The back-up well does not need to tap an independent aquifer or supply source.

Both agencies accept stabilization to mean that water level decline is less than 0.5 feet per hour per hundred feet of saturated well depth for a minimum of 6 hours.

Comment O.55
The DEIS should describe where the discharge lines were placed for each pumping well, and how a determination was made that recharge to the aquifer was prevented.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 13)

Response O.55
All discharge lines were extended a minimum of 200 feet away from the well and to locations that caused the well discharge to flow away from the well, and other wells, and towards surface water bodies, having been filtered through straw bales and into ground brush and grasslands.

Comment O.56
A 72 hour test was performed. The discharge lines claimed to have sufficient distance from the well, so there would have been discharge into the aquifer. There is no documentation as to how far the lines went. Did they actually go to the Swamp River? Where did they dump water?

(Alan Surman, Public Hearing Transcript, 5/30/09, Pg. 66)

Response O.56
See FEIS Response O.55 above.

Comment O.57
Exhibit III.O-5 should include the Swamp River monitoring points utilized during the pumping test.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 13)

Response O.57
The Swamp River monitoring points utilized during the September, 2009 supplemental testing program have been added. Refer to Exhibit II.O-1.

Comment O.58
The DEIS should include or refer go to an appendix containing a list of each compound and corresponding laboratory method included in the NUSDOH Subpart 5.1 parameter list. The microparticulate analysis results should be included in the summary, and a determination should be made as to whether the aquifer is under the direct influence of surface water.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 13)

Response O.58
See FEIS Response O.29.

Comment O.59
Table III.O-3 should also include the timeframe that each well was tested, static water level (feet below grade) in each well, pump setting (feet below grade), and stabilized water level.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 13)

Response O.59
The requested well data is summarized in the following table:

Pumping Test Result Summary (1st test/2nd test)

Well	Pump Setting	Static Water Level	Test Duration	Stabilization	Stabilized Level	Projected Yield
4	400 ft	16 ft	72 hrs	24 hours	141 ft	40 gpm
9	400 ft	48 ft	72 hrs	8 hours	190 ft	100 gpm
10A	400 ft	13 ft	72 hrs	8 hours	290 ft	40 gpm
11A	400 ft	5 ft	72 hrs	6 hours	300 ft	60 gpm
15B	180 ft/180 ft	15 ft/15 ft	72 hrs/72 hours	12 hours/48 hours	180 ft/100 ft	175 gpm/175 gpm
18	180 ft/ 180 ft	2 ft/2 ft	72 hrs/72 hours	60 hours/48 hours	140 ft/146 ft	250 gpm/323 gpm

Comment O.60
The DEIS should include a quantitative review of the stabilization and recovery data for each well. The large scale (20 to 50 feet per tick mark) used for the "Y" axis on the hydrographs and the drawdown projection graphs for the pumping wells does not allow for accurate determination

of water levels during stabilization and recovery and, it is not clear if applicable stabilization and/or recovery criteria has been met.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 13)

Response O.60

The requested stabilization and well recovery data is summarized in the following table:

Pumping Test Stabilization and Recovery (1st test/2nd test)

Well	Saturated Well Depth	Static Water Level	WL Change/Last 6 Hours	WL Change/Hour	Stabilization Target
4	791 ft	16 ft	[+] 0.8 ft	[+] 0.13 ft	[-] 3.955 ft/hr
9	534 ft	48 ft	[-] 0.72 ft	[-] 0.12 ft	[-] 2.67 ft/hr
10A	788 ft	13 ft	[-] 1.55 ft	[-] 0.26 ft	[-] 3.94 ft/hr
11A	455 ft	5 ft	[-] 1.39 ft	[-] 0.23 ft	[-] 2.27 ft/hr
15B	435 ft	15 ft/15 ft	na/[-] 0.61 ft	na/[-] 0.10 ft	[-] 2.17 ft/hr
18	743 ft	2 ft/2 ft	[+] 0.08/[-] 0.07 ft	[+] 0.013/[-] 0.01 ft	[-] 3.75 ft/hr

WL = water level, na = not applicable, [-] = lowering water level, [+] rising water level

Comment O.61

The primary pumping test appears to have produced 50 feet of drawdown in Well 10A when it was used as a monitoring well. The DEIS concluded that the level of interference should not be sufficient to cause a reduction in yield for either well if they are pumped simultaneously. The DEIS should include a discussion and projected drawdown data to back up the conclusion that interference will not affect the projected yield.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 13)

Response O.61

The pumping test on the wells located west of Route 22, specifically Well 18 and Well 15B, was monitored using all wells including the test wells located east of Route 22. Two of the wells on the east side, Wells 10A and 11A, tap the same bedrock aquifer as the wells on the west side. These wells were expected to have some hydraulic connection. The monitoring data for those wells show that Well 10A had approximately 50 feet of drawdown and Well 11A, which is closer to Route 22, had an observed drawdown of approximately 130 feet. Although these are significant amounts of drawdown, they do not preclude the wells from being pumped at the given rates since the combined drawdown in these wells does not exceed the available drawdown in each well, even with all wells being pumped simultaneously.

The Well 10A pumping test had a maximum drawdown of 290 feet and an observed drawdown during the west side test of 50 feet. The combined drawdown of 340 feet still provides approximately 60 feet of available drawdown above the pump. The pump was set to 400 feet for convenience although the well is 788 ft deep and the primary contributing fracture is at 640 feet in the well.

The Well 11A test produced a maximum drawdown of 300 feet. The drawdown due to the west side testing was about 130 feet. The combined drawdown of 430 ft did not reach the primary producing fracture located 457 feet in the well.

The system pumping test is intended to show the capability of the system of wells to produce the maximum day demand for 72-hours. Maximum day is typically twice the average daily

demand for the project and is, therefore, twice the rate that these wells will be pumped on a normal basis. It is clear from the testing that these wells can produce the maximum day rate for the 72-hours required and are, therefore, suitable to safely produce the average day demand on a continuous basis.

Comment O.62
According to the hydrograph in the pumping test report, the first phase of the pumping test produced approximately 130 feet of drawdown in Well 11A, which was being used as a monitoring point. The pumping test in Well 11A produced 300 feet of drawdown. The DEIS should indicate whether simultaneous pumping of all the wells will reduce the safe yield for Well 11A and include data to back up the conclusion.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 14)

Response O.62
Refer to FEIS Response O.61 above.

Comment O.63
As stated in the test, the DEIS should include a reduced projected safe yield for Well 15A to protect the pump. The current projected yield of 175 gpm is for a forced stabilization at the pump intake and is not a safe rate for the current pump configuration.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 14)

Response O.63
Well 15B was tested with the assumption that it was a well that produced greater than 300 GPM. The high pumping rate caused a rapid drawdown in the well that soon reached the pump. To salvage the test [in part so that the simultaneous pumping test for the west side wells could be completed] the test was converted to a forced stabilization [constant head test]. This test method has, in the past, proved to be an accurate predictor of a wells yield. A subsequent pumping test on wells 18 and 15B, using more standard methods, proved that the well is easily capable of pumping 175 GPM. See the Supplemental Pumping Test Memorandum in FEIS Appendix 14.

Comment O.64
The DEIS should include additional data (i.e., pump testing, amount of available water (in feet) above the pump, etc.) to support the conclusion that the Hough-Evans and Stra wells will not be affected by the project.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 14)
Response O.64
The depth of the well pump in both the Hough-Evans and Stra wells is not known. However the digital data loggers that were used to monitor these existing wells were lowered as far as possible into the wells for monitoring. Pump centering guides prevented the logger from being lowered any further down the well than reported below. In the case of the Hough-Evans well, the logger was lowered to a depth of 118 feet below the static water level in the well. In the

case of the Stra well the logger was lowered to a depth of approximately 135 feet. In the case of the Hough-Evans well, the drawdown during the test was limited to approximately 7 feet. Therefore, it is clear that in the Hough-Evans well the available water above the logger during the greatest amount of drawdown during the test was about 111 feet. Since the owners own usage was limited to about 4 feet, this left about 107 feet of available drawdown above the logger. Since the logger is higher in the well than the pump, the actual available drawdown is known to be greater than 107 feet. In the case of the Stra well, the drawdown during the test was limited to about 5 feet. Since the owners own usage was limited to about 3 feet and the logger was about 130 feet below the static water level, the Stra well had at least 122 feet of available drawdown. The logger was an unknown height above the existing pump in the Stra well.

Comment O.65
A dam safety plan should be provided for the existing reservoir dam.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 14)

Response O.65
A dam safety plan is on file with the Town of Dover. The plan entitled the Emergency Action Plan For The Harlem Valley State Hospital Dam, DEC Dam No. 230B-677 was prepared by Earth Tech in April, 2002 and accepted by the Dover Town Board on April 15, 2002. The plan remains in full force and effect until such time as an updated plan is approved by both NYSDEC and the Town Board. Refer to FEIS Appendix 15 of this FEIS for a copy of the Earth Tech plan.

Comment O.66
The DEIS should indicate that additional data is needed to confirm that the toluene and tetrachloroethylene detections are not related to site contamination.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 13)

Response O.66
The detected levels of toluene and tetrachloroethylene [perc] are below the maximum allowable limits. Nonetheless they will be further investigated. At this time it is believed that the perc is a laboratory contaminant and the toluene is from the use of tape, pipe dope or casing paint [new well casing comes painted and may not have been fully cured]. All the wells will be retested as part of the NYS Department of Health Subpart 5-1 requirements for testing of public water systems. If these components are found again, then a determination will be made as to the source of these compounds and whether any remedial action is necessary.

Comment O.67
Traces of toluene were found in Well 4. The explanation used was that electricians tape is used widely in pump wiring systems. How come trace elements of electricians tape were only found in one of the wells?

(Alan Surman, Public Hearing Transcript, 5/30/09, Pg. 69)

Response O.67
Refer to FEIS Response O.66 above.

Comment O.68
Well 10A showed traces of tetrachloroethane, which is dry cleaning fluid. This explanation was that this was a common contaminant that could have been introduced at the lab. So only one of the six samples was subject to some cross-contamination? That is inexplicable. Perhaps causatives at the site were not looked into. Maybe there was a dry cleaning plant somewhere in the Harlem Valley at one point in time and maybe some things were dumped there over the history of the plant.

(Alan Surman, Public Hearing Transcript, 5/30/09, Pg. 69-70)

Response O.68
Circumstances do occur which could explain a false positive lab result. For example, the first sample that is run in the testing laboratory after a highly contaminated sample from another project has been run will, on occasion see some residual from that previous, contaminated, sample, causing a false positive. Subsequent samples will show less residue, if any. While the testing laboratory is careful to remove any of the contaminated residue that may remain, sometimes the concentrations are so high that they cannot be completely removed.

Comment O.69
Some well supplies indicate positive chloroform results. The explanation here was the contamination was caused by handling pumping and drilling equipment and that this is not an indication of compromised water quality.

(Alan Surman, Public Hearing Transcript, 5/30/09, Pg. 70)

Response O.69
The positive results indicated the presence of coliform and not chloroform. Coliform is a common airborne soil bacteria that is very often found in water samples from new wells that have undergone intense handling. It is nearly impossible to prevent coliform contamination and generally a new well requires disinfection with an acidified chlorine solution. No ecoli bacteria were detected.

Comment O.70
I am glad to see that watershed protection requirements would be established to assure there will be a sustainable recharge of our watershed. I think that the developer could spearhead a regional water consortium to evaluate the future needs of the watershed as development grows.
A report was released in July 2008 by the Bureau of Watershed Assessment and Management of the NYSDEC. This report listed the Swamp River and parts of the Tenmile River as having stressed and threatened waters. The regional implications of development should be considered for safe and sustainable water resources.

(Michael Purcell, Public Hearing Transcript, 5/30/09, Pg. 40-43)

Response O.70
While the Applicant would be supportive of such a planning initiative, it is beyond the scope of responsibility for the Applicant to take the lead on this regional issue.

Comment O.71
Table III.O-1 displays average daily flows. This is based on a population of 3,000, not the estimated 3,700 that was stated previously in the DEIS, which I believe is still too low based on the number of units.

In addition, while the DEIS states there are several vacant lots around the site with no wells, one could argue that many of these vacant lots could eventually be subdivided with homes constructed.

(Alan Surman, Public Hearing Transcript, 5/30/09, Pg. 63-64)

Response O.71
Table III.O-1 has been revised to reflect the new unit mix of the FEIS Site Plan. Refer to FEIS Table II.O-1, Estimate of Project Wastewater and Water Demands. The average daily flows presented therein are in fact based upon NYSDEC recommended design standards based on bedroom count and not population.

Future subdivision of land beyond the site's boundary and the water supply alternatives available to those properties is out of the control of the Applicant and beyond its responsibility.

Comment O.72
Based on the State's investigations during the 1920's and 1930's, they estimated that a reservoir based system with a watershed could supply 1.2 million gallons of water per day. If the reservoir needed to be recharged during times of excessive demand, water could be pumped from the Swamp River or from a well in times of low rain. The state would not have gone through all of this trouble for water if groundwater was a viable alternative at this site.

(Alan Surman, Public Hearing Transcript, 5/30/09, Pg. 65-66; Alan Surman, Letter, 6/30/09, Pg. 1)

Response O.72
The State, having a reservoir available did not need to explore the availability of ground water.

Comment O.73
Table III.O-2 contains information about the test wells. The 16 wells ranged from 54 to 1,009 feet. The average depth is about 609 feet. This is considerably deeper than most of the wells for homes in the area.

(Alan Surman, Public Hearing Transcript, 5/30/09, Pg. 66)

Response O.73

On average, a typical home needs a well supply of approximately 1/3 gallon per minute to meet its demands. Dutchess County requires that a private well produce a minimum of 5 gallons per minute to meet short term demands. Public water supply wells need to meet considerably higher water demands and thus need to maximize their yields.

Comment O.74

The reports argue only notifying people within 500 to 1,000 feet of the area yet rainfall studies from areas far from the site are used in the engineering models.

(Alan Surman, Public Hearing Transcript, 5/30/09, Pg. 68)

Response O.74

It is standard practice to notify adjoining property owners when a well test is planned and the land owners are given the chance to have their wells monitored during the test. The influence of ground water drawdown due to pumping diminishes with distance and, therefore, monitoring wells closer to the test wells will be influenced at a greater degree than wells at a further distance.

It is necessary to use rainfall studies from the general area because detailed, long-term climatic data does not exist for the specific site.

Comment O.75

The well testing indicated that they were monitoring various wells. They only tested six of the wells of the 16 that were drilled. They did not want to use wells which were closer to neighboring properties because they did not want to impact their water supply. Why did they drill those wells if they knew they would not be tested?

(Alan Surman, Public Hearing Transcript, 5/30/09, Pg. 68-69)

Response O.75

The combined well yield of all sixteen (16) project wells produced a surplus of water that allowed the project to exclude wells that "may" have more of an impact on off-site wells. If needed those wells would have been tested. Note there are no riparian water rights established in New York other than under the "reasonable use" criteria. This means that if the project wells influence off-site wells, this is not enough to exclude the use of those wells, unless they "negatively" impact those wells. Simply reducing the water level by a given amount in the off-site wells, without otherwise impacting those wells, is not sufficient to limit the use of the project wells.

Comment O.76

Drops in the water level were observed in the wells of some of the neighbors. While the drops were not considered adverse impacts in the report, is this true in the long term?

(Alan Surman, Public Hearing Transcript, 5/30/09, Pg. 71)

Response O.76
See FEIS Response O.24 and FEIS Response O.64 above.

Comment O.77
Letters of the well testing were sent to neighboring properties. I did not receive one. I have several parcels on top of Waldo Hill which overlooks the site. One of my wells goes down about 850 feet, but I am sitting at 750 foot elevation. So clearly, the aquifer is the same in these two areas.

(Alan Surman, Public Hearing Transcript, 5/30/09, Pg. 63)

Response O.77
The depth of the well is not an indicator of the aquifer that your well taps. The source of water is determined by the geology and the structure of the bedrock that the well taps.

Comment O.78
I am concerned about groundwater issues. My water supply will not be affected by the Project, but I care about the people who live in the area that would be affected and Great Swamp.

(Constance I. DuHamel, Deuell Hollow Conservation Association, Public Hearing Transcript, 5/30/09, Pg. 104; Jill Way, Public Hearing Transcript, 5/30/09, Pg. 122)

Response O.78
The purpose of the testing that was done for this project, in part, is to make those determinations. Further, the test reports are reviewed by County and State agencies and by private consultants hired to review the project documentation with the intent to prevent off-site impacts.

Comment O.79
If multiple wells are needed onsite, will treatment plants be required for each well to eliminate bacteria and filter hard water elements?

Some of the wells will require motors of 10 plus power or more. This will be a huge energy draw. The energy costs of this system are going to be huge and complex to maintain as opposed to the original system based on the reservoir.

While the costs of repairing the infrastructure are prohibitive, in the long term the costs will be much cheaper to operate the site. The energy savings would be enormous. Instead, what is clearly happening here is that the cheaper option will be chosen, and the Applicant will leave without having to pay the costs of operating the new system. A patchwork repair will probably be undertaken on the reservoir.

(Alan Surman, Public Hearing Transcript, 5/30/09, Pg. 71-73; Alan Surman, Letter, 6/30/09, Pg. 2-3)

Response O.79
Well filter buildings will be located on-site to provide the necessary treatment of the groundwater supply to bring it in compliance the DEC drinking water standards.

Operational costs of the community water supply system will be the responsibility of the water service transportation corporation, the costs of which will be borne by the water users within the district.

The Applicant has no plans at this time to use the reservoir as part of the community water supply system. The associated dam will be maintained as required to stay in compliance with DEC dam safety standards.

Comment O.80
I have researched the costs of repairing the reservoir facility. The water treatment facility will cost $4 to $6 million to repair. In the long-term, will the Town be faced with having to repair the dam? Where will the money come from?

(Alan Surman, Public Hearing Transcript, 5/30/09, Pg. 73-75, 77)

Response O.80
Under the Proposed Action the existing reservoir dam is to be privately owned and operated. Thus, the Town will be under no financial obligations to either repair or improve the dam or water treatment plant.

Comment O.81
What if there is an oil spill and the aquifer is contaminated? We should take advantage of having the reservoir facility.

(Alan Surman, Public Hearing Transcript, 5/30/09, Pg. 75-76; Alan Surman, Letter, 6/30/09, Pg. 3)

Response O.81
The Applicant's current water supply plan calls for maintaining the reservoir as a potential back-up water supply source.

Comment O.82
The Applicant seems to ignore the findings of its own expert. The Delaware Engineering report on page 25 states that to establish an adequate groundwater supply, the Department of Health requires that it be twice the average demand with the best out of service. The Applicant uses 1.7 as the multiplier rather than 2.0. This should be consistent. The effect of having 1.7 is that you have the convenience of underestimating the water demands. Also, the best well was not taken out of service. Basic math proves that there is not sufficient groundwater supply. I could be wrong. This information means that the reservoir must be used, which will require upgrades to the water treatment facility pre-construction.

(Carolyn Handler, Coalition for the Responsible Growth of Dover, Public Hearing Transcript, 5/30/09, Pg. 97-98)

Response O.82
The Applicant under the current water supply plan is using a factor of 2.0 times the average daily demand in its calculations.

The Applicant plans to drill an additional "back-up" well at the time of its filing of a Public Water Supply Application with NYSDEC and NYSDOH to meet the requirement of providing back-up flow for the best well out of service. The "back-up" well would be known as Well 18A and would drilled immediately adjacent to Well 18, the project's "best well". Well 18A would be located within approximately 15 feet of Well 18 and would be expected to produce a similar yield by tapping the same aquifer.

The Applicant does not plan on immediately implementing upon project approval any Water Treatment Plant upgrades required to bring the plant into regulatory compliance. The plant upgrades would only be undertaken in the event the Applicant was unsuccessful in developing either back-up Well 18A or other alternative back-up well supply sources.

Refer also to FEIS Response O.16 above which summarizes the Applicant's proposed strategic water supply plan.

Comment O.83
HVPC housed approximately 6,500 patients and employed 2,000 workers, and therefore used a lot of freshwater. The treatment plant worked very well, but has not been operated in 15-20 years. I think that the reservoir could be used again as a water source.

(Henry Wallis Walters, Public Hearing Transcript, 6/3/09, Pg. 120-121)

Response O.83
The Applicant's current water supply plan calls for maintaining the reservoir as a potential back-up water supply source.

Comment O.84
Surface water does not make a good reservoir. Currently, many places are drilling wells next to surface water so that the water is filtered through the soil. I think that the Applicant should not attempt to use the reservoir.

(Peter Rostenberg, Public Hearing Transcript, 6/3/09, Pg. 131-132)

Response O.84
The current water supply plan calls for using the reservoir only as a potential back-up water supply source.

Comment O.85
There are strong indications that the Applicant may not be able to use the reservoir for drinking water because it may not pass potability use standards. In light of this, we recommend the reservoir only being used for irrigation.

(Tonia Shoumatoff, New York State Watershed Coordinator, Housatonic Valley Association, Public Hearing Transcript, Pg. 107)

Response O.85
To the contrary, nothing in the record precludes the use of the reservoir as a source for potable water, the water filtration facility is approved by NYSDOH to treat 1.2 MGD so there is significant excess capacity built into the WTP design.

Comment O.86
The existing reservoir is proposed to be abandoned as a water supply resource. This is unwise. The headwaters that feed the reservoir should be protected. We recommend an analysis of the feasibility of replacing the existing reservoir system versus the proposed well system.

The Applicant must at least provide detailed plans to address the containment of the reservoir in the event the dam fails.

(Chris Wood, Chair, Oblong Land Conservancy, Letter, 6/30/09, Pg. 2-3; Alan Surman, Letter, 6/30/09, Pg. 4; Town of Dover Planning Board, Letter, 7/20/09, Pg. 8; Constance I. DuHamel, Deuell Hollow Conservation Association, Letter, 6/30/09, Pg. 2)

Response O.86
The current plan calls for using the reservoir as a potential back-up water supply source in the event project water demands warrant additional supply and insufficient groundwater sources are available. The reservoir system is too large to provide for a containment system but provisions have been taken in the design of the Proposed Action to allow for an emergency breach of the dam In the event of a breach, flows would be routed around developed areas to the large wetland located immediately east of NYS Route 22. In addition there is in place an Emergency Action Plan to deal with such an event. Refer to FEIS Appendix 15.

Comment O.87
Is there enough water onsite, and is the proposed method cost effective in the long-term?

(Jeffrey Baker, Young Sommer Ritzenberg Baker & Moore LLC, Public Hearing Transcript, 5/30/09, Pg. 82)

Response O.87
After conducting an on-site well exploration monitoring program, the Applicant has identified six (6) potential well sites capable of supplying a combined yield of approximately 738 GPM. This well yield exceeds the project's estimated maximum day demand of approximately 622 GPM. The estimated maximum day demand excludes irrigation but has been calculated at 2 times the average day demand as defined by local regulatory authorities. FEIS Table II.O-1,

Estimate of Project Wastewater and Water Demands, summarizes the project's water and sewer demands.

Refer also to FEIS Response O.59 and FEIS Response O.60 which provide additional data relative to the results of the hydrogeologic testing conducted to determine the sufficiency of the proposed groundwater supply as the project's water supply source.

In New York State (NYS) public water utilities are regulated by the NYS Public Service Commission (NYSPSC) and required to be organized under a special corporation known as a transportation corporation with a defined service area. Under the Proposed Action the Applicant will be required to establish a transportation corporation responsible for providing water to the project site. This corporation will be required by NYS law to charge the utility users within its defined service area at a rate which will maintain the financial viability of the corporation.

Comment O.88
We heard that the recent pumping tests came up short and did not yield enough water for a project of this size and scope on this site, and that some of the wells were silted. Either scale back the project or apply techniques to maximize recharge and infiltration.

(Tonia Shoumatoff, New York State Watershed Coordinator, Housatonic Valley Association, Public Hearing Transcript, Pg. 106)

Response O.88
The testing of the wells has shown that the system should produce sufficient water for the project with suitable quality. Refer also to FEIS Response No. 87 above.

Comment O.89
In one community I have worked with, they are building a sewage treatment plant that produces drinking water. They do not have enough groundwater, and this system would reinject water back into the ground to restore the groundwater supply. It is not as high quality as pure groundwater, but does restore water levels.

(Peter Rostenberg, Public Hearing Transcript, 6/3/09, Pg. 129)
Response O.89
The current plan calls for the reuse of the treated effluent for irrigation of the golf course. Highly treated wastewater will be used and will reduce the overall water usage of the project. The golf course has always been irrigated using potable water so the historical high usage figures which resulted in the need to use the Swamp River to augment supply would be reduced considerably.

Comment O.90
The numbers do not add up. The 72 hour pumping test was done during a very wet period.

(Alan Surman, Public Hearing Transcript, 6/3/09, Pg. 166-167)

Response O.90

Aquifer pumping tests, specifically those conducted in bedrock wells, are not significantly impacted by seasonal changes in weather. The purpose of the testing is to determine the hydraulic characteristics of the bedrock aquifer. Those characteristics do not change [the bedrock fractures do not get smaller or larger] with weather. What does change, to a limited degree, is the water level in the well. For that reason the testing is done in a conservative manor to account for those changes.

Comment O.91

The aquifer withdrawals anticipated for the project are likely to impact groundwater and wetland hydrology, especially during drought periods, despite the studies provided by the developer. This concern is given substance by independent analysis provided at the public hearing. The wetlands most vulnerable to aquifer withdrawals are the groundwater fed calcareous fens which support rare biota. The serious questions concerning statements about the lack of impacts from wate withdrawals need to be convincing addressed.

(James Utter, Chairman, Friends of the Great Swamp, Letter, 6/30/09, Pg. 3)

Response O.91

See the Supplemental Pumping Test Memorandum in FEIS Appendix 14.

Comment O.92

Aquifer depletion resulting in septic pollution and increased aquatic toxic load must be considered. Well drawn down, lack of buffer zones of at least 200 to 300 feet and aquifer alterations will result not only in contaminated water for the local development buy may result in total aquifer toxicity. I strongly recommend that competent environmentalists with expertise in aquatic toxicology join the study of this development.

(Louis D. Trombetta, Letter, 6/30/09, Pg. 1)

Response O.92

Every gallon of water that is used will be treated using state of the art technology and discharged right back into the Swamp River at a quality that surpasses the quality of the Swamp River.

Comment O.93

For the past few years the Town of Dover has been evaluating Dover Knolls and more recently, the American Power Company has proposed its 1,000 mw Cricket Valley natural gas plant about 3 miles from the project. These entities will be located on or near the prized Swamp River, which flows from the Great Swamp to the Ten Mile River. We are interested in making sure that properly water quality measurements are put in place because we are downstream from you and receive the water once you are through with it.

Has the anticipated groundwater withdrawal been reviewed with the anticipated withdrawal for the power plant?

(Peter O. Rostenberg. Letter, 6/3/09, Pg. 1-2; Stephen P. Dolce, President, Mid-Hudson Trout Unlimited, Letter, 6/24/09, Pg. 3)

Response O.93
It is the Applicant's opinion that the quality of treated wastewater and treated stormwater released to the Swamp River will meet or exceed regulatory requirements and is not expected to cause a significant impact to the Swamp River. Under the Proposed Action upgrades to the existing wastewater treatment plant are expected to be designed to meet the discharge requirements into an intermittent stream, the most stringent effluent standards found in NYS. Similarly, on-site stormwater runoff will be routed through water quality basins designed in accordance with NYSDEC standards to treat storm runoff and remove pollutants prior to discharge to the Swamp River. Both the treatment plant upgrades and stormwater management plan will require the review and approval of several regulatory and permitting agencies including, but not limited to, NYS Department of Environmental Conservation, NYS Health Department and the Dutchess County Health Department.

It is the Applicant's opinion that the proposed natural gas plant, if ultimately located approximately 3 miles from the project site, is too distant to have any impact on groundwater withdrawals from the project site.

Comment O.94
Nowhere is there any breakdown or listing of water and wastewater infrastructure operation costs, as well as long term costs regarding replacement of worn components.

(Alan Surman, Letter, 6/30/09, Pg. 4)

Response O.94
The operating costs of the water and wastewater systems will be a significant part of the detailed engineering design report prepared in support of the required NYSDEC and NYSDOH regulatory approval process.

Comment O.95
It is well documented that the water supply is poor in Pawling. The DEIS mentions the problem with the fracture system collapse and sand clogging the well heads. This has been an ongoing problem in the Village of Pawling, requiring severe water usage restrictions at times.
Wingdale is not far from the Village of Pawling, and hydrologic expectations would be that the aquifer in the valley is more productive than it is in Pawling. Pawling is a place of headwaters, with limited water resources. Adjacent Wingdale can be expected to share some of Pawling's problems. Discussion with the Village Water Commissioners and engineers would be wise.

(Chris Wood, Chair, Oblong Land Conservancy, Letter, 6/30/09, Pg. 2)

Response O.95
Comment noted.

Comment O.96
If this "New Town" is built, and water supplies are inadequate, intense pressure will be placed on the Town of Dover to solve the problem. There are very limited available water resources in the region that can be tapped.

(Chris Wood, Chair, Oblong Land Conservancy, Letter, 6/30/09, Pg. 2)

Response O.96
The proposed uses are significantly less intense than the HVPC that existed on site since the 1930's. The water and sewer companies will be by law stand alone facilities with the users of the systems being responsible to pay the water and sewer rates that will finance the operation of the facilities. Within the rate making process is annual capital reinvestment, so a portion of the day to day water and sewer rates are required to go back into the long term upkeep of the systems.

Comment O.97
It is not clear from the DEIS that the contents of the Chazen report on hydrology and other reports have been incorporated into its terms.

(Chris Wood, Chair, Oblong Land Conservancy, Letter, 6/30/09, Pg. 2)

Response O.97
The Chazen report was used as a reference concerning the recharge of the Swamp River. Other reports have been reviewed and found to be of little use concerning the development of ground water resources since they did not incorporate the exploration of ground water resources as was done for this project.

Comment O.98
Groundwater pumping to meet community demands will increase significantly and could lower the water table during periods of prolonged drought. In turn, this would affect groundwater discharge to the Great Swamp and the Swamp River resulting in lower water levels and reduced flows in the Swamp River.

(Stephen P. Dolce, President, Mid-Hudson Trout Unlimited, Letter, 6/24/09, Pg. 3)

Response O.98
Those concerns have been addressed by testing the wells at a rate that is twice what the completed project will need.

Comment O.99
How will the two dams on site be maintained? The second dam is at the headwaters of the Swamp River but not listed on the NYSDEC list of dams. Will the Swamp River dam be able to handle the discharge from wastewater treatment plus runoff?

(Donna Hearn, Town Historian, Public Hearing Transcript, 6/3/09, Pg. 64-65; Donna Hearn, Letter, 6/3/09, Pg. 5)

Response O.99
NYSDEC regulates the operation and maintenance of dams in NYS, the existing dam at the reservoir will be upgraded to meet the current regulations of NYS. The impoundment area on the Swamp River appears to be located upstream of the WWTP.

Comment O.100
What if there is not enough well water to supply 1,000,000 gallons per day? More information is need. The water supply issue has been raised several times in the past by the public.

(Donna Hearn, Town Historian, Public Hearing Transcript, 6/3/09, Pg. 61-62; Sibyll Gilbert, Vice Chair, Oblong Land Conservancy, Public Hearing Transcript, 6/3/09, Pg. 80; Donna Hearn, Letter, 6/3/09, Pg. 3)

Response O.100
Refer to the description of the proposed Water Supply Plan presented in FEIS Response O.16 found earlier in this section.

Comment O.101
The DEIS proposes to use the wells and the Reservoir, the Swamp River and the Ten Mile River as backups. Keep in mind that the Reservoir functions best when full, so water from somewhere will have to be constantly pumped into the reservoir if groundwater does not keep it full.

Some wells may not be able to be used because of contamination. That means less water from the wells and a greater need for water from alternate sources. How will this affect the Swamp River and Ten Mile River, both of which are important ecological areas?

Residents warned the Applicant of water issues onsite. Previous transcripts and comments need to be addressed.

(Donna Hearn, Letter, 6/3/09, Pg. 3, 5)

Response O.101
The Applicant has no plans for using water from either the Swamp River or Ten Mile River as either a primary water supply source or a back-up water supply.

The Proposed Action, as currently planned, will use just the six (6) on-site test wells as its primary water supply source. The reservoir at this time is considered only as a potential alternative back-up water supply source to replace the system's best well if other on-site well supply sources can not be developed. Refer also to FEIS Response O.16.

All wells will be tested in accordance with NYSDOH Regulations Subpart 5-1 promulgated to protect both existing and future public water supply sources. Contamination found within the wells may not preclude the use of such water but may necessitate the implementation of treatment measures.

Comment O.102
In the DEIS, the Applicant reports contaminated well water samples which are assumed to have been cross contaminated in the laboratory. Former HVPC employees have said there was a laundry room near that location. Perhaps they also had a dry-cleaning operation as well. Further testing should be demanded.

(Evelyn and Joseph Chiarito, Letter, 6/30/09, Pg. 2)

Response O.102
The parameters referred to were found in low concentrations that are less than the maximum allowable concentrations for those compounds. Further, the wells will be tested, on a regular basis, for those constituents under the NYSDOH Subpart 5-1 sampling and analysis program required for a public water supply system.

c. Natural Gas

Comment O.103
The DEIS notes that "NYSEG has indicated that natural gas may be available for the Project" (page III.O-20). While the DEIS provides a potential routing of the gas line, it is unclear if this routing would result in any environmental impacts (e.g., wetland impacts, impacts on habitat, etc.). As provision of natural gas is considered an element of the Project's carbon footprint in Section II.K, the DEIS should include more consideration of potential impacts related to the natural gas connection and distribution lines throughout the site.

(Graham Trelstad, AKRF, Letter to Town Board, 7/30/09, Pg. 14)

Response O.103
NYSEG has not made a final service ruling on extending gas to the Site but they are exploring service to this Site as well as others. NYSEG's extension of gas service could be possible from the existing Iroquois Natural Gas Transmission Main, located approximately one mile north of the site. The new gas main could be installed along the north side of NYS Route 55 and would require construction of a new pressure reducing station and gas distribution main connection at the transmission line. The location of this connection is not known at this time but would be expected to be the subject of a separate environmental review process. It is expected that most if not all of the new gas distribution mains that would be required to provide gas service to the site would be constructed within the limits of existing right-of-way and thus would be expected to provide minimal disturbance to any adjoining wetland systems. On-site gas distribution and service mains will be designed to share common utility trenches with the new on-site electric and communication distribution network.