



City of Pataskala Utility Department
Nathan W. Coey, Utility Director

Utility Department Updates for the September 19, 2016 City Council Meeting

➤ **Director Updates**

• **Legislation**

- **Resolution 2016-053.** *This will be presented at the October 3rd meeting pending review from the Utility Committee.* A Resolution authoring and directing the City Administrator to enter into contract with Chaltron Systems Inc for the purchase of new flow metering equipment at Water Treatment Plant #1 in an amount of \$12,600.

- The Water Treatment Plant #1 has an issue with accurately tracking water demand into the distribution system. The current flow meter is in a position that does not provide the appropriate data regarding metered flow.
- The current meter is installed prior to the 200,000 gallon clear well. Water from the clear well is pumped to the distribution system through the High Service Pumps. Our daily production tracking is not accurate for what is pumped to the system.
- The new metering system will track the actual water pumped into the distribution system via the pumps.
- Funds are available for this purchase under the 2016 Utility Budget.
- Please see the “Flexim Ultrasonic Flow Meter Summary” document attached to this update.

- **Ohio EPA WRF Inspection.** On August 17, 2016, Paul Vandermeer with the Ohio EPA conducted the annual inspection of the WRF facility. Please see the attached report from the OEPA.

- **Inspection Report Summary.** This was a positive inspection for us. No deficiencies were noted regarding treatment operations. Our only (self-reported) violations were two overflow events in 2015. June 2015 was related to pumps tripping out in high flow at

Creek Road Lift Station and July 2015 was related to the lightning strike that destroyed communication and pump operations at Eastside Lift Station. Typical events like this serve as indicators that our system is stressed during wet weather events, of which the OEPA will document for required improvements.

- **Report Findings #2.** The amount of inflow and infiltration (I & I) was discussed during the inspection. By my calculations 40% of our annual flow is directly related to I & I. This is not uncommon given the age of the infrastructure in the Westside Tributary Area. Specifically, historic village due to the amount of aged clay pipe in the ground. There is 36,264 feet of 8, 10, and 15 inch clay pipe in the service area or 22% of our entire inventory. Clay pipe often has joints every 10 to 20 feet, the grout and packing fails allowing in ground water to the sanitary system. We have identified only one area (High and Broadway) where storm sewers are tied into the sanitary via catch basins. At some point this bill will be due in the form of reinvestment. I have called these out in the past 4 years as unfunded CIP projects, specifically pipe replacing or relining. I will suggest a part of the 2018 budget to begin a replacement effort incrementally over several years. The OEPA would like to see movement on this before they make it a requirement due to consistent wet weather overflows.
 - Our highest reported average daily flow over the past year was 2.343 MGD (68% increase from average daily flow), as a result of rain and snow melt the last week of December 2015, thus indicating our influence of I & I. The peak flow is compared to our dry weather flows are in the .6 MGD range with an annual average of .742 MGD.
 - I & I remediation requires a great deal of time and resources to completely eliminate. Short of replacing the entire clay system or relining, our options are limited. The OEPA focus or concern is related to growth potential, more so this being an issue as we grow closer to a WRF design flow of 1.1 MGD.
 - Challenges and lessons to come.
- **Suggested Action 1.** The agency suggested were look at a storm water utility to fund storm repairs or installation of new storm systems. This would provide a mechanism to address

specific areas of known direct surface water influence (High and Broadway).

- **River Forest Lift Station Project.** The survey work is underway for obtaining the required lift station property.
- **GIS Update.** The ARC Online software has been purchased. Stantec is under contract to populate the data for this platform. This will allow remote access and sharing of the GIS data base. This will be a great tool for field and office staff to access the data for work flow tasks.

➤ **Water Department**

- The staff located a vexatious service leak on Harold Stewart Parkway. This leak did not surface via normal routes. However, the leak was observed through extended sump pump run times in some homes in the area. We were able to locate the leaking service line with our leak detection equipment during a period when the ground was dry. This repair has resulted in normal (reduced) sump pump operation for 4 homes in the area.

➤ **Water Reclamation Department**

- A biosolids land application event has been scheduled for mid-September to a local privately owned farm field. We will be applying the product to hay fields that are finished with harvesting for the season. All necessary party notices have been completed.

➤ **Billing Department Update**

- Financial data through August 2016.
 - \$364,561 have been received in water and sewer capacity fees. August 2015 we received \$697,381 in capacity fees, 2015 was a banner year, but wanted to share the comparison.
 - \$2,279,061.29 have been received in the form of use charges through August 2016. Compared to August 2015 we received \$1,975,130.90. The increase is a result of the 2016 rate increases including the Water CIP increase.

Highest Regards, Nathan W. Coey, Utility Director



City of Pataskala Utility Department
Nathan W. Coey, Utility Director

'Flexim' Ultrasonic Flow Meter Summary

➤ **Issue**

- Water Treatment Plant #1 does not accurately record produced water delivered to the distribution system.
 - The current magnetic flow meter is placed in a vertical position. Due to the position in the flow process the metering point is not “full pipe” due to gravity drop into the production clear well. The drop and aeration in the pipe provides inaccurate readings due to poor application.
 - “Mag” meters work efficiently in full pipe applications mounted in horizontal applications.
 - The current meter monitors only the water pumped to the production clear well prior to delivery to the system via the high service pumps.
 - The transfer pump system pressurizes the ion exchange units with treated water drawn from the iron filters. The treated water pressurized by pumps and treatment vessels result in treated discharge to the clear well.
 - The stored water in the clear well (200,000 gallon capacity) is available for discharge to the system by the high service pumps. Set points are activated for automatic delivery to the system. This water is not currently metered.
 - To further complicate the issue, water may be produced for clear well storage when demand may not require. Current meter reports are not accurate to the actual usage in the system.
 - In order for ion exchange backwash to occur, the transfer pumps will operate. During this automatic operation, the vessel to be backwashed is removed from the treatment train while water will be produced through the active unit. This results in additional treated water to the clear well that is metered for production, often not based on demand needs. The produced water is not always distributed at an equal pace

by the high service pumps based on system demand. This means there is a gap (unaccounted water) between what is pumped to the clear well and what is pumped to the system.

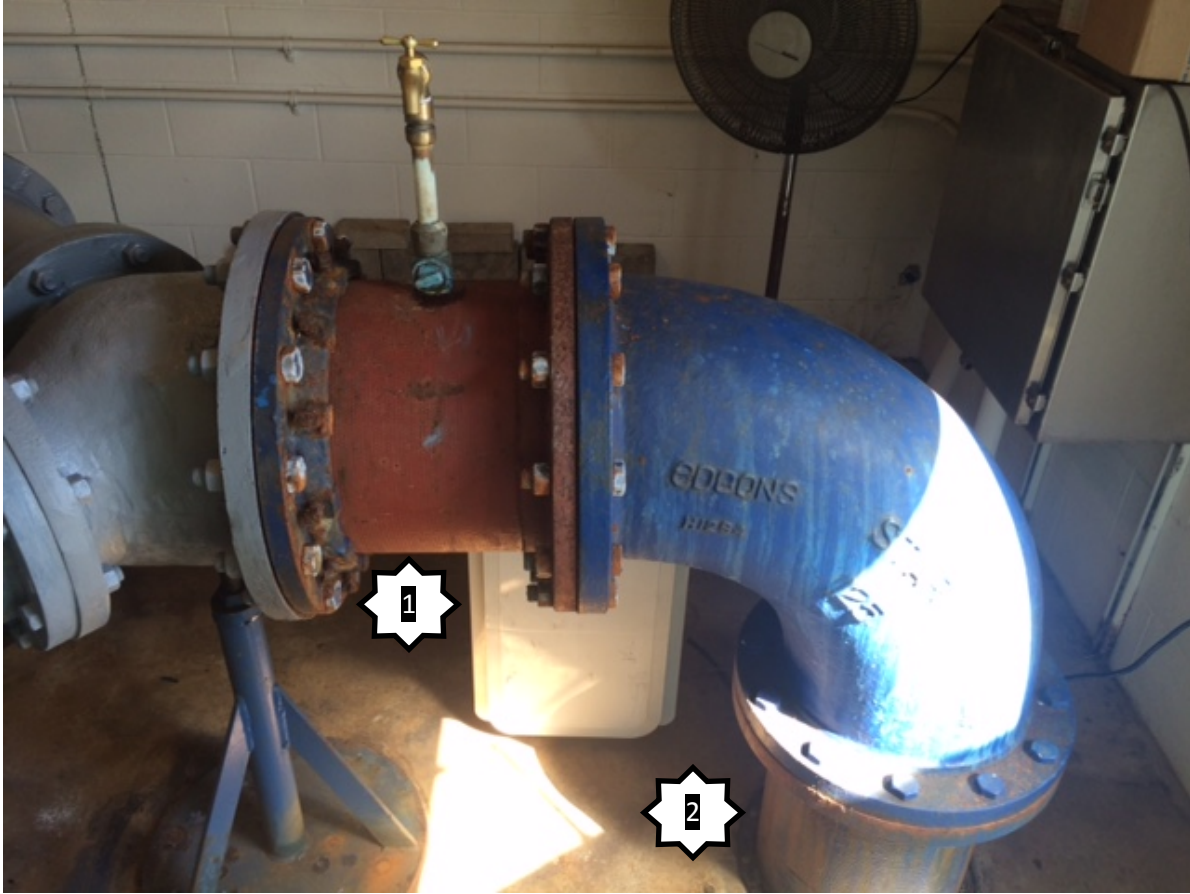
- Based on recent testing 43% of the daily water produced to the clear wells actually leave the facility to meet system demand. However, our current metering indicates 100% of produced water is leaving the plant, which is not accurate.

➤ **Goal**

- We seek to be accurate in our monthly distribution flow reports to the Ohio EPA. For future planning it is imperative to know the actual daily demand of water to the system. Water Treatment Plant #1 may produce 300,000 to 400,000 gallons of water a day to the clear well, this water is not always pumped to the system that day.
- Accurate monitoring of the water distributed from WTP#1 will provide a clear picture on our actual water loss percent (unaccounted water through billing) in the aged system. Accurate flow reporting is key to ensure our diligence in protecting the infrastructure investment.

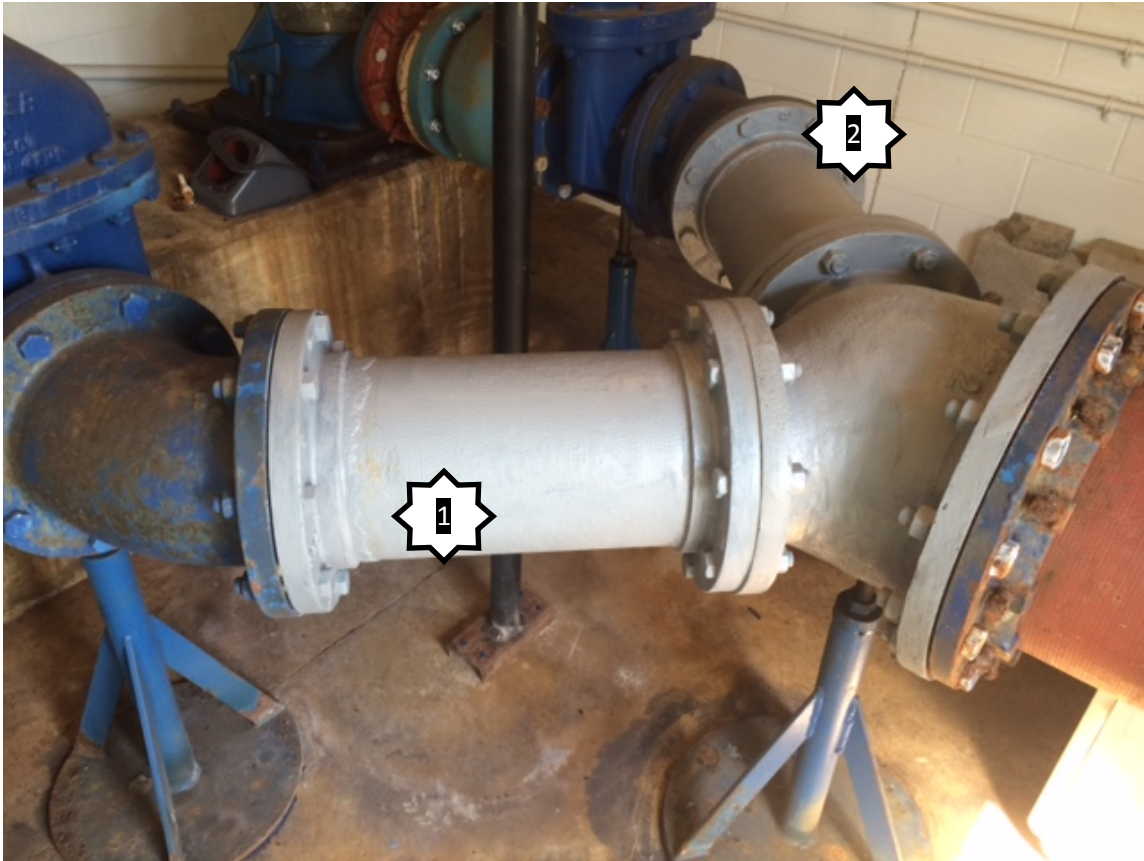
➤ **Solutions**

- **Option 1.** Install a one magnetic flow meter in the high service building downstream from both pumps.
 - Due to restrictions there is not enough lay length for a single mag meter downstream of both pumps. We needed at least 13 inches for the meter and additional fittings put us in the 18 to 24 inch range to make this work. Pipe work modifications provided no room for error and proved to be risky. This option was abandoned.



Spool piece (1) was less than 12 inches. Pipe after the ninety degree fitting (2) was prohibitive due to the penetration into the concrete floor.

- **Option 2.** Install a one magnetic flow meter after each pump (2 total) in the high service building downstream from both pumps.
 - Due to restrictions there is not enough lay length for a mag meter after each pump. We needed at least 13 inches for the meter and additional fittings put us in the 18 to 24 inch range to make this work. There were concerns that harmonics from the pumps would cause inaccurate meter readings. This option was abandoned.



Spool pieces (1 and 2) were less than 14 inches. These areas were not long enough to install a mag meter.

Options 1 and 2 would have been the most economical at a cost of \$8,000 to \$11,000. Pipe configuration limitations proved to be insurmountable.

- **Option 3.** Install a one magnetic flow meter downstream of the high service pump building on the WTP#1 property. This option was planned to be our best plan of correction. Through evaluation and planning process, we found this to be the most expensive, but typical industry standard.
 - This option would have required a capital cost estimated at \$22,000.
 - \$8,000 for flow meter, monitoring equipment, grounding rings, and manufacturer startup/programming costs.
 - \$4,000 for a concrete metering vault (8 feet deep), access hatch, and safety ladder/cage for entry.
 - \$2,000 for pipe work and valves for a meter bypass in the event of failure or replacement.
 - \$2,000 for excavation work, vault set, vault base, and aggregate.
 - \$2,000 to run electric and communication cables to the vault.
 - \$2,000 for integration and programming to the SCADA system.
 - \$2,000 dollars (10%) contingency for any unknowns. This was added in case we had to replace sections of pipe before and after the meter, backfill, thrust blocking, and vault penetration sealing.
 - Total cost estimate of \$22,000.
 - Understanding the budget restrains of the Water fund, I was not enamored with the cost potential of this option. This option would have required WTP#1 to be off line for several days to set the pit and install new pipe work.



Meter vault location (1), High Service Pump Building (2).

- **Option 4.** Install a clamp on ultrasonic flow transducers after each high service pump. While at the OWEA Annual Conference I met the folks from Chaltron Systems and was introduced to their 'Flexim' ultrasonic transducer flow meters. This option proved to be more economical than Option 3. This option is our best alternative for accurate flow metering at WTP#1.
 - Representatives from Chaltron conducted a feasibility study on our application in the High Service Building. Testing indicated that the ultrasonic meters would work on the previously discussed spool pieces from Option 2. Additionally, there were no harmonics issues given the proximity to the pump motors.
 - Chaltron offered a quote of \$12,660.
 - \$9,058 for two ultrasonic transducers, meter control device, cables, and mounting equipment.
 - \$2,402 for a wireless transmitter and receiver package to send the data into the operator station in the building. This would provide easy daily data reporting for the operators.
 - \$1,200 for installation and programming of the meters.
 - Total quote cost of \$12,660.
 - Chaltron provided an extensive list of their installations, mostly in northern Ohio. I called some of the larger clients and focused on water plant applications.
 - Marathon Petroleum has over 250 meters installed.
 - NEORS (Cleveland Wastewater) utilizes in treatment and collection operations.
 - Kent Water Plant uses these meters on well flow recording. They are planning to purchase more for additional wells and their filter to waste monitoring. They have used this for 1.5 years with no reported issues.
 - City of Hudson uses this type of meter on water treatment discharge monitoring. In service for 3 years and working well with no issues.
 - Avon Lake Water uses these meters for their large commercial applications. They are planning to buy a portable unit for water loss testing in specific parts of their system. They have reported no issues with the accuracy and maintenance on the meters. They have been using this product for 5 years.
 - Portage County Water utilizes these meters on their production wells. They also use this in an up flow pipe to a

storage reservoir. They have used this product for a year and have had no reported issues.

- City of Akron and Cleveland (Baldwin and Crown) use these meters in the plants and system. I have yet to receive a return call from the superintendents regarding their option on the meter.
- Village of West Jefferson (local) uses this in applications at their wastewater plant. They have not reported any issues and are satisfied with the purchase.

Highest Regards, Nathan W. Coey, Utility Director



John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

Rec. 9/8/16

August 29, 2016

Nathan Coey, Utility Director
Pataskala WWTP
621 W. Broad Street
Suite 1-D
Pataskala, OH 43062

**Re: Pataskala WWTP
Inspection
Inspection
NPDES
Licking County
4PB00009**

Subject: Ohio Environmental Protection Agency NPDES Inspection

Dear Mr. Coey:

On August 17, 2016, a Reconnaissance Inspection was conducted at the Pataskala WWTP. Present for the inspection were you and Steve Kill representing the City of Pataskala and myself of the Ohio EPA, Central District Office, Division of Surface Water. The purpose of the inspection was to evaluate compliance with the terms and conditions of your NPDES permit and to evaluate the operation and maintenance of the plant.

Findings

1. The 2 sanitary sewer overflows resulted from a lightning strike and an extreme weather event (over 2 inches of rain in 14 hours) respectively.
2. We discussed the elevated influent flows (see table on page 4) that occur during precipitation events. According to research done by your department, nearly 40% of the annual flow to the WWTP is due to inflow and infiltration (I&I). We also discussed that the City has approved development of over 900 new homes at some time in the near future. Although the WWTP seems to be able to handle current peak flow events, further growth in the City may eventually cause further violations (like the extreme weather SSO in June, 2015) if I&I is left unaddressed.
3. The inspection revealed no obvious problems regarding operations or maintenance of the WWTP. All treatment systems were functional and appeared to be in satisfactory repair at the time of the inspection.

Suggested Action

1. The City should evaluate instituting a funding mechanism (e.g., a storm water utility) to generate funds to upgrade storm sewers and catch basins; especially those that are cross-connected to the sanitary sewer. Updating storm and sanitary sewer use ordinances may also be helpful to assist in the removal of sump pump and downspout water entering sanitary sewers via improper connections. This should take place before further development begins.

Nathan Coey
Pataskala WWTP
Page 2

If you have any questions or comments concerning the enclosed inspection report, please contact me at (614) 728-3854 or e-mail at paul.vandermeer@epa.ohio.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Paul Vandermeer", with a long horizontal flourish extending to the right.

Paul L. Vandermeer
Environmental Specialist II
Compliance and Enforcement
Ohio EPA Division of Surface Water
Central District Office

c: File Copy

e: Steve Kill (skill@ci.pataskala.oh.us)

PV/cf Pataskala_WWTP_08_2016


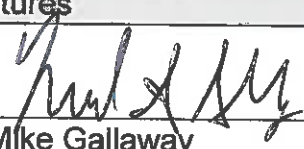
NPDES Compliance Inspection Report

SECTION A: NATIONAL DATA SYSTEM CODING				
Permit #	NPDES #	Inspection Type	Notice of Violation	Significant Non-Compliance
OH0020273	4PB00009	Ri	No	No
Inspection Date	Entry Time	Exit Time		
8/17/2016	9:55 am	11:10 am		

SECTION B: FACILITY DATA	
Name and Location of Facility Inspected	Permit Effective Date
Pataskala WWTP 388 Shawnee Loop, South Pataskala, OH	8/1/2014
	Permit Expiration Date
	7/31/2019
Name(s) and Title(s) of On-Site Representatives	Phone Numbers
Steve Kill, Utility Superintendent	(614) 554-3649
Name and Title of Responsible Official	Phone Number
Nathan Coey, Utility Director	(740) 927-4134

SECTION C: AREAS EVALUATED DURING INSPECTION		
Corrective Action Needed – Y-Yes; N-No; N/A-Not Applicable; N/E – Not Evaluated		
N	E. NPDES Compliance	
N	F. Operations & Maintenance	
N	G. Operator Certification	
Y	H. Collection System	40% of annual flow is related to I&I.
N	I. Sludge Management	New sludge storage added. Land applied by city.
Y	J. Storm Water	Some storm sewers still cross connected the sanitary
N	K. Self-Monitoring Program	
N	L. Laboratory	
N	M. Effluent / Receiving Water Observations	

Comments:

Signatures			
	8/25/16		8/25/16
Paul L. Vandermeer Compliance and Enforcement Division of Surface Water Central District Office	Date	Mike Gallaway Section Manager Division of Surface Water Central District Office	Date

Compliance Data for Pataskala WWTP between 4/1/2015 and 8/1/2016

Summary

Permit Effluent Limit Violations: 0
 Permit Effluent Code Violations: 0
 Permit Effluent Frequency Violations: 0
 Compliance Schedule Milestones Not Entered: 0
 Reported SSO Events: 2

Pataskala WWTP SSO Events			
Parameter	Units	Date	Reported Value
Overflow Occurrence	No./Month	6/20/2015	1
Overflow Occurrence	No./Month	7/19/2015	1

High Flow Data for Pataskala WWTP between 4/1/2015 and 8/1/2016

Top 10 Flows	
Date	Flows (MGD)
12/28/2015	2.343
4/9/2015	2.117
12/27/2015	2.109
6/20/2015	2.001
4/12/2016	1.913
12/29/2015	1.847
2/24/2016	1.836
3/15/2016	1.799
3/14/2016	1.778
3/13/2016	1.720
Average	0.742
Design	1.100