

3.6 WATER RESOURCES COMMENTS AND RESPONSES

Comment 3.6-1 (Dan Kiely, Lou Faron, Mr. Montello, Public Hearing, May 9, 2005; Letter 12, Donna Genova, May 22, 2005; Letter 13, Vera Peitranillo, May 22, 2005; Letter 15, Ann B. De Felice, May 22, 2005; Letter 11, Pearl Seigler, May 21, 2005; Letter 5, William and Laura Fox, May 20, 2005; Letter 16, Alice Kiely, May 22, 2005; Letter 19, Daniel Kiely, May 22, 2005; Letter 7, Suzanne and Jeffrey Steimel, May 20, 2005; Letter 8, Frances and George Davis, May 20, 2005): Existing flooding problems of neighboring properties in the vicinity of Stonewall Court will be exacerbated by the project. Some lots are downgradient of areas where development is planned. An additional basin should be added to the plan in the vicinity of Lots 28, 29, and 30. There will be an increase in the water pressure on the high water table in an area characterized by clay type soils, causing water to flow into neighboring yards. Neighboring properties include those protected by an easement where there is presently an excessive amount of water, and some properties that are affected by poor drainage such that their lawns can not be mowed until well into June. The presence of Paxton Soils in the southwestern portion of the site immediately behind existing homes on Stonewall Court raises the concern that loss of vegetation that absorbs stormwater runoff will worsen existing drainage conditions for existing homes.

***Response 3.6-1:** Stormwater from the Yorktown Farms site will be collected and treated and discharged away from Stonewall Court. As a result of comments made by the public, a revision to the project was made to address the potential for off-site drainage related impacts in the southwestern corner of the subject site. A storm drain system is proposed along the property line behind the Stonewall Court homes to collect surface runoff in several drains before it flows off-site and toward the homes on Stonewall Court. The collection system will direct that water to a proposed stormwater basin in Yorktown Farms. Site walks with homeowners have revealed that some homes that experience basement flooding lack the proper foundation drains needed to convey water away from the basements. This is an inherent condition that will be improved with the proposed drainage system in Yorktown Farms, although one that will likely continue to some degree unless proper footing drains are installed at these homes. Collection of this surface water will alleviate, to some extent, infiltration of water into basements. As such, the proposed action is not expected to worsen the existing condition.*

Comment 3.6-2 (Dan Kiely, Lou Faron, & Unidentified Resident of Stonewall Court, Public Hearing, May 9, 2005,): There is too much impervious surface associated with the proposed project and this will increase the water table downstream. Can driveways be constructed using pervious surfaces instead?

***Response 3.6-2:** The proposed area of impervious surface has been reduced by 36 percent, or by 2.1 acres, from the DEIS plan. The Drainage Study included in the DEIS, and the Stormwater Pollution Prevention Plan (SWPPP) included in the FEIS as Appendix D, demonstrate how the proposed drainage systems will mitigate the effects of the proposed increase in impervious surfaces. The SWPPP for the project is designed to control post construction increases in the rate of runoff from the project and eliminate any adverse downstream impacts, consistent with requirements of the Town of Yorktown, the New York State Department of Environmental Conservation (NYSDEC) and the New York City Department of Environmental Protection (NYCDEP). As summarized in Table 3.6-1, below, the three proposed stormwater detention basins will reduce the peak rates of stormwater discharge from the developed site to rates below existing rates. For the portion of the site that drains to the Muscoot Reservoir Basin, discharge rates are similarly controlled to avoid*

impacts on Wetland A-2 and the downstream watercourses that are tributary to that reservoir.

Table 3.6-1										
Summary of Pre and Post Construction Peak Rates of Runoff (Cubic Feet Per Second)										
	DP-1		DP-2		DP-3		DP-4		DP-5	
	Pre	Post								
1 Year	2.3	0.9	13.1	10.6	3.1	3.0	0.3	0.0	4.2	2.3
2 year	4.2	1.5	20.8	18.5	6.6	5.3	0.7	0.0	7.5	4.0
5 year	7.4	2.5	33.5	31.1	12.9	9.1	1.4	0.1	12.9	5.6
10 year	9.1	3.1	40.0	37.7	16.3	11.1	1.8	0.1	15.8	6.3
25 year	12.6	4.2	53.8	52.0	23.7	15.3	2.8	0.2	21.9	7.5
50 year	16.3	5.4	67.5	66.6	31.5	19.6	3.8	0.2	28.2	8.7
100 year	18.2	6.0	75.0	74.1	35.5	21.8	4.4	0.3	31.5	10.9

Source: Ralph G. Mastromonaco P.E., P.C., 2007

Comment 3.6-3 (Letter 19, Daniel Kiely, May 22, 2005): The DEIS indicates that "...future stormwater rates will be maintained at, or reduced below, present levels for all storm events ... where stormwater exits the property. This is done either through the diversion of water, or the routing of water into retention basins." Under the DEIS, this is not true for the southwest corner of the property.

Response 3.6-3: See Response 3.6-2. The proposed project has been revised since the DEIS and now includes an additional stormwater collection system to collect stormwater runoff from the southwestern portion of the project site and divert it to the southeastern corner above Wetland A-2. This design will mitigate potential adverse impacts associated with stormwater from the southwestern portion of the site.

Comment 3.6-4 (Letter 19, Daniel Kiely, May 22, 2005): The 100 year storm that is used in the DEIS is one that produces 7.5 inches of rain. However, both Hurricane Floyd and a thunderstorm that struck the Yorktown area in August of 1990 produced more rain than 7.5 inches. The 1990 storm was the one where the water came down from a development under construction off Stoney Street and destroyed the basement wall on the front of a house facing Stoney Street. Since both of these storms have occurred within the last 15 years, the efficacy of the stormwater control should be reevaluated.

Response 3.6-4: The SWPPP has been designed in accordance with NYCDEP, NYSDEC, and Town of Yorktown regulatory requirements for controlling the post construction peak rates of stormwater discharged from the site. While it is possible that certain extreme storm events may produce greater than 7.5 inches of rain, 7.5 inches is the statistical average of the 100 year storm event in this part of the county. Prevailing New York State, City, and Town of Yorktown regulations require detention of runoff generated by the statistical average for a 100 year storm event as is provided in the three proposed stormwater management basins.

Comment 3.6-5 (Letter 1, Yorktown Planning Department, June 13, 2005): A more in depth investigation of the water problems associated with the homes existing on Gay Ridge Road and on Stonewall Court and Jefferson Court is needed to ensure that no additional runoff will leave the site.

Response 3.6-5: Refer to Response 3.6-1. The Applicant met with homeowners located to the west of the project site to evaluate existing drainage problems and their concerns that runoff from the proposed project will exacerbate those problems. Site walks by the project engineer and Applicant with current homeowners revealed that some homes that experience basement flooding lack the proper footing drains that are needed to convey water away from their basements. This is an inherent condition that will likely remain unless proper footing drains are installed at these homes. The condition is not expected to be worsened by the proposed project. The proposed project plan includes stormwater management systems that capture and treat runoff from developed areas of the project, while preserving existing flow in all other areas of the site. There will be no stormwater from the Yorktown Farms project directed toward any existing properties on the west side of the site.

Comment 3.6-6 (Letter 1, Yorktown Planning Department, June 13, 2005): Do the stormwater calculations that guarantee no increase in runoff take into account vegetation removal and surface street runoff from lawns, etc. Also homes?

Response 3.6-6: The stormwater management facilities proposed for Yorktown Farms were designed based upon calculations that accounted for pre and post-development topography, vegetative cover, soil characteristics, and all impervious surfaces (houses, driveways, and roads).

Comment 3.6-7 (Letter 3, James D. Benson, New York City Department of Environmental Protection, June 14, 2005): DEP has designated the Muscoot Reservoir as phosphorous restricted, meaning that phosphorous levels in the water do not comply with State guidelines and need to be reduced. In addition, the NYSDEC has determined the reservoir exceeds its total maximum daily load (TMDL) of phosphorous, meaning that phosphorous loading from within the basin prevents the reservoir from meeting water quality standards under current conditions.

DEC promulgated Phase II Phosphorus TMDLs for all the reservoir basins in 2000. Many of the reservoir basins, including the Muscoot basin, require significant reductions in nonpoint sources of phosphorus. As part of the regional effort to reduce phosphorus loads to the reservoirs, individual towns will soon be assigned load reduction targets by the NYSDEC for existing sources of phosphorous. As such, the applicant should evaluate the project's basin-wide and town-wide impact on the regional TMDL program during the SEQRA process.

Based on the loading calculations presented on page 3.6-4, the DEIS claims that the proposal would cause a minimal impact on phosphorous loading. However, since the methodology used to make such a determination differs significantly from the methodology used by NYSDEC during the creation of the TMDLs, the DEIS cannot and should not assume that the project will have no impact on the Town's ability to achieve the TMDLs. As such, the DEIS fails to fully evaluate the impact of the project on the regional TMDL program and the Town's ability to achieve TMDL compliance.

Response 3.6-7: As detailed in the SWPPP and summarized in Table 3.6-2, below, the calculated post construction load of total phosphorous (TP), as well as other pollutants in stormwater discharging to the Muscoot Reservoir, is below the existing load. As such, the proposed project will not impact the Town of Yorktown's ability to meet its TMDL obligation.

The Muscoot Reservoir Basin, into which stormwater from less than 14 acres of the project site now discharges, and would discharge following construction, is classified as "phosphorus restricted" by NYCDEP. A phosphorus-restricted basin is defined in the City's Watershed Rules and Regulations (WR&Rs) as a "drainage basin of a reservoir or controlled lake in which the total phosphorous (TP) load [the amount of phosphorous entering a reservoir from point and non-point sources in the reservoir's watershed] results in phosphorus concentrations above those provided in the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1, Ambient Water Quality and Guidance Values (October 22, 1993)."

Under the provisions of the Clean Water Act, the NYSDEC has established specific Phase II Total Maximum Daily Load (TMDL) limitations for phosphorus inputs into the Muscoot Reservoir. A phosphorous TMDL is a reservoir's loading capacity for total phosphorous and is considered to be a watershed budget for the pollutant, representing the amount of total phosphorous (from point and non-point sources) that can be assimilated by a reservoir without causing impairment, or exceeding water quality standards, including the New York State TOGS guidance values. TMDLs represent the sum of the point source waste-load allocations (WLAs), or the amount of phosphorous being discharged to the reservoir from point sources such as wastewater treatment plants, the non-point source load allocations (LA), or the amount of phosphorous entering the reservoir from non-point sources such as urban stormwater runoff, and an added "margin of safety" to account for uncertainty in the loading calculations.

NYSDEC's Phase II Phosphorus Total Maximum Daily Loads for the Reservoirs in the New York City Water Supply Watershed, June 2000 (the Phase II Report)¹, includes the following information concerning the Phase II TMDLs, and phosphorus, in the Muscoot Reservoir.

The Phase II Report notes that the Muscoot Reservoir is currently water quality limited based on existing conditions. The phosphorus TMDL of 9,397 kg/yr is based on a 20 micrograms per millimeter (ug/l) guidance value and includes a 10% margin of safety (MOS) of 940 kg/yr. Therefore, 8,457 kg/yr total phosphorus is available for allocation between point and non-point sources. A WLA of 1,405 kg/yr and a LA of 7,052 kg/yr has been set for Muscoot Reservoir. The current load of 11,560 kg/yr is greater than the available load. Even after upstream loading reductions and reductions in point source loadings due to the application of the WR&Rs, the available load will be exceeded by 2,058 kg/yr. Upstream phosphorus loads at 5,579 kg/yr and urban runoff loads at 2,853 kg/yr are the two largest contributors of phosphorus to the Muscoot Reservoir. Significant reductions of these two loading sources would be needed to mitigate the 2,058 kg/yr excess. The non-point source programs listed in Section VI of the Phase II Report (Sewer Extension Design and Construction, Septic System Rehabilitation and Replacements, Stormwater Retrofits, Watershed Planning in the Croton System, East of Hudson Water Quality Investment Funds, and Future Stormwater Controls for Single Family Houses, Small Businesses, and Low Income Housing) will be implemented throughout the Croton System to achieve the necessary phosphorus reductions. The five-year average of 1992-1996 annual geometric means of reservoir data indicates a phosphorus concentration of 24.6 ug/l can be expected as a growing season average in the Muscoot Reservoir.

¹NYSDEC, Division of Water, Bureau of Watershed Management. June 2000. Phase II Phosphorous Total Maximum Daily Loads for Reservoirs in the New York City Water Supply Watershed (Delaware, Dutchess, Greene, Putnam, Schoharie, Sullivan, Ulster, and Westchester Counties).

As discussed above, the Phase II Report indicates that the Muscoot Reservoir phosphorous TMDL is being exceeded as a consequence of existing point and non-point phosphorous inputs from its watershed. The Phase II report also indicates that significant reductions in existing point source load, the urban runoff load of 2,583 kg/yr, and the 7,052 kg/yr upstream loads would have to be achieved to meet the target load. Estimates of pre and post construction phosphorous loads calculated with the Simple Method indicate that the annual phosphorus loads from the portion of the proposed Yorktown Farms project located in the Muscoot Reservoir watershed, as shown in Table 3.6-2 would be decreased by 0.4 lbs/yr.

The SWPPP for the Project has been prepared to satisfy the NYCDEP requirement to capture and treat the runoff (from all disturbed areas in sub watersheds 3 and 4) generated by the 2 year, twenty-four hour storm event. The SWPPP is also designed to meet the New York State requirement to capture and treat the runoff from the 90th percentile rainfall event. Note that to comply with the WR&Rs, the SWPPP required for the Yorktown Farms project, a part of which is located in the phosphorous restricted Muscoot basin, includes an analysis of pre- and post-construction phosphorus concentrations in stormwater runoff, and includes measures to capture and treat runoff from a 2-year, 24-hour storm event to reduce post construction increases in phosphorous loading.

The Yorktown Farms SWPPP complies with both NYSDEC and NYCDEP requirements and would control both erosion and sedimentation during construction and post construction increases in pollutant loading in stormwater, two potential sources of phosphorous loading in receiving waters. The implementation of the SWPPP is to be overseen by a Certified Professional Erosion and Sediment Control Specialist (CPESC)/Certified Professional in Stormwater Quality (CPSWQ). Based upon the proposed stormwater plans, no increase in phosphorous loading in the Muscoot Reservoir, or elsewhere, from the site is anticipated.

The SWPPP for the project is expected to achieve better than the calculated phosphorus removal due to the adjunct stormwater practices that have been incorporated into the project design, but not considered in the stormwater treatment calculations. These adjuncts include catch basin/drain inlet sumps, turf filter strips, and the addition of permanent pools in the stormwater basins. The stormwater basin permanent pools will include landscaping capable of removing dissolved phosphorous.

The burden for reducing current phosphorous loading to achieve the TMDL in the Muscoot Reservoir rests with the Town of Yorktown and other MS4s in the Muscoot Watershed. A program for achieving phosphorous reductions has been established in the NYSDEC draft document entitled New York City Watershed Croton Reservoir System Phase II Phosphorous TMDL Non-point Source Implementation Plan (TMDL Implementation Plan). This plan states that, for simplicity and ease of local government administration, the plan is largely structured to use existing programs to achieve phosphorous reductions. Applicable to the Yorktown Farms project, these programs include:

- NYSDEC SPDES General Permit for Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) Permit No. GP-02-02;*
- Westchester County "Croton Plans";*
- NYCDEP "Croton Strategy"; and,*
- NYCDEP East of Hudson Water Quality Investment Funds.*

The Yorktown Farms Project is consistent, and complies, with the TMDL Implementation Plan and the applicable portions of the above-cited programs. Further, based on the proposed SWPPP, the Applicant believes the project will not impact the Town of Yorktown ability to achieve the established TMDL.

The Applicant notes that the specific goal of the TMDL Implementation Plan to help achieve TMDLs in the New York City's Croton Watershed, NYSDEC prepared the New York City Watershed Croton Reservoir System Phase II Phosphorus Total Maximum Daily Load Non-Point Source Implementation Plan (Implementation Plan), which was prepared in accordance with the January 1997 NYC Watershed Memorandum of Agreement and Section 303(d) of the Clean Water Act, is . The goal of the plan, which NYSDEC presented to municipal officials in 2006, is to reduce the phosphorus concentration in the eight reservoirs, including the East Branch, listed in the Phase II Phosphorus TMDL as needing further phosphorus reduction than will be achieved by the wastewater treatment plant upgrades required by the WR&Rs.

According to NYSDEC, a substantial part of the TMDL Implementation Plan relies on the Stormwater Management Plans (SWMPs) that Municipal Separate Storm Sewer System (MS4s) operators are developing pursuant to State Pollutant Discharge Elimination System General Permit (GP-02-02). The permit now applies to each municipality within the East of Hudson portion of the New York City watershed, including the Town of Yorktown, which have been designated as MS4s. The plan also relies on non-point source projects selected by Westchester County and NYCDEP, and supported by NYCDEP East-of-Hudson Water Quality Investment Funds. To further help meet the TMDL, the plan also includes tasks to reduce phosphorus from agriculture, sanitary collection systems, fertilizer use and other phosphorus source controls.

In addition to the Implementation Plan, NYSDEC has developed heightened requirements for the MS4s in the East of Hudson Watershed that, if the MS4s implement as part of their SWMPs, they will be presumed to be in compliance with the TMDL Strategy requirements in Part III.B.2 of GP-02-02. Part III.B.2 requires an MS4 with discharges to an approved TMDL waterbody, such as the Muscoot Reservoir, that is not meeting the TMDL stormwater (load) allocations to modify its SWMP to ensure that the reduction of the phosphorous pollutant of concern specified in the TMDL (phosphorous) is achieved. The MS4 permit requires that modifications to the SWMP be considered for each of the six minimum measures established in GP-02-02.

To assist in the development of the heightened requirements, the NYSDEC hired the nationally recognized experts in stormwater, the Center For Watershed Protection (CWP). The CWP assessed existing local programs to determine how stormwater runoff is being addressed within the East of Hudson Watershed, they evaluated the DEC's statewide Phase II MS4 Stormwater program, and provided recommendations to the NYSDEC on how it could further its Phase II program within the East of Hudson Watershed.

The NYSDEC also used recommendations provided in the "Recommendations To The New York State Department of Environmental Conservation for The Development of its Phase II TMDL Implementation Plan" report prepared by the Watershed Protection and Partnership Council Technical Advisory Committee, dated March 24, 2004, to develop the heightened MS4 permit requirements.

Discussions with NYSDEC during January, 2007, revealed that neither the Implementation Plan, nor the heightened MS4 requirements, which NYSDEC indicated will compliment each other in achieving the TMDL, have been issued.

Table 3.6-2 Annual Pollutant Load Summary (lbs/yr)							
BOD		TP		TN		TSS	
Pre	Post	Pre	Post	Pre	Post	Pre	Post
135.8	125.9	2.5	1.9	16.8	16.4	2190.7	2170.6
Source: Ralph Mastromonico, P.C.. 2007							

Comment 3.6-8 (Letter 2, Bruce Barber, June 13, 2005): A SPPP must be prepared for the entire site with design assumptions and calculations in order to comply with the Town of Yorktown Stormwater Ordinance. This will include complete erosion and sediment control plan using site specific soil information as well as pre and post construction stormwater quality and quantity information.

Response 3.6-8: The Yorktown Farms SWPPP that accompanies this FEIS as Appendix D was prepared in accordance with NYCDEP, NYSDEC, and Town of Yorktown requirements, including those set forth in NYSDEC General Permits for Stormwater Discharges from Construction Activities 02-02, and 93-06 which is incorporated into New York City's watershed regulations by reference. Calculations of pre- and post-construction stormwater discharge rates, and pollutant loading, as well as those upon which the designs of the proposed stormwater management facilities were based, are included in the SWPPP. The calculations include pre and post construction pollutant loading in runoff from the portion of the site that discharges to the Muscoot Reservoir, and the Water Quality Volume (Wqv) for runoff from the portion of the site that is not in the Muscoot drainage basin. The SWPPP also includes a complete Erosion and Sediment Control Plan that has been developed in accordance with the New York Standards and Specifications for Erosion and Sediment Control, April 2005. That plan is included in the accompanying plan set for the revised project plan.

A detailed in the Yorktown Farms SWPPP (Appendix D), the "Simple Method" was used to predict specific, non point pollutant loadings from the fourteen some acres of the site located in the New York City watershed. Pollutant loading rates used are from the New York State DEC, the National Urban Runoff Program and other sources as described in Appendix D. Pollutants examined were total suspended solids (TSS), total phosphorous (TP), total nitrogen (TN) and biological oxygen demand (BOD).

The introduction of impervious surfaces and residential uses influences the quality of stormwater runoff compared to an undeveloped condition. Constituents introduced from automobiles, pet waste, herbicide and pesticide application and atmospheric deposition may increase following the change in cover type and reduction in natural vegetation.

A stormwater pollutant loading analysis was performed for each of the two drainage areas under proposed conditions that drain to the watershed. The runoff volume from a 2-year 24-hour event was used as the design basis for water quality. The results of the Simple Method analysis is provided above in Table 3.6-2.

Comment 3.6-9 (Letter 2, Bruce Barber, June 13, 2005): Applicant has only considered pollutant removal within NYCDEP watershed area. This not in compliance with the Town of Yorktown Stormwater Ordinance. Within the DEP watershed, post construction Nitrogen increases 23.86% from pre construction levels. This is not in compliance with the Town of Yorktown Stormwater Ordinance.

Response 3.6-9: *Section 248-13 of the Code of the Town of Yorktown (Stormwater Management Design Standards) requires that stormwater detention facilities, such as those proposed, “reduce pollutants in stormwater which the development generates.” As shown in 3.6-2, post-construction pollutant loads generated by the development would be significantly reduced.*

The proposed stormwater treatment facilities provide treatment of the Wqv as required by NYSDEC, and treatment of calculated post construction increase pollutant loads in accordance with NYCDEP requirements. The Applicant notes that the project would result in a reduction of each of the pollutants analyzed.

Comment 3.6-10 (Letter 2, Bruce Barber, June 13, 2005): Applicant must state who will be responsible for maintenance of the stormwater infrastructure.

Response 3.6-10: *The Applicant proposes to offer the two proposed roads and the two open space lots, including stormwater infrastructure, for dedication to the Town of Yorktown. At such time as these components are accepted by the Town, responsibility for maintaining the stormwater infrastructure will become the responsibility of the Town.*

Based on a site meeting with the Town Planner on September 14, the project engineer has modified the proposed plan at the southern end of the project by 1) identifying utility easements on the site plan, 2) modifying the drainage systems servicing the individual homes (drainage from roofs and driveways) that would drain into the stormwater basin, and 3) minimizing the extent of the drainage system within utility easements, thereby facilitating access to the stormwater basins and pipes for maintenance and minimizing Town maintenance responsibilities to the greatest extent possible. The plan also presents an alternative design for discharge of the perimeter curtain drain system to the surface rather than connecting to the Town system. It is noted that the drainage design will require approvals from NYSDEC and NYCDEP.