Appendix F-5
Analysis of Critical Issues Within the 09/16/2016 Discovery LLC. MUPDD "Hills" DEIS Submission

Ron Nappi

NELSON POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

TOWN OF SOUTHAMPTON

Main Office
116 HAMPTON ROAD
SOUTHAMPTON, NY 11968
Phone: (631) 287-5740
Fax: (631) 283-5606

Town Clerk Annex
Phone: (631) 723-2712
Fax: (631) 723-3080

Website:
www.southamptontownny.gov

OFFICE OF TOWN CLERK
SUNDY A. SCHERMEYER

MEMORANDUM

DATE: February 22, 2017

TO: Jay Schneiderman, Supervisor
Christine Preston Scalera, Councilwoman
Stanley Glinka, Councilman
John Bouvier, Councilman
Julie Lofstad, Councilwoman
James Burke, Town Attorney
Kyle Collins, Town Planning/Development Administrator
Janice Scherer, Assistant Town Planning Director

FROM: Sundy A. Schermeyer, Town Clerk SAS

RE: The Hills at Southampton, MUPDD

Enclosed please find a DVD copy of an analysis of critical issues within the September 2016 DEIS for The Hills at Southampton, MUPDD prepared/submitted by Ron Nappi.

Should you have any questions or concerns, please feel free to contact my office.

Thank you.

SAS/kao

Attachment - DVD

Janet Johnson 2-22-17
Signature Date

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Attachment - DVD (4)

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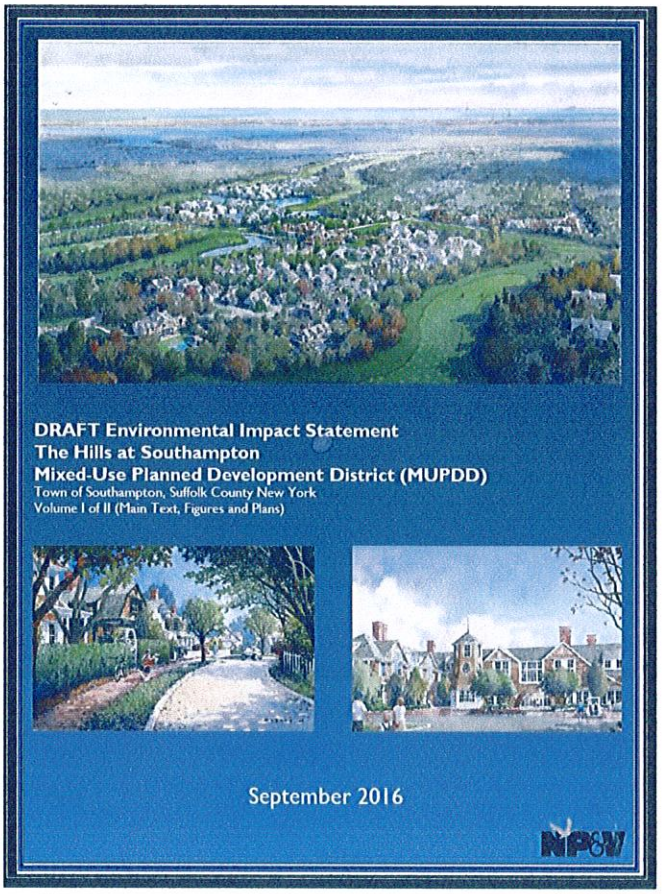


To facilitate the reader, reference material in the document below is dynamically linked to each numbered paragraph. The reader can place the mouse cursor over any bracketed number [#] and by clicking the left mouse button, the viewer will be navigated to that specific reference. The viewer can then return to the point of origin by again left clicking the return bracketed number at the bottom of each reference.

Prepared by Ron Nappi
Copies may be obtained by email: grantad9@gmial.com

List of Critical Issues That Must Be Addressed

F-5.1 Sec. 2.2.5

1. Nitrogen impact analysis failed to account for additional wastewater generated by four sanitary faculties. The two golf course comfort stations, the maintenance shed, and the gatehouse will generate an additional 186 pounds of nitrogen. The combined total **leachate** for these additional facilities is **~50** pounds. [1]

2. Nitrogen impact analyses fail to account for or delineate soil amendments for the golf practice areas. The total **leachate** for this additional partial acre is **~30** pounds.

3. Nitrogen impact analyses fail to account for episodic rain events, which can potentially add an addition **500+** lbs. of nitrogen **leachate** to the groundwater of the subject acres. Despite the attested adherence to precipitation sensitive fertilizer application, not even the developer can control the weather. (i.e. At weather forecasted 40% chance of rain, what subjective judgement is used for fertilizer application. [3]

4. The potential maximum annual resident occupancy could be as high as 243days. All SONIR wastewater calculations are based on a maximum occupancy of 180 days. [**4**]

5. Residential wastewater generation of 35,400 gpd is critically understated and is calculated using 300 gpd for a three bedroom single family home. The proposed residences will have an average of 4.2 bedrooms and will have all the standard water-use amenities of a normal household. The 35,400-gpd wastewater design flow is biasedly attenuated by siting "***proposed use***". [5]

6. The DEIS environmental impact calculations are based on an occupancy rate of 2.5 persons per dwelling. However, both the stated DEIS maximum (444) and the DEIS referenced Rutgers's occupancy scale conclude a figure of 3.75 persons per dwelling. The DEIS does not include the additional environmental impact of 132 non-resident memberships and up to four guests each in any SONIR calculations. [6]

7. National standard septic calculation for single-family residence is 110 GPD per bedroom. The DEIS sets usage @ 300 GPD for residences. No Sanitary Engineer will sign-off on a C of O for a 4-5 bedroom house with a septic system design capacity of 300 GPD. Using the correct standard value of 110 gpd/bedroom will have a major impact on SONIR wastewater calculations. Likewise, the 6,140 GPD for the Clubhouse with a full service restaurant, locker rooms, staff offices, pro shop, sundries retail, and guest services is woefully understated. [7]

8. The DEIS uses the standard of 300 gpd/residential wastewater and references the "***Guidance Memorandum 17 - Agricultural and Golf Course Density***" and ***SCSC Article 6*** as the source. This standard appears nowhere in in either document. In fact, the 300-gpd standard is no longer used.

9. The DEIS calculates nitrogen septic influence @ 50 mg/L. The Suffolk County Department of Health Services – Office of Wastewater Management has fixed the value of 75 mg/L for an average nitrogen septic influence from a residence. In addition, the DEIS does not separate Residential from Commercial (Clubhouse) wastewater. The commercial nitrogen influence standard for a small restaurant/public building is 125-200 mg/L. [9]

10. Groundwater Recharge Impact area is only 88.53 acres – Not 591. Any acreage outside the fertilized area virtually will not be impacted by nitrogen loading and is a "wash" whether developed or left fallow. Only 88.53 irrigated fertilized acres contribute to the target Nitrogen Sink. As such, all SONIR computations must be limited to the 88.53-acre area. All septic systems sit under this acreage. [10]

11. The DEIS calculates the nitrogen impact of the project would annually subtract -1,436 pounds from the aquifer. However, the following must be applied: ***A*** - Reduce site impact area to the fertilized 88.53 acres. ***B*** - Include omitted sources. ***C*** - Use standard nitrogen influence rates of 75mg/L residential and 125mg/L commercial. ***D*** – Use DEIS fertilization schedules. ***E*** - Adjust the calculations to include standardized wastewater usage from 300 gpd to 460 gpd residential and from 6,414 gpd to 10,000 gpd commercial. Based on these combined changes, the real-world nitrogen impact of the project would potentially ***add*** ~**850** pounds annually to the aquifer. [11]

12. The stated 4,500 rounds of course play are based on 118 residences for 180-day season. These numbers fail to account for the 132 non-resident memberships and their guests for a projected 200-day season. Hence, the number of rounds will be ~9,000. Soil amendment calculations are based on 4,500 rounds.

13. Calculations for fertigation, recharge, and nitrogen leaching were based on 45.24 million gallons/year of irrigation. The Aqua Agronomic Solutions, Inc. irrigation report commissioned by the developer, showed a total irrigation draw of 51.5 million gallons per season. The 51.5 million gallons is roughly equivalent to the volume of water that flows over the crest line of Niagara Falls in one minute. To achieve the seasonal draw of this volume, the pump rate is **178.63 GPM @24 hr. /200 days**. This is the **ANNUAL** draw from our sole source aquifer. [13]

14. The calculation for irrigation mitigation of 2,504 pounds of nitrogen is based on irrigation draw volume of 20 M gallons with a sustained nitrogen concentration of 15 mg/L. However, the concentration of nitrogen is critically dependent on the fertigation well's proximity to the 15 mg/L source. The placement of the original Grosser fertigation well would not realize fertigation needs, at any depth or pump rate, [14]

15. Calculations for fertigation, recharge, and leaching were based on background nitrogen @ 15 mg/L. An analysis of the SCWA 2010-2014 pumping and test records show that the combined Spinney wells never reached an average level greater than 8.1 mg/L nitrogen. [15]

16. Appendix A-12, nitrogen particle tracks modeling, commissioned by the developer *to P.W. Grosser Consulting, Inc.*, projects that background nitrogen in the Upper Glacial is homogeneously spread across the groundwater in the Spinney Hills aquifer. SCWA published data and the developer's test wells at ~200-yard North/South intervals show that background nitrogen readings have significant variation. Two monitoring wells to the north measure average nitrogen levels < 2.0 mg/L. The two wells, at mid property record a nitrogen average of <3.0 mg/L. Progressing to the south, the TW-1 (new fertigation well site) records the anomalous average of 14.26 mg/L. Returning to consistency, the two test wells directly south of TW-1 average <5.0 mg/L. **The developer has placed the TW-1 fertigation well within a 0.5 acre established compost heap.** Consequentially the narrow band of high nitrogen concentration of the fertigation well (TW-1) will never achieve a sustained critical concentration of 15 mg/l at any screen depth or pump rate. This will require a like increase of applied fertilizer to maintain turf health. [16]

17. The DEIS states the construction employment impact over the projected six year buildout will be 310 fulltime jobs. Based on the DEIS labor income figures, the average wage of 310 employees equals $**65,000.00** which is substantially above the mean income of current East Quogue residents. This places these transplanted employees well within the community's affordable home range. The Bureau of Labor Statistics estimates that 10% to 17% of full time workers relocate to the community of their employment. Using the DEIS employment numbers, at the very least, this project can result in the ~**42** new students being enrolled in the East Quogue School District. [17]

F-5.2
Sec. 3.4

18. The DEIS states that "*Compounded 50-yr. Community Benefits with 3% annual inflation factor:* ***$1,512,986,567.00.***" This projection is irrelevant. At the stated owner demographic age 58.9 years, none of the original occupants will be alive and no covenants or restriction would be in place in fifty years. Mind you, the adverse environmental impacts have no temporal limitations.

F-5.3
Sec. 3.4

19. If the capacity of the irrigation pond is exceeded by episodic storm runoff, a sidewall "freeboard" will allow leaching of unmitigated pond water to recharge the groundwater. The target of the pond overflow is a Drainage Recharge Area (DRA), which is an open-air sump. Essentially as described, there is a potential for thousands of gallons of nitrogen, pesticide, and fungicide saturated irrigation pond water to flow, unmitigated, directly into the aquifer. [19]

F-5.4
Sec.
2.2.5

20. The premise of the Rain Garden is to provide habitat for moisture affinitive species to process and detoxify contaminants while reducing the nitrogen load to the groundwater. This requires that these microenvironments have a supply of moisture from green-liner recharge. As designed, the gardens only receive water from the lined greens and precipitation. Since the controlled irrigation system will rarely overwater the greens, the gardens can desiccate. To overcome this design flaw, irrigation, laden with nitrogen, will be necessary. At the recognized Rain Garden 30% N leach rate, the ability to mitigate the constant supply of nitrogen will be compromised.

21. Nitrogen calculations afford lined greens and rain gardens a combined total of 207.58 pounds mitigation credit. As designed, contaminant laded overflow from a saturated rain garden will pass into the adjacent Drainage Retention Area (DRA) and thus directly into the groundwater. Rain Gardens are intended to retain the green runoff to facilitate extended microbial breakdown of pesticide and fungicides. However, acceptable pesticide amendments, based on Dr. Petrovic's review, have a half-life of 24 hours and breakdown to inert compounds. Golf course rough and the DRA's, has a stated leach rate of 15%, while rain gardens have a stated 30% leach rate. Thus, it is counter intuitive for rain gardens to be intercepting the green runoff. The 1.4 acres of rain gardens will unnecessarily double the amount of nitrogen leachate per square footage. The rain gardens are a liability not an asset.[21]

22. The 155,760 square foot Clubhouse will have two of the four stories underground. This will require excavation of ~25 feet into the subsoil. This will breach the aquifer saturated sand layer. The Clubhouse location sits directly above a natural bio swale. On the developer's site maps the Clubhouse acreage is between a small pond and Drainage Recharge Areas. The water table depth in this area is less than 30 feet from the surface. Aside from engineering issues with excavating, the foundation of this building will be undermined by seepage and flooding. [22]

F-5.5
Sec.
2.2.5

23. Due to the limited depth of the subsoil layer, excavation will intrude into the saturated sand layer or directly into the aquifer. Estimating that excavation will eventually affect 136 acres, 402,254 cubic yards of soil will be churned or roughly half a million tons. The deepest intrusion to the subsoil layer will be in grade compliance, foundations, basements, the underground parking garage, and drainage systems. The tons of churned topsoil, subsoil, and sand used as backfill negate the natural filtering dynamics of the indigenous soil. Backfill is an aerated, permeable, loose conglomerate. When combined with precipitation, the soil's natural filtration process is compromised. Applied contaminates, unbound heavy metals, organic waste byproducts, and nitrogen will pass, uninhibited, directly into the aquifer throughout the six year buildout cycle.

24. The maintenance storage area is within the 200 feet of the SCWA Spinney #4 wellhead's **Z**one **o**f **A**bsolut **C**ontrol (ZOAC) mandated by the Environmental Protection Agency. [25] F-5.6 Sec. 2.2.5

25. One thousand gallons of diesel fuel, 500 gallons of gasoline and over 1,000 pounds of nitrogen-based fertilizer will be stored at the maintenance facility. When combined, these same chemicals were used in the Oklahoma City bombing which created a crater 50 deep and 100 feet wide. The resulting underground shockwave from such an explosion would snap the Spinney well shafts like plastic soda straws and directly infuse the upper glacial aquifer with a toxic soup that would last for decades. Spinney wells provide much of the public drinking water for East Quogue. [25] F-5.7 Sec. 2.2.5

26. Based on the DEIS truckload movement of soil, fill, detritus, and construction material to complete the buildout, the project will generate **4,021,120** pounds of on-site CO_2 emissions or **2,010.56** standard US tons. No personal vehicular traffic is included in this total. Among other human health and environmental hazards, carbon dioxide is responsible for acid rain. [26] F-5.8 Sec. 4.1

27. The DEIS does not site the application rate, quantity, or schedule for the use of fungicides, defoliants, and herbicides that will be applied during the project's excavation, construction and operation phases. This is a freighting omission. F-5.9 Sec. 2.2.1

28. The arbitrary comingling of seasonal/annual and fertilized acreage/site acreage is a critical flaw in the DEIS SONIR Model. Irrigation volume is meant to be a seasonal calculation of the **(P)otential (E)vapo(T)ransporation** or **(P)ET** for **SEASONAL** precipitation of 29.90 inches of **irrigated** acres (88.53). No land outside the fertilized 88.53 acers will be irrigated. SONIR is calculating on the **ANNUAL** precipitation on all 591 acres @ 49.90 inches. This distorts the total volume of pertinent recharge water and defuses the leached nitrogen over a wider area and longer activity period.

29. Of the 591 Acres, under current restrictions, only 168 acres can be developed. No land is being magnanimously preserved. Development of a large portion of the remaining 424 acres is restricted by zoning yield, TDR's, slope, and environmental statute. F-5.10 Sec. 3.2.1

30. The DEIS SONIR model (Appendix G – et al) fails to differentiate seasonal rates of nitrogen application for 36.76 acres of golf course rough @ 1.00 lb. /1000f^2 and sites 10.53 acres of landscaping/lawns @ 3.00 lbs. /1000f^2. The model combines both acreages and incorrectly calculates the application rate @ (1.00 lb. /1000f^2). In addition, applied nitrogen calculations fail to account for precipitation nitrogen. [30] F-5.11 Sec. 2.2.5

31. The DEIS SONIR model (Appendix G – et al) validates several data input values by siting, "**Hughes, Henry B.F.; and Porter, K., 1983**, *Land Use and Groundwater Quality in the Pine Barrens of Southampton*, Cornell University, Water Resources Program, Center for Environmental Research, Ithaca, New York." . This report is over 33 years old. There is contemporary research on nitrogen leaching which has superseded this study.

32. The DEIS SONIR model ***Appendix G-1 SONIR* Manual** contradicts key data input values used by the SONIR DEIS to calculate nitrogen recharge load. The **Manual** states higher rates and equates the leach rate of irrigation water and precipitation. This will profoundly affects nitrogen recharge values.

	Manual Value	SONIR Data
Irrigation Leach Rate	**15%**	10%
Landscape Leach Rate	**15%**	10%

These rates have also become invalid. After the recent review of prolonged fertilizer application at Sebonack Golf course, it was concluded that the aggregate nitrogen leach rate was 20%, twice the SONIR model's leach rate data input variable.

33. In ***Petrovic Report May 23 2016 – DEIS Evaluation***, it was noted that the SONIR model should change the non-golf areas leach rate to 15%, however, this calculation change was not made in the Completed DEIS submitted on 09/16/2016. [33]

34. As per the DEIS SONIR model, the use of wastewater mitigation measures will annually reduce 2,711 pounds of nitrogen from the aquifer. However, when quantified with the total **Upper Glacial Nitrogen Sink in Weesuck & Pleasant Lane Swales**, after mitigation of 15 mg/L, the nitrogen level down gradient of both swales will be **nominally** reduced to 14.97 mg/L. In the real world, this represents a .002% reduction in nitrogen that annually reaches Weesuck Inlet. [34]

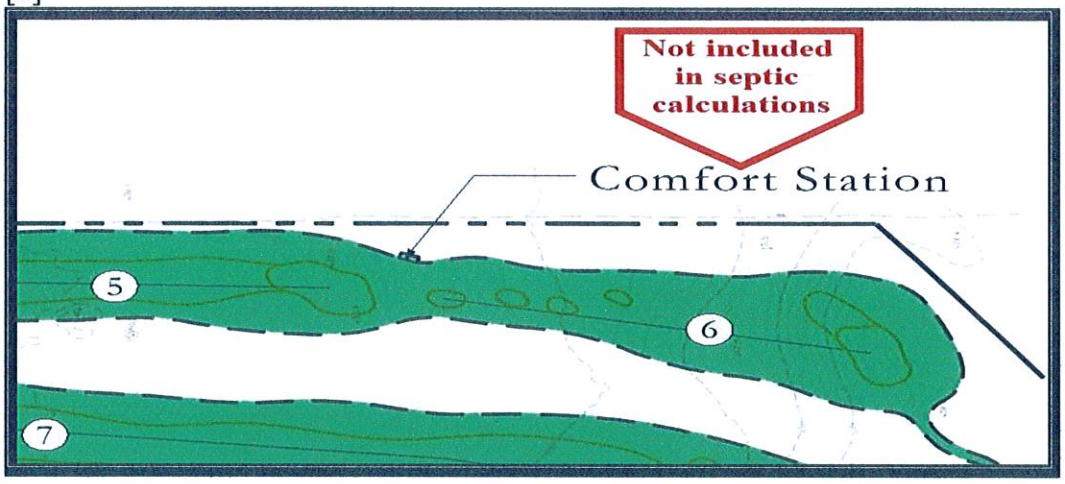
35. There is no independent oversite mechanism in place to insure the implementation of the numerous voluntary restrictions, limitations, and improvements delineated in the DEIS. A citizens "Watch Dog" review plan is essential to insure the adherence to the proposed objectives.

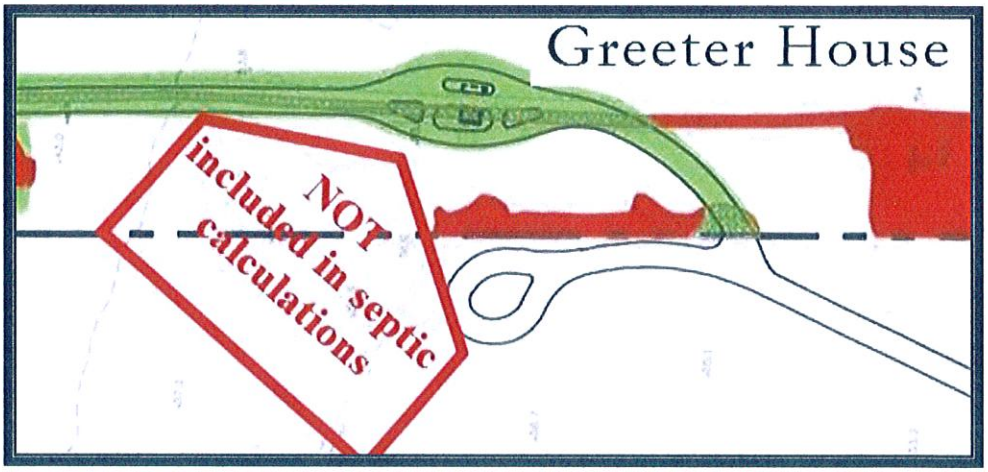
F-5.12
Sec. 1.7.1

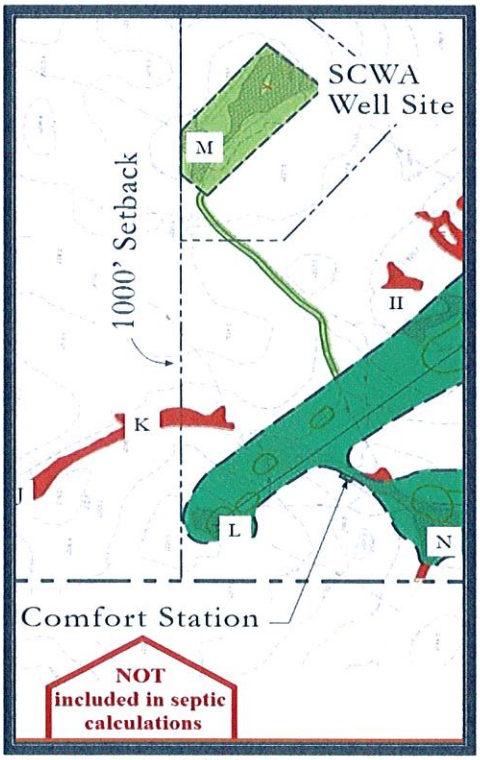
If you are reading this then you have accomplished a task few others can match. Congratulations

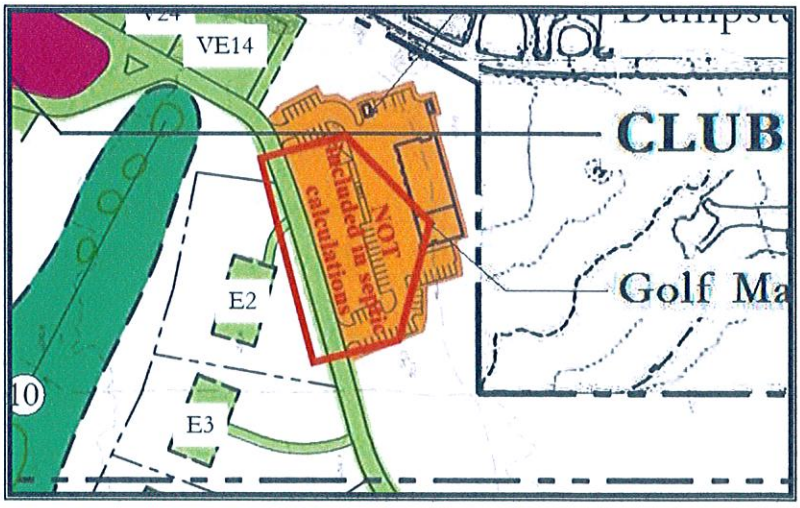
Hills Site Map Locations of Waste Water sources NOT in Septic Calculations

[1]









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Episodic Precipitation Event Leachate Projections[3]

		Start Date[1]	End Date[1]	Days[1]	% Leachable[2]
	Application	4/15/2014	11/1/2014	200	50%
Inch Rain Leach Threshold[3]	Minimum Value Measuable Rain in Inches	Fertilized Acres	Liters Rain@0.01"	Ambient mg/L	Lbs N Leach[4]
0.50	0.01	85.16	87411.00	0.075	0.01
Coefficient[5]	Fert lbs[6]	Target Days	Fert Lbs/Day	Fert Leach/lbs	Ambient Leach/lbs
1%	9,237	200	46.2	23.09	0.01
Date of Precipitation	Inches[8]	>0.5 Saturation for Target Days(See 9)	Lbs/d Adjusted	Lbs N in Rain[10]	Total Pounds N
Total Rain	27.51		557.06		

Total Nitrogen Lbs/Season Leached From Episodic Rain >0.5 Inches [7]

TOTALS are for Dates April 15, 2014 Through December 28, 2014 ***ONLY***

NOTES

1. Start & End dates of amendment application = days
2. % Leachable estimates amount of applied N potentially available 6 hours after application.
3. Saturation Threshold is the point at which precipitation is no longer retained by turf.
4. Available lbs. of ambient N @ .01" of rain over fertilized acres (no greens, ponds, or rain gardens).
5. **D**issolved **O**rganic **N**itrogen % is the increase in N leach volume for each .01" of rain > Saturation.
6. Total pounds of N in applied (no greens, ponds, or RG) per season **@application rate** as per DEIS
7. Includes residual nitrogen accumulated in turf that is present after last target date application.
8. Episodic event is defined as greater than 0.5 inch of rain in 24-hour period. Rain < .05" not in Totals
9. The first ½ inch of rain is not factored; however, ambient N is factored for days outside date range.
10. The number of pounds of leachable ambient atmospheric N available from volume of rain.

Control-Left Click to return to # [3]

DEIS Potential Resident Occupancy Days Per Year

[4]
The proposed Covenant & Restrictions (Appendix A-6)

state the following with respect to occupancy:
(a) The lots and/or units shall not be occupied as a place of primary legal or permanent residence and/or domicile;
(b) Between May 1 and October 15: no time limits on occupancy, provided, however, that the total number of days of occupancy in any calendar year shall not exceed one-hundred-eighty-three (183) days;
(c) Between October 16 and April 30 of following year: a lot or unit may not be occupied for more than thirty (30) consecutive days or an aggregate of sixty (60) days.

Control-Left Click to return to # [4]

[5]

DEIS Daily Water Budget

Table 1-14
WATER USE & SANITARY WASTEWATER GENERATION [1]
Proposed Project

Residential Component:			
Woodland Estate Lots	26 units	300 gpd/unit	7,800 gpd
Village Estate Lots	16 units	300 gpd/unit	4,800 gpd
Village Lots	53 units	300 gpd/unit	15,900 gpd
Total Residential Component			28,500 gpd
Golf Course Component:			
Club Condos	24,000 SF (10 units)	300 gpd/unit	3,000 gpd
Clubhouse Facilities	131,760 SF [2]	---	6,414 gpd
Club Cottages	13 units	300 gpd/unit	3,900 gpd
Total Golf Course Component			13,314 gpd
Total Sanitary Wastewater Generation			**41,814 gpd**
Adjusted Sanitary Wastewater Generation [3]			**6,874 gpd**

(1) Assuming appropriate SCDHS design flow factors.
(2) Includes maintenance/management/mechanical/storage spaces and member facilities; below-grade parking areas exempt.
(3) Based on 60 days per year expected occupancy (41,814 X [60/365]); see Appendix A-5 and Section 1.3.3.

They are as follows:

1) An extension of the existing 12-inch water main east on Lewis Rd onto the proposed entrance road and into our Spinney Rd. well field property - approximately 5,500 feet.
2) An upgrade of the pumping capacity at the Quogue - Riverhead Rd. booster.
3) Construction of an additional booster at Spinney Rd.

Service into the development would be in the vicinity of Spinney Rd. well field.

Provided these improvements are made we are confident we can meet your water supply requirements. As the project moves forward and the scope is further refined we will work together to develop the plan and determine the appropriate arrangement for sharing costs. The developer then would have to execute a contract with SCWA and fund their portion of the construction.

It is also expected that the project's preliminary design will be subject to more detailed engineering review by the SCWA as part of the Town's site plan review process, at which time final arrangements for infrastructure improvements will be made.

In addition to the use of retained stormwater for golf course irrigation, the project will install two new irrigation wells to supplement stormwater inflow to the drainage and irrigation ponds.

NP&W

Page 1-63

DEIS Total Residency Bedroom Table

Table 1-9
PROPOSED PROJECT BREAKDOWN
Unit Types and Details*

Unit Type	Bedrooms		Total Units	Lot Sizes (acres)	Unit Square Footage		Selling Price ($K)
	Per Unit	Total			Per Unit	Total	
Woodland Estate Lots	6	156	26	1.0 to 2.3	5,200	135,200	4,125
Village Lots	4	212	53	0.18 to 0.26	3,200	169,600	2,800
Village Estate Lots	4-5	64-80	16	0.36 to 0.56	4,250	68,000	3,300
Club Condos	3	30	10	---	2,400	24,000	2,400
Club Cottages	4	52	13	---	3,000	39,000	2,850
Totals	---	**514-530**	**118**	---	---	**435,800**	---

* Residences are anticipated to be 2 to 3 stories in height, except for Club Cottages, which will be 2 stories high.

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Rutgers Standard NYS Occupancy Table

[6]

NEW YORK (1--1) ALL PERSONS IN UNIT: TOTAL PERSONS AND PERSONS BY AGE

STRUCTURE TYPE /BEDROOMS/ VALUE (2005)/TENURE	TOTAL PERSONS	AGE 0-4	5-13	14-17	18-24	25-44	45-64	65-74	75+
Single-Family Detached, 2 BR									
All Values	2.31	0.16	0.23	0.06	0.10	0.80	0.64	0.20	0.12
Less than $106,000	2.25	0.15	0.26	0.09	0.12	0.82	0.56	0.16	0.09
$106,000 to $164,500	2.31	0.15	0.23	0.05	0.09	0.79	0.67	0.19	0.14
More than $164,500	2.37	0.17	0.20	0.04	0.08	0.77	0.71	0.25	0.14
Single-Family Detached, 3 BR									
All Values	3.06	0.31	0.55	0.16	0.12	1.21	0.56	0.11	0.05
Less than $135,000	3.09	0.27	0.65	0.20	0.15	1.21	0.47	0.09	0.06
$135,000 to $194,500	3.11	0.36	0.55	0.16	0.11	1.28	0.50	0.11	0.05
More than $194,500	2.95	0.28	0.45	0.13	0.11	1.10	0.72	0.12	0.04
Single-Family Detached, 4 BR									
All Values	3.76	0.42	0.91	0.26	0.15	1.35	0.58	0.07	0.03
Less than $224,500	3.87	0.38	0.95	0.34	0.19	1.40	0.50	0.07	0.03
$224,500 to $329,500	3.74	0.43	0.91	0.24	0.12	1.39	0.56	0.06	0.03
More than $329,500	3.67	0.43	0.86	0.19	0.14	1.26	0.68	0.08	0.04
Single-Family Detached, 5 BR									
All Values	4.52	0.47	1.16	0.42	0.24	1.36	0.70	0.11	0.06
Less than $329,500	4.84	0.46	1.18	0.56	0.34	1.47	0.60	0.15	0.07
$329,500 to $748,500	4.43	0.47	1.13	0.38	0.20	1.35	0.72	0.10	0.07
More than $748,500	4.23	0.51	1.19	0.29	0.15	1.18	0.85	0.05	0.03

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National Standard Septic Capacity Calculation

[7]

(b) Designs for new construction shall be based upon a minimum daily flow of 110 gallons per day per bedroom. Other design flows listed in Table 1 may be applicable for systems receiving wastewater from dwellings equipped with older plumbing fixtures or waterless toilets.

TABLE 1
DAILY DESIGN FLOWS

Plumbing Fixtures (based on manufactured date)	Minimum Design Flow (gallons per day per bedroom)
Post-1994 Fixtures 1.6 gallons/flush toilets 2.5 gallons/minute faucets & showerheads	110
Pre-1994 Fixtures 3.5 gallons/flush toilets 3.0 gallons/minute faucets & showerheads	130
Pre-1980 Fixtures 3.5+ gallons/flush toilets 3.0+ gallons/minute faucets & showerheads	150
Waterless Toilets (e.g., composter) (graywater discharge only)	75

75-A.4 Soil and Site Appraisal.

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Suffolk County Septic Influence Standard

[9]

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
OFFICE OF WASTEWATER MANAGEMENT
ALTERNATIVE ON-SITE SEWAGE DISPOSAL SYSTEMS

TASK VI – COST AND BENEFIT ANALYSIS

7. Estimation of Nitrogen Loading Reductions

The selected Alternative OSSDS systems are expected to reduce influent nitrogen concentrations from wastewater by 87% as opposed to a 50% reduction in a conventional septic system, refer to Table 8. The 75 mg/L influent and 40 mg/L effluent total nitrogen concentrations resulting in a 50% reduction have been observed by various authors and have been documented in literature. In implementing an alternative OSSDS the effluent total nitrogen requirement will be enforced to be maintained at 10 mg/L yielding an 87% reduction. The 30 mg/L total nitrogen difference results in 0.075 lbs. of additional TN removed in a typical residential household producing wastewater flows of 300 gpd.

Table 8. Total Nitrogen Reductions in Residential Applications

Type of System	Influent Concentration (mg/L)	Effluent Concentration (mg/L)	Reduction (%)	Cost of Design, Construction and Installation
Conventional Article VI Septic System	75	40	50%	$5,000
Alternate OSSDS System	75	10	87%	$33,250*

*Average of Micro-FAST® and Nitex™ Systems

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DEIS Recharge Area Acreage

[10]

The Hills at Southampton
MUPDD Application
Draft EIS

(1) Total fertilized landscaped acreage is 88.53 acres (14.98% of the site), as: 78.00 acres of Golf Course Play Area, 2.31 acres Clubhouse Landscaping, and 8.22 acres of Residential Area Landscaping, where up to 88.65 fertilized acres/15% are allowed (CPB CLUP Standard 5.3.3.6.3). Unfertilized landscaping totals 12.62 acres, and is comprised of Rain Gardens (1.40 acres), Pond House (0.38 acres), Maintenance Area (0.59 acres) and Residential Area (10.25 acres).
(2) Unfertilized.
(3) These areas total 166.86 acres, and reflect the acreage to be cleared.
(4) As 8.22 acres fertilized and 10.25 acres unfertilized.
(5) These areas total 424.14 acres, and reflect the natural acreage to remain undisturbed.

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[11] DEIS Appendix J ITHMP Nitrogen Fertilizer Application Schedule

Integrated Turf Health Management Plan for the Hills at Southampton, East Quogue, NY. Page 98
The supplemental nitrogen application rate will not exceed < 0.5 #N/1000 SF in any single application. The greens will receive more frequent applications at the low rates at ≤ 0.25 # N/1000 SF. Tees will also receive frequent applications at low rates because of divot repairs especially to the par 3 holes. Fairways will receive higher rates, less frequently. A typical yearly application of nitrogen (excluding irrigation waters) during the operating season can be described as:
Greens- 16 applications; Tees-10 applications; Fairways-4 applications; Rough applications are by dispersing clippings (from tees, greens and or fairways) **into the roughs for disposal**

Clippings lbs
540,885

Appendix J ITHMP, Text only.pdf Page 88
Clippings management is also critical because clippings are a source of nitrogen, with 35 to 38 percent of the applied nitrogen found in clipping tissue.

Clipping NO_3
36.90%

Clippings mg/L
8.52

Nitrogen Leachate Calculation Based on ITHMP Application Schedule

Turf	Application Frequency	Application Rate #N/1000 SF	Lbs @ Maximum Application	Maximum Application Plus Rain	Leach Rate	Weight lbs
Greens	16	0.13	245	258	20.0%	51.65
Tees	10	0.21	339	357	20.0%	71.37
Fairways	4	0.54	3,275	3,450	20.0%	690.04
Roughs - Clippings	5	0.17	1,309	1,486	20.0%	297.16
Practice Areas	10	0.13	134	145	20.0%	29.08
Native Areas	0	0.00	0	0		0.00
Residential/Common	2	1.07	985	1,038	20.0%	207.60
	Total Seasonal Pounds Nitrogen Application		6,288	6,735		0.00
		Irrigation Pounds	2,504	2,502	20.0%	500.40
	Total Lbs Course Nitrogen All Sources		8,792	9,237	Weighted Avg Leach Rate	
					20.00%	

Total Seasonal Pounds Nitrogen for Residential, Clubhouse, and Maintenance Shed Septic

Septic Source	Gallons per Day	Number of Days	Septic Influence mg/L	Pound per Season	Leach Rate	Weight lbs
Residential @ 118 Units	460	183.00	75.00	6,218	19%	1,181.48
Club House @ 1 Unit	6,414	200.00	125.00	1,338	19%	254.30
Comfort Station 2 Units	400	200.00	75.00	50	19%	9.52
Gate House 24/7/365	50	365.00	75.00	11	19%	2.17
Maintenance @ 1 Unit	600	200.00	200.00	200	19%	38.06
Total				7,819	Weighted Avg Leach Rate	
					19%	

Final Nitrogen Load Impact Calculations	
Total Nitrogen Contribution All Sources	17,055.11
Combined Weighted Average All Mitigation	19.67%
Total Pounds Nitrogen Entering Aquifer	3354.17
Total Pounds Nitrogen Mitigated From Aquifer by Fertigation	-2,504
Total Pounds Aquifer Nitrogen Impact	850

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[13]

Site Water Usage Data

Table 1-8b
SITE AND DEVELOPMENT CHARACTERISTICS & IMPACTS
Proposed Project

Parameter	Parlato Property	Hills North Parcel	Hills South Parcel & Kracke Property*	*Totals*
Use & Yield	Open Space	Open Space	118 resort units & golf	---
Coverages (acres):	---	---	---	---
Unvegetated	1.15	0	2.30	*3.45*
Agriculture	0	0	0	*0*
Freshwater Wetland	0	1.40	0	*1.40*
Natural Vegetation	84.98	85.52	252.24	*422.74*
Brushy Cleared Land	0	0	0	*0*
Revegetated	15.78	0	17.39	*33.17*
Landscaped	0	0	101.15	*101.15* [1]
Ponds & Pools	0	0	4.52	*5.85*
Buildings	0	0	8.43	*8.43*
Paved/Impervious	0	0	16.14	*14.81*
Totals	101.91	86.92	402.17	*591.00*
Water Resources:	---	---	---	---
Domestic Use (gpd) [2]	0	0	41,814/6,874	*41,814/6,874*
Irrigation, golf course (gpy)	0	0	45,236,957	*45,236,957*
Irrigation, non-golf course (gpy)	0	0	6,219,191	*6,219,191*
Total Water Use (gpy)	0	0	51,456,148	*51,456,148*
Recharge Volume (MGY) [3]	474.27			*474.27*
Nitrogen Conc. (mg/l) [3]	0.59/0.34 (assumes advanced wastewater system)			*0.59/0.34*
Trip Generations (vph):	---	---	---	---
Weekday AM Peak Hour	0	0	92	*92*
Weekday PM Peak Hour	0	0	122	*122*
Saturday Midday Peak Hour	0	0	114	*114*
Miscellaneous:	---	---	---	---
Parking Provided (spaces)	0	0	385 (601 w/driveways)	*385/601*
Residents (max. potential) [4]	0	0	444	*444*
School-Age Children [4]	0	0	130	*130*
Taxes Generated ($/year) [4]	4,513,946			*4,513,946*
School Taxes ($/year) [4]	3,431,031			*3,431,031*
Employees: (FTE) [5]	---	---	---	---
Direst	0	0	101.8	*101.8*
Indirect	0	0	18.7	*18.7*
Induced	0	0	34.1	*34.1*

* See **Color-Coded Master Plan**, in a pouch at the back of this document.

(1) Total fertilized landscaped acreage is 88.53 acres (14.98% of the site), as: 78.00 acres of Golf Course Play Area, 2.31 acres Clubhouse Landscaping, and 8.22 acres of Residential Area Landscaping, where up to 88.65 fertilized acres/15% are allowed (CPB CLUP Standard 5.3.3.6.3).

(2) Assuming SCDHS design flow rates for wastewater systems (see **Section 1.6.4**)/flow reduction due to seasonal occupancy (see **Table 1-13**).

(3) See **Appendix G-3**.

(4) Will not attend East Quogue UFSD due to restrictive covenant; see **Appendix F**.

(5) Per applicant.

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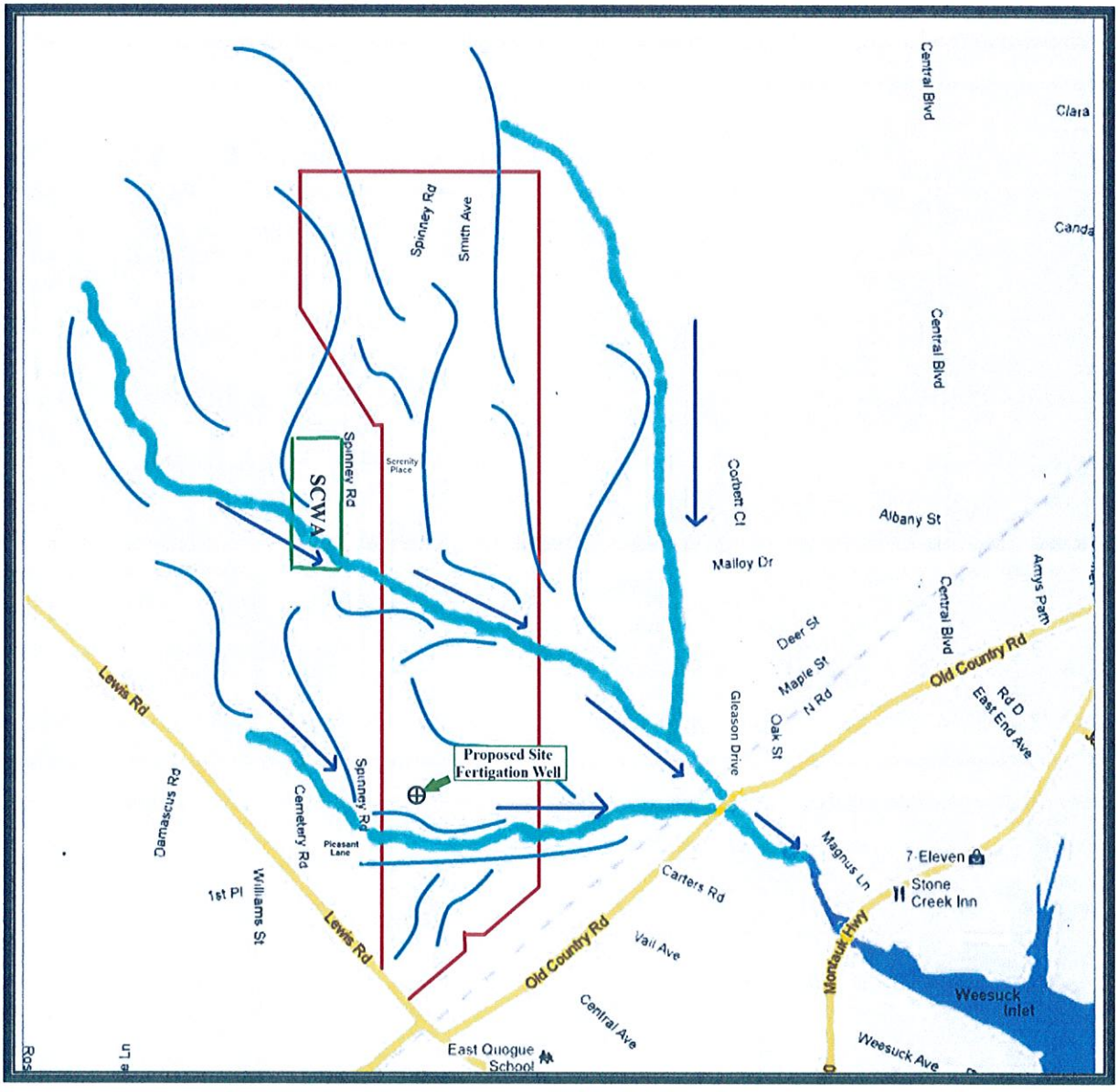
[14]

Appendix A-12 Agricultural Plume Modeling Analysis PWGC 11_20_15_1 Pg. 8-9

....The proposed Hills irrigation well in all the above figures is shown screened across the bottom 30 feet of the Upper Glacial aquifer (approximately -80 ft. to -110 ft AMSL). In Figure 3 particles released near the irrigation well remain shallow and are captured by it....

The model results predict that the most effective place to locate the proposed irrigation well is at the southern end of the Hills property and directly upgradient hydraulically of Weesuck Creek (see Figures 3 thru 5). The model also estimates that screening the well across the bottom 30 feet of the Upper Glacial aquifer will have the most influence with regards to intercepting the nitrogen contaminated groundwater. A vertical profile and test well are recommended to be conducted to verify the modeling results and to best determine where the greatest levels of nitrogen concentrations are at the proposed well location to better delineate a screen zone for the well.



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SCWA Spinney Wellfield Test Aggregate Nitrogen Testing Results 2010 - 2014

Detected Substance	Year	Report Type	Unit	MMCL	MCLG	Likely Source	Low	High	Avg	#_Tests
Nitrate	2010	May Supplement					ND	5.92	3.96	16
Nitrate	2011	May Supplement					ND	13.05	7.06	73
Nitrate	2012	Annual (All 2011)	mg/l	10	10	Natural deposits_ fertilizer_ septic	ND	4.18	0.49	86
Nitrate	2012	May Supplement					ND	13.68	7.16	69
Nitrate	2013	Annual (All 2012)		10	10	Natural deposits_ fertilizer_ septic	ND	5.22	0.58	86
Nitrate	2013	May Supplement					ND	14.08	7.62	42
Nitrate	2014	Annual (All 2013)	mg/L	10	10	Natural deposits_ fertilizer_ septic	ND	6.28	1.3	100
Nitrate	2014	May Supplement					ND	15.13	8.1	240

ND = **N**one **D**etected

Detected Substance	Year	Wellfield	Unit	Low	High	Avg	#_Tests
Nitrate	2010	Spinney	mg/L	ND	5.92	3.96	16
Nitrate	2011	Spinney	mg/L	ND	13.05	7.06	73
Nitrate	2012	Spinney	mg/L	ND	13.68	7.16	69
Nitrate	2013	Spinney	mg/L	ND	14.08	7.62	42
Nitrate	2014	Spinney	mg/L	ND	15.13	8.1	240

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