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To: Township of West Orange Planning Board

From: Timothy Derrick, P.E.
Michael Fowler, P.E.

Info: Montclair Golf Club

Date: 3 May 2024

Re: Sanitary Flow Calculations
Halfway House, Golf Building Expansion, and Parking Lot Improvements.
Montclair Golf Club
25 Prospect Avenue
Block 151, Lot 1
West Orange, Essex County, New Jersey
Langan Project No.: 001039211

This memo provides the supporting documentation to demonstrate the sanitary flows associated with the proposed improvements are less than the existing flows and the existing pipe to be re-used has adequate capacity. The previous men's locker room, women's locker room, and snack bar are to be replaced with restroom facilities and new snack bar which will result in a reduction of sanitary flows.

The existing and proposed sanitary flows shown below and on the attached sheet were calculated using the flow criteria provided in NJAC 7:14A-23.3(a).

- Existing Flow = 3,474 gallons per day
- Proposed Flow = 1,965 gallons per day
- Net Decrease = 1,509 gallons per day.

Additionally, pipe capacity calculations are provided to demonstrate that the existing 6-inch sanitary lateral that is to be re-used has adequate capacity to accommodate the proposed reduced flows.

SANITARY SEWER DEMAND CALCULATIONS
MONTCLAIR GOLF CLUB HALFWAY HOUSE AND GOLF BUILDING EXPANSION
TOWNSHIP OF WEST ORANGE, ESSEX COUNTY, NEW JERSEY
LANGAN PROJECT No. 001039211
3 MAY 2024

Existing Facility (Existing Flow Demand)				
Type of Establishment	Measurement Unit	Gallons per Day ⁽¹⁾	Number of Units	Total Flow (gpd)
Golf Building (Store)	per S.F.	0.1	3,240	324
Snack Bar (Fast Food Restaurant)	per Seat	15	60	900
Pool/Locker Room (Multi-member pool)	per Person	15	150	2,250
Total Combined Flow Generated by Existing Facility (gpd):				3,474

Proposed Facility (Proposed Flow Demand)				
Type of Establishment	Measurement Unit	Gallons per Day ⁽¹⁾	Number of Units	Total Flow (gpd)
Golf Building (Store)	per S.F.	0.1	4,650	465
Halfway House (Fast Food Restaurant)	per Seat	15	60	900
Halfway House Restrooms (Visitor Center)	per Visitor	5	120	600
Total Combined Flow Generated by Proposed Expanded Facility (gpd):				1,965

Flow Comparison (Existing vs. Proposed Flow Demand)		
Development		Total Flow (gpd)
Existing Facility		3,474
Proposed Facility		1,965
Total Additional Flow Generated by Proposed Facility (gpd):		-1,509

Notes:

1. Flow criteria is based on NJAC 7:14A-23.3(a).
2. Number of people at the existing pool is based on number of chairs.
3. Number of visitors using the Halfway House restrooms is based on golf course usage.

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Q_{NJDEP}	1,965 gpd (Calculated per N.J.A.C. 7:14A-23.3, See Appendix A)
Q_{design}	$2 * Q_{NJDEP}$
Q_{full}	$1.49/n * A_{pipe} * R^{2/3} * S^{1/2}$
Q_{half}	FLOW AT HALF FULL = $0.5 * Q_{full}$
V_{max}	VELOCITY AT 80% FULL = $1.15 * Q_{full} / A_{pipe}$
V_{half} , fps	VELOCITY OF FLOW AT HALF FULL = $Q_{half} / (A_{pipe} * 0.5)$
PIPE SIZED ACCORDINGLY	CHECKS IF Q_{design} IS LESS THAN Q_{half} , (PER N.J.A.C.)

SANITARY SYSTEM:

EX. 6-INCH PIPE

MINIMUM SLOPE WITHIN THIS ENTIRE RUN = 0.50%

MATERIAL	PVC	Q_{full} , cfs	Q_{full} , gpd	Q_{half} , cfs	Q_{half} , gpd	V_{max} , fps	V_{half} , fps
LENGTH, ft	110	0.73	472,445	0.37	236,223	4.28	3.73
DIAMETER, in	6						
MIN. SLOPE	1.00%	PIPE SIZED ACCORDINGLY:				TRUE	
n	0.01	2 fps < VELOCITY < 10 fps:				TRUE	
Q_{NJDEP} , gpd	1,965						
Q_{design} , gpd	3,930						