CAYUGA ORCHARD APARTMENTS
SITE PLAN UPDATES AND STORMWATER SWPPP MODIFICATION
August 2017

Executive Summary of Proposed Changes

This summary is to address proposed changes to an original site plan known as "Cayuga Farms," a 21 unit townhome complex to be located along North Triphammer Road in the Town of Lansing. The project and site plan were originally reviewed and approved by Town of Lansing's engineers in late 2014 and early 2015 and received full site plan and SEQRA approvals by the Town Planning Board in July of 2015. Original stormwater management design incorporated permanent treatment practice accommodations for building construction, associated parking areas, walkways, drives, and landscaping on 1,278,291-SF (29.34-AC) of land. Recent changes to the site plan, including a reduction in the number of building units, size, and placement, parking area surfaces, driveway locations, and a general lessening in the overall project scope have prompted a revised Site Plan and a Stormwater Pollution Prevention Plan modification to ensure that the site continues to meet compliance with stormwater law.

It should be noted that the previous site plan for the project contained 21 buildings of four and six-plex townhouse-style dwellings, and has now been modified to propose 15 six-plex and eight-plex garden-style apartment structure. A separate small community building/clubhouse has also been added to the mix. The original number of dwelling units remains the same (102 total), but the size-bedroom mix has been altered to include more single bedroom and fewer two or three bedroom apartments. While the overall project density remains the same at 12,726 sf/dwelling, the reduction in bedrooms has the positive net effect of lowering public water consumption and wastewater generation by approximately 15%, and will further reduce vehicle trip generation estimates to the site. Perhaps the largest benefit of the revised plan is the reduction of stormwater runoff from the new construction. Over 27% of the previous impervious cover has been eliminated, and the overall greenspace has increased by 8%. While some minor modifications of the bio-swales near the buildings had to be made due to the different building configuration, the main treatment and detention practices were <u>not revised downward</u> in size. This means that project runoff is retained <u>longer</u> in the now-oversized practices, and peak discharges from the site have been significantly reduced from the previous levels, as summarized below and detailed in the revised SWPPP document.

The only other change in the updated site plan is the change from a private access driveway through the center of the project to a Town-dedicated roadway. The original private drive was to be constructed to Town Highway specifications, but was to remain private. This change to public ownership means no physical differences or changes between the two plans (the road plan, section, and profiles are identical), it just means that the roadway ownership and maintenance will be public, as will be also for the water

mains and appurtenances after they are installed and accepted by the Town. All Town set-back and yard dimensional requirements will be met by the project.

Overall it is felt that the updated site plan and revised building mix contains not only more open space and is set back farther from North Triphammer Road, but the new plan will have the positive environmental effects of less impermeable cover and stormwater runoff, smaller peak stormwater discharges leaving the property, fewer vehicle trips, and less public water consumption and wastewater generation.

Proposed Stormwater Management Changes

Design Point 1 Modifications

The site watershed was originally separated into two distinct groups discharging into designated design points, DP 1 and DP 2. DP 1 consisted of 2 subcatchments, PSC-1 and PSC-5 totaling approximately 249,033-SF (5.72-AC) in size with approximately 1.41-AC of impervious cover. One 393,610-SF (9.03-AC) subcatchment, (OSC-1) would remain undisturbed throughout the duration of the project.

Changes to the proposed site plan call for a reduction in the size of town home units as well as the corresponding parking and driveway surfaces. This will lower the overall impervious cover by 19,495-SF (0.45-AC) or, a 32% reduction from the original design concept. Modifications to the proposed final grading plan will also reduce the area of disturbance from the project, increasing OSC-1 by almost 100,000-SF.

A comparative summary of these modifications is shown in the attached table.

Design Point 2 Modifications

DP 2 originally consisted of a three (3) subcatchment area (PSC-2, 3, and 4) totaling 1,029,333-SF (23.63-AC) that would be impacted by the construction of 19 townhome units. The drainage segment also included three (3) off-site subcatchments (OSC-2,3 and 4) totaling 87,408-SF which would remain undisturbed throughout the duration of the project.

Changes proposed to the original site plan include the reduction in number and size in town home units, as well as the corresponding driveway and parking surfaces. This will lower the impervious cover from 368,586-SF (8.46-AC) to 270,351-SF (6.2-AC), or a 27% reduction overall. Final grading will also reduce the size of the general areas of disturbance consequently increasing the size of the off-site subcatchments.

A comparative summary of these modifications is shown in the attached table.

Site Control Methods: This project follows the 2015 DEC design standards on runoff reduction by applying green infrastructure techniques and standard stormwater management practices to provide source control for impervious surfaces. The site

incorporates several engineered infiltration structures to meet water quality and quantity needs.

Thirteen bio-retention areas and three wet ponds were originally chosen to provide water quality and quantity treatment for the site. Reduction in impervious cover and general drainage areas to the site, eliminate four infiltration practices from the plan while leaving the three wet ponds unchanged. All structures have been designed in accordance with NYSDEC guidance methods. The site still provides 24-hour extended detention in post-developed runoff rate increases for the 1 yr storm and a reduction in 10 yr and 100 yr storms to less than or equal to that of the pre-developed site. The site also meets runoff reduction and water quality volume requirements between green infrastructure applications and standard practices that have features such as forebays and permanent pools. As shown in the tables below, values for flow rates, volumes, and quality treatment have been drastically reduced across the site at both design points.

DP-1 Comparative Modeling Results Table:

ORIGINAL VS. REVISED
PROPOSED FLOW CONDITIONS AT DESIGN POINT (DP1)

STORM EVENT	*ORIGINAL PEAK FLOW (CFS)*	*ORIGINAL TOTAL VOLUME (AF)*	*REVISED PEAK FLOW (CFS)*	*REVISED PEAK FLOW (CFS)*
1-year	*1.08*	*0.176*	*0.02*	*0.005*
10-year	*3.91*	*0.723*	*1.44*	*0.247*
100-year	*21.20*	*2.217*	*20.69*	*1.594*

DP-2 Comparative Modeling Results Table:

ORIGINAL VS. REVISED
PROPOSED FLOW CONDITIONS AT DESIGN POINT (DP2)

STORM EVENT	*ORIGINAL PEAK FLOW (CFS)*	*ORIGINAL TOTAL VOLUME (AF)*	*REVISED PEAK FLOW (CFS)*	*REVISED TOTAL VOLUME (AF)*
1-year	*0.67*	*0.311*	*0.18*	*0.116*
10-year	*8.80*	*2.194*	*3.76*	*0.884*
100-year	*60.36*	*6.270*	*29.23*	*4.471*

Runoff Reduction and Water Quality Volume:

ORIGINAL VS. REVISED
QUALITY VOLUME

Design Point	*Original min RRv* (AF)	*Original RRv met (AF)*	*Revised Min RRv (AF)*	*Revised RRv met (AF)*	*Original WQv (AF)*	*Revised WQv (AF)*
DP-1	*0.028*	*0.102*	*0.026*	*0.088*	*0.113*	*0.088*
DP-2	*0.180*	*0.258*	*0.149*	*0.200*	*0.660*	*0.548*
Site Total	*0.208*	*0.360*	*0.175*	*0.288*	*0.773*	*0.636*

Respectfully submitted,

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Original vs. Revised Subcatchment Analysis

Cayuga Orchard Apts.

Existing Subcatchments

	Design Point 1		
	Original	**Revised**	**% Change**
	ESC-1, 2, 3	ESC-1, 2,3	
Impervous Cover	0	0	0.00%
Pervious	710,423	687,217	-3.27%
Total	710,423	687,217	-3.27%

	Design Point 2		
	Original	**Revised**	**% Change**
	ESC-4,5,6,7	ESC-4.5.6.7	
Impervous Cover	0	0	0.00%
Pervious	1,048,961	1,025,755	-2.21%
Total	1,048,961	1,025,755	-2.21%

	Design Point 1								
	Original	**Revised**	**% Change**	**Original**	**Revised**	**% Change**	**Original**	**Revised**	**% Change**
	OSC-1	OSC-1		OSC-1b, PSC-1A, 1B, 1C, 1D	PSC-1, PSC-2, PSC-7		PSC-5	PSC-5	
Impervous Cover	0	0	0.00%	45,641	27,913	-38.84%	15,551	13,784	-11.36%
Pervious	393,610	490,446	24.60%	150,042	95,798	-36.15%	37,799	34,962	-7.51%
Total	393,610	490,446	24.60%	195,683	123,711	-36.78%	53,350	48,746	-8.63%

	Design Point 2											
	Original	**Revised**	**% Change**	**Original**	**Revised**	**% Change**	**Original**	**Revised**	**% Change**	**Original**	**Revised**	**% Change**
	PSC-2a, 2b, 2c, 2d, 2e, 2f	PSC-2a, 2b, PSC-6		OSC-2, OSC-4	OSC-3		PSC-3a, 3b, 3c, OSC-3	OSC-4, PSC-3, PSC-4		PSC-4a, 4b, 4c, 4d	PSC-8a, 8b, 8c, 8d	
Impervous Cover	127,147	101,334	-20.30%	0	0	0.00%	63,099	48,067	-23.82%	178,340	120,950	-32.18%
Pervious	242,440	188,927	-22.07%	60,405	159,940	164.78%	207,744	182,389	-12.20%	237,566	294,874	24.12%
Total	369,587	290,261	-21.46%	60,405	159,940	164.78%	270,843	230,456	-14.91%	415,906	415,824	-0.02%

	Total DP 1 Changes			Total DP 2 Changes			Total Site Changes		
	Original Site	**Revised Site**	**% Change**	**Original Site**	**Revised Site**	**% Change**	**Original Site**	**Revised Site**	**% Change**
Impervious Cover	61,192	41,697	-31.86%	368,586	270,351	-26.65%	429,778	312,048	-27.39%
Pervious Cover	581,451	621,206	6.84%	748,155	826,130	10.42%	1,329,606	1,447,336	8.85%
	642,643	662,903	-25.02%	1,116,741	1,096,481	-16.23%	1,759,384	1,759,384	-18.54%