



City of **NAPOLEON**, Ohio

Waste Water Treatment Plant

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2019 Annual Report Combined Sewer Overflow & Sanitary Sewer Overflows

Back Ground

The City of Napoleon is served by a partial combined sewer system (CSS) constructed in the downtown area in the early 1900's. The Wastewater Treatment Plant (WWTP) was built in 1958 along the Maumee River. As the City has grown the collection system evolved by expanding outward with separated sewers and pump stations. Multiple surface load separations were completed in the City from the 1970's through the 1990's. The WWTP was expanded in 1982, 1997 and 2010 with several new processes to improve effluent quality and increase capacity. At present, the WWTP is rated at 2.5 million gallons per day (MGD) capacity with the ability to continuously treat 4.5 MGD and has an instantaneous peak hydraulic capacity of 7.5 MGD. The 2.5 MG Equalization Basin (EQ basin) at the head of the WWTP was constructed in 2010 as part of Long Term Control Plan (LTCP) Project No. 14 and can store wet weather flows at a peak rate of 33 MGD. In total, the WWTP and EQ basin can handle flow rates reaching 40 MGD for a short time period during wet weather periods.

The Napoleon CSS consists of the following sewer sheds: East Riverview, East Washington, Front, Haley, Oberhaus, South Side, Shelby, VanHying, and West Riverview. The City has made a continuous effort throughout the LTCP to improve the collection system including interceptor improvements, pump station upgrades, CSO control improvements and SSO closures. Prior to the LTCP the City had identified six (6) CSO and ten (10) SSO outfall locations throughout the City. At the end of 2016, one (1) CSO and eight (8) SSO locations have been closed because of the improvements made to the collection system. The remaining five (5) CSOs and two (2) SSOs that are active in the system are summarized below.

| NPDES ID | Name | Location Description |
|----------|------------------|---|
| CSO #003 | Central CSO | Parking lot NW of Scott Street and West Riverview Avenue, Discharges to the Maumee River. |
| CSO #004 | Monroe CSO | Monroe Street and East Riverview Avenue, Discharges to the Maumee River. |
| CSO #006 | Oakwood CSO | Oakwood Avenue and Yeager Street, Discharges to Oberhaus Creek |
| CSO #010 | Dodd CSO | Dodd Street and Yeager Street, Discharges to Oberhaus Creek |
| CSO #011 | WWTP 011 Outfall | WWTP Facility, Discharges to the Maumee River. |
| SSO #302 | Haley SSO | Haley Avenue and West Riverview Avenue, Discharges to the Maumee River. |
| SSO #303 | Glenwood SSO | Ritter Park near Glenwood Avenue, Discharges to the Maumee River. |

Current Conditions

The criterion limits CSO events to a maximum of four (4) overflows in a typical year to provide an adequate level of control to meet the water quality-based requirements of the Clean Water Act (CWA).

The CSO Control Policy defines “criterion” as the elimination or capture for treatment of no less than 85 percent by volume of the combined sewage collected in the CSS during precipitation events on a system-wide, annual average basis.

“On a nationwide basis, the number of overflows not receiving primary treatment and corresponding to 85 percent capture for treatment, ranged from four to six depending on location. In practice, a CSO control facility that captures for treatment 85 percent of the combined sewage collected in the system may experience more than six overflows on an annual average basis, although a significant deviation from this range of overflows would not be expected. In cases where a significant deviation due to local conditions is encountered, the permit writer’s judgment should be used to determine whether use of the 85 percent capture criterion is appropriate.”

The Napoleon CSS is operating well above 85 percent capture even though the model predictions show the City’s collection system captures more than 99 percent of wet weather flows during the typical year, with nine (9) overflow events predicted at the Central and Monroe CSO’s.

Rainfall Data

The City has installed a permanent tipping bucket rain gauge at the WWTP so that rainfall data can be continuously recorded in five (5) minute increments and matched to overflow events as recorded by the level sensors.

Various rainfall statistics (e.g., volume, duration, intensity, and return period) will be calculated for each event coinciding with an overflow event at any of the CSOs or SSOs to assist in the comparison of overflow volumes and monitored recorded data. This data will be collected by City staff and recorded.

Level Sensors

The Solinst Levellogger Edge level sensors were installed in July 2015 at CSOs 002, 004, 006, and 010, and SSOs 302 and 303. The sensors are suspended in the structure of each of the CSOs and SSOs to provide an accurate level measurement. The sensors record both temperature and level.

The sensors are downloaded monthly, at a minimum, and after a wet weather event. The City previously had used the block method to record CSO/SSO events. The blocks have been left in place in the structures as a visual reference to determine if a CSO event has occurred and if the level sensor data needs to be downloaded for the required reporting.

The data obtained from the level sensors must be processed to ultimately provide an estimated overflow volume. Initially, the level sensor data is automatically corrected by the Solinst software in conjunction with a barometric sensor, located at the WWTP, to provide a level reading. The corrected output from the level sensor software is copied into an Excel spreadsheet that was developed to convert the level readings into an overflow volume using standard equations, such as Manning’s Equation, weir equations and orifice equations, to provide an estimated overflow volume (in gallons).

Visual Inspection of CSOs and SSOs

Visual inspections of any storm water outfalls required by the current NPDES Permit will be visually inspected. The visual inspections will follow the procedures of any flow that is observed during the dry weather inspections will be tested for wastewater indicators including, but not limited to E. coli and ammonia.

Summary of Events

CSO 003 Central School Discharge Maumee River:

| <u>Date</u> | <u># of Events</u> | <u>Total Discharged</u> | <u>Cause of Event</u> | <u>Time of Event</u> |
|-------------|--------------------|-------------------------|------------------------|----------------------|
| 5/19/2019 | 1 | 0.001 MG | Excessive Rain (0.87") | 3am-4am |
| 6/01/2019 | 1 | 0.054 MG | Excessive Rain (3.39") | 8pm-4am |
| 7/21/2019 | 1 | 0.045 MG | Excessive Rain (1.66") | 6pm-7pm |
| 8/30/2019 | 1 | 0.043MG | Excessive Rain (1.08") | 2am-3-am |
| 9/30/2019 | 1 | 0.073MG | Excessive Rain (1.45") | 5am-6am |

CSO 004 Monroe Street Discharge Maumee River:

| <u>Date</u> | <u># of Events</u> | <u>Total Discharged</u> | <u>Cause of Event</u> | <u>Time of Event</u> |
|-------------|--------------------|-------------------------|------------------------|----------------------|
| 5/19/2019 | 1 | 0.001MG | Excessive Rain (0.87") | 2pm-3pm |
| 6/1/2019 | 1 | 0.093MG | Excessive Rain (3.39") | 8pm-11pm |
| 7/21/2019 | 1 | 0.052MG | Excessive Rain (1.66") | 6pm-7pm |
| 8/8/2019 | 1 | 0.050MG | Excessive Rain (1.54") | 3pm-10pm |
| 8/30/2019 | 1 | 0.018MG | Excessive Rain (1.08") | 2am-3am |
| 9/13/2019 | 1 | 0.002MG | Excessive Rain (0.45") | 4pm-5pm |
| 9/30/2019 | 1 | 0.005MG | Excessive Rain (1.45") | 5am-6am |

CSO 006 Oakwood Discharge Oberhaus Creek:

| <u>Date</u> | <u># of Events</u> | <u>Total Discharged</u> | <u>Cause of Event</u> | <u>Time of Event</u> |
|-------------|--------------------|-------------------------|------------------------|----------------------|
| 6/1/2019 | 1 | 0.061MG | Excessive Rain (3.39") | 9pm-11pm |
| 7/21/2019 | 1 | 0.019MG | Excessive Rain (1.66") | 6pm-7pm |
| 8/30/2019 | 1 | 0.002MG | Excessive Rain (1.08") | 2am-3am |

CSO 010 Dodd & Yeager Discharge Oberhaus Creek:

| <u>Date</u> | <u># of Events</u> | <u>Total Discharged</u> | <u>Cause of Event</u> | <u>Time of Event</u> |
|-------------|--------------------|-------------------------|------------------------|----------------------|
| 6/1/2019 | 1 | 0.023MG | Excessive Rain (3.39") | 9pm-11pm |
| 7/21/2019 | 1 | 0.007MG | Excessive Rain (1.66") | 6pm-7pm |
| 8/30/2019 | 1 | 0.003MG | Excessive Rain (1.08") | 2am-3am |

CSO 011 WWTP Plant Bypass Discharge Maumee River:

| <u>Date</u> | <u># of Events</u> | <u>Total Discharged</u> | <u>Cause of Event</u> | <u>Time of Event</u> |
|-------------|--------------------|-------------------------|------------------------|----------------------|
| 6/2/2019 | 1 | 0.525MG | Excessive Rain (3.39") | 9pm-5am |
| 7/21/2019 | 1 | 0.031MG | Excessive Rain (1.66") | 6pm-7pm |

SSO 300 All City Wide Manholes Depending on Location:

| <u>Date</u> | <u># of Events</u> | <u>Total Discharged</u> | <u>Cause of Event</u> | <u>Time of Event</u> |
|-------------|--------------------|-------------------------|------------------------|----------------------|
| 6/1/2019 | 4 | Estimated at 0.012MG | Excessive Rain (3.39") | 8pm-4am |

SSO 302 Haley Street Discharge Maumee River:

| <u>Date</u> | <u># of Events</u> | <u>Total Discharged</u> | <u>Cause of Event</u> | <u>Time of Event</u> |
|--------------------|---------------------------|--------------------------------|------------------------------|-----------------------------|
| 6/1/2019 | 1 | 0.3843MG | Excessive Rain (3.39") | 9pm-4am |
| 9/30/2019 | 1 | 0.0034MG | Excessive Rain (1.45") | 5am-6-am |

SSO 303 Glenwood Discharge Maumee River:

| <u>Date</u> | <u># of Events</u> | <u>Total Discharged</u> | <u>Cause of Event</u> | <u>Time of Event</u> |
|--------------------|---------------------------|--------------------------------|------------------------------|-----------------------------|
| 4/20/2019 | 1 | 0.0070MG | Excessive Rain (1.44") | 4pm-6pm |
| 6/1/2019 | 1 | 0.2592MG | Excessive Rain (3.39") | 10pm-4am |

Nine Minimum Control Inspection Summaries

1. Proper operation & regular maintenance program for sewer system and CSO's.

City staff operates and maintains the wastewater treatment plant (WWTP) and the collection system. The city employs private contractors to televise and clean sewers, with the goal of inspecting the full collection system at least once every ten years, though known problem and high importance areas are inspected more frequently. Pump stations are inspected twice a week, overflow regulators are inspected monthly and overflow outfalls are inspected during precipitation events that activate the EQ basin screw pumps.

2. Maximum use of the collection system for storage.

By Cleaning and televising the collection system on a regular basis the city achieves the maximum storage in the collection system.

3. Review and modification of pretreatment requirements to assure CSO impacts are minimized.

The City does not have an Ohio EPA approved pretreatment program.

4. Maximize flow at the WWTP for treatment.

The WWTP is a trickling filter facility designed to treat an average daily flow of 2.5 million gallons per day (MGD). The WWTP is capable of handling sustained peak flows up to 6 MGD.

5. Prohibition of CSOs during dry weather.

The City visually inspects its outfall regulators monthly during dry weather and no y weather overflows have been observed.

6. Control of solids and floatable materials in CSO's.

Catch basins are cleaned at known problem areas frequently.

7. Pollution Prevention.

The City preforms street sweeping weekly and operates a curbside leaf pick-up program in the fall.

8. Public Notification to ensure the public receives adequate notification of CSO occurrences and impacts.

The City implements the Great Lakes Basin CSO Public Notification Plan, approved by Ohio EPA. Along with signs posted at all outfalls.

9. Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

Each overflow regulator is equipped with tipping blocks to indicate an overflow event. City staff inspects the regulators for overflows during precipitation events that activate the EQ basin screw pumps. Additionally, the City has installed level sensors at each regulator that record overflow volumes. The data is downloaded each month to support discharge volume.

NPDES Compliance Projects

Wet Weather Improvement Plan

The permittee submitted a Wet Weather Improvement Plan (WWIP) on June 20, 2018 to serve as an update to the permittee's Long Term Control Plan. The WWIP was amended on March 20, 2019 and approved by Ohio EPA on May 27, 2019. The WWIP proposes to attain a level of control of five CSO events or fewer per typical year and elimination of the remaining SSO outfalls in the collection system. The permittee shall implement the WWIP as expeditiously as possible, but not later than the dates developed in accordance with the following schedule.

1. WWIP Implementation Schedule

a. Williams Pump Station Replacement

i. Not later than December 31, 2021, the permittee shall complete construction of the Williams Pump Station Replacement project. Notify the Ohio EPA Northwest District Office within seven days of completing this item. (Event code 05599)

b. Haley SSO Elimination

i. Not later than December 31, 2021, the permittee shall begin design on the Haley SSO Elimination project. (Event code 00999)

ii. Not later than December 31, 2022, the permittee shall complete construction of the Haley SSO Elimination project. Notify the Ohio EPA Northwest District Office within seven days of completing this item. (Event code 91099)

c. Van Hying Pump Station Replacement

i. Not later than December 31, 2020, the permittee shall begin design of the Van Hying Pump Station Replacement project. (Event code 00999)

ii. Not later than December 31, 2023, the permittee shall complete construction of the Van Hying Pump Station Replacement project. Notify the Ohio EPA Northwest District Office within seven days of completing this item. (Event code 05599)

d. Glenwood SSO Relief

i. Not later than December 31, 2020, the permittee shall begin design of the Glenwood SSO Relief project. (Event code 00999)

ii. Not later than December 31, 2023, the permittee shall complete construction of the Glenwood SSO Relief project. Notify the Ohio EPA Northwest District Office within seven days of completing this item. (Event code 05599)

e. Glenwood SSO Elimination

i. The permittee shall conduct post-construction monitoring of the Glenwood SSO for at least 12 months prior to elimination of the outfall.

ii. Not later than December 31, 2024, the permittee shall begin design of the Glenwood SSO Elimination.

iii. Not later than December 31, 2025, the permittee shall complete construction of the Glenwood SSO Elimination project. Notify the Ohio EPA Northwest District Office within seven days of completing this item.

f. East Washington Interceptor Improvements

i. Not later than December 31, 2025, the permittee shall begin design of the East Washington Interceptor Improvements.

ii. Not later than December 31, 2029, the permittee shall complete construction of the East Washington Interceptor Improvements. Notify the Ohio EPA Northwest District Office within seven days of completing this item.

g. WWTP Improvements, Phase 1

i. Not later than December 31, 2025, the permittee shall begin design of the WWTP Improvements, Phase 1.

ii. Not later than December 31, 2029, the permittee shall complete construction of the WWTP Improvements, Phase 1. Notify the Ohio EPA Northwest District Office within seven days of completing this item.

2. WWIP Programmatic Review

Prior to the expiration date of this permit, the permittee shall evaluate progress toward attaining the goals of the WWIP. The permittee shall implement a flow monitoring program of at least 12 months which will assess the success of the previously completed projects, evaluate the appropriateness of future projects, and justify any proposed changes to the established compliance schedule. A final report detailing the findings of this review must be submitted no later than July 31, 2023. (Event Code 61099)

3. Post-Construction Compliance Monitoring

Upon completion of the WWIP projects, the permittee shall implement a post-construction compliance monitoring program to assess the effectiveness of the CSO controls.

4. Annual Reporting

The permittee shall submit annual progress reports on implementation of wet weather improvement projects to Ohio EPA Northwest District Office for activities performed during the previous calendar year.

- a. Annual reports shall, at a minimum, include the following:
- i. The design or construction status of WWIP projects listed in Item B.1 above;
 - ii. A brief description of I/I removal projects completed during the previous year and projected to begin in the upcoming year;
 - iii. Identified illicit detections including dates identified and eliminated. If the illicit connection has not been eliminated, provide a reason and timeline for elimination; and

iv. Post-construction monitoring results and discussion regarding progress toward the goals of the WWIP.

b. The annual progress report shall be submitted on or before the following dates:

- i. June 30, 2020 (Event code 03599)
- ii. June 30, 2021 (Event code 03699)
- iii. June 30, 2022 (Event code 03799)

iv. June 30, 2023 (Event code 03899)

v. June 30, 2024 (Event code 03999)

C. This Schedule of Compliance includes items that extend beyond the expiration date of this permit, 2PD00000*SD. The requirements of Schedule of Compliance will be included in permit 2PD00000 when it is renewed.

It is anticipated that the implementation of Wet weather improvement plan will enable the closure of the remaining SSOs within the Napoleon CSS and will not create additional water-in-basement (WIB) occurrences for peak rainfall events.

For further information, contact the Napoleon Wastewater Plant at 419-592-3936

David Pike

City of Napoleon

Wastewater Superintendent