

I. Executive Summary

Pursuant to the New York State Environmental Quality Review Act ("SEQRA"), Article 8 of the Environmental Conservation Law 6NYCRR Part 617, an Environmental Impact Statement consisting of a Draft and Final Environmental Impact Statement (EIS) was prepared and a Findings Statement was filed on December 24, 2012 by the Town of Goshen Planning Board acting as Lead Agency ("Lead Agency"). R.H. Craigville, LLC (the "Project Sponsor") proposes a 105 lot, open space, single-family subdivision, including roadways, stormwater facilities, sewer collection system, sewer treatment plant, central water system and appurtenances on a 354+/- acre parcel within the Town of Goshen (the "Project Site"). The Project Site is located within the Rural (RU) Zoning District. The Site is subject to Scenic Road Corridor Overlay District and the AQ-3 and AQ-6 Aquifer Overlay District regulations.

The Project Sponsor in September 2013 submitted an Addendum to Environmental Impact Statement and Statement of Findings for purposes of further analyzing the force main alternative to connect the project to the Village of Goshen's existing wastewater treatment plant. Amended Statement of Findings was prepared by the Lead Agency and was filed on November 26, 2013.

The Application received Conditional Preliminary Approval from the Planning Board and the Resolution was filed on March 4, 2014 with the Town Clerk's office. Pursuant to Specific Condition #12, the Project Sponsor petitioned the Town Board on November 10, 2014 to commence the process to create and/or extend the necessary drainage, water and sewer districts for the Young's Grove Subdivision. There was much dialogue between the Project Sponsor, Town Board and Consultants regarding ultimate disposition of the Project's sanitary sewer and the two (2) previously evaluated alternatives to handle said sewage. The original SEQRA documents evaluated both an onsite wastewater treatment plant (WWTP), and an onsite pump station and force main to pump project sewage to the Village of Goshen's WWTP. The Project Sponsor received a letter from the Town Attorney dated December 1, 2014 stating "*based on the Town's experience with wastewater infrastructure, it was determined that it was in the best interest of the Town to have a package plant constructed to serve the subdivision rather than burdening the district with the responsibility for maintenance of a long force main*".

See Appendix A Correspondence.

Also, in the letter the Town Board recognized that the Planning Board during the SEQRA process examined both the force main and onsite WWTP alternatives.

Based on the directive that the Project Sponsor received from the Town Board to construct an onsite WWTP, the preliminary plans were re-evaluated by the Project Team. This included re-evaluation of sewer treatment possibilities/technologies and plant locations.

Under this Second Addendum, the Project Sponsor is seeking to relocate the proposed onsite WWTP from the previously evaluated location in the southeasterly portion of the site to a location in the northwesterly portion of the site. This alternative location will eliminate the need for a sanitary pump station and onsite force main. The proposed alternative location is evaluated in this Addendum to identify any potential environmental impacts and propose measures to mitigate those impacts.

See Figure No. 1 Alternate WWTP Locations.

The EIS evaluated two (2) alternatives for domestic water systems including the following:

- An onsite water system including three (3) supply wells, a water storage standpipe approximately 79' high and 34' in diameter, treatment facilities, emergency power, distribution system and appurtenances.
- An onsite water system including three (3) wells, a hydropneumatic system, fire pump system, low profile storage tank, emergency power, treatment facilities, distribution system and appurtenances.

The Project Sponsor is seeking to amend the previously evaluated domestic water system by proposing a third alternative that was not evaluated. The proposed alternative domestic water system is evaluated in this Addendum to identify any potential environmental impacts and propose measures to mitigate those impacts.

Additional compliance, permits, approvals and/or plan reviews will be required for stormwater management coverage under the General Permit GP-0-~~1520-002-001~~ (NYSDEC), WWTP and wastewater collection system (Town of Goshen and NYSDEC), Article 17, SPDES Permit for Sanitary Surface Discharge (NYSDEC) and community water supply and distribution (Town of Goshen, NYSDEC, NYSDOH and OCDOH), highway work permit (Town of Goshen and OCDPW), bonding, offers of dedication and conservation easements (Town Board of Goshen).

II. Project Location

The property is designated as tax parcel Section 9, Block 1, Lot 8.452 containing approximately 354+/- acres; located within the Town of Goshen, County of Orange and State of New York (the "Project Site"). The Project Site is divided into three (3) sections. The "Northern Portion" of the Project Site is bound by Hasbrouck Road to the northwest, Craigville Road to the southwest, Ridge Road to the southeast and privately owned lands to the northeast. The "Eastern Portion" of the Project Site is bound by Craigville Road to the southwest and privately owned lands on the three other sides. The "Southern Portion" of the Project Site is bound to the northeast by Craigville Road and privately owned land on the other three sides. An existing Town right-of-way from Broadlea Road abuts a portion of the southwest property line.

The Project Site is serviced by the Goshen Central School District, Goshen Fire District and a small portion of the Site is within the Chester Fire District. The Project Site is patrolled by the

New York State Police, Orange County Sheriff's Department and Town of Goshen Police Department.

Open space development in the RU Zoning District requires a minimum of fifty (50) percent of the gross acreage to be preserved as undeveloped open space. The plan subject to the EIS proposed approximately 294.4 acres of open space or 83% of the gross acreage as undeveloped open space. After the conclusion of SEQRA and prior to Conditional Preliminary Approval, Utility Lot 4 was added to the preliminary plans which includes the water treatment facility, access drive, parking and emergency access road. This lot is excluded from the open space resulting in 289.84 acres of open space or 82% of the gross acreage. These areas will conserve and preserve in perpetuity a variety of environmental resources, including wetlands, woodlands, streams and a large biodiverse area on the northern portion of the site near the intersection of Craigville and Hasbrouck Roads.

III. General Project History

The Town of Goshen Planning Board, as Lead Agency, designated the Proposed Action a Type I Action and adopted a Positive Declaration under SEQRA. This required coordinated review and approval by a variety of agencies. The Lead Agency directed the Project Sponsor to prepare a Draft Environmental Impact Statement ("DEIS"), which was accepted for public review on December 3, 2009. A Joint Public Hearing was opened for SEQRA and preliminary subdivision on January 21, 2010 and continued on February 4, 2010, March 4, 2010 and April 15, 2010. The SEQRA portion of the Public Hearing was closed on April 15, 2010 with the opportunity for written comments up to ten (10) days after close of Public Hearing. The preliminary subdivision portion of the Public Hearing was adjourned. As a result of public comment, the Project Sponsor prepared the Final Environmental Impact Statement (FEIS) which was accepted and last revised in October 2012. A Statement of Findings was prepared and adopted on December 24, 2012.

On September 27, 2013, the Project Sponsor submitted the First Addendum to the EIS which included a further evaluation of the onsite pump station and force main that would convey project sewer to the Village of Goshen's WWTP. As a result of the First Addendum, the Lead Agency, based on their review of submitted information, adopted an Amended Statement of Findings dated November 26, 2013.

The Project Sponsor appeared before the Village of Goshen Board of Trustees to discuss the possibility of the Village providing sewer service to the proposed project. At that meeting, the Board unanimously agreed to provide sewer service to Young's Grove. The Board also indicated that there is an existing Inter-Municipal Agreement in place with the Town of Goshen that provides the administrative framework for outside sewer users. Notwithstanding, the Town Board opted to require an onsite WWTP as opposed to conveying project sewage to the existing Village of Goshen's WWTP via a force main.

See Appendix A Correspondence.

The Application received Conditional Preliminary Approval from the Planning Board and the Resolution was filed on March 4, 2014 with the Town Clerk's office for 105 single family residential lots arranged in an open area development.

IV. Sanitary Sewer Treatment Alternatives

The Planning Board, acting as Lead Agency, prepared a Findings Statement pursuant to Article 8 of the Environmental Conservation Law and 6NYCRR Part 617. In doing so, the Board relied on facts and conclusions that were presented in the Final Environmental Impact Statement to support their decision. The following is a re-evaluation and verification that the salient facts and conclusions previously presented in the FEIS are accurate and current.

V. Summary of Anticipated Impacts and Mitigation for Proposed Wastewater Treatment Plant Alternative Location

V.1 Approvals

The Proposed Action will be serviced by a central onsite WWTP and the Project Sponsor will need to obtain a SPDES Permit from the NYSDEC for surface water discharge of treated effluent. The WWTP will be designed to treat sewage to meet Intermittent Stream Effluent Limits (ISEL). Final Design Plans and Specifications along with the SPDES Permit Application will be submitted to the NYSDEC for permit issuance and plan review and approval.

The sanitary sewer collection system including gravity collection system and manholes will be designed in accordance with NYSDEC standards and will be submitted to the NYSDEC for review and plan approval.

V.2 Impacts on Land

By relocating the proposed on-site WWTP to Utility Lot #2, the following net benefits will be realized:

- Reduce impervious surface by reducing access road by approximately 17,591 square feet or 0.4 acres.
- Reduce required tree clearing/site disturbance by approximately 89,836 square feet or 2.0 acres.
- Will eliminate permanent disturbance of 100' wetland buffer by approximately ~~5,9702,628~~ sf.
- Reduce fragmentation of wildlife corridors by eliminating the previously proposed WWTP access road.
- Eliminate potential impacts to existing onsite cultural resources within the area of the original WWTP.

- Eliminate the need for onsite sewage pump station and 1,875 linear feet of force main. This will also reduce long term operation and maintenance costs.
- Minimize the commitment of nonrenewable resources by eliminating the need to construct an onsite pump station and force main.

Constructing the WWTP on Utility Lot #2 will result in the following potential impacts:

- Temporary disturbance of approximately 300 sf of wetland to install outfall.

See Figure Nos. 2 Original WWTP Location and Figure No. 3 Proposed WWTP Alternate Location.

V.3 Ownership and Operations

The Project Sponsor has contracted Natural Systems Utilities (NSU) to design and build the onsite WWTP. NSU has over 30 years of experience and leadership in water resource management. NSU currently owns and/or operates over 240 sewer and/or water systems across the United States.

It is the preferred plan of the Project Sponsor that NSU will ultimately own and operate the WWTP. To this end the Project Sponsor will petition the Town Board for authorization to form a Transportation Corporation under Article X of the Transportation Corporation Law.

In accordance with the original Statement of Findings, the Project Sponsor will prepare and submit a Map, Plan & Report along with a petition to create a Town Sewer District to the Town Board. The Project Sponsor will also execute a Turnover Agreement with the Town of Goshen should the private sewer company fail to provide adequate service and/or maintenance of the sewer system. The Turnover Agreement will give the Town of Goshen the authority to take over the private sewer company and its assets so it may properly run the central sewer system. Once the underlying district is formed it will permit the Town to bill only those residents residing within the Sewer District for operations and maintenance costs.

V.4 Proposed Wastewater Treatment Process Overview

Domestic wastewater will be collected from the residential buildings and conveyed by a sanitary collection system to an on-site wastewater treatment facility. Major components of the treatment facility will include:

- Fine Screening System
- Trash Trap
- Flow Equalization
- Aerobic Process Tanks
- Ultrafiltration Membrane Tanks
- Ultraviolet Disinfection
- Re-aeration

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- Instrumentation and Controls
- Process Redundancy and Alarms
- Sludge Holding
- Backup Power Generation
- Outfall pipe

The fine screening system captures large solids, plastics, fibrous materials, and trash. The screens drain by gravity into the trash trap which directs flow to equalization tankage. The equalization volume dampens flow spikes and reduces the variability of influent wastewater sent to the downstream aerobic biological process. Process wastewater undergoes carbonaceous oxidation and nitrification in the aerobic tankage. Process air is supplied through fine bubble diffusers via positive displacement blowers. Final liquid/solid separation is accomplished by ultrafiltration membranes. Membrane permeate is then directed through an ultraviolet light disinfection system. Treated, disinfected effluent is then oxygenated in re-aeration tankage prior to discharge.

Ancillary equipment includes process instrumentation and controls, chemical feed systems, safety equipment, odor controls, pump and process redundancy, programmable logic control, remote access, a 24-7-365 alarm system linked to all critical process parameters, emergency backup generator, etc. The facility itself will consist of below grade tankage and an above grade containerized (fully enclosed) treatment and control building.

V.5 Review of Original Findings dated December 2012

Below is a review for consistency with the original SEQRA Findings (*italicized*) as related to the current alternative WWTP location.

1. *Connections to existing infrastructure and utilities will be analyzed and implemented wherever feasible, limiting impacts and providing beneficial support.*

Response: The Project Sponsor will continue to evaluate connections to existing infrastructure and utilities wherever feasible.

2. *The construction of the domestic sewer collection system and water distribution system will occur simultaneously with the construction of roads and other utilities servicing the project. The Project Sponsor will be required to maintain all infrastructure during construction until such time that they are offered for dedication and accepted by the Town. The cost associated with maintenance will be borne by the Project Sponsor.*

Response: The Project Sponsor concurs and acknowledges responsibility for costs associated with maintenance of sewer and water during construction.

3. *The Project Sponsor will petition the Town Board for the formation of sewer, water and drainage districts to ensure proper maintenance and future repairs are*

performed and the financial obligation for such maintenance will be borne by the residents of the district.

Response: The Project Sponsor's preferred alternative is to own and operate the WWTP under a Transportation Corporation. Under this arrangement maintenance costs will be borne by residents of the improvement district.

4. *The on-site WWTP will be an enclosed system with air quality controls to eliminate the potential for odors. The structure will be architecturally consistent with the overall development or appropriately screened. A landscape plan will be prepared for the WWTP and approved by the Planning Board that will include a variety of deciduous and evergreen plantings to provide screening of the WWTP. Lighting will be in accordance with Town specifications, and shall consist of "dark sky friendly" to reduce nighttime glare and offsite illumination.*

Response: The Project Sponsor acknowledges the design requirements for the WWTP.

5. *All proposed treatment practices will be reviewed by the Planning Board with input from the Highway Superintendent during subdivision and site plan review.*

Response: The Project Sponsor acknowledges the need for review of treatment practices by the Planning Board, Highway Superintendent and NYSDEC.

6. *All proposed stormwater treatment ponds, wells, water storage tanks, pump stations and the wastewater treatment plant will be located on utility parcels which are excluded from the proposed 105 lot count.*

Response: The current plan shows proposed utility improvements on individual utility lots.

7. *The Project Sponsor shall develop a mechanism for funding the water system, which may include a developer's agreement, or such other funding mechanism approved by the Town Board.*

Response: The Project Sponsor will provide requisite surety to warrant implementation of proposed site improvements. Said surety will be in a form approved by the Town Attorney and Town Board.

VI. Summary of Alternative WWTP Location

It is the opinion of the Project Sponsor that the proposed alternative location for the WWTP is consistent with the Original Findings set forth in the December 2012 Statement of Findings and will further reduce potential impacts.

VII. Central Water System Alternative

As noted in Section I. Executive Summary above, two (2) alternatives for a central water system were evaluated. The Proposed Action will be serviced by a central water system. The current layout/density has an estimated water demand of 42,000 gpd or 29.2 gpm. The water source will

be through three (3) rock wells which yielded approximately 234,720 gpd or 163 gpm from the combination of all three (3) wells. The wells were tested in accordance with the Town of Goshen Well Testing Protocols for community water systems and applicable county and state requirements.

In the process of advancing the preliminarily approved plans for the domestic water system for outside agency permitting and design approvals, a number of operation and maintenance issues were identified.

Water storage within public community water systems is required to satisfy normal domestic demands. Very large public community water systems often incorporate additional storage for fire suppression. This is regularly implemented when the volume recommended for fire suppression is substantially less than the volume required for daily domestic demands. In these cases, the incremental additional volume does not appreciably impact system design.

However, in the case of very small systems such as the one proposed at Young's Grove, the volume recommended for fire suppression significantly exceeds the volume projected for daily domestic demands, particularly during winter months. Because of this, incorporating water storage for fire suppression into the proposed potable water system is impractical for several reasons. Importantly, it is noted that there is no requirement to incorporate fire suppression storage within a public community water system (NYSDOH and OCHD).

Significantly increasing the overall water storage within a system beyond what is required to satisfy domestic demands, can dramatically increase the time required for the water in the system to be replaced/replenished. This is not only a function of water stored in tanks, but also a function of the pipe diameters in the distribution network. When providing for potable/domestic service the distribution system pipe diameters can be designed to efficiently match the needs and pressure of domestic usage. However, when fire suppression is included, minimum diameters of 8" or more are required. The additional volume stored in larger pipes in the case of Young's Grove can exceed 20,000 gallons. Again, this additional stagnant volume within tanks and pipes increases the time required for the water in the system to be replaced/replenished. As the resulting "water age" increases, water quality deteriorates. Typical disinfection practices become less effective and the risk of discoloration, odors, and contamination increases.

In colder months, the reduced turnover in storage tanks can also result in freezing problems. If unchecked, this can lead to damage of the storage facilities and/or extended service interruptions, or worse. This is a common management issue for small public community water systems with large fire suppression demands.

Instead of burdening the domestic system in this manner, a separate and dedicated water storage system for fire suppression is preferred. (A similar system was recently approved in the Town of New Windsor). Not only does this ensure that water quality and system reliability within the potable distribution network can be more easily maintained, but it also ensures that an adequate supply of water for fire suppression will be readily available – and completely independent of the potable system.

Based on the latest site plans, the minimum distance between residential dwelling units will be between 20 feet and 30 feet. For this occupancy, construction type, and general configuration, the Insurance Services Office (ISO) recommends an available/useable fire suppression volume of 45,000 gallons. If the final separation distance between residential dwelling units exceeds 30 feet, the requirement drops to 30,000 gallons.

This is also consistent with the recent determination made by fire officials in the Town of New Windsor regarding the proposed 172-unit Apple Ridge cluster development, wherein on-site storage of 30,000 gallons was required for a separate fire-suppression system.

Based on the above, it is recommended that buried tankage totaling 30,000 to 45,000 gallons of useable capacity be provided to serve the proposed development. Not only will this ensure rapid access to serve dwellings within the development, but also it will reinforce the ability to serve the surrounding community. Compared to surface water sources, the advantages of buried tankage are many. Buried tankage prevents water from freezing, can be sited optimally for service (e.g. adjacent to roads), and is far cleaner and safer for pumping equipment because the water is free of debris, organic matter, grit, etc. Tanks would be filled and tested for water tightness upon installation, inspected quarterly and after each use, and refilled as needed by the adjacent domestic water system (also proposed).

To ensure a total useable volume of between 30,000 and 45,000 gallons, actual tank capacity may need to be slightly greater, as tanks cannot typically be drawn dry. The preferred location of each of two tanks is shown on the accompanying drawing, which was developed based on the hose lengths currently in use by the fire company. Local fire officials should also specify the exact types of connections and fittings that are preferred. These should be compatible with existing equipment.

See Figure No. 4 Fire Storage Tank Locations.

Figure No. 5 details the storage tank location and requisite grading adjacent to existing intermittent water course. Installation of the proposed underground storage tank on Utility Lot #6 is approximately 85' from an existing intermittent water course and will provide an undisturbed buffer of approximately 65'. Figure No. 5 shows the proposed grading and silt fence. The tank is underground and the area disturbed during installation will be re-vegetated.

The underground tank installed on Utility Lot #7 is approximately 85' from the nearest isolated wetlands. Figure No. 6 shows the area that will be temporarily disturbed and silt fence in relation to isolated wetlands.

Potable water storage can then be based on the requirements for the domestic system. This will ensure water quality, system reliability, and will also eliminate the need for either:

- an elevated water storage tank on the order of 79 feet tall which would provide pressure by gravity, or
- a complex fire pumping system and additional infrastructure (mains, hydrants, controls)

Separating the fire suppression system from the public community water system, ensures the highest quality drinking water and a more reliable, more cost-effective system, without compromising fire protection for the proposed and surrounding community.

The elevated storage tank, with complexities and cost related to freezing and water quality degradation due to insufficient water turnover, would create operational and maintenance issues that are difficult to mitigate in a cost-effective manner. Constructing the tank and mitigation measures to manage tank storage and water quality would be cost prohibitive, thus the third alternative of the domestic water system is being pursued by the Project Sponsor.

VIII. Summary of Anticipated Impacts and Mitigation for Proposed Domestic Water Alternative

VIII.1 Approvals

The Proposed Action will be serviced by a central domestic water system and the Project Sponsor will need to obtain a Water Taking Permit from NYSDEC for withdrawal of groundwater. The system will be designed to meet all state and local requirements. The final Design Plans and Specifications will also require plan review from NYSDOH and OCDOH.

VIII.2 Potential Impacts

Each of the previous alternative water systems was evaluated to ensure that it can meet the following requirements for all of the proposed dwellings. The current proposed water system alternative shall be evaluated utilizing the same design criteria.

- *The system shall provide a minimum static operating pressure of 35 psi and 20 psi under fire flow conditions.*
Response: The alternative system will provide a minimum static operating pressure of 35 psi, fire flows provided by alternative means.
- *The system shall provide proper chlorination/disinfection and contact times.*

Response: The alternative system will provide proper chlorination/disinfection and contact times.

- *The water storage tank shall provide a full 24 hours of domestic storage.*

Response: The alternative system will provide 24 hours of domestic storage.

- *The water system shall provide fire flows at adequate volumes and pressure throughout the project.*

Response: The alternative system will provide adequate storage of water based on OSI recommendations. Pressure for fire fighting will be via pumper trucks which is typical for most areas of the Town.

- *Providing a metered emergency interconnection with the adjacent Stonehedge Water District that could be of benefit during times of drought, mechanical repair or mechanical failure.*

Response: The alternative system could still provide an emergency interconnection with the adjacent Stonehedge Water District.

- *The water system shall provide any treatment required by the Department of Health which could include filtration if it determined the developed groundwater sources are under the influence of surface water.*

Response: The alternative system will provide any treatment required by OCDOH which could include filtration.

VIII.3 Ownership and Operations

In accordance with the Original Statement of Findings, the ownership, operation and management of the central water system will be either a Town water district that will be formed by the Town Board and filed with the State Attorney General's office or a private water company that will be formed in accordance with the Public Service Commission's rules regulating such companies.

VIII.4 Proposed Domestic Water Treatment Process Overview

The primary components of the proposed alternative domestic water system will include:

- Three well pumps and assemblies to pump water from Wells 1, 2 & 5 to the treatment plant.
- Two iron filtration vessels sized to treat the maximum daily demand (92,400 gpd).
- Disinfection by chlorination.
- Chemical storage and metering system.
- Laboratory and safety equipment.
- Climate controlled treatment building.
- Emergency power source (generator) with noise attenuation.
- Low profile water storage tank.
- Two buried water storage tanks with hydrants for firefighting purposes. Tanks will be connected to domestic water system to ensure tanks are continually filled.
- Site improvements and appurtenances.

VIII.5 Review of Original Findings dated December 2012

1. *Connections to existing infrastructure and utilities will be analyzed and implemented wherever feasible, limiting impacts and providing beneficial support.*

Response: The Project Sponsor will continue to evaluate connections to existing infrastructure and utilities wherever feasible.

2. *The construction of the domestic sewer collection system and water distribution system will occur simultaneously with the construction of roads and other utilities servicing the project. The Project Sponsor will be required to maintain all infrastructure during construction until such time that they are offered for dedication and accepted by the Town. The cost associated with this maintenance will be borne by the Project Sponsor.*

Response: The Project Sponsor concurs and acknowledges responsibility for costs associated with maintenance of sewer and water systems during construction.

3. *The Project Sponsor will petition the Town Board for the formation of sewer, water and drainage districts to ensure proper maintenance and future repairs are performed and the financial obligation for such maintenance will be borne by the residents of the district.*

Response: In accordance with the Original Findings, the ownership, operation and management will either be a town water district or private water company with executed turnover agreement with the Town.

4. *The on-site WWTP will be an enclosed system with air quality controls to eliminate the potential for odors. The structure will be architecturally consistent with the overall development or appropriately screened. A landscape plan will be prepared for the WWTP and approved by the Planning Board that will include a variety of deciduous and evergreen plantings to provide screening of the WWTP. Lighting will be in accordance with Town specifications and shall consist of "dark sky friendly" to reduce nighttime glare and offsite illumination.*

Response: The Project Sponsor acknowledges design requirements for the water treatment facility.

5. *All proposed treatment practices will be reviewed by the Planning Board with input from the Highway Superintendent during subdivision and site plan review.*

Response: The Project Sponsor acknowledges the need for review of treatment practices by the Planning Board, Highway Superintendent, NYSDEC, NYSDOH and OCDOH.

6. *All proposed stormwater treatment ponds, wells, water storage tanks, pump stations and the wastewater treatment plant will be located on utility parcels which are excluded from the proposed 105 lot count.*

Response: The current plan shows proposed utility improvements on individual utility lots.

7. *The Project Sponsor shall develop a mechanism for funding the water system, which may include a developer's agreement, or such other funding mechanism approved by the Town Board.*

Response: The Project Sponsor will provide requisite surety to warrant implementation of the proposed domestic water system. Said surety will be in a form approved by the Town Attorney and Town Board.

IX. Summary of Domestic Water Alternative

It is the opinion of the Project Sponsor that the alternative domestic water system is consistent with the findings set forth in the December 2012 Statement of Findings and Amended Statement of Findings dated November 26, 2013.

X. Vegetation and Wildlife

The Project Site provides a range of habitats including woodlands, wetlands, old farm ponds and abandoned gravel roads. It was the opinion of the Planning Board during the review process that the northern corner of the Site at the intersections of Craigville Road and Hasbrouck Road exhibited a high level of biodiversity. The Board asked the Project Sponsor to provide a buffer around this resource which was provided.

X.1 Biodiversity Corner

Further, the current Proposed Plan provides an additional 100' separation from the discharge point of the proposed outfall pipe from the biodiversity buffer line.

X.2 Modification to Open Space

The Plan, subject to the EIS, proposed approximately 294.4 acres of open space or 83% of the gross acreage. The current Plan proposes approximately 291.4 acres of open space or 82% of the gross acreage. The Code requires a minimum of 50% open space.

Modifications to Open Space include:

Open Space A = No Change

Open Space B = -0.57± acre (modified to exclude water line connection to Stonehedge at south end of Broadlea Road from the calculation)

Open Space C = -0.96± acres (Lots along north side of Young's Grove Road, previously lots 75-83, were modified and Utility Lot 2 was removed from the calculation)

Open Space D = No Change

Open Space E = No Change

Open Space F = -1.44± acres (modified to exclude 100' well ownership for Wells 1 & 5)

Total = 2.97± acres difference (New Open Space Percentage = 82%)

X.3 Wildlife Connectivity

Wildlife connectivity area between Open Space D and E on the south side of Young's Grove has been reduced from 125' to approximately 112'. It is the opinion of the Applicant that this reduction would not significantly impact wildlife movement. The proposed tank is underground and will not restrict wildlife movement. The connectivity area north of Young's Grove has not been changed and is approximately 129' in width.

XI. Land Use and Zoning

The Project Site is located in the RU Zone and is subject to the general standards of the Scenic Road Overlay District. Based on the Original Findings, "The utilization of an on-site WWTP will consist of an enclosed system with air quality controls to eliminate the potential for odors. The structure will be architecturally consistent with the overall development; lighting will be in accordance with the Town specifications and the area will be supplemented with a variety of deciduous and evergreen vegetation to provide screening".

XI.1 General Design Standards

In accordance with Section 97-29F the following standards shall be met for the proposed WWTP located on Utility Lot 2:

- The design of the structure will be aesthetically compatible with its surroundings.
- Will minimize removal of existing native vegetation.
- Will locate structure in a manner that will minimize visibility from the scenic road to the extent practicable (building is approximately 190' from existing roadway).
- The Project Sponsor recognizes the prohibition of chain link fences or stockade and other fences that "block visual access to the land in the corridor".

XII. Infrastructure and Utilities

Response to Technical comments in H2M Memorandum dated February 18, 2020:

The SEORA Amended Findings indicate each alternative water system was evaluated to meet requirements for minimum pressure, disinfection, domestic storage, fire flow and pressure, interconnection with the adjacent Stonehedge Water District and treatment. The SEORA Amended Findings concluded the standpipe system to be the preferred alternative since the hydropneumatic system will require a large low profile or subsurface water storage tank and

high-volume pumps. Further, the Planning Board determined the standpipe will allow the water system to operate by gravity and would be the most reliable system as well as reduce capital, operation and maintenance costs. The third (3rd) alternative described in the Second Addendum appears to be similar to the previously evaluated hydropneumatic system except fire pumps are no longer proposed and are to be replaced with two (2) buried water storage tanks. The Second Addendum should be revised to provide a detailed description of the proposed third (3rd) alternative water system and include an evaluation of the third (3rd) alternative water system to meet the originally considered system requirements. We have the following comments:

The originally SEORA review included a requirement for water systems to provide a minimum pressure of twenty (20) pounds per square inch (PSI) under fire flow conditions. The Second Addendum indicates fire flows will be provided by alternative means. We understand the third (3rd) alternative includes two (2) buried water storage tanks which will provide a volume of water for responding fire departments to draft water. The proposed third (3rd) alternative provides no pressure; rather pressure must be provided through a fire department pumping apparatus. The Second Addendum should be revised to describe drafting procedures and include a comparison to the standpipe and hydropneumatic alternative water systems relative to pressure and fire flow.

Response: See Table 1, below, for a comparison of the standpipe system outlined in the SEORA Amended Findings to the alternative described in the Second Addendum.

Following Table 1, is a detailed description of the proposed alternative for storage of fire suppression water and an evaluation of the proposed third (3rd) alternative water system to meet the originally considered requirements, as applicable.

Table 1, Comparison of Volume, Pressure and Fire Flow Requirements

	<u>Domestic Water System</u>	<u>Fire Suppression</u>	<u>System Pressure</u>	<u>Storage Volume (G)</u>
<u>SEORA Amended Findings</u>				
<u>Standpipe System</u>	X	X	<u>Minimum operating pressure of 35 psi; 20 psi under fire flow conditions</u>	<u>536,000</u>
<u>Second Addendum</u>				
<u>Proposed Third (3rd) Alternative</u>				
<u>Low Profile Water</u>	X		<u>NYDOH Requirement:</u>	<u>21,000</u>

<u>Storage Tank</u>			<u>Design 60 to 80 psi and not less than 35 psi</u>	
<u>Below Grade Tanks</u>		<u>X</u>	<u>Pressure provided by fire department pumping equipment</u>	<u>30,000 to 45,000</u>
<u>Total Water Storage with Alternative System</u>			<u>-</u>	<u>51,000 to 66,000</u>

Fire Suppression Water Storage and Distribution Approach

The current layout/density has an estimated water demand of 40,000 gpd or 28 gpm. The water source will be through three (3) rock wells which combined yield approximately 234,720 gpd or 163 gpm. The wells were tested in accordance with the Town of Goshen Well Testing Protocols for community water systems and applicable county and state requirements.

In the process of advancing the preliminarily approved plans for the domestic water system for outside agency permitting and design approvals, a number of operation and maintenance issues were identified.

Water storage within public community water systems is required to satisfy normal domestic demands. Very large public community water systems often incorporate additional storage for fire suppression. This is regularly implemented when the volume recommended for fire suppression is substantially less than the volume required for daily domestic demands. In these cases, the incremental additional volume required for fire suppression does not appreciably impact system design.

In the case of very small systems such as the one proposed at Young's Grove, the volume recommended for fire suppression significantly exceeds the volume projected for daily domestic demands, particularly during winter months. Because of this, incorporating water storage for fire suppression into the proposed potable water system is impractical for several reasons. Importantly, it is noted that there is no requirement to incorporate fire suppression storage within a public community water system (NYSDOH and OCHD).

Significantly increasing the overall water storage within a system beyond what is required to satisfy domestic demands, can dramatically increase the time required for the water in the system to be replaced/replenished. This is not only a function of water stored in tanks, but also a function of the pipe diameters in the distribution network. When providing for potable/domestic service the distribution system pipe diameters can be designed to efficiently match the needs and pressure of domestic usage.

To ensure a total useable volume of between 30,000 and 45,000 gallons, actual tank capacity may need to be slightly greater, as tanks cannot typically be drawn dry. The preferred location of each of two tanks is shown on the accompanying drawing, which was developed based on the hose lengths currently in use by the fire company. The Project Sponsor will coordinate with local fire officials regarding types of connections and fittings to be used. The recommended and installed connections will be compatible with existing fire department equipment,

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The original SEORA review included a requirement for water systems to provide a water storage tank with a full twenty-four (24) hours of domestic storage. The Second Addendum indicates the third (3rd) alternative will provide twenty-four (24) hours of domestic storage. We understand this storage will be provided in the proposed low profile water storage tank. The subdivision plans with Second Addendum should be revised to show the location of this water storage tank so any potential environmental impacts associated with tank construction may be identified and evaluated. Further, the Second Addendum should be revised to include an evaluation of the system's compliance with Department of Health requirements. Specifically, we note the 2018 Recommended Standards for Water Works (Ten State Standards) indicates hydropneumatic (pressure) tanks shall be located above ground and sized to be at least ten (10) times the capacity of the largest pump.

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Response: The third (3rd) alternative proposed in the Second Addendum will meet New York State Department of Health (NYSDOH) and Orange County Department of Health (OCDOH) requirements. The NYSDOH and the OCDOH refer to "Recommended Standards for Water Works" (Ten State Standards) as the design basis for water systems.

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Ten States Standards stipulates that;

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- The minimum storage capacity for systems not providing fire protection shall be equal to the average daily consumption. This requirement may be reduced when the source and treatment facilities have sufficient capacity with standby power to supplement peak demands of the system." (Section 7.01)

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The Second Addendum proposes a third (3rd) alternative that addresses this requirement. The current layout/density has an estimated daily water demand of 40,000 gpd or 28 gpm. The water source will be through three (3) rock wells which yielded approximately 234,720 gpd or 163 gpm from the combination of all three (3) wells. The twenty-four (24) hour storage volume of 40,000 gallons is overly conservative.

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Instead, storage of 50% of the estimated daily water demand (20,000 gallons) is recommended for the following reasons;

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Response: The alternative described in the Second Addendum was developed precisely because it represents a more cost effective, safer solution. See below tables.

Impact of Incorporating Fire Suppression Storage into Small Public Community Water Systems	
Is incorporation required by NYSDOH, OCHD, Ten States?	No
Does incorporation yield water quality concerns?	Yes
Is incorporation the most cost effective solution?	No
Does incorporation present freezing problems?	Yes
Is the bifurcated solution presented herein in place elsewhere?	Yes
Is the bifurcated solution common for small systems?	Yes
Does incorporation increase the ultimate cost to system users?	Yes

ESTIMATED COSTS OF YOUNG'S GROVE WATER DISTRIBUTION SYSTEM OPTIONS (REGARDING STORAGE OF FIRE SUPPRESSION WATER VOLUME)			
SYSTEM COMPONENT	Combined Storage	Combined Storage	Separate Storage
	Elevated Tank	Ground Level Tanks	Ground Level Tanks
Distribution Mains	\$594,000	\$594,000	\$279,000
Valves & Hydrants	\$110,000	\$110,000	\$31,000
Fire Storage & Appurtenances	\$1,020,000	\$307,000	\$137,000
Fire Pumping System	\$0	\$204,000	\$0
Engineering & Permits	\$82,000	\$82,000	\$51,000
Subtotal	\$1,806,000	\$1,297,000	\$498,000
Construction A&I (7.5%)	\$135,450	\$97,275	\$37,350
Contingency (10%)	\$180,600	\$129,700	\$49,800
TOTAL	\$2,122,050	\$1,523,975	\$585,150
DIFFERENCE	(\$1,536,900)	(\$938,825)	\$0

**Estimates are budgetary only and should be considered AACE Class 5*

- The Second Addendum indicates in small water systems, such as Young's Grove (105 service connections), incorporation of fire suppression storage within an elevated water tank is impractical for several reasons including water quality/water age and system reliability/freezing. The Town currently operates four (4) water systems including Arcadia Hills (258 service connections), Hambletonian Park (163 service connections), Scotchtown Park (44 service connections) and Stonehedge (42 service connections), three (3) of which include elevated water storage tanks and one (1), Scotchtown Park, utilizes a hydropneumatic system. We recommend you solicit the comments of the Highway Department regarding their experiences locally with water quality and system reliability.

Response: The applicant looks forward to the input of the Highway Department, and notes that water storage regimes in each of these four systems are substantially different from that proposed at Young's Grove.

2. The SEORA Amended Findings indicate four (4) alternatives were evaluated for WWTP technologies which concluded an activated sludge extended aeration process was the preferred treatment process for the proposed WWTP. The Second Addendum should be revised to confirm the relocated WWTP will utilize the activated sludge extended aeration process.

Response: Domestic wastewater will be collected from the residential buildings and conveyed by a sanitary collection system to an on-site wastewater treatment facility. Major components of the treatment facility are described in Section V.4. above.

Numerous treatment technologies exist that are based on the activated sludge process, wherein microbial biology is employed to breakdown harmful components of wastewater. Membrane bioreactors (MBRs) are one such technology, and have been in use for over thirty years. Membranes provide a physical barrier that separate solids from liquids. This physical barrier distinguishes the MBR from other activated sludge technologies which typically rely on large clarifiers to separate solids by gravity. As a result, MBRs produce a significantly higher quality effluent. As MBRs have become more popular, many new manufacturers have entered the market. The resulting competition has reduced the cost of membranes. Additionally, operational protocols and industry design advancements now enable MBRs to operate with less energy. For these reasons, an MBR based treatment facility is now recommended for Young's Grove.

XIII. Community Services and Facilities

- The water system evaluated as part of the original SEORA review included an elevated water storage tank (standpipe) which provided water for firefighting by gravity to hydrants located throughout the subdivision. The proposed water system described in the Second Addendum will consist of two (2) buried water storage tanks to provide static water from which fire department pumping apparatus may draft water during a fire. The Second Addendum indicated hydrants will be provided, however we understand these are dry hydrants (unpressurized) intended to facilitate drafting operations. Further, we understand to obtain water for firefighting from the buried tanks, pumping apparatus will connect hoses to the dry hydrants and lift water from the buried tanks. The Second Addendum indicates buried tank locations were determined based on fire department hose lengths and includes a figure (Figure 4) indicating a maximum distance between a buried tank and residential dwelling of approximately 1,350 linear feet. The ability of the fire department pumper to draft from the buried storage tank is related to the suction lift (vertical distance between the water surface elevation and pump intake); generally, as suction lift increases, pump output decreases. Further, hose friction loss can also reduce

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pump output. We recommend revising the Second Addendum to provide calculations demonstrating the ability of the proposed water system to deliver the required fire flow to the residential dwellings within the subdivision. Further, we recommend you solicit the comments of the fire department regarding the modifications to the water system relative to fire fighting.

Response: As noted above, compared to relying on surface water resources, the advantages of the buried tanks are many. Buried tanks prevent water from freezing, hydrants can be located adjacent to roadways-easy access, it is far safer and cleaner for expensive pumping equipment because the water is free of debris, organic material, grit, etc. The tank life is expected to be 50 years or more under normal operating conditions.

Suction becomes an issue at about 32 feet or greater of lift. The proposed alternative tanks will have a suction lift between 8-18 feet depending on the fire apparatus. Without having the specifications on the various pumping apparatus of the Fire Department, pump curves, diameter of hoses, etc. it is difficult to provide a calculation regarding the ability to deliver required fire flow. As noted above, it is a practical solution which eliminates many of the issues associated with relying on ponds or streams as a source of fire suppression.

The Project Sponsor's representatives met with Chief Pearson to review the current third alternative on May 4, 2018, March 11, 2019 and December 16, 2019. At the latter meeting, the Chief indicated that he was "okay" with the current fire supply alternative, but was deferring the matter to the new chief as his term was coming to an end.

- The Second Addendum indicates there is no NYS or Orange County Department of Health requirements to incorporate fire suppression storage within a public community water system. We note the Town Code indicates the size of water mains and location of hydrants shall be such as to furnish adequate water supply and fire protection [§93-25]. We recommend the Second Addendum be updated to include any Town requirements for fire protection and provide an evaluation of the proposed water system relative to compliance with the Town Code.*

Response: It is the opinion of the Applicant that the proposed water mains, supply wells and water treatment facility will furnish adequate water supply to future project residents. The hydrants associated with the buried water storage tanks make accessible adequate water supply for firefighting in two (2) locations of the project.