



CITY OF DELPHOS

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DELPHOS OH 45833

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Annual Report

The City of Delphos is required to provide an Annual Report to the public in accordance with Ohio Environmental Protection Agency. The new standards for CSO reporting have been put in place by the City of Delphos starting on January 1, 2019. All CSO locations are numbered by the NPDES discharge numbers and are clearly marked with the WWTP's information. In the sections to follow you will find a description of the collection system, Delphos's collection system maintenance program, an overview of the 9 minimum control standards, and all monitoring records.

Collection System Overview

Here is a description of the City of Delphos collection system in its entirety and provide explanation for its operational and maintenance requirements.

The city's sewer system is approximately 55% combined sewer with the balance (predominately newer subdivisions and industrial park areas) being separated. The collection system is comprised of 14 lift stations, 2 storm water pumping stations (one for each interceptor sewer), 2 storm water lagoons and seven permitted combined sewer outfalls (Station codes 002, 005, 006, 007, 008, 010 and 011) and 1,865 acres of collection system area. Twelve of the lift stations and the 2 storm water pumping stations are currently incorporated into the telemetry and SCADA system located at the WWTP. Two of the newest lift stations that were added in 2008 have Chatterboxes and are monitored via telephone alarm systems. In the future the WWTP would like to replace both of these Chatterbox systems with RTU type monitoring system for better monitoring.

The telemetry system is capable of providing at any given time, the run status of the pumps, power failure, communication failure and high wet well levels at each of the stations. While the system allows for the operators to monitor how often the pumps are running, it does not provide for additional information such as amp draw, wet well level, or flow rate at each of the stations. These are parameters

that the WWTP are looking into adding in the future, at a minimum to the major lift stations to assist the staff in the operations, maintenance, and gathering other pertinent information. It is the WWTP's intention to try and budget these additions over the next five years. This information can begin to be gathered in an attempt to better understand the flow variations throughout the collections system.

Following is a description of the 14 lift stations and Influent Station

Influent Lift Station

The Plant influent station was built in 2006 **consisting** of 5- pumps rated at 833 gpm or 1.2 MGD each, 1 automatic bar screen, 2 manual bar screens, 2 storm pumps, 5-telemetry type level controllers, 1 isolating storm control valve, several VFD and Drives, permanent generator, 1scada system, RTU, and 1 non-potable water break tank.

7th Street Lift Station - 2- 1260 gpm @ 28' TDH 24Hp

3 Influent pipes 1 -18", 1 - 10", and 1 – 4"

10" force main to Moening Street

- A. Station received major upgrade in 2007 including new pumps, new electrical controls, complete polyurea coating to inside of wet well and all new rails. A carbon filtration unit was also installed for odor control.
- B. The station again in 2013 was upgraded with new pumps and controls due to corrosion caused by sewer gases.
- C. Station controlled by bubbler level monitoring – calls lead and lag pumps on at specific set-points and kicks them off once a lower set point is achieved. In addition, this station is equipped with a back-up float control system.
- D. Station services majority of industrial waste from east side of town (Carolyn Drive and Heritage Meadow's subdivisions and flows from Ricker Street Station) as well as sewage that originates on S. East part of Delphos.

Ricker Street Lift Station - 2 – 400 gpm @ 25' TDH

3 Influent pipes; 1 – 12", 1 – 10" and 1 – 8"

8" force main

- A. Station is over 30 years old. Pumps have been holding up; however, with it being located in "nice" residential area a major upgrade (i.e. bigger force main or station replacement) may be very difficult.
- B. Station controlled by a bubbler tube system which calls for the lead and lag pumps to come on at a certain system pressure.
- C. Majority of flow from Lakeview Farms. Residential Flow from Ricker Addition, Heritage Meadows.
- D. This station is running significantly more due to the increased flows from LVF and impeller wear from years of service.

Bredeick Street Lift Station - 2 – 550 gpm pumps

2 Influent pipes; 1 – 12” and 1 – 10”

2 - 4” force mains (one for each pump) into manhole
6 foot away into 10” discharge line

- A. Controlled by 4 floats – pump off, lead, lag and high-water level.
- B. Station handles majority of flow from combined sewers on southwest part of town as well as some flow from Bunge North America.

South Park Lift Station - 2 – 280gpm pumps

2 – 12” influent lines

4” force main discharge

- A. South Park was built in 1999.
- B. Station controlled by air bubbler monitoring – calls lead and lag pumps on at specific set-points and kicks them off once a lower set point is achieved.
- C. Station handles flow from S.E. part of town – Flow can be high after rain event – I&I needs to be investigated in this area.
- D. The station has had two new pumps installed 2017 and a spare was purchased.

697 Pump Station - 2 – 151 gpm pumps @ 31’ TDH

2 Influent lines; 1 – 12” and 1 – 8”

4” Force Main

- A. This station had a new duplex controls and pumps installed in 2016
- B. Controlled by 4 floats – pump off, lead, lag and high-water level.
- C. Handles flows from Toledo Molding and Die and Unverferth Manufacturing.

Jefferson High School Lift Station - 2 – 100gpm pumps

3 – 8” influent lines

6” forced main discharge

- A. Station controlled by a bubbler tube system which calls for the lead and lag pumps to come on at a certain system pressure.
- B. Handles flow from Jefferson High School and Menke Addition.

3rd Street Lift Station - 1 – 8 gpm grinder pump (single phase)

2 influent lines; 1 – 6” and 1 – 4”

2” discharge

- A. Station handles flow from 6 homes along Flat Fork Creek; no back-up power available.
- B. Station controlled by 2 floats – pump on and off floats.

Southridge Lift Station - 2 – 115 gpm pumps

2 influent lines; 1 – 8” and 1 – 6”

4” force main

- A. Station serves Southridge Estates subdivision (Approximately 15 -20 homes); hardware in wet well is corroding. Pump motors are 3 phase running off phase converter (single phase power available, converted into 3 phase using capacitors).
- B. Controlled by 4 floats – pump off, lead, lag and high-water level.

Dickman Street Lift Station - 2 – 20 gpm grinder pumps

1 – 8” influent

2” discharge

- A. Controlled by 4 floats – pump off, lead, lag and high-water level.
- B. Station serves Wildwood Subdivision (approximately 10 homes)

Urgent Care Lift Station - 2 – 290 gpm pumps

3 – 12” and 2 – 6” influent lines

6” discharge

- A. Station built in late 1990’s and handles flow from St. Rita’s Urgent Care, Arby’s Restaurant, Family Physician’s, Funeral Home, Nursing Home and Delphos Animal Hospital. Set for future development of East Fifth Street.
- B. Station controlled by Air Bubbler monitoring – calls lead and lag pumps on at specific set-points and kicks them off once a lower set point is achieved.

Tent and Awning Lift Station- 1 – 8 gpm grinder pump

(single phase)

2 influent lines; 1 – 6” and 1 – 4”

2” discharge

- A. Station handles waste from Tent and Awning along with 1 house; no back-up power source available. Gas powered 4-inch trash pump would handle flow in case of emergency.
- B. Closest Gravity sewer is approximately 400 feet to the south.
- C. Station controlled by 2 floats – pump on and off floats.
- D. This station is currently being engineered to accept flows for two additional houses to the north. This will change the depth of the station from the current 9 feet to approximately 12 feet with new pumps and controls.

Erie Street Lift Station - 2 – 35 gpm grinder pumps

2" force main

- A. New station in 2008.
- B. Controlled by 4 floats – pump off, lead, lag and high-water level.
- C. Serves approximately 10 houses on South Erie Street that were added due to Findings and Orders issued to Van Wert County for aged septic systems.

South Bredeick #2 Lift Station – 2 – 35 gpm grinder pumps

2" force main

- A. New station in 2008.
- B. Controlled by 4 floats – pump off, lead, lag and high-water level.
- C. Serves approximately 20 houses on S. Bredeick Street that were added due to Findings & Orders issued to Van Wert County for aged septic systems.

Currently, none of the individual lift stations have their own back-up power sources; however, a trailer mounted generator was purchased in 2005 in order to provide for back-up power should the need ever arise. Quick connect power couplings for the generator were also installed at each station (except for the two small grinder pump lift stations as noted in their descriptions) when the generator was purchased. Back-up pumping is provided for at each of the smaller grinder pump stations by a 4-inch gas powered trash pump which is trailer mounted and can be hauled to each site when necessary. The back-up generator is run under load at a different lift station once per month for a minimum of 20 minutes as part of the generator exercise and maintenance program. In addition, each of the storm water pumping stations on the interceptor sewers have back-up generators at their locations.

Current (2008) Storm Water and Flow Capacity:

North Park Pond	2.1 Million Gallons
Franklin Pond	10.0 Million Gallons
Jennings Creek Interceptor	323,000 gallons
Franklin Street Interceptor	400,000 gallons
TOTAL:	12.723 Million Gallons

Total Peak Flow Treatment Capacity at WWTP when construction is complete: 3.83 MGD

Once the capacity of the sanitary sewer system is exceeded, the flow backs up in the system and is pumped to the storm lagoons via several methods. First, at the influent pump station, once the flow has exceeded the 3.83MGD that the pumps are capable of, the flow is diverted over a weir wall and flows

by gravity to the storm water pumping station. From there the flow is pumped to the North Park Storm Lagoon which is capable of equalizing with the Franklin Storm Lagoon via gravity. In addition, there are two storm water pumping stations. The North Street pump station pumps the storm water from the Jennings Creek Interceptor Sewer to the North Park Lagoon, while the Franklin Street Pump Station pumps storm water from the Flat Fork Creek Interceptor Sewer directly into the Franklin Street Storm Lagoon. Finally, after the storm lagoons are full, the water discharges via the CSO's that are attached to the interceptor sewers.



Franklin Street Storm Lagoon Pump Station with bar screen and wet well

Theoretically our system should be able to treat 3.83 million gallons daily and store another 12 million gallons of water for a total capacity of 15.83 million gallons. This is only possible if our system can convey the water to the treatment plant and holding lagoons in a timely and effective manner. That is the reason for the CSO management plan. It is required to show that the City is conforming to the regulations implemented by the State and Federal EPA in an attempt to minimize discharges to the stream of untreated wastewater in wet weather events. As part of the Findings and Orders that were issued to the city in 2002, Delphos was required to complete a Long-Term Control Plan. The city combined this plan

with our wastewater plan and developed what become known as our Wastewater Compliance Plan that was submitted to OEPA in 2003.

Due to the fact that the wastewater treatment facility was considerably aged and land locked with the city's Parks and Recreation area surrounding it, it was quickly decided that the best option for the city was to purchase land outside of the parks on the outskirts of town and build a new treatment facility there. Due to estimates provided to the city in the mid-1990's (in excess of \$30 million in 1994) on the cost of sewer separation and to the fact that it was understood that the city would have to construct a new treatment facility, it was decided that if possible the new facilities would be designed to capture and treat as much of the storm water as possible and that sewer separation would not be addressed at this time. This Wastewater Compliance Plan was approved by the Ohio EPA in 2004. Detailed design of the new treatment facility and additions to the storm water lagoons were began at that time. The city also operates under our Combined Sewer Overflow (CSO) Operation and Maintenance Plan which was completed by Poggemeyer Design Group, Inc. and approved by the OEPA in 1996.

Our sewers range from four to almost 20 feet in depth. Materials of construction for the pipes are vitrified clay, concrete and PVC. The wastewater enters gravity sewers that range from 6" to 48". The minimum sewer size according to the Ten State Standards is now supposed to be 8" so this requires that when any modifications are made to the 6" vitrified clay lines that they be replaced with 8" lines typically of a different material (PVC) and this requires a Permit to Install (PTI) application with the OEPA.

Following is a table of the approved CSO locations, station codes, pipe sizes and receiving streams (see map at end of system section):

	Station #	Description	Inlet Pipe Size	Overflow Pipe Size	Receiving Stream
	2PD00029002	Diversion Chamber at Influent Pump Station	48"	48"	Jennings Creek
	2PD00029011	5th and State Streets	18"	18"	Jennings Creek
	2PD00029005	7th and Scott Streets	42"	27"	Flat Fork Creek
	2PD00029006	Bredeick and Superior Streets	18"	18"	Jennings Creek
	2PD00029007	Bredeick between Erie and Cleveland	30"	30"	Jennings Creek

	2PD00029008	Ohio and State Streets	18"	18"	Jennings Creek
	2PD00029010	3rd and State Streets	12"	12"	Jennings Creek

In addition, all of the duckbills have been replaced on each of the CSO locations during the summer of 2008. This replacement project totaled over \$45,000 and was done to replace worn and weathered duckbills that had been in place since 1991. This should assist in the removal of solids and floatable debris in the CSO discharges when they occur. One CSO location (Station Code 011) has been blocked with a flapper valve and block of wood since I began my tenure at the city. It is our intention to investigate the occurrences of CSO discharges as required over the next few years and to attempt to gather data on these locations particularly during peak wet weather events (i.e. 100-year flood events) in an attempt to determine if any of these locations can be removed from the system since the addition of additional storm water holding lagoons and the new peak capabilities of the treatment facility.

With the construction of the new wastewater treatment facility, a concrete pad which drains back to the headworks of the facility was installed for disposal of the street sweepings and Vac truck tank. The solid debris is removed and taken to landfill for disposal. Our approved CSO Plan indicated that the catch basins and combined sewers will be cleaned at least every three years. The plan will divide the city in half with Main Street being the divider. Each half of town will be cleaned every other year focusing on the catch basins in the combined areas of town first.

Since November 2007, there has also been considerable investigation of known areas of I&I. In addition, an ordinance was approved in the 1990's requiring downspout and sump pump discharge removal from the combined sewer areas. This ordinance has never been implemented. Beginning soon, the cities collections staff should plan to begin smoke and dye testing in the combined areas of town and implementing this removal ordinance.

It should be noted that the additional equipment that can be utilized to for the maintenance of the collection systems is a Portable Type Camera purchased in 2008 and the Vactor truck purchased in 2017. The city is currently trying to purchase a new street sweeper.

CSO Program Requirements:

The City of Delphos's CSO operation and Maintenance Plan has been approved by the Ohio EPA and has been included in our NPDES Permit and as such is considered to be the document that the City operates under by law.

The approved CSO Operations and Maintenance Plan states that "The city has a program for cleaning and flushing the combined sewer system every three years. Catch basins associated with the combined sewer are cleaned every three years. Pump stations are inspected daily. The City will continue this program and more frequently if maintenance personnel find that solids are accumulating in the sewers."

In addition, as part of the Flat Fork Creek Interceptor project, and inverted siphon was installed at Fifth Street and Flat Fork Creek, the approved program indicates that "As part of the City's Maintenance Program, the inverted siphon is checked, flushed and cleaned every 3 months."

Nine Minimum Controls:

1. 1. Proper Operation and Regular Maintenance Program for the Sewer Systems and CSO's

The City of Delphos has adopted policies and procedures for the monitoring and maintenance of the collection system. Based on the inspection results, more frequent cleaning and/or inspection could be necessary. All inspections, cleaning and maintenance should be properly documented and filed.

2. Maximize Use of the Collections System for Storage

In the fall of 2018, the City of Delphos completed the second of three phases of construction. The city is currently working with Poggemeyer Design Group to finalize plans for phase 3. When the construction is complete the plant will see an increase in flow capacity from 1.25 MGD to 3.83 MGD. We should see a reduction of CSO's due to the plants new flow capacity.

3. Review and Modification of Pretreatment Requirements to assure that CSO Impacts are Minimized

The City of Delphos has an approved pretreatment program as required by 40CFR 403.8(c) and section 6111.03. Local limits have been developed and are reviewed and adjusted regularly. They were most recently updated and approved in February 2005. They will be reviewed and adjusted if necessary, based on the new capacity at the plant once final completion of phase 3 is complete. As required by the State of Ohio, a registered PE will have to perform and submit these calculations.

Our industrial user inventory is updated regularly and the industrial users are covered under operational permits with the city. In addition, agreements with several of the industrial users have been made so that in the event of an extreme wet weather event, their flows could be temporarily stored on their plant sites to assist in minimizing the pollutant loadings to the streams during a CSO event.

In addition, a direct discharge line from the Gressel Drive area to the treatment plant is under consideration in the event that CSO events are not less than four events per year as required by our approved Long-Term Control Plan. Data will be collected to determine if this line is necessary.

4. Maximization of Flows to the Publicly Owned Treatment Works

The objective of this control is to reduce the magnitude, frequency and duration of CSO's that flow untreated into receiving waters. The city is currently under construction to raise the peak flow. In addition to the increased flow rate, this control mechanism would require such things as listed in control mechanism 1- proper operation and maintenance of the sewer system and CSO's.

5. Prohibition of CSO's During Dry Weather

Dry weather overflows of the combined sewer system are illegal and should be eliminated. CSO inspections are performed a minimum of once per week and documented by wastewater treatment plant staff. Documentation of these inspections kept on file at the treatment plant as required by the plan. Inspection frequency increases during wet weather events.

6. Control of Solid and Floatable Materials in CSO Discharges

Our CSO Plan indicates that we control or reduce solids and floatable materials to the stream by collecting the first flush in the storm water lagoons. We do this and in addition, duckbills were added to the ends of 5 of the CSO discharges. These prevent this type of material from being discharged into the stream during CSO discharge events. In addition, our plan indicates that the City practices source control via a garbage collection system which includes recycling and street cleaning.

7. Pollution Prevention

Our approved program lists our pollution prevention activities as:

1. Public Education
2. Garbage Receptacles
3. Garbage Collection
4. Street Sweeping

8. Public Notification of CSO Occurrences and Impacts

The City of Delphos is required to report all CSO's to the public with-in two hours of discovery. The WWTP staff upload the location, time discovered, rainfall total before CSO, and total flow to the city's computer server. This information is then uploaded to the cities website and e-mailed the Allen County Health Department. With-in seven days of the CSO stopping for at least 12 hours the staff then records to the total discharge flow, rainfall totals, and time ended. This information is then uploaded to the cities webpage and sent to the health department. At the end of each year the city will make an Annual CSO and post it on the cities webpage for the public to view.

In addition, we are required by our permit to have signs posted at each of the XSO discharges that indicate that there is the potential for untreated wastewater to be present in the creek at those points.

9. Monitoring to Effectively Characterize CSO Impacts and Efficiency of Controls

Our NPDES permit requires that we monitor each CSO discharge that occurs and monitor the flow, Carbonaceous Biological Oxygen Demand, Total Suspended Solids, Events per day and hours per event. This data is collected by wastewater treatment plant staff and submitted on our monthly operating reports to the OEPA as required by our NPDES Permit.

2019 COS'S and Monitoring Results

Station 002 - Diversion Chamber - Jennings Creek

Date	Flow, MGD	TSS, mg/l	CBOD5, mg/l
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1/3/2018	0.23	40	270
1/4/2018	0.01		
1/8/2018	0.47	57	260
1/9/2018	0.8		
1/10/2018	2.05		
1/11/2018	2.96		
1/12/2018	5.44		
1/13/2018	4		
1/14/2018	3.73		
1/15/2018	3.44		
1/16/2018	2.76		
1/17/2018	1.29		
1/19/2018	0.19		
1/20/2018	0.98	590	330
1/21/2018	1.51		
1/22/2018	2.12		
1/23/2018	2.36		
1/24/2018	1.88		
1/25/2018	1.59		
1/26/2018	1.27		
1/27/2018	1.7		
1/28/2018	0.96		
1/29/2018	0.52		
2/15/2018	1.61	54	110
2/16/2018	1.56		
2/17/2018	0.96		
2/18/2018	0.79		
2/19/2018	4.57		
2/20/2018	4.16		
2/21/2018	6.17		
2/22/2018	5.23		
2/23/2018	3.54		
2/24/2018	4.37		
2/25/2018	4.92		
2/26/2018	1.92		
2/27/2018	1.06		
2/28/2018	0.99		
3/27/2018	0.9	110	180
3/28/2018	0.97		
3/29/2018	4.26		
3/30/2018	4.92		
3/31/2018	2.63		
4/15/2018	2.57	88	47
4/16/2018	1.71		
4/17/2018	1.38		
4/18/2018	0.49		
4/19/2018	0.39		

4/20/2018	0.29		
4/21/2018	0.37		
4/22/2018	0.12		
4/23/2018	0.27		
4/24/2018	0.27		
4/25/2018	0.2		
5/21/2018	0.5	220	98
5/22/2018	0.24		
5/23/2018	0.01		
5/26/2018	0.42	280	110
5/27/2018	0.14		
6/5/2018	0.18	200	170
6/8/2018	0.17	98	170
6/9/2018	0.98		
6/10/2018	0.51		
6/11/2018	0.6		
6/12/2018	0.01		
6/19/2018	0.63	170	69
6/20/2018	0.54		
6/21/2018	3.36		
6/22/2018	3.16		
6/23/2018	5.79		
6/24/2018	2.82		
6/25/2018	1.26		
6/26/2018	0.46		
6/27/2018	1.83		
6/28/2018	0.17		
6/29/2018	0.01		
7/16/2018	3.05	700	97
8/21/2018	1.01	320	56
8/22/2018	0.4		
8/23/2018	0.21		
10/1/2018	0.15		
10/2/2018	0.34		
10/3/2018	2.31		
10/7/2018	0.35		
10/8/2018	0.23	11	26
10/28/2018	0.85	67	120
10/29/2018	0.69		
10/30/2018	0.29		
10/31/2018	0.3		
11/1/2018	8.68	130	290
11/2/2018	8.61		
11/3/2018	4.7		
11/4/2018	1.73		
11/5/2018	1.09		
11/6/2018	0.8		

11/7/2018	0.37		
11/8/2018	0.06		
11/9/2018	0.43	37	110
11/10/2018	0.59		
11/11/2018	0.43		
11/12/2018	0.12		
11/15/2018	1.33	48	80
11/16/2018	1.83		
11/17/2018	2.05		
11/18/2018	2.13		
11/19/2018	1.81		
11/20/2018	0.72		
11/21/2018	0.44		
11/22/2018	0.03		
11/23/2018	0.01		
11/24/2018	0.91		
11/25/2018	0.31		
11/26/2018	3.62		
11/27/2018	1.54		
11/28/2018	1.27		
11/29/2018	0.76		
11/30/2018	0.39		
12/1/2018	3.31		
12/2/2018	4.28		
12/3/2018	3.4		
12/4/2018	2.58		
12/5/2018	1.17		
12/6/2018	0.61		
12/7/2018	0.31		
12/8/2018	0.34		
12/9/2018	0.24		
12/10/2018	0.33		
12/20/2018	0.58	13	380
12/21/2018	2.44		
12/22/2018	0.92		
12/23/2018	0.57		
12/24/2018	0.34		
12/25/2018	0.26		
12/26/2018	0.32		
12/27/2018	0.85		
12/28/2018	0.77		
12/29/2018	0.37		
12/30/2018	0.32		
12/31/2018	6.1		

Date	Flow, MGD	TSS, mg/l	CBOD5, mg/l
8/21/2018	0.036	57	AA, 6.0
9/25/2018	0.0648	23	39
11/1/2018	0.864	29	24
12/3/2018	0.115	24	AA, 6.0

Station 008 - Ohio and State Streets - Jennings Creek

Date	Flow, MGD	TSS, mg/l	CBOD5, mg/l
11/1/2018	0.432	45	AA, 20.0

