NEWEA & NYWEA Joint Spring Meeting
Technical Conference & Exhibition
June 8, 2016

Readiness for Economic Development and it's Future, Monticello, NY

Richard Straut, P.E.
Anthony Eagan, P.E.

Barton & Loguidice, D.P.C.
Engineers • Environmental Scientists • Planners • Landscape Architects

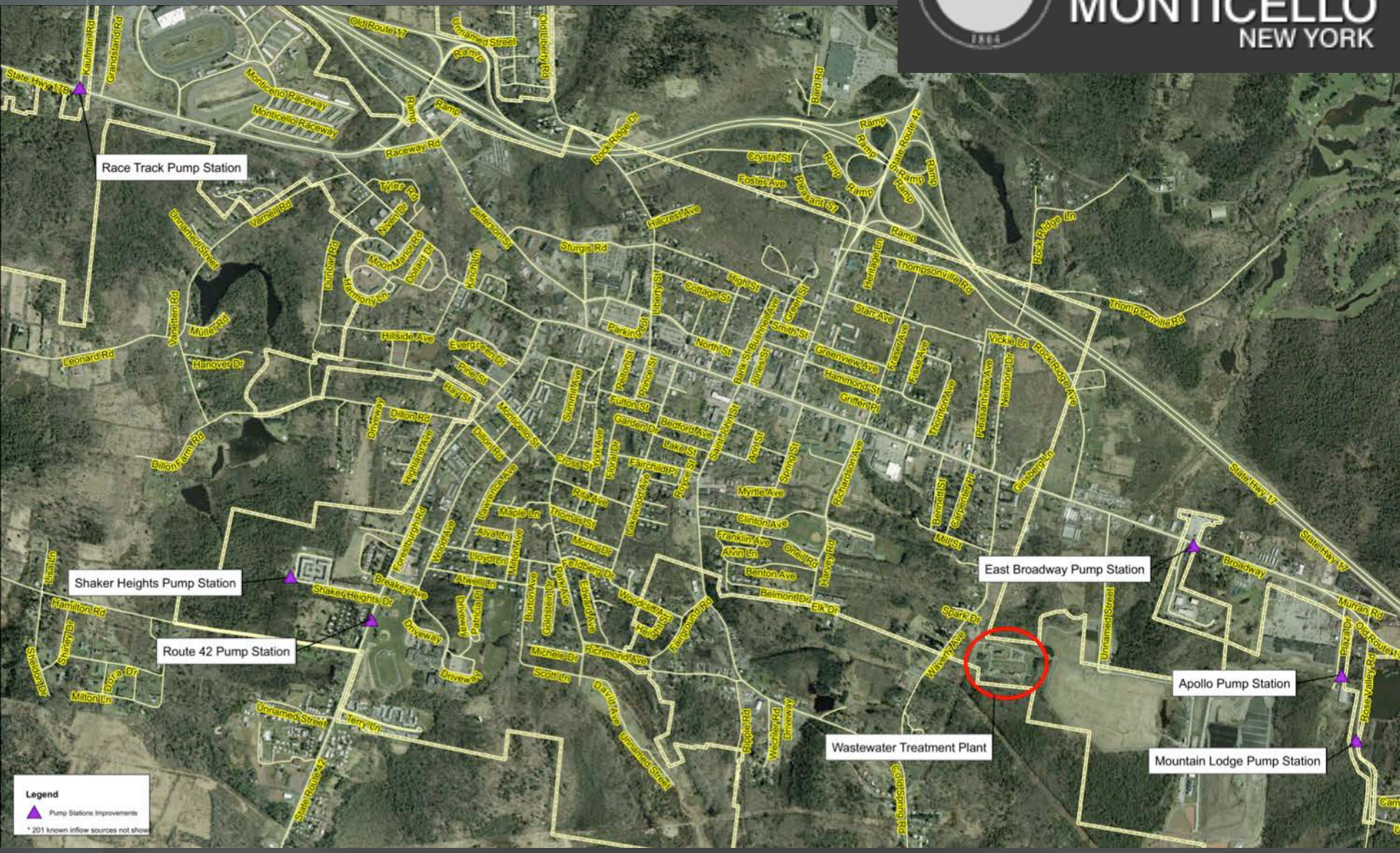
NEWEA
WORKING FOR WATER QUALITY

NYWEA

Objectives

- History
- Project Background
- Design Components
  - Sewer Improvements
  - Water Resource Recovery Facility Improvements
  - Nutrient Removal
- Next Steps

VILLAGE OF MONTICELLO
NEW YORK



Village of Monticello

- County Seat of Sullivan County
- 4.1 square miles
- 6,465 persons
- 2013 Census Data - $21,668 MHI
- Low-moderate income account for 57.62%.
- Collection System Constructed more than fifty (50) years ago
- Treatment Plant Constructed in 1984

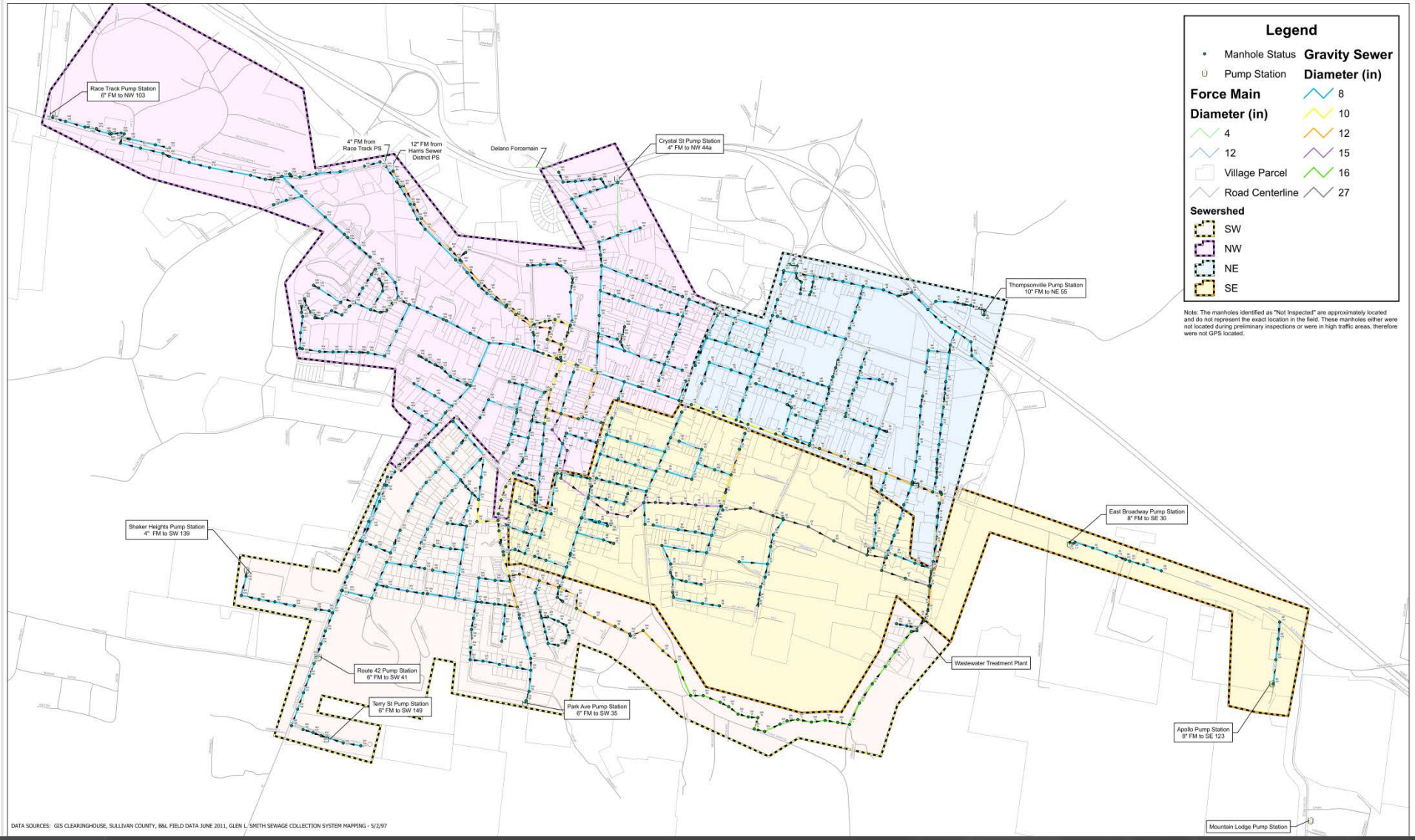
Condition

- Pumps in Collection System Pump Stations need replacement every 2-3 years due to excessive wear and tear
- Treatment Plant has become labor intensive
- Equipment is past its useful life
- Treatment ability significant impacted during wet weather
- Peak Hourly Flows in Excess of 12 MGD

Collection System

- Much of the Collection System was constructed more than fifty (50) years ago
- Pipe network consists of sewer mains ranging in diameters from 6 to 27-inches, many of which are the original clay tile sewer lines
- Several of the manholes are original brick structures
- Seven Pump Stations
- SSES 1979, 1998 & 2012
- Orders of Consent for I&I

Collection System

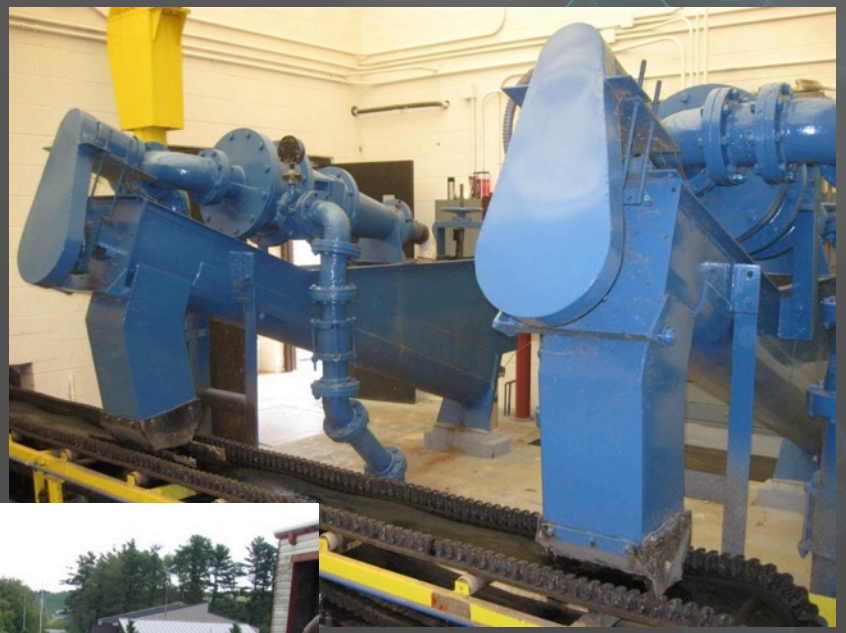


Wastewater Treatment Plant

- Expansion and Construction 1984
- Design Capacity of 3.1MGD
- Influent Screening, Aerated Grit, Two Oxidation Ditches, 1.5 MG Storm Retention Tank, Travelling Bridge Clarifiers, Four (4) Roberts Media Filters, Post Aeration, Disinfection Waiver
- Sludge Holding Tank, Parkson Belt Press

Wastewater Treatment Plant

Headworks



Storm Retention Basin

Oxidation Ditches

Draft Tube Degradation

Travelling Bridge Clarifiers

Roberts Filters

Wastewater Treatment Plant

Intended Improvements

- Three Pump Station Replacements
- Install Generators at all Pump Stations
- Replace Equipment at Plant with Energy Efficient Equipment
  - Oxidation Ditches – Sequencing Batch Reactors
  - Roberts Filters – Cloth Media Filters
  - Sludge Press - Reed Beds
  - Translucent Roof Replacements

American Reinvestment Recovery Act (ARRA) 2009

USDA – RD to Fund $15 Million in Improvements consisting of:

- $7.98 Million Loan
- $6.45 Million Grant
- $0.569 Million Municipal Contribution

Upon Beginning Discussions with DRBC:

- Nitrogen Ammonia - 29 lbs/day
- Nitrate (as N) - 116 lbs/day
- TKN – 68 lbs/day
- Phosphorous - 31 lbs/day
- TDS - 1,000 mg/L
- $CBOD_5$ – 129 lbs/day
- Fecal Coliform 200/100 mL

MASS BASED LIMITS – NUTRIENT REMOVAL

Impacts

Additional SBR Tank Volume Needed

3 basins 242 ft long vs 3 basins 280 ft long

Cloth Media Filters

Improved Headworks

Improved Solids Handling

Project Cost - $21.5 million

VILLAGE OF MONTICELLO WWTP EFFLUENT DISCHARGE LIMITS - SPDES PERMIT & DRBC DOCKET				
PARAMETER	**MONITOR**	CURRENT SPDES EFFLUENT LIMIT	DRBC PROPOSED EFFLUENT LIMIT	**SPDES / DOCKET COMBINED LIMIT**
Flow	M30CDAM[1]	3.1 MGD	3.1 MGD	**3.1 MGD**
BOD_5 BOD_5 % Removal	Daily Max. Daily Max.	5 mg/l ; 129 lbs/day 85%	5 mg/l ; 129 lbs/day 85%	**5 mg/l ; 129 lbs/day** **85%**
TSS TSS % Removal	Daily Max. Daily Max.	10 mg/l ; 258 lbs/day 85%	10 mg/l ; 258 lbs/day 85%	**10 mg/l ; 258 lbs/day** **85%**
pH Settleable Solids Dissolved Oxygen	Range Daily Max. Daily Min.	6.0 to 9.0 0.1 ml/l 7.0 mg/l	6.0 to 9.0 0.1 ml/l 7.0 mg/l	**6.0 to 9.0** **0.1 ml/l** **7.0 mg/l**
Ammonia (as NH_3)	M30CDAM[1]	1.5 mg/l	1.125mg/l ; 29 lbs/day	**1.125mg/l ; 29 lbs/day**
Nitrogen, TKN	M30CDAM[1]	Not Permitted	2.6 mg/l ; 68 lbs/day	**2.6 mg/l ; 68 lbs/day**
Nitrite/Nitrate	M30CDAM[1]	Not Permitted	4.5 mg/l ; 116 lbs/day	**4.5 mg/l ; 116 lbs/day**
Phosphorous	M30CDAM[1]	Not Permitted	1.2 mg/l ; 31 lbs/day	**1.2 mg/l ; 31 lbs/day**
Fecal Coliform [2]	Geometric Avg.	Not Permitted	200 colonies per 100 ml	**200 colonies per 100 ml**

[1] M30CDAM – Maximum 30 consecutive day arithmetic mean

[2] Fecal Coliform (FC) effluent parameter/limit listed in DRBC Docket pending. FC Waiver letter prepared by B&L was sent to DRBC on 3/16/12 requesting elimination of FC limit.

TABLE 2: MONTICELLO WWTP PROPOSED DESIGN FLOWS AND LOADS

PARAMETER	EXISTING FLOWS & LOADS [1]		FUTURE GROWTH [4]	TOTAL PROJECTED FLOW AND LOADS		DESIGN FLOWS AND LOADS [5]
	Influent [2]	Effluent [3]		Influent	Effluent	
Flow (MGD)						
Peak Hourly	14.60	9.70	0.44	15.04	10.14	**12.5**
Daily Max.	7.27	5.01	0.11	7.38	5.12	**6.20**
M30CDAM	2.57	2.99	0.11	2.68	3.10	**3.1**
Annual Avg.	1.57	2.04	0.11	1.68	2.15	**2.0**
BOD (lbs/day)						
M30CDAM	2,706	3,315	165	2,871	3,480	**3,176**
Average Day	1,760	2,416	165	1,925	2,581	**2,253**
Daily Max.	4,462	5,353	165	4,627	5,518	**5,073**
TSS (lbs/day)						
M30CDAM	1,965	2,655	150	2,115	2,805	**2,460**
Average Day	1,270	1,865	150	1,420	2,015	**1,718**
Daily Max.	5,134	3,931	150	5,284	4,081	**4,683**
TKN (lbs/day)						
M30CDAM	545	N/A	35.0			**580**
Average Day	365		25.0			**390**
Daily Max.	725		50.0			**775**
Phosphorous (lbs/day)						
M30CDAM	30.0	N/A	2.0			**32**
Average Day	20.0		1.0			**21**
Daily Max.	45.0		5.0			**50**

Table Notes:

1. *Due to inaccuracies from influent flow monitoring in Parshall Flume, effluent flow meter also used in deriving existing flows and loads to plant- average value taken from flows and loads derived using influent and effluent flow monitoring values.*
2. *Influent flows and loads based on Monticello Wastewater Facility Operating Reports from April 2008 to December 2009*

Headworks

Sequencing Batch Reactors


TOPAZ

	Effluent Limits		3/15/2016			3/10/2016			3/9/2016			3/8/2016		
Parameter	SBR Effluent (mg/L)	SBR Effluent (lbs/day)	Influent (mg/L)	SBR Effluent (mg/L)	SBR Effluent (lbs/day)	Influent (mg/L)	SBR Effluent (mg/L)	SBR Effluent (lbs/day)	Influent (mg/L)	SBR Effluent (mg/L)	SBR Effluent (lbs/day)	Influent (mg/L)	SBR Effluent (mg/L)	SBR Effluent (lbs/day)
Daily Flow Rate (MGD)					1.113			1.07			0.922			0.966
CBOD	5	29	96.5	ND	-	105	ND	-	76.1	ND	-	80.6	ND	-
TSS	10	58	118	ND		64	ND		69.3	ND		108	ND	
Ammonia, NH3	2.3	29	12.5	0.34	3	15.5	ND		12.6	1.58	12	13	0.68	5
Phosphate		31	3.55	1.09	10	2.9	0.616	5	3.73	0.96	7	3	0.507	4
Alkalinity			2.47	20.3	188	116	16.5	147	105	12.3	95	123	15	121
Nitrate, as N		116	1.55	13.4	124	1.55	15.4	137	5.94	38.8	298	1.91	16.3	131
TKN		68	25	1.41	13	1	2.46	22	25.3	1.41	11	25.5	1.6	13
TSS1 of Mixed Liquor			2980			2560			2740			2670		
TSS2 of Mixed Liquor			2720			2420			2840			2780		
VSS of Mixed Liquor			1900			1900			2000			2100		
SS of Mixed Liquor			175			70			175			70		

Currently Meeting Permit

- MLSS > 8,000 mg/L
- Two SBR's experienced flows over 3.1 MGD
- Effluent Ammonia ND
- TKN > 1.0 mg/L

Operator is Very Happy with Flexibility and Forgiveness of the System

Next Steps

- Construction Completion October 2016
- Infiltration & Inflow Study on Major Interceptors 2016/2017
- Collection System Improvement Project in Planning through USDA Pre Planning Grant
- Adelaar Resort & Casino - March 2018
- Future Infill Development & Downtown Revitalization as a result of the $1.3 Billion Investment

Thank You!

Anthony Eagan, P.E.

637 Broadway, Suite 2B, Newburgh, NY

aeagan@bartonandloguidice.com

Richard Straut, P.E.

10 Airline Drive, Suite 200, Albany, NY 12205

rstraut@bartonandloguidice.com

Barton & Loguidice, D.P.C.

Engineers • Environmental Scientists • Planners • Landscape Architects

NEWEA
WORKING FOR WATER QUALITY

NYWEA