CARMINA WOOD
DESIGN

DOWNSTREAM SANITARY SEWER CAPACITY ANALYSIS REPORT

for

Multifamily Project

Joe McCarthy Drive
Town of Amherst, Erie County, New York

Prepared for

MEL Investors, LLC

6790 Main Street, Suite 100
Williamsville, New York 14221

Prepared by

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Buffalo, NY 14203

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March 2024
Rev. November 2026



Project Description

This project is the development of a 2.4 acre site located at Joe McCarthy Drive, between Edward White Drive and Roger Chaffee Drive in the Town of Amherst. Construction will consist of the extension of Joe McCarthy Drive, associated utility improvements, and a four story, 40-unit multi-family building of multiple vacant parcels on the east side of Joe McCarthy Drive

An existing 8" public sanitary sewer is located along Joe McCarthy Drive and will be utilized for this project. A new 8" PVC public sanitary sewer extension will be installed and connected to this existing sewer. A terminating sanitary structure will be installed at the end of the sanitary extension.

Wastewater from the proposed project will flow south along Joe McCarthy Drive via an 8" sanitary sewer, and then east along Willow Ridge Drive via an 18" sanitary sewer. Flow then continues north and are conveyed through the 60" North Ellicott Creek sewer and ultimately to the Town of Amherst Wastewater Treatment Facility. Refer to the sewer routing map located in the TECSmith monitoring section of this downstream sewer capacity analysis report.

Node 1 – 214 Willow Ridge (24"):

Existing Peak Flow measured (wet weather event)	= 2.915 cfs (1.884 mgd)*
Proposed Multi-Family Flow	= 0.075 cfs**
Proposed Total Peak Flow	= 2.990 cfs
Existing Peak Flow measured (dry weather peak event)	= 3.181 cfs (2.056 mgd)*
Proposed Multi-Family Peak Flow	= 0.075 cfs**
Proposed Total Peak Flow	= 3.256 cfs

Theoretical capacity of existing 24" assumed RCP pipe (n = 0.012) @ 0.08% = 6.926 cfs

Conclusion The proposed total peak flow is less than the capacity of the 24" pipe during normal operation however, on three occasions during the monitoring period did flow depth exceeded the pipe diameter at Node 1 of the downstream monitoring points during the rain events monitored. Only during excessive wet weather events was capacity exceeded and at no point during monitoring did the flow slow or stall which would have caused a backup or flooding at the manhole.

Node 2 –Willow Ridge and Peppertree (18"):

Existing Peak Flow measured (wet weather event)	= 1.434 cfs (0.927 mgd)*
Proposed Multi-Family Flow	= 0.075 cfs**
Proposed Total Peak Flow	= 1.509 cfs
Existing Peak Flow measured (dry weather peak event)	= 2.152 cfs (1.391 mgd)*
Proposed Multi-Family Peak Flow	= 0.075 cfs**
Proposed Total Peak Flow	= 2.227 cfs

Theoretical capacity of existing 18" assumed RCP pipe (n = 0.014) @ 0.12% = 3.939 cfs

Conclusion The proposed total peak flow is less than the capacity of the 18" pipe during normal operation however, on two occasions during the monitoring period flow depth exceeded the pipe diameter at Node 2 of the downstream monitoring points during the rain events monitored. Only during excessive wet weather events was capacity exceeded and at no point during monitoring did the flow slow or stall which would have caused a backup or flooding at the manhole.

Node 3 – North Ellicott Creek Rd (60”):

Existing Peak Flow measured (wet weather event)	= 23.719 cfs (15.330 mgd)*
Proposed Multi-Family Peak Flow	= 0.075 cfs**
Proposed Total Peak Flow	= 23.794 cfs

Theoretical capacity of existing 60” assumed RCP pipe (n = 0.012) @ 0.055% = 79.736 cfs

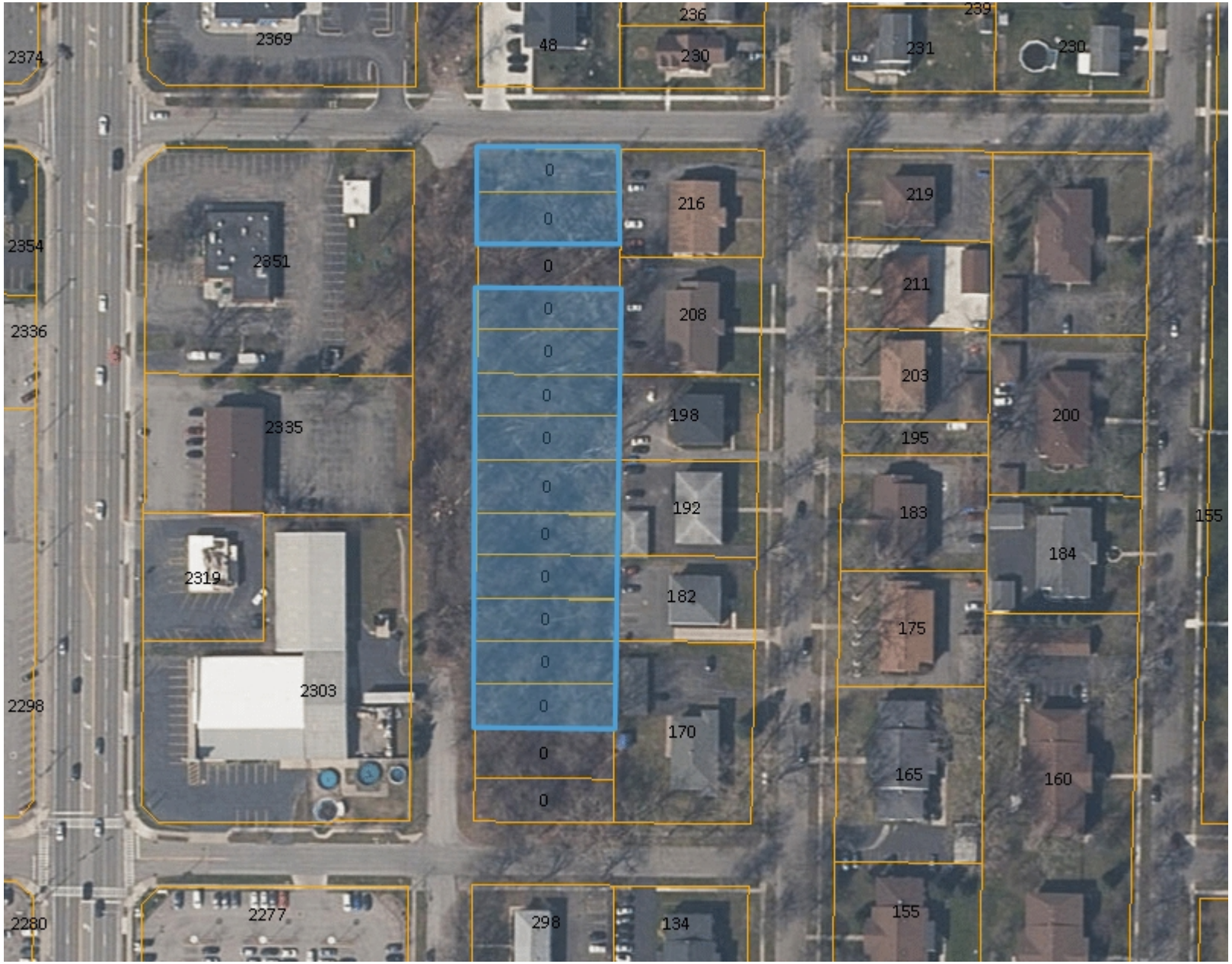
Conclusion: The proposed total peak flow is less than the capacity of the 60” pipe during normal and wet weather operation therefore, there is sufficient capacity. At no point during the monitoring period did flow depth exceed the pipe diameter at Node 3 of the downstream monitoring points during the rain events monitored.

Foot Notes:

Downstream capacity node information provided by the Town of Amherst Engineering Department
*Converted from measurements in TECSmith report dated 1/15/24
** See Sanitary Sewage Demand Calculations

Location Map

Erie County On-Line Mapping Application





Legend

- Parcels

0 0.04 0.1 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere
THIS MAP IS NOT TO BE USED FOR NAVIGATION

ERIE COUNTY
DEPARTMENT OF ENVIRONMENT & PLANNING
OFFICE OF GIS

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

1: 2,257

Sanitary Demand Calculations

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(716) 842-3165
FAX (716) 842-0263

Project No.: 24-4023 Date: 4/13/2026
Project Name: Proposed Multi-Family
Project Address: Joe McCarthy Drive Amherst, NY
Subject: Sanitary Sewer & Water Demand Calcs
Sheet: 1 of 1

Sanitary Sewage Demand Calculations:

220 gal/d/unit x 52 units = 11,440 gpd *use 220 gallons per unit per day (2-bdrm)

Total Site Sanitary Demand: = 11,440 gpd

Find Peak Sanitary Demand:

Peaking Factor based on Population:
Total demand: 11,440 gpd / 100 gpcd = 114 per capita

Population (P) = 114 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 4.23

Peak Sanitary Demand = 11,440 x 4.23 = 48,358 gpd
= 0.048 MGD
= 0.075 cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow = 48,358 gpd = 33.58 gpm

4:1 offset flow per NYSDEC requirements = 33.58 x 4 = 134.33 gpm req'd

Mitigation Credit = $250 / gpm

Mitigation Agreement Amount = $33,582.14

TECSmith Monitoring Report

TECsmith

TECSMITH, Inc.
PO Box 95
Clarence, NY 14031
716-462-0382

Date: January 15, 2024

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For: Joe McCarthy Flow Monitoring - Downstream Monitoring Capacity Analysis

Patrick Sheedy Jr., PE
487 Main Street, Suite 500
Buffalo, New York 14203

Project Name: Joe McCarthy Flow Monitoring - Downstream Monitoring Capacity Analysis

Flow Monitoring Period: November 14, 2023 to December 12, 2023

Rain Events (> 0.5-inches) Monitored: November 17 (0.81”) and November 21 (1.04”)

Number of Monitoring Nodes: Two (2) downstream manholes

Node Locations and Descriptions:

- Node 1 Willow Ridge (24")
- Node 2 WILLOW RIDGE AND PEPPERTREE (18")

Summary Conclusion:

Based on the data presented in this report, specifically the flow depth measurements recorded (see graphs below)

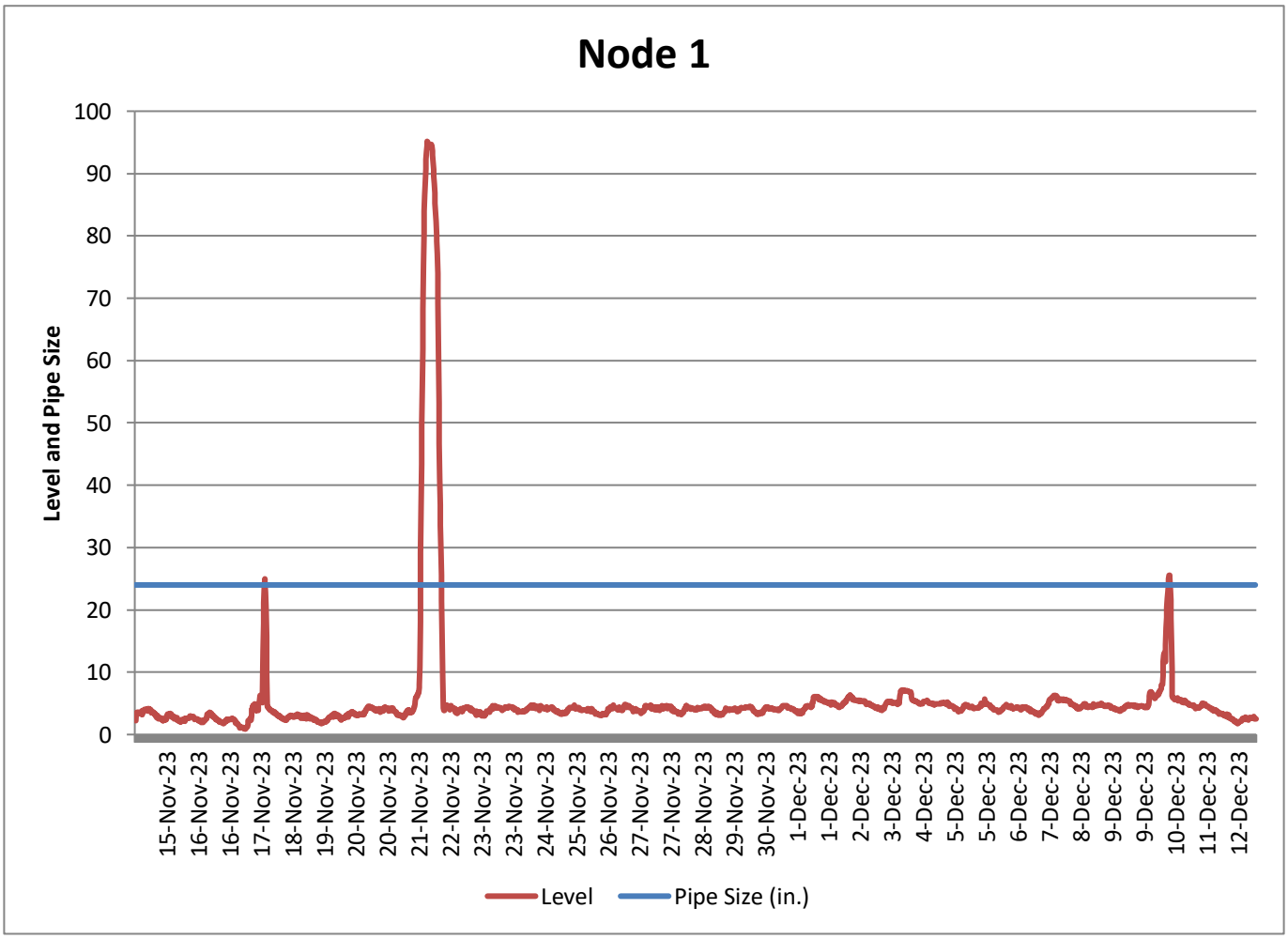
- Three times the flow depth exceed the pipe diameter at Node 1 of the downstream monitoring points during the rain events monitored.
- Two times the flow depth exceed the pipe diameter at Node 2 of the downstream monitoring points during the rain events monitored.

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Depth of Flow Capacity Summary:

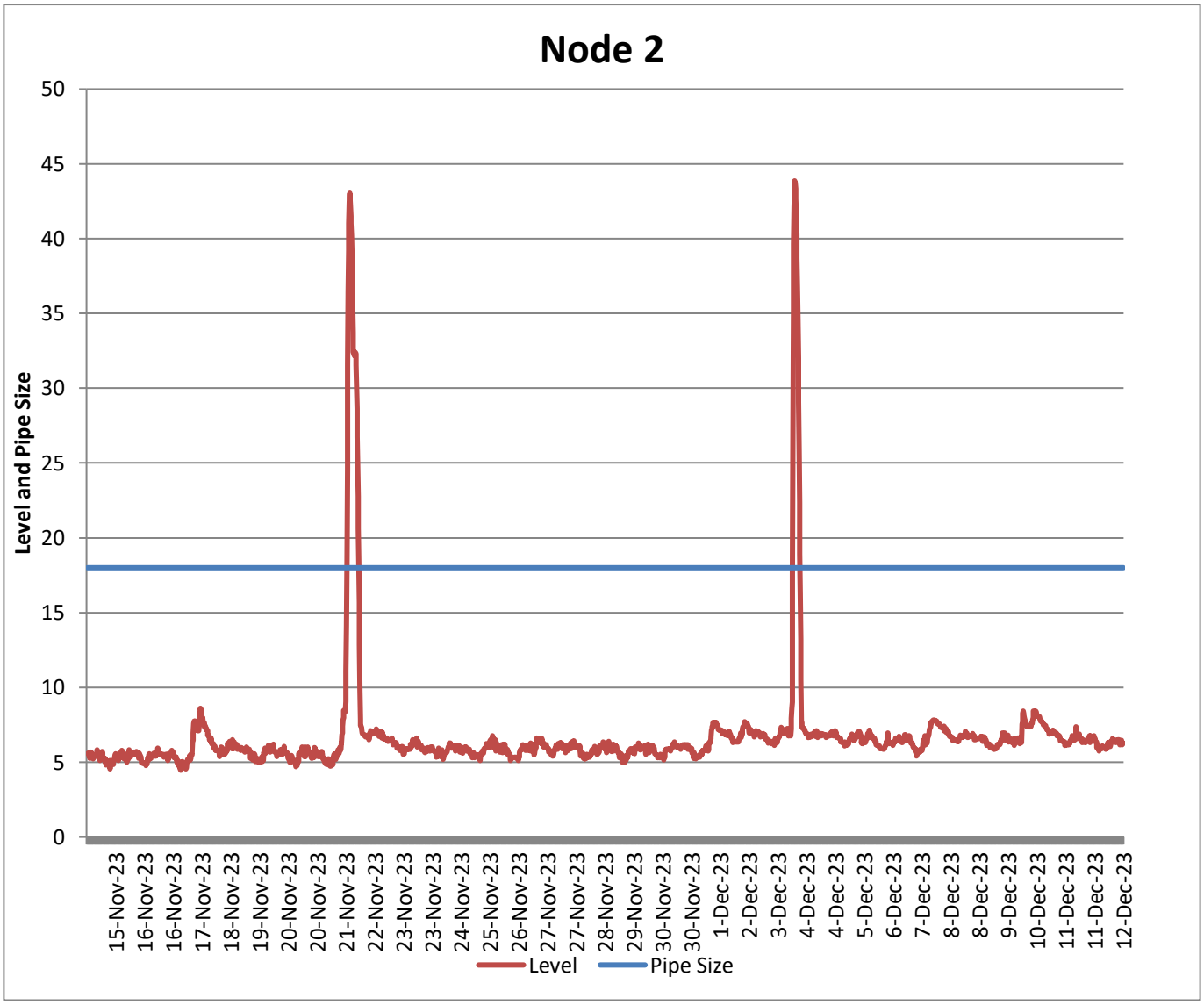
Depth of flow capacity is based on diameter of pipe. See graphs below.

- Three times during the monitoring period did depth of flow exceed pipe diameter at Node 1.



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- Two times during the monitoring period did depth of flow exceed pipe diameter at Node 2.



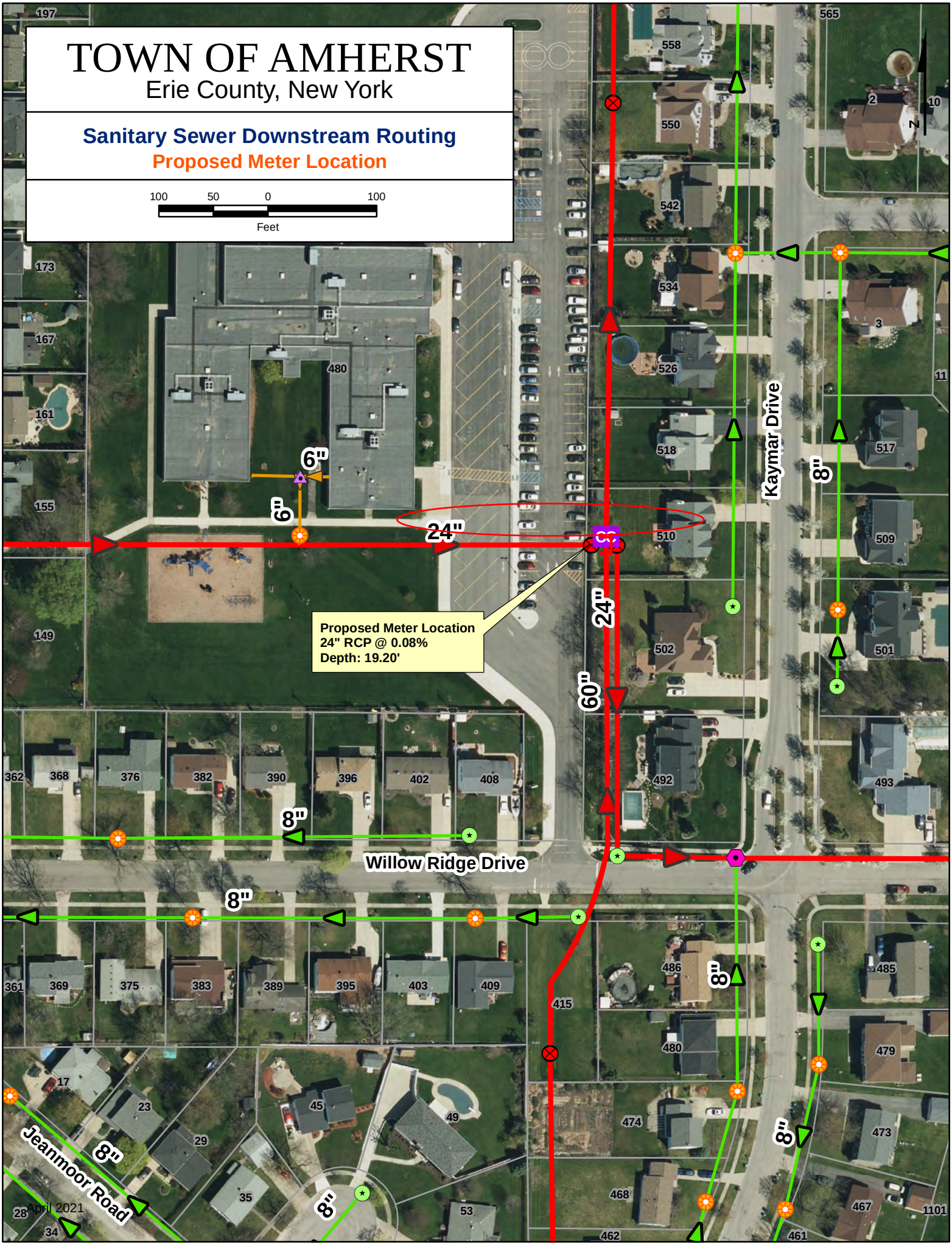
Date	Node 1			Node 2			Rain₂	Node 3		
	Willow Ridge (24")			WILLOW RIDGE AND PEPPERTREE (18")				N. ELLICOTT CREEK (60")		
	FLOW (GAL x 1,000)	PEAK FLOW (MGD)	PEAK LEVEL (IN)	FLOW (GAL x 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	(inches)	FLOW (GAL x 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)
11/14/2023	166.195	0.439	4.127	---	---	5.842	***0.00***			
11/15/2023	181.050	0.318	3.378	---	---	5.842	***0.00***			
11/16/2023	160.696	0.340	3.556	---	---	5.954	***0.00***			
11/17/2023	419.650	1.481	24.989	---	---	8.601	***0.81***			
11/18/2023	231.095	0.332	3.499	---	---	6.517	***0.00***			
11/19/2023	197.154	0.362	3.637	---	---	6.208	***0.00***			
11/20/2023	309.695	0.493	4.568	---	---	6.010	***0.00***			
11/21/2023	463.232	1.884	95.157	331.569	0.927	43.037	***1.04***			
11/22/2023	594.318	1.598	88.385	351.162	1.133	7.444	***0.09***			
11/23/2023	360.956	0.603	4.652	191.757	0.774	6.618	***0.00***			
11/24/2023	357.183	0.574	4.698	225.844	0.965	6.291	***0.00***			
11/25/2023	320.491	0.574	4.701	137.833	0.335	6.752	***0.00***			
11/26/2023	353.429	0.729	4.845	137.270	0.469	6.599	***0.16***			
11/27/2023	363.070	0.543	4.696	139.780	0.410	6.428	***0.00***			
11/28/2023	352.715	0.525	4.636	161.730	0.590	6.401	***0.00***			
11/29/2023	323.039	0.501	4.574	84.889	0.268	6.274	***0.12***			
11/30/2023	333.072	0.560	4.654	84.004	0.372	6.358	***0.00***			
12/1/2023	546.957	1.049	6.114	170.778	0.448	7.663	***0.28***			
12/2/2023	699.148	1.088	6.343	211.375	1.391	7.710	***0.15***			
12/3/2023	765.538	1.560	7.149	205.542	1.352	43.864	***0.30***			
12/4/2023	631.691	0.849	5.642	117.777	0.355	7.297	***0.00***			
12/5/2023	422.232	0.933	5.669	146.543	0.751	7.147	***0.07***			
12/6/2023	345.405	0.627	4.800	145.289	0.964	6.942	***0.02***			
12/7/2023	581.191	1.087	6.238	200.300	0.381	7.813	***0.37***			
12/8/2023	497.611	0.672	4.975	192.147	0.879	7.059	***0.00***			
12/9/2023	438.633	1.419	6.826	166.131	1.010	8.426	***0.19***			
12/10/2023	1,022.792	2.056	25.582	213.446	0.547	8.433	***0.44***			
12/11/2023	381.749	0.670	4.988	124.535	1.183	7.376	***0.00***			
12/12/2023	100.269	0.269	2.944	94.365	0.237	6.595	***0.00***			
---		---	---	---	---	---	***4.04***			

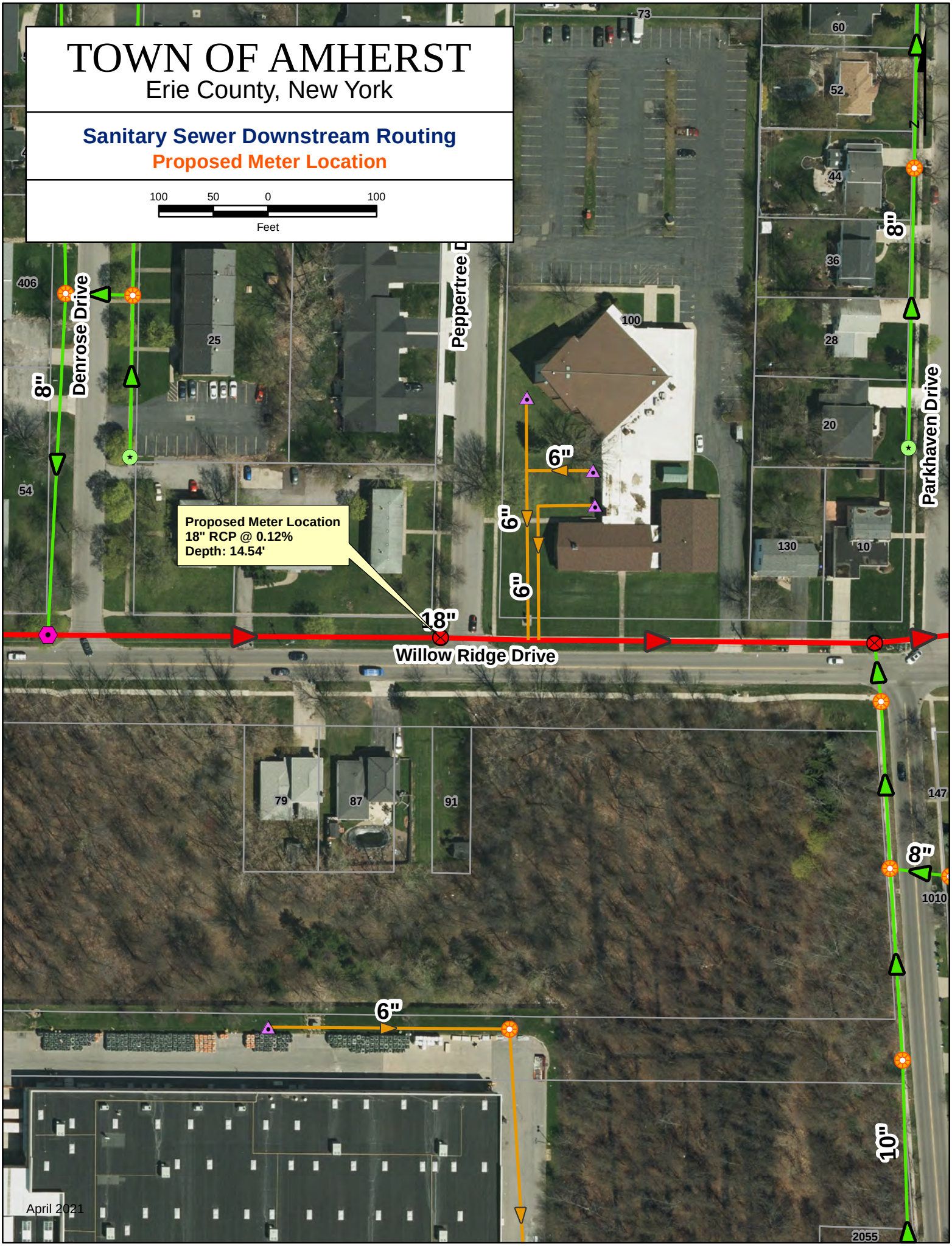
	MGD	CFS
Wet	1.884	2.915
Overall	2.056	3.181

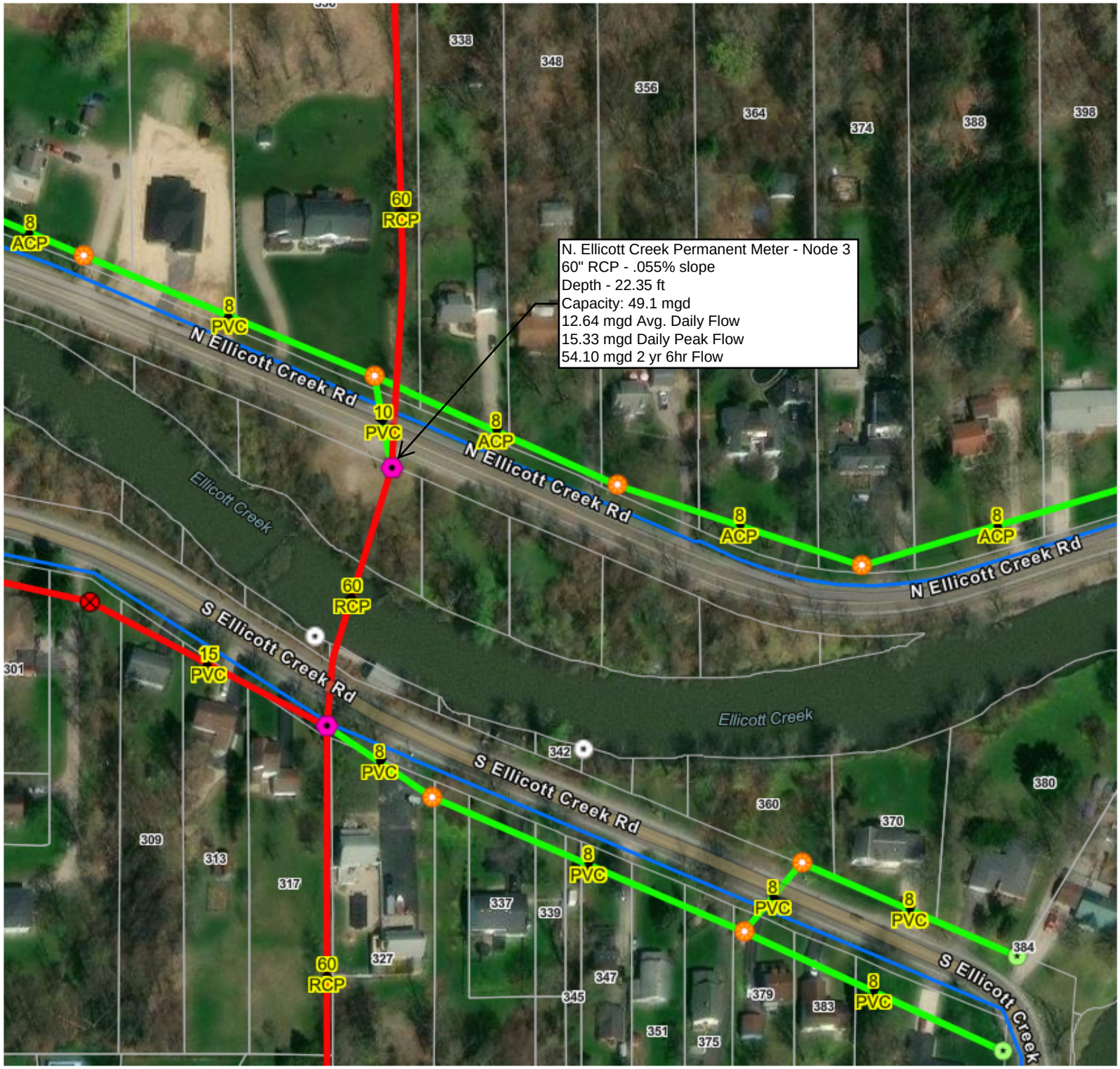
	MGD	CFS
Wet	0.927	1.434
Overall	1.391	2.152

	MGD	CFS
Wet	15.330	23.719
Overall	12.640	19.557

Town of Amherst Sanitary Sewer Downstream Routing Maps


TOWN OF AMHERST
Erie County, New York
Sanitary Sewer Downstream Routing
Proposed Meter Location
100 50 0 100
Feet
N
Proposed Meter Location
24" RCP @ 0.08%
Depth: 19.20'
6"
6"
24"
24"
60"
8"
8"
8"
8"
8"
8"
Kaymar Drive
Willow Ridge Drive
Jeanmoor Road
April 2021


TOWN OF AMHERST
Erie County, New York
Sanitary Sewer Downstream Routing
Proposed Meter Location
100 50 0 100
Feet
N
Denrose Drive
Peppertree D
Parkhaven Drive
Willow Ridge Drive
Proposed Meter Location
18" RCP @ 0.12%
Depth: 14.54'
8"
6"
6"
6"
18"
8"
8"
6"
10"
406
25
54
73
100
60
52
44
36
28
20
130
10
79
87
91
147
1010
2055
April 2021


N. Ellicott Creek Permanent Meter - Node 3
60" RCP - .055% slope
Depth - 22.35 ft
Capacity: 49.1 mgd
12.64 mgd Avg. Daily Flow
15.33 mgd Daily Peak Flow
54.10 mgd 2 yr 6hr Flow
N Ellicott Creek Rd
S Ellicott Creek Rd
Ellicott Creek
60 RCP
8 ACP
8 PVC
10 PVC
15 PVC
338
348
356
364
374
388
398
301
309
313
317
327
337
339
342
345
347
351
360
370
375
379
380
383
384

TOWN OF AMHERST
Erie County, New York

Downstream Sewer Routing

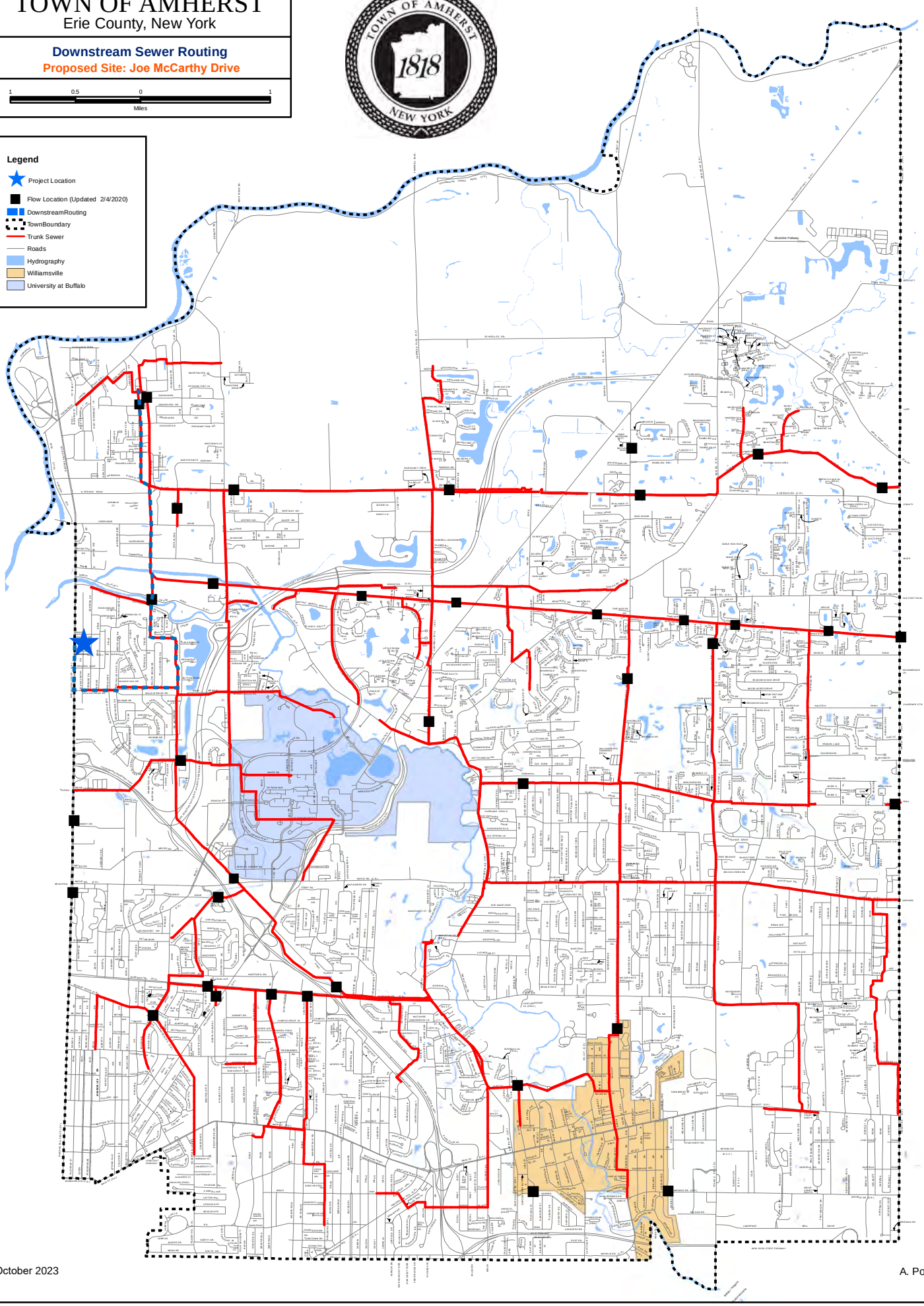
Proposed Site: Joe McCarthy Drive

1 0.5 0 1
Miles

N

Legend

- Project Location
- Flow Location (Updated 2/4/2020)
- DownstreamRouting
- TownBoundary
- Trunk Sewer
- Roads
- Hydrography
- Williamsville
- University at Buffalo



October 2023

A. Pontikos