

Long-Term Control Plan Update

***Moundsville Sanitary/Stormwater  
Utility Board***

---

Marshall County, West Virginia

September 2022

# **Moundsville Sanitary/Stormwater Utility Board**

## **Long-Term Control Plan Update**

**September 2022**



**Prepared by:**

**Burgess & Niple, Inc.  
4424 Emerson Avenue  
Parkersburg, WV 26104**

## TABLE OF CONTENTS

Chapter		Page
1	SUMMARY	1
2	INTRODUCTION	4
	Capital Projects Completed in the CSS	8
3	NINE MINIMUM CONTROLS	10
	Proper Operation and Regular Maintenance Programs	10
	Maximization of Storage in the Collection System	14
	Review and Modification of Pretreatment Requirements	14
	Maximization of Flow to the POTW for Treatment	15
	Elimination of CSOs during Dry Weather	15
	Control of Solid and Floatable Materials in CSOs	16
	Pollution Prevention Programs to Reduce Contaminants in CSOs	16
	Public Notification	17
	Monitoring to Characterize CSO Impacts and the Efficacy of CSO Controls	17
4	PUBLIC PARTICIPATION AND CONSIDERATION OF SENSITIVE AREAS	18
	Identification of Sensitive and Priority Areas	18
	Public Participation and Notification	18
	Advertisement in Newspaper	19
	Signage	19
	Brochures	19
	Trade Show	19
	Web Site	20
5	WATER QUALITY CONSIDERATION	21

## TABLE OF CONTENTS

Chapter		Page
6	CSO CONTROL ALTERNATIVES	22
	Conveyance and Treatment at the Wastewater Treatment Plant	22
	Inflow Reduction	23
	Sewer Separation	23
	Off-Line Storage	24
	Wet Weather Treatment Facilities	24
	“Green” Infrastructure Initiatives	25
	Green Roofs	26
	Bioretention	26
	Vegetated Swales	26
	Permeable Pavements	27
	Rain Barrels	27
	Summary of Green Infrastructure Improvements	27
	Summary of CSO Alternative Costs	28
7	IMPLEMENTATION SCHEDULE	29
	User Rates	29
	Funding Sources	29
	Completed Implementation Activities	30
	Implementation Schedule	31
	Phase 1B	31
	Phase 2	32
	Phase 3	32
	Phase 4	33
	Phase 5	33
	Phase 6	33
8	POST CONSTRUCTION MONITORING	34
	Flow Metering	34
	Rainfall Monitoring	34
	Water Quality Analyses	34
	Reporting	35

## **TABLES**

<b>Number</b>		<b>Page</b>
1	List of CSOs	5
2	CSO Activity	6
3	Conveyance and Maximization of Treatment at the Plant	22
4	Estimated Cost of Residential Inflow Reduction	23
5	Estimated Cost of Sewer Separation – New Sanitary Sewer	23
6	Estimated Cost of Off-Line Storage	24
7	Estimated Cost of Wet Weather Treatment Facilities	25
8	Estimated Cost of Green Infrastructure Improvements	27
9	Total Estimated Cost of Evaluated Alternatives	28
10	Estimated Project to be Funded	30

## **APPENDICES**

Appendix A	- CSO Boundary Map
Appendix B	- Summary of Overflow Events
Appendix C	- WVDEP CSO LTCP Data Worksheet
Appendix D	- Water Quality Data from the Phase 1 Project (2016)
Appendix E	- Nine Minimum Controls Audit
Appendix F	- Litter Ordinance
Appendix G	- Brochures

## **CHAPTER ONE**

### **SUMMARY**

Separation of combined sewers is the goal of the Moundsville Sanitary/Stormwater Utility Board (Board), creating separate sanitary sewer and storm drainage systems. However, if complete separation becomes impractical, improvements will be made to the combined sewer overflow (CSO) discharges that will allow the Board to meet the requirements of the Total Maximum Daily Loading (TMDL) associated with the receiving stream (Middle Grave Creek, which is part of the Upper Ohio River South Watershed, TMDL approved September 2009). The Board currently has four permitted CSOs. A summary of the CSOs is provided below:

**CSO 002** – Located within the Maxwell Acres subdivision, this CSO is the most frequently activated overflow in the Moundsville system.

**CSO 003** – Located at the far south end of Short Poplar Street, this CSO is seldom activated (one time from May 1, 2018 and October 31, 2020).

**CSO 004** – Located just south of the intersection of 12<sup>th</sup> Street and Parriott Avenue, this CSO is seldom activated (one time from May 1, 2018 to October 31, 2020).

**CSO 007** – Located at the intersection of Fostoria Avenue and the railroad bridge, this CSO is currently capped.

Phasing for the implementation schedule follows:

**Phase 1B** – Continues the infiltration/inflow (I/I) initiatives from the initial phase of improvements to the wastewater system. Tasks include:

- Complete flow metering (March 1, 2023)
- Technical memorandum on results from flow metering completed (June 1, 2023)
- Complete smoke testing in areas identified from flow metering (October 31, 2023)
- Complete manhole inspection/sewer televising in select areas (July 31, 2024)
- Provide final I/I remediation report (November 30, 2024)

**Phase 2** – Project includes cleaning of prior anaerobic digester; replacing the methane boiler and heat exchanger for the anaerobic digesters; installing permanent flow meters on the CSOs; replacing 15-inch and 18-inch diameter sewers along the old railroad grade to near the existing manhole MH-39 (existing sewers are in the flood plain and in poor condition); sewer lining from manhole MH-39 to the old railroad grade (sewer located in swampy area and is in poor condition); and rehabilitation of the junction chamber at the wastewater treatment plant (WWTP), which also removes I/I reducing frequency of CSO events. Schedule of improvements is as follows:

1. Submit a preliminary engineering report to WVIJDC– May 31, 2021
2. Submit plans to review agency – November 1, 2022
3. Begin construction of improvements – September 1, 2023
4. Complete construction of improvements – September 1, 2024
5. Issue the post construction monitoring report – June 30, 2025

**Phase 3** – Project includes a generator at the WWTP for secondary treatment system; new influent lift station at the WWTP; new headworks at the WWTP including mechanically cleaned screens and vortex grit removal; new septage receiving station with holding tanks; new 18-inch and 36-inch sewers to the new lift station; and Phase 1 rehabilitation of the sanitary sewers and manholes identified in the I/I remediation report. Schedule of improvements is as follows:

1. Submit a preliminary engineering report to WVIJDC – October 10, 2025
2. Submit plans to review agency – July 31, 2026
3. Begin construction of improvements – May 1, 2027
4. Complete construction of improvements – May 1, 2028
5. Issue the post construction monitoring report – November 30, 2029

**Phase 4** – Project includes the second phase of sewer rehabilitation identified by the I/I remediation report. Schedule of improvements is as follows:

1. Submit a preliminary engineering report to WVIJDC – March 31, 2030
2. Submit plans to review agency – December 31, 2030
3. Begin construction of improvements – October 31, 2031
4. Complete construction of improvements – October 31, 2032
5. Issue the post construction monitoring report – April 30, 2034

**Phase 5** – Project includes the third phase of sewer rehabilitation identified by the I/I remediation report. Schedule of improvements is as follows:

1. Submit a preliminary engineering report to WVIJDC – August 31, 2034
2. Submit plans to review agency – May 31, 2035
3. Begin construction of improvements – March 31, 2036
4. Complete construction of improvements – March 31, 2037
5. Issue the post construction monitoring report – September 30, 2038

**Phase 6** - At the completion of Phase 5, the Board will review information from the post construction monitoring reports prepared during the first three phases of the Implementation Schedule. Should the need arise to make further improvements to the collection system associated with sewer separation, another phase will be conducted that will either remove the outfalls or will provide sufficient disinfection at the outfalls to meet the water quality standard for fecal coliform. Schedule of improvements is as follows:

1. Submit a preliminary engineering report to WVIJDC – January 31, 2039
2. Submit plans to review agency – October 31, 2039
3. Begin construction of improvements – August 31, 2040
4. Complete construction of improvements – August 31, 2041
5. Issue the post construction monitoring report – February 28, 2043



## CHAPTER 2 INTRODUCTION

Providing sanitary sewer service to the City of Moundsville and the City of Glen Dale, the Moundsville Sanitary Board (Board) owns and operates a combined sewer system (CSS). Moundsville is home to approximately 9,318 people as noted in the 2010 U.S. Census and it is located along the Ohio River in Marshall County, West Virginia. The Board operates the wastewater treatment plant (WWTP) under WV/NPDES Permit WV0023264, which has an average daily design flow of 2.34 million gallons per day (mgd).

Any issues associated with the Long-Term Control Plan (LTCP) can be addressed by Mr. Brock Castilow, Superintendent, at:

Moundsville Sanitary/Stormwater Utility Board  
800 6<sup>th</sup> Street  
Moundsville, WV 26041  
(304) 845-4360  
(304) 845-8973 (fax)  
[bcastilow@moundsvillewwtp.com](mailto:bcastilow@moundsvillewwtp.com)

In 1994, the United States Environmental Protection Agency (EPA) issued a national policy statement entitled “Combined Sewer Overflow (CSO) Control Policy.” The purpose of this policy was to establish a consistent approach for controlling CSO discharges through the National Pollutant Discharge Elimination System (NPDES). CSO permittees are required to incorporate provisions of the CSO Control Policy including accurately characterizing their CSS and CSO discharges, demonstrating implementation of minimum technology-based controls, and developing long term CSO control plans, which evaluate alternatives for achieving compliance with the Clean Water Act. West Virginia Department of Environmental Protection (WVDEP) is the NPDES and water quality standards authority responsible for reviewing the long-term control plans and ensuring consistency with the CSO Control Policy.

Burgess & Niple, Inc. (B&N) has assisted the Board to characterize the CSS, evaluate the impact of CSO discharges on the receiving stream, and developing the long-term control plan. Currently, the Board has four permitted CSO locations. In the 1990s, CSOs at the Penitentiary (CSO 005) and 16<sup>th</sup> Street (CSO 006) were eliminated. Appendix A contains a map of the above CSS boundaries and CSO locations. Locations of the actively permitted CSOs are summarized below:

**TABLE NO. 1  
LIST OF CSOs**

<b>CSO #</b>	<b>Description</b>	<b>Receiving Stream</b>	<b>Latitude</b>	<b>Longitude</b>
002	Maxwell Acres	Middle Grave Creek	39°54'42"	80°43'20"
003	Short Poplar Street	Middle Grave Creek	39°55'01"	80°43'37"
004	12 <sup>th</sup> and Parriott Avenue	Middle Grave Creek	39°54'39"	80°44'08"
005	Penitentiary ( <i>Eliminated late 1990's</i> )	--	N/A	N/A
006	16 <sup>th</sup> Street ( <i>Eliminated late 1990's</i> )	--	N/A	N/A
007	Fostoria (currently capped)	Parr Run	39°55'37"	80°44'21"

In order to reduce the solids load on the receiving stream, the Board installed a bar screen at the CSO 002 and baskets at the CSOs 003 and 004. To reduce the possibility of water from Middle Grave Creek entering the CSS during flooding events, flap gates have been installed on CSOs 003 and 004.

Average daily flow observed at the WWTP from January 2017 through May 2018 was approximately 2.09 mgd. Design flow rates through the facility are 9.50 mgd through primary treatment and 2.34 mgd through secondary treatment.

CSO events are monitored by the Board using visual observations and flow meters located on the discharge pipes. Three flow meters have been installed on CSOs 002, 003, and 004 while CSO 007 is currently capped off. Moundsville also purchased and employs a tipping bucket rain gauge to assist with analyzing the CSS during rain events.

Inspections are performed by the Board on the CSOs weekly and after each rain events when personnel are available during normal working hours. A summary of CSO events is provided in Appendix B and the WVDEP CSO LTCP Data Worksheet is included in Appendix C. During this time, the CSOs were activated with a minimum 0.30-inch storm event. The following table indicates the most recent discharge activity from the CSOs:

**TABLE NO. 2  
CSO ACTIVITY**

<b>Reporting Period</b>	<b>Wet Weather Events</b>	<b>Dry Weather Events</b>
May 2018 – October 2018	9	0
November 2018 – April 2019	8	0
May 2019 – October 2019	7	0
November 2019 – April 2020	13	0
May 2020 – October 2020	4	0

Along with the quantity of discharges associated with CSOs, it is important to understand the issues with quality. In April of 1999, Board staff created the “Combined Sewer Overflow Water Quality Analysis Report” (see Appendix D), which identified changes in water quality in Middle Grave Creek associated with rain events. This information will be used when determining the effects of improvements on water quality associated with the upcoming projects to reduce overflow frequency.

Properly trained personnel, ongoing CSO program and capital spending have been a long-term administrative commitment for the Board. Efforts include funds being made available from the general budget to make CSO improvements; annual training for personnel along with safety and training meetings occurring every other month; continued efforts associated with the preparation of the LTCP; and capital improvements associated with the separation of sewers.

WWTP components consist of a septage receiving facility, mechanical screenings removal, grit removal, primary clarification, activated sludge system, secondary clarification, ultraviolet disinfection (UV), standby power generation, anaerobic digestion, and belt press dewatering. Improvements were performed for the UV system, anaerobic digesters, and belt filter press in the early 2010s. The remainder of the equipment at the facility appears to be in good working condition with substantial useful life remaining.

A three-man sewer crew operates and maintains the Board’s wastewater collection system, while a two-man stormwater collection system maintenance crew is available to assist and work on joint projects. If necessary, plant employees (operators) can assist these crews. Flow meter maintenance and record keeping for the CSO program is performed by the lab manager/technician and assistant superintendent.

The City of Moundsville Sanitary Board wastewater collection system is an aging system comprised of 85% clay, 10% polyvinyl chloride (PVC), and 5% other (concrete, etc.) material. Though the system is aging, it does appear to be in relatively good shape. The system consists of approximately:

- 78,000 lineal feet of 6-inch,
- 62,000 lineal feet of 8-inch,
- 9,700 lineal feet of 10-inch,
- 10,700 lineal feet of 12-inch,
- 12,500 lineal feet of 15-inch,
- 142 lineal feet of 18-inch,
- 2,500 lineal feet of 20-inch,
- 4,600 lineal feet of 22-inch,
- 1,175 lineal feet of 24-inch,
- 600 lineal feet of 30-inch,
- 1,900 lineal feet of 33-inch, and
- 3,400 lineal feet of 36-inch.

### **Capital Projects Completed in the CSS**

Improvements to the wastewater system completed since the original LTCP in 2009:

- CSO 003 – Removed an 8 inch and two 6-inch storm drains from the upstream CSS.
- CSO 007 – Removed a catch basin and three 8-inch storm drains from the CSS, which has allowed the Board to temporarily cap this overflow.
- CSO 002 – Installed a new sanitary sewer across a creek bottom at the Maxwell Acres subdivision and across a known swamp (Varlas’s Bottom), which is upstream from the CSO.
- Parriott Avenue – Replaced approximately 1,300 feet of 6-inch sanitary sewer.
- Grant Avenue to 12<sup>th</sup> Street and from McConnell Drive to Parriott Avenue – Replaced approximately 1,100 feet of 8-inch sanitary sewer and 2,000 feet of 6-inch sanitary sewer.
- National Corrections & Law Enforcement Training and Technology Center (NCLETTTC) – Replaced about 1,155 feet of sanitary sewers.
- 7<sup>th</sup> Street – Installed approximately 200 feet of 20-inch sewer pipe.

- WWTP Improvements – Included replacement UV system, new mixing system and lid for the primary anaerobic digester, cleaning of the secondary digester, and rehabilitation of the belt filter presses.
- Primary clarifier drive replacement – Includes replacing the drive and gears on Primary Clarifier No. 1 (currently under construction)
- Influent flow meter – Currently the Board is replacing the influent ultrasonic flow meter.

## **CHAPTER THREE**

### **NINE MINIMUM CONTROLS**

As required in the CSO Control Policy, municipalities were obligated to immediately implement best management practices to reduce CSOs and their effects on receiving streams no later than January 1, 1997. The Board has previously submitted documentation demonstrating compliance with the nine minimum controls (NMCs) requirement. In this section, a brief description of each minimum control measure implemented is provided. A more thorough explanation of NMC efforts is summarized in the CSO NMC Implementation Policy Audit provided in Appendix E. The audit has been updated based on action items carried out by the Board.

#### **Proper Operation and Regular Maintenance Programs**

According to the EPA's "Guidance for Nine Minimum Controls," a program that clearly establishes operation, maintenance, and inspection procedures to ensure that a CSS and treatment facility will function in a way to maximize treatment of combined sewage and comply with NPDES permit limitations is required. Its aim is to ensure that existing facilities perform as effectively as possible.

Utilizing the "Final Plan for Combined Sewer Overflows" prepared in November 1996, employees can operate and maintain CSS equipment.

The superintendent and assistant superintendent of the Moundsville Sanitary/Stormwater Utility Board direct the activities of three employees dedicated full-time to collection system maintenance. Reports from the superintendent and assistant superintendent regarding the status of the WWTP and sewer operations are provided to members of the Board. Based upon this information, the Board provides general instructions to the superintendent and assistant superintendent.

In order to ensure compliance with the LTCP, the superintendent and assistant superintendent of the Board are licensed wastewater operators responsible for all aspects of the operation and maintenance of the combined sewer system. These duties include:

- Preparation of annual operation, maintenance and equipment replacement budgets for presentation to the Board for approval. Upon approval, responsible for monitoring budget expenditures (deficits and surpluses).

- Ensuring that sanitary board staff are adequately trained and equipped for completing assigned tasks, particularly tasks associated with maintaining compliance with the NPDES permit.
- Properly scheduling routine operation and maintenance procedures.
- Reporting the status of the combined sewer system to the Board.
- Preparation of monthly operating reports for submittal to the WVDEP.

Personnel from the sewer maintenance crew are responsible to complete tasks as directed by the superintendent and assistant superintendent. Sewer maintenance personnel would also report any operating problems to the superintendent and assistant superintendent. Personnel associated with the storm water utility are responsible for maintenance of the storm sewers.

Additional personnel with indirect involvement in the maintenance of the combined sewer system include personnel employed by the Street Department. The Street Commissioner directs the Street Department which is responsible for street sweeping activities.

Along with equipment owned by the Board, agreements are in place with other City Departments to borrow equipment on an “as-needed” basis to perform maintenance of the collection system. In addition, major repair and cleaning efforts in the sewer system are typically contracted out.

In order to help ensure that an adequate operation and maintenance budget is established annually, the Board considers the following items of importance to the combined sewer system:

- Identifying specific personnel requirements for maintenance of combined sewer system.
- Identifying technical and safety seminars for personnel.
- Listing equipment, tools and vehicles needed to adequately and safely perform assigned tasks.
- Suggesting capital improvements necessary to maintain compliance with the NPDES permit.

Development of inspection and maintenance charts for use by Board maintenance personnel include the following:

- Sewer Inspection and Cleaning Chart - The superintendent has identified locations where flow restrictions are regularly anticipated, and cleaning of the sewers is necessary. Also, anticipated

frequency of cleaning is shown. Supplemental sheets are also included for recording specific sewer cleaning, maintenance and repair activities.

- Combined Sewer Overflow Inspection and Cleaning Chart - CSO diversion structures and receiving water discharge sites were visited to determine the type of routine maintenance which may be necessary.
- Catch Basin Inspection and Cleaning Chart – A list of problematic catch basins have been made and the Board repairs and cleans these as needed. Catch basin tops are regularly cleaned and catch basins are cleaned out when necessary.
- Grease Trap Inspection Chart – With the combined sewer system being located in a mostly residential area, grease traps are not present and do not cause problem with CSOs. However, the Board does work with the City Building Inspection Department in requiring new restaurants or any building that is converted into a restaurant to maintain a grease trap.
- Street Cleaning Map - A map showing the weekly street cleaning schedule has been developed. Street sweeping for the 5/1/18 through 4/30/19 netted a total of 1,146 cubic yards (cy) of materials; 5/1/19 through 4/30/20 netted a total of 888 cy of material; and from 5/1/20 through 10/31/20 netted a total of 678 cy of materials.

Cleaning activities are facilitated by use of the Sanitary Board's "Hi-Vac" truck, which is capable of cleaning both sewers and catch basins. An "Electric Eel" unit is also available for removing sewer lateral obstructions.

The Board utilizes daily rainfall amounts as observed at the WWTP rain gauge in order to assist maintenance staff in determining when non-routine maintenance procedures may be necessary. Periods of heavy rainfall, snowfall and/or flooding are followed by non-routine inspection of several components of the CSS. All sewer system components inundated during flooding are inspected after flood waters have subsided. The Board continues to include within each annual budget, funds for emergency cleaning and repair of sewers. Typically, the Board budgets about \$4,000 per year for CSO improvements and another \$60,000 for inhouse costs for materials for repairs and upgrades as well as contractual services. Additionally, the wastewater department has an annual total budget of approximately \$225,000 in the Capital Improvements Fund and \$50,000 in the Repair and Replacement Account, which can be used for maintenance activities in the collection system and treatment plant.



In situations where large scale flooding occurs, it may be necessary to secure funds from the Federal Emergency Management Agency (FEMA) to assist with sewer inspection and cleaning. A typical procedure for responding to emergency situations is described below:

- Step 1 – Notification of superintendent or assistant superintendent concerning situation.
- Step 2 – Superintendent or assistant superintendent assesses the situation to determine resources necessary to address situation. City Manager, Chief of Police, and/or other department heads are notified as needed. If the situation involves discharge of untreated wastewater, superintendent or assistant superintendent contacts WVDEP spill hotline (1-800-642-3074).
- Step 3 - Obtain equipment and materials necessary to correct the situation, including outside services, if necessary.
- Step 4 - Follow up with local WVDEP representative to confirm that repairs have been completed.

The Board historically contracts with James White Construction of Weirton or Ohio-West Virginia Excavating of Powhatan Point, Ohio for non-routine sewer repairs and with Robinson Pipe Cleaning of Eighty-Four, Pennsylvania for non-routine sewer cleaning needs.

Board personnel have previously had operation and safety training presented by the superintendent. Personnel maintain regular involvement with training programs offered by the Environmental Training Center, located near Ripley, West Virginia. Overall operation and safety training programs address the following:

- Hazard recognition and risk assessment
- Confined space entry procedures.
- Combined sewer system operation and maintenance.
- Wastewater treatment plant operation, maintenance, and safety.
- Maintenance of traffic through construction sites.
- Illicit discharge and detection elimination processes
- Overall worker safety.

## **Maximization of Storage in the Collection System**

Maximizing storage in the collection system means making relatively simple and inexpensive modifications enabling the CSS to store wet weather flows until downstream facilities can handle the increased volumes. In some instances, the Board has opted to separate sewers and reduce infiltration and inflow to maximize the ability of the collection system to convey wastewater.

In the past, the Board has aggressively pursued the identification and elimination of sources of inflow and infiltration to the sanitary sewer system. In addition, to maximize storage in the collection system, the Board installed a small weir in the Parriott Avenue overflow (CSO 004). The Board has cleaned, with some assistance from contract sewer jetting companies, approximately 13,000 lineal feet (lf) of sewers from 5/1/18 through 10/31/20. Additional information on sewer cleaning will be discussed in a subsequent section of this chapter of the report. Siphons within the system are cleaned annually or as needed by the Board.

## **Review and Modification of Pretreatment Requirements**

EPA guidance document stipulates that the Board should determine whether non-domestic sources are contributing to CSO impacts and investigate ways to control them. Examples of typical contributing nondomestic sources may include restaurants, gas stations, industrial users, etc.

The relative contribution of non-domestic flow to the total dry weather flow is small in part, because the fraction of the CSS service area dedicated to non-domestic use is small. Also, the number of users that would discharge common pollutants as a function of their business operations is small. For these reasons, a pretreatment program has not been considered and is not being proposed at this time.

From information in the NPDES Permit, Moundsville provides treatment to the following industrial users:

- IU01- Wetzel County Landfill
- IU03 - Bill Heedi Quaker State
- IU04 - McAdoo's Amoco
- IU07 - WVANG
- IU09 - Walmart Stores (tire lube)
- IU11 - WVDOT Maintenance Garage
- IU12 - Pepsi Cola Bottling
- IU13 - Moundsville Public Works

- IU14 - Moundsville Public Works
- IU15 - Marshall County Readiness Center

IU07 is the only industrial discharge impacting a CSO (CSO 004), IU11, IU12 and IU15 are on the main trunk sewer located downstream of CSO 004.

### **Maximization of Flow to the POTW for Treatment**

Maximization of flow to the Board's publically owned treatment works (POTW) can entail simple modifications to the CSS and treatment plant to allow as much flow as reasonably possible to enter the treatment plant during wet weather events. Ultimately, maximizing the flow to the treatment plant will reduce the magnitude, frequency, and duration of CSO events.

In an effort to maximize the flow to the WWTP, the Board installed a small weir in the Parriott Avenue overflow (CSO 004). Siphons within the system are cleaned annually or as needed by the Board.

### **Elimination of CSOs during Dry Weather**

Dry weather overflows are prohibited by the NPDES program. Therefore, this control is enforceable outside of any CSO control program. Moundsville is unaware of any regularly occurring dry weather overflows within the CSS.

To ensure that an occurrence of a dry weather overflow would be noticed, the City observes each CSO location weekly and downloads flow meters monthly. Should a dry weather overflow be encountered, the Board maintains a procedure to contact the West Virginia Water Pollution Spill Alert Hotline immediately.

For confirmation of success of the collection system, Board staff perform observations throughout the year during both dry and wet weather. Observation over the past few years has included:

- 5/1/18 through 4/30/19 – 47 dry weather observations and 10 wet weather observations
- 5/1/19 through 4/30/20 – 37 dry weather observations and 18 wet weather observations
- 5/1/20 through 10/31/20 – 16 dry weather observations and 11 wet weather observations

## **Control of Solid and Floatable Materials in CSOs**

Reducing visible floatables from the CSS using simple control measures is the sixth minimum control measure. Such equipment may include trash racks, screens, grease traps, and oil skimmers. Other maintenance operations such as street sweeping may further reduce the solids and floatables that enter the CSS. Control devices on the CSOs include:

- CSO 002 = screen
- CSO 003 = basket
- CSO 004 = basket

## **Pollution Prevention Programs to Reduce Contaminants in CSOs**

Keeping contaminants from entering the CSS and impacting the receiving stream through CSOs is the goal of this minimum control. The control measure is predicated upon the Pollution Prevention Act of 1990 that established a national strategy for pollution prevention. This measure is focused more on behavioral changes as opposed to construction of infrastructure. Currently, the Board maintains street sweeping and trash collection programs. One street sweeper is owned and operated by Moundsville, which runs on a regular basis to reduce trash and litter on City streets.

Trash receptacles have been placed in appropriate spots in areas of high pedestrian traffic (i.e. downtown city streets, playgrounds, parks, ball fields, etc.). Pet waste station receptacles have been installed at City parks and along walking trails and are maintained by the City of Moundsville Recreation Department. Regular trash collection is conducted for all City residents. In the fall, Moundsville has a leaf removal program.

Moundsville also maintains pet waste receptacles within the City – five located at the City park and one located along the business district of Jefferson Avenue. Replenishment of bags has been as follows:

- 5/1/18 through 4/30/19 – 6,000 bags
- 5/1/19 through 4/30/20 – 6,000 bags
- 5/1/20 through 10/31/20 – 4,000 bags

An ordinance has been adopted to prohibit illegal dumping of materials to waterways, inlets, or onto the ground. A copy of the ordinance prohibiting littering and illegal dumping is included as Appendix F.

## **Public Notification**

Informing the public of the location of CSOs; the actual occurrences of CSOs; the possible health and environmental impacts of CSOs; and the recreational activities limited as a result of CSOs is critical to the effectiveness of the CSO program. Posting of signs at all CSO discharge locations warning of the need to stay away from the CSO locations during wet weather events is the primary notification measure for the Board. These signs alert the recreational public that CSOs are nearby and to avoid them should they be discharging.

## **Monitoring to Characterize CSO Impacts and the Efficacy of CSO Controls**

Determining the occurrence and apparent impacts of CSOs through visual observation or other simple methods is the ninth and final control measure. Over time, changes in the occurrences of CSO events can provide a preliminary indication of the effectiveness of the nine minimum controls.

In order to begin to characterize the CSO impacts, accurate mapping of the CSS must be available. A general map of the CSS service area to a scale of 1-inch equals 200-feet was historically maintained by the Board. Beginning in 2019, Moundsville began working with the Operator Training Council of Ohio (OTCO) to begin creating a geographic information system (GIS) of the sewer system. Employees have continued adding information as time has allowed.

Observations are made of each CSO location weekly, whether it is overflowing, and weather observations are recorded. In addition, when wet weather events occur, observations are made at each overflow that can be correlated with rainfall data gathered from the Board's rainfall gauge. When significant wet weather events occur during working hours, Board staff makes observations at representative CSOs to ensure that systems are functioning properly. The Board records the frequency of trash basket cleanings to assist with monitoring and characterization of CSOs.

When personnel and equipment are available to meet sampling criteria, samples are collected quarterly from above and below the CSO outfalls during an overflow event. Parameters tested include: suspended solids, BOD, fecal coliform, ammonia nitrogen, dissolved oxygen and water temperature. The results are recorded and kept at the wastewater treatment plant.

## **CHAPTER FOUR**

### **PUBLIC PARTICIPATION AND CONSIDERATION OF SENSITIVE AREAS**

As a community of approximately 10,000 people, the City of Moundsville is under the population limit of 75,000 established in EPA's "Guidance for Long-Term Control Plan." Section 1.6.6 entitled "Small System Considerations" acknowledges the limitations of small systems and reduces the necessary sections of the LTCP to four key elements. Public participation and consideration of sensitive areas are two of these elements and are addressed in more detail herein.

#### **Identification of Sensitive and Priority Areas**

Sensitive areas, as defined by the USEPA Combined Sewer Overflow Control Policy, include "designated Outstanding National Resource Waters, National Marine Sanctuaries, waters with threatened or endangered species and their habitat, waters with primary contact recreation, public drinking water intakes or their designated protection areas, and shellfish beds." There are no known areas within the City limits that qualify as described and are negatively impacted by CSO discharges or CSO discharges related to equipment failures.

Priority areas are locations having some environmental significance but not to the level of "sensitive areas" as defined in the federal CSO Control Policy. These priority areas may include: public access areas (i.e. near marinas, schools, playgrounds, parks, or athletic fields) or use of shallow streams for recreational activity, with something less than full contact (i.e. wading). Moundsville has identified no priority areas within the corporate boundaries; however, the Ohio River may ultimately be impacted by the effects of the CSOs.

#### **Public Participation and Notification**

Public participation and notification of CSO issues and events is a key goal of this LTCP. Based upon this goal, the Board has implemented several items that are described in this section:

### Advertisement in Newspaper

Annually within the Moundsville Echo, the Board places an advertisement that contains information on the location of CSOs within the City and the issues with the discharge. Publication dates were May 7, 2018; May 14, 2019; and May 1, 2020.

### Signage

Posting of signs at all CSO discharge locations warning of the need to stay away from the CSO locations during wet weather events is the primary notification measure. Signs are located at each CSO discharge location.

### Brochures

Brochures educating residents of the potential health risks associated with exposure to CSOs are made available at the City Building and water office where the public pays their bills. The brochures are made available free of charge by WVDEP and can be found in Appendix G. Also, in the second quarter newsletter prepared by the Board, the advertisement placed in the Moundsville Echo is included into the mailing along with a flyer.

### Trade Show

The City of Moundsville Sanitary Board attends the annual Marshall County Chamber of Commerce Home and Business Expo that takes place in Moundsville. Information on CSOs is distributed at the Board's booth along with educational materials. The following lists the number of brochures and handouts that were provided during the event:

- 2018 – 272 brochures plus gave away a rain barrel (181 people registered)
- 2019 – 552 brochures
- 2020 – 166 brochures plus gave away a rain barrel (96 people registered)

## Web Site

Within the City's website ([www.moundsvillewtp.com](http://www.moundsvillewtp.com)), the Board has placed information concerning CSOs and a map of their location. Additionally, the Board is considering creating a new website with assistance from the West Virginia Rural Water Association.



## CHAPTER 5

### WATER QUALITY CONSIDERATION

Motivation for implementation of CSO controls is attainment of water quality standards, including designated uses. Dischargers are expected to be knowledgeable about water quality conditions in local waterbodies that receive CSO discharges.

In 2009, WVDEP and USEPA approved the TMDL Report for the Upper Ohio River South, which includes Middle Grave Creek. As Moundsville's CSOs 002, 003 and 004 discharge into Middle Grave Creek, it will be the main waterbody of concern for this report. According to the TMDL Report, Middle Grave Creek is impaired for iron, fecal coliform, and biological impairment. As such, a TMDL has been established for fecal coliforms at the end of the pipe for CSOs of 200 counts per 100 milliliters (mL). The City of Moundsville Sanitary Board has been in negotiations with WVDEP concerning making changes to the City's NPDES Permit that will allow the end of pipe CSO limits to be addressed within the Implementation Plan of the LTCP (see Chapter 7 for additional information). From these negotiations, the following is being added to the NPDES Permit, Section F:

#### *Section F – Combined Sewer System Overflows*

##### *9. TOTAL MAXIMUM DAILY LOAD (TMDL)*

- a. Middle Grave Creek (a tributary of the Ohio River) has a completed TMDL (EPA approved September 24, 2009) for fecal coliform which impacts CSO Outlets 002, 003, and 004. The 2009 EPA approved TMDL specifies wasteload allocations of 200 counts per 100 milliliters for fecal coliform for the aforementioned CSO outlets. As such, the permittee must implement procedures in its LTCP to afford compliance with the wasteload allocations prescribed by the TMDL.*
- b. For the CSO outfalls noted above, LTCP implementation procedures shall include scheduling the TMDL compliance measures in the LTCP and implementation of those measures shall be represented in the LTCP compliance schedule (implementation schedule). If any changes in water quality standards and/or TMDL revisions or updates occur during implementation of the LTCP, the LTCP may need to be revised to address those changes.*

**CHAPTER 6**  
**CSO CONTROL ALTERNATIVES**

One major element of the LTCP is evaluation of CSO control alternatives. CSO control alternatives that may be considered as part of this plan are: 1) conveyance and treatment at the wastewater treatment plant, 2) inflow reduction, 3) sewer separation, 4) off-line storage, 5) wet weather treatment facilities, and 6) “Green” infrastructure initiatives. Following this paragraph is a description for each control alternative. A map outlining the boundary of the tributary sewer areas is provided in Appendix A.

**Conveyance and Treatment at the Wastewater Treatment Plant**

This alternative involves the ability to contain combined sewage within the collection and transfer and treat the flows at the POTW. In order to get the flow to the treatment plant, it would be necessary to install lift stations at CSOs 002, 003, and 004. In addition, it would be necessary to install a force main, parallel to the existing interceptor sewer through the City that would carry peak flows. The cost associated with these improvements, including necessary upgrades to the treatment plant, is summarized in the table below:

**TABLE NO. 3**  
**CONVEYANCE AND MAXIMIZATION OF TREATMENT AT THE PLANT**

<b>Improvements</b>	<b>Estimated Cost</b>
New Lift Station at CSO 002	\$500,000
New Lift Station at CSO 003	\$500,000
New Lift Station at CSO 004	\$1,800,000
WWTP Improvements	\$4,600,000
New Force Main	\$2,356,000
<b>TOTAL ESTIMATED COST</b>	<b>\$9,756,000</b>

Wastewater treatment cost is based on \$170,000 per million gallon of excess combined sewage that will be conveyed to the plant (27.06 million gallons), while the cost for the new force main is based on a unit cost of \$220 per linear foot.

## Inflow Reduction

Inflow reduction is a widely used CSO control practice centered on removal of direct sources of clean water connected to the CSS. For purposes of this report, roof leader and downspout disconnections will be the only inflow reduction measures considered. Costs for these disconnections are based on a unit cost of \$400 per dwelling in the tributary sewer area. Total costs associated with inflow reduction for each tributary sewer area is summarized in the table below:

**TABLE NO. 4  
ESTIMATED COST OF RESIDENTIAL INFLOW REDUCTION**

<b>Tributary Sewer Area</b>	<b>Estimated Cost</b>
CSO 002	\$76,000
CSO 003	\$96,400
CSO 004	\$943,200
CSO 007	\$118,400*
<b>TOTAL ESTIMATED COST</b>	<b>\$1,234,000</b>

\* CSO 007 is capped off. No improvements are proposed in this tributary area at this time.

## Sewer Separation

Sewer separation is the practice of replacing the single pipe system of a CSS with separate sanitary sewers and storm drains. Costs for sewer separation were estimated at a unit cost of \$250 per linear foot of existing sewer pipe. Total costs associated with the construction of a new sanitary sewer for each tributary sewer area is summarized in the table below:

**TABLE NO. 5  
ESTIMATED COST OF SEWER SEPARATION – NEW SANITARY SEWER**

<b>Tributary Sewer Area</b>	<b>Estimated Cost</b>
CSO 002	\$1,748,000
CSO 003	\$2,560,000
CSO 004	\$24,980,000
CSO 007	3,461,000*
<b>TOTAL ESTIMATED COST</b>	<b>\$32,749,000</b>

\* CSO 007 is capped off. No improvements are proposed in this tributary area at this time.

## Off-Line Storage

Off-line storage is the term used to describe facilities that store combined sewage in tanks, basins, or other structures. During dry weather, wastewater is bypassed around off-line storage facilities. During wet weather, combined sewage flows are diverted from the CSS to the off-line facility by gravity or pumping.

Using the Green LTCP EZ form provided by USEPA, volumes of excess flows were estimated for the tributary areas. Costs are estimated based upon a unit cost of \$120,000 per million gallons of storage. Total costs associated with volume reduction to be achieved with storage for each tributary sewer area are summarized in the table below:

**TABLE NO. 6  
ESTIMATED COST OF OFF-LINE STORAGE**

<b>Tributary Sewer Area</b>	<b>Estimated Cost</b>
CSO 002	\$1,278,000
CSO 003	\$1,930,000
CSO 004	\$17,935,000
CSO 007	\$3,181,000*
<b>TOTAL ESTIMATED COST</b>	<b>\$24,324,000</b>

\* CSO 007 is capped off. No improvements are proposed in this tributary area at this time.

## Wet Weather Treatment Facilities

Wet weather treatment facilities are installed at the end of the CSO to treat the discharge prior to entering the receiving stream. Using the Green LTCP EZ form provided by USEPA, volumes of excess flows were estimated for the tributary sewer areas. Costs are estimated based upon a unit cost of \$1,700,000 per million gallons per day of treatment capacity required. Total costs associated with wet weather treatment facilities for each tributary sewer area are summarized in the table below:

**TABLE NO. 7  
ESTIMATED COST OF WET WEATHER TREATMENT FACILITIES**

<b>Tributary Sewer Area</b>	<b>Volume of Excess Combined Sewage (MG)</b>	<b>Estimated Cost</b>
CSO 002	1.065	\$1,811,000
CSO 003	1.608	\$2,734,000
CSO 004	14.946	\$25,408,000
CSO 007*	2.651	\$4,507,000*
<b>TOTAL ESTIMATED COST</b>		<b>\$34,460,000</b>

\* CSO 007 is capped off. No improvements are proposed in this tributary area at this time.

### **“Green” Infrastructure Initiatives**

According to the “Green Long-Term Control Plan-EZ Template” guide document prepared by the USEPA:

*“Green infrastructure practices are those that use or mimic natural processes to infiltrate, evapotranspire (i.e., return water to the atmosphere either through evaporation or through uptake by plants), or store (e.g., through rain barrels and cisterns) stormwater or runoff on or near the site where it is generated. Such practices reduce stormwater runoff, which in turn minimizes the frequency, duration and volume of CSOs.”*

Five general green infrastructure runoff controls are considered in the USEPA guidance document, which include:

- Green Roofs
- Bioretention
- Vegetated Swales
- Permeable Pavement
- Rain Barrels

Each of these items will be discussed in greater detail in the following sections.

### Green Roofs

In order to reduce the amount of rainfall reaching the collection system, green roofs can be placed on new and existing buildings. Green roofs are formed by placing growth media and vegetation on the top of roofs of buildings with membrane roofs, typical of flat top roofs. CSS locations in Moundsville are situated in areas of residential homes and commercial businesses. Few buildings are constructed with the types of parapet walls that would facilitate the construction of green roofs within the City. Therefore, for purposes of this report, it is estimated that no future or existing structures will be constructed with green roofs in the City of Moundsville.

### Bioretention

Bioretention facilities, such as rain gardens, collect storm water in shallow vegetated depressions and are located in mainly urban settings. Water is stored in the depression following the storm and, following the storm, the water leaves through either infiltration into neighboring soils or consumed through evapotranspiration. For the City of Moundsville, bioretention basins could be located in school sites and other areas with substantial green space. For purposes of this report, a total of 9 possible locations throughout the CSS were identified for possible locations of installation of rain gardens.

### Vegetated Swales

Vegetated swales are used in place of gutters and storm drains for conveying storm water to the receiving streams. These swales consist of vegetation on the sides and bottom of the channel, which helps to manage the water quality of the storm water runoff. Storm water reduction can also be realized by infiltration into the soils of the channel and by evapotranspiration of the plant material. Vegetated swales are similar to the bioretention facilities in practice, but typically are placed linearly and can cover a larger runoff area. Swales were identified in a couple of the less densely populated area of the CSS and covered an approximate area of 1.2 acres.

### Permeable Pavements

Unlike typical concrete and asphalt pavements found within the City, permeable pavements allow storm water to drain through the pavement and infiltrate into the neighboring soils. These pavements are placed in areas that do not contain a heavy number of vehicular loads, such as parking lots and sidewalks. With the City of Moundsville not owning large paved parking areas, it is not reasonable to believe that the City could effectively use this option. Therefore, for purposes of this report, it is assumed that permeable pavements will not be used by the Board in their planning efforts.

### Rain Barrels

Perhaps the easiest of the green initiatives to incorporate into planning is the use of rain barrels. Rain barrels are holding structures that collect storm water from downspouts and can be discharged for other uses during dry periods. For purposes of this report, it was assumed that 55-gallon drum would be used for creating the rain barrels. Also, it was assumed that about 50% of the homes would correctly participate in the program. A total of 1,543 homes were assumed to participate in the program.

### Summary of the Green Infrastructure Improvements

Using the spreadsheet from the USEPA titled, “Green Long-Term Control Plan EZ Template”, the following table includes cumulative totals for each of the tributary sewer areas:

**TABLE NO. 8  
ESTIMATED COST OF GREEN INFRASTRUCTURE IMPROVEMENTS**

<b>Tributary Sewer Area</b>	<b>Volume of Excess Combined Sewage (MG)</b>	<b>Estimated Cost</b>
CSO 002	0.025	\$70,000
CSO 003	0.028	\$82,000
CSO 004	0.383	\$1,106,000
CSO 007*	0.016	\$71,000

\* CSO 007 is capped off. No improvements are proposed in this tributary area at this time.

## Summary of CSO Alternative Costs

A summary of the estimated cost with each of the evaluated alternatives is summarized in the table below:

**TABLE NO. 9  
TOTAL ESTIMATED COST OF EVALUATED ALTERNATIVES**

<b>Alternative</b>	<b>Total Estimated Cost</b>
Conveyance and Treatment at the WWTP	\$9,756,000
Inflow Reduction	\$1,234,000
Sewer Separation	\$32,749,000
Off-Line Storage	\$24,324,000
Wet Weather Treatment Facilities	\$34,460,000
Green Infrastructure	\$1,329,000

Although Table No. 9 indicates that the “Inflow Reduction” alternative is the least costly alternative, it should be noted that roof drains typically discharge surface water to the streets, which is subsequently transported to catch basins, culverts, or swales that ultimately connect to the combined sewer system. Therefore, this alternative alone would not reduce flows sufficiently to meet Water Quality Standards.

Green Infrastructure improvements were also considerably less expensive than some of the more contemporary methods of reducing the issues with CSOs. However, Green Infrastructure only indicated a minor effect on overall storm water flows reaching the collection system and these items, though helpful in reducing overall flows, will not be relied upon solely to meet Water Quality Standards.

With the requirements under the TMDL to meet end of pipe water quality standards, the City of Moundsville Sanitary Board elected to perform sewer separation to address CSOs. By eliminating the CSOs, the Board will not have discharges from the collection system and the only permitted discharge point will be the effluent from the WWTP. However, as the discharges are moved from combined sewage to separate storm sewers, increased requirements will be noted from the Municipal Separate Storm Sewer System (MS4) program with which Moundsville also must comply.



## CHAPTER 7

### IMPLEMENTATION SCHEDULE

#### User Rates

Median household income (MHI) for the City of Moundsville is \$34,628 based upon 2015 data provided by the US Census Bureau through the American Community Survey. For an average water usage of 3,400 gallons per month, the City of Moundsville's customers pay a rate of \$16.82 per month, which is 0.55% of the MHI.

#### Funding Sources

Upon the approval of the Long-Term Control Plan, the Board may approach the West Virginia Infrastructure and Jobs Development Council (WVIJDC) for funding recommendations for the proposed improvements. The sources of funds that may be available for constructing sanitary sewers include:

- Small Cities Block Grant
- WVIJDC Loan and/or Grant
- Appalachian Regional Commission (ARC) Grant
- WVDEP State Revolving Fund
- City of Moundsville Sanitary Board General Fund
- United States Department of Agriculture (USDA) Rural Utility Services (RUS) Loan and/or Grant

Using the 4,350 customers listed in the 2020 Public Service Commission of West Virginia (PSC) Annual Report, the information contained in the following table indicates the size of project the Board could complete to increase annual sewer rates to a certain amount of the City's MHI:

**TABLE NO. 10  
ESTIMATED PROJECT TO BE FUNDED**

<b>% MHI</b>	<b>Rate</b>	<b>Loan Amount (3%, 20 years)</b>	<b>Loan Amount (0%, 40 years)</b>
1.00	\$28.86	\$9,350,000	\$25,140,000
1.25	\$36.07	\$14,950,000	\$40,194,000
1.50	\$43.29	\$20,557,000	\$55,269,000
1.75	\$50.50	\$26,156,000	\$70,234,000
2.00	\$57.71	\$31,755,000	\$85,378,000

**Completed Implementation Activities**

WVDEP previously approved the Moundsville Sanitary/Stormwater Utility Board’s Long-Term Control Plan that was submitted to the Agency in July of 2008. In order to comply with the requirements of the Total Maximum Daily Load (TMDL) report for the Upper Ohio River South, the Board is updating this report. With the time that has passed (over six years), several items that were included in the Implementation Schedule have been completed or are in the process of completion. A summary of these activities follows:

- Installed third flow meter in the CSO discharge structures. This allows the Board to now monitor discharges from all CSOs.
- Installed electronic rain gauge.
- Achieved compliance with the Nine Minimum Controls (see Appendix D for the updated checklist).
- Upgraded primary anaerobic digester and associated mixing system.
- Rehabilitated the existing belt filter presses.
- Cleaned the secondary anaerobic digester.
- Replaced the Hi-Vac truck.

- Replaced the ultraviolet disinfection (UV) system.
- Replaced influent flow meter (current project).
- Replaced Primary Clarifier No. 1 drive and gears (current project).
- Purchased the following for the collection system crews:
  - 2016 Kobelco K55 compact excavator
  - 2018 5500 Dodge Utility Truck
  - 2019 5500 Ford dump truck
  - 2016 New Holland C227 compact track load/skid steer
  - New street sweeper (delivery anticipated in June 2021)
- Phase 1 Sewer Separation Project for the following areas:
  - Parriott Avenue
  - Grant Avenue to 12<sup>th</sup> Street
  - National Corrections & Law Enforcement Training and Technology Center

## **Implementation Schedule**

In order to meet Water Quality Standards, the following phases will be completed:

### Phase 1B

Continue the infiltration/inflow (I/I) initiatives from the initial phase of improvements to the wastewater system. Estimated timeframes for the activities associated with this phase of the Implementation Schedule follows:

- Complete flow metering – March 1, 2023
- Technical memorandum on results from flow metering – June 1, 2023
- Complete smoke testing in areas identified in the flow metering – October 31, 2023
- Complete manhole inspections/sewer televising in select areas – July 31, 2024
- Provide final I/I remediation report – November 30, 2024

## Phase 2

Project includes the following:

- Cleaning of the primary anaerobic digester.
- Installing permanent flow meters on the CSOs.
- Replacing the methane boiler and heat exchanger for the anaerobic digesters.
- Replacing 15-inch sewer along the old railroad grade to near existing manhole MH-39. Sewer is located in flood plain and is in poor condition.
- Sewer lining from manhole MH-23 to the old railroad grade and rehabilitation of the junction chamber at the wastewater treatment plant. Sewer is located in swampy area and is in poor condition.

Estimated timeframe for tasks associated with this phase of the Implementation Schedule follows:

1. Submit a preliminary engineering report to WVIJDC– May 31, 2021
2. Submit plans to review agency – November 1, 2022
3. Begin construction of improvements – September 1, 2023
4. Complete construction of improvements – September 1, 2024
5. Issue the post construction monitoring report – June 30, 2025

## Phase 3

Project includes the following:

- Generator at the WWTP for secondary treatment system.
- New influent lift station at the WWTP.
- New headworks at the WWTP including mechanically cleaned screens and vortex grit removal.
- New septage receiving station with holding tanks.
- New 18-inch and 36-inch sewers to the lift station
- Phase 1 rehabilitation of sanitary sewers and manholes identified in the I/I remediation report.

Estimated timeframe for tasks associated with this phase of the Implementation Schedule follows:

1. Submit a preliminary engineering report to WVIJDC – October 31, 2025
2. Submit plans to review agency – July 31, 2026
3. Begin construction of improvements – May 1, 2027
4. Complete construction of improvements – May 1, 2028
5. Issue the post construction monitoring report – November 30, 2029

#### Phase 4

Project includes the second phase of sewer rehabilitation identified by the I/I remediation report.

Estimated timeframe for tasks associated with this phase of the Implementation Schedule follows:

1. Submit a preliminary engineering report to WVIJDC – March 31, 2030
2. Submit plans to review agency – December 31, 2030
3. Begin construction of improvements – October 31, 2031
4. Complete construction of improvements – October 31, 2032
5. Issue the post construction monitoring report – April 30, 2034

#### Phase 5

Project includes the third phase of sewer rehabilitation identified by the I/I remediation report. Estimated timeframe for tasks associated with this phase of the Implementation Schedule follows:

1. Submit a preliminary engineering report to WVIJDC – August 31, 2034
2. Submit plans to review agency – May 31, 2035
3. Begin construction of improvements – March 31, 2036
4. Complete construction of improvements – March 31, 2037
5. Issue the post construction monitoring report – September 30, 2038

#### Phase 6

At the completion of Phase 5, the Board will review information from the post construction monitoring reports prepared during the first three phases of the Implementation Schedule. Should the need arise to make further improvements to the collection system associated with sewer separation, another phase will be conducted that will either remove the outfalls or will provide sufficient disinfection at the outfalls to meet the water quality standard for fecal coliform. Based upon this information, the estimated timeframe for tasks associated with this phase of the Implementation Schedule follows:

1. Submit a preliminary engineering report to WVIJDC – January 31, 2039
2. Submit plans to review agency – October 31, 2039
3. Begin construction of improvements – August 31, 2040
4. Complete construction of improvements – August 31, 2041
5. Issue the post construction monitoring report – February 28, 2043

## **CHAPTER 8**

### **POST CONSTRUCTION MONITORING**

Currently, there is no guidance available from USEPA on post construction monitoring for CSO improvements. However, Moundsville will need to determine a course of action to verify the effect of improvements on the system associated with the improvements. Effects of the improvements will be evaluated by two methods: 1) flow metering and 2) water quality analyses.

#### **Flow Metering**

Similar to work that is currently being performed by the Board; CSO outfalls will have meters placed in the discharge pipes to determine the activation of CSOs during storm events, including CSO 002 (Maxwell Acres), CSO 003 (Short Poplar), and CSO 004 (Parriott Avenue). It is anticipated that the flow metering will occur for six months following completion of the projects. Following the metering period, information will be assembled for each of the post construction metered outfalls and an analysis will be made between metering conducted prior to the improvements projects to determine the reduction in overflow events associated with the projects.

#### **Rainfall Monitoring**

Board will maintain a tipping bucket type rain gauge, which will include checking regularly for proper operation. Meters will be downloaded monthly and information documented includes rainfall totals, duration, and intensity.

#### **Water Quality Analyses**

As a baseline for the water quality analyses, water quality data that was collected by the Board during the analyses associated with the Phase 1 project completed in 2016 and included in Appendix C will be used for analysis of the improvement projects listed in the Implementation Schedule. Samples will be taken once per month for dry weather (considered to 72 hours or more following a rainfall event) at each location and for a minimum of three wet weather events (wet weather events will be considered as events that are greater than 0.50-inches of rain within an eight-hour period). Monitoring will occur for a six-month period. For wet weather events, two samples will be taken – one within 1 hour of the completion of the event and the second sample taken 12 hours following completion of the event.

As the projects listed in the Implementation Schedule are mostly directed at addressing the discharges along Middle Grave Creek, it is anticipated that sampling will occur at these locations. Additional information on sampling sites is provided below:

- **Upstream and downstream of CSO 002 Outlet, Maxwell Acres Overflow.** Sample points above and below the CSO outlet located on the south side of the walking trail by the soccer fields and located before the walking bridge farthest away from Maxwell Acres. Sampling will occur approximately 75 feet above and below the end of the outlet pipe. Sampling should be collected before any other streams or ditches entering Middle Island Creek. If necessary, distance can be adjusted to prevent any results from being influenced by another source.
- **Upstream and downstream of CSO 003 Outlet, Short Poplar Avenue Overflow.** Sample points above and below CSO outlet located at the end of Short Poplar. Sample above the CSO outlet after stream leaves the large underground culvert located west of the CSO outlet and collect the sample for below the CSO outlet approximately 20 feet before the small drainage ditch from Triple A Trailer Court joins the stream that the CSO outlet is located.
- **Upstream and downstream of CSO 004 Outlet, Parriott Avenue Overflow.** Sampling will be conducted 100 feet above and below where the drainage ditch meets Middle Grave Creek. Sampling should be collected before any other streams or ditches entering Middle Grave Creek. If necessary, distance can be adjusted to prevent any results from being influenced from another source.

## Reporting

Moundsville will prepare a single “Post Construction Monitoring Report” following each phase of improvements as listed in the Implementation Schedule in Chapter 7. It is anticipated that each report will be submitted eight months following completion of the improvements; however, dependent upon rainfall events, the report may need to be delayed until sufficient information is available. If this occurs, the Board will inform the WVDEP 60 days prior to the due date. Contents of the report are presented below:

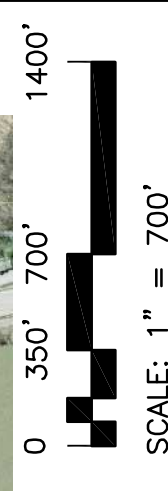
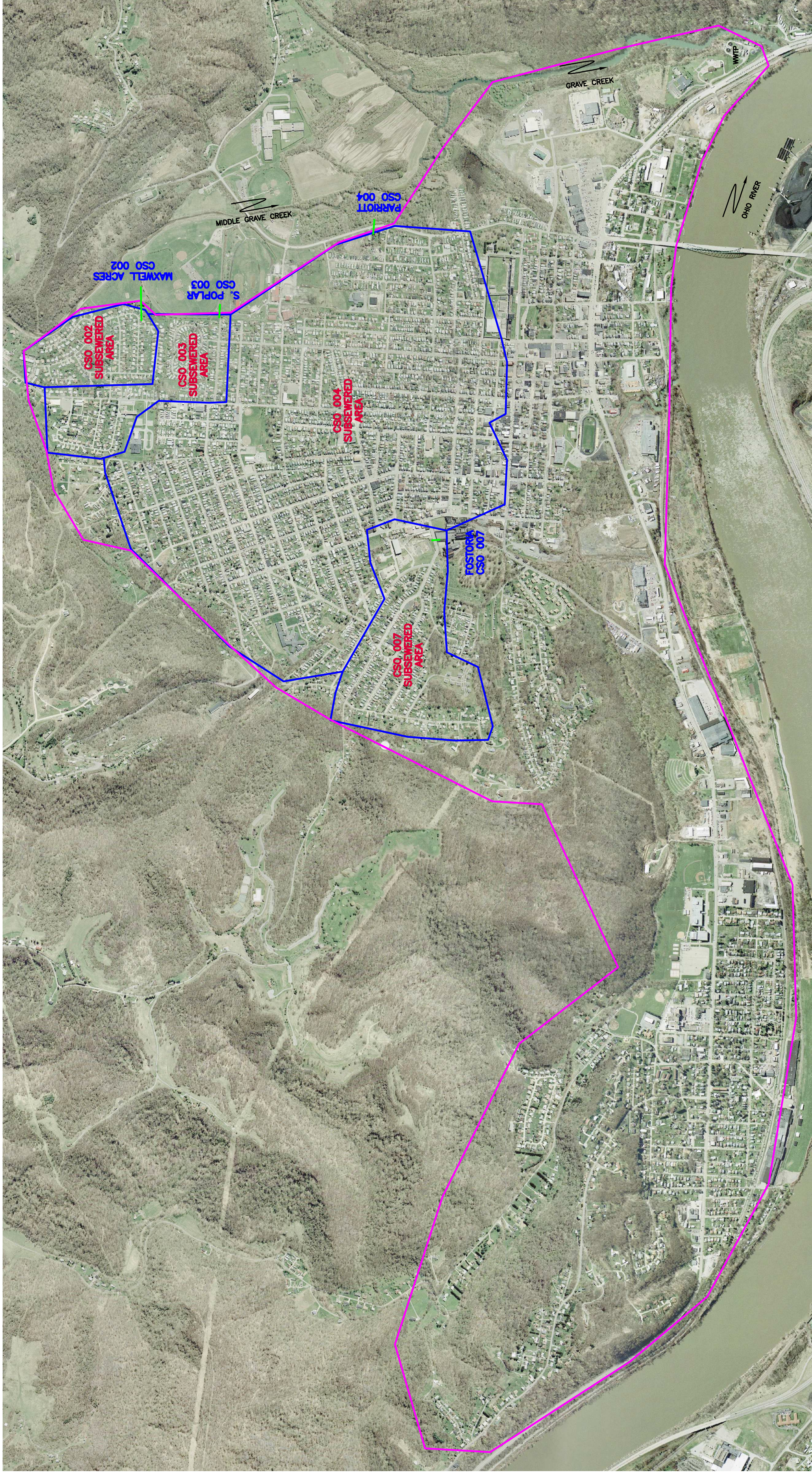
- Rainfall data
- Flow metering data
- Water quality data (includes spreadsheet with results, bench sheets, and chain of custody)
- Summary of the effects of the improvements project
- Recommendation on whether the implementation schedule should be altered

---

***Appendix A***

***CSO Boundary Map***





**CITY OF MOUNDSVILLE  
LONG-TERM CONTROL PLAN  
CSO BOUNDARY MAP**

**BURGESS & NIPLÉ**  
4424 Emerson Avenue  
Parkersburg, WV 26104



---

## ***Appendix B***

### ***Summary of Overflow Events***

**MOUNDSVILLE SANITARY/STORMWATER UTILITY BOARD  
LONG-TERM CONTROL PLAN UPDATE  
SUMMARY OF OVERFLOW EVENTS**

March 3, 2021

Start Date	End Date	Overflow Events					Minimum Rain (in)
		CSO 002	CSO 003	CSO 004	CSO 007	Dry Weather	
May-18	Oct-18	9	0	1	0	0	0.94
Nov-18	Apr-19	8	1	0	0	0	0.63
May-19	Oct-19	7	0	0	0	0	0.42
Nov-19	Apr-20	13	0	0	0	0	0.4
May-20	Oct-20	4	0	0	0	0	0.3

---

***Appendix C***

***WVDEP CSO LTCP Data Worksheet***

**CSO LONG TERM CONTROL PLAN DATA**

**System Owner:** *City of Moundsville*

**NPDES Permit Number:** WV0023264

**Consulting Engin** Burgess & Niple, Inc.

**CSO LTCP Approach:**

Highlight One: Presumptive      Demonstrative      **Separation**

**Goal:**

Complete separation

**LTCP End Date:** 2/28/2043

**Will Community Meet Current Water Quality Standards Upon Completion of LTCP?**

Highlight One: **Yes**      No

**CSO List**

CSO ID	###	LOCATION	RECEIVING WATER	WATERSED
002	002	Maxwell Acres	Middle Grave Creek	Upper Ohio South
003	003	Short Poplar Street	Middle Grave Creek	Upper Ohio South
004	004	12th & Parriott Ave	Middle Grave Creek	Upper Ohio South
Insert more lines as needed				

NUMBER OF EVENTS PER CSO						
(LAST 5 YEARS)						
CSO	5/18-10/18	11/18-4/19	5/19-10/19	11/19-4/20	5/20-10/20	Total
002	9	8	7	13	4	41
003		1				1
004	1					1
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
Insert lines as needed						0
<b>Total CSO Events:</b>	10	9	7	13	4	<b>43</b>

**CSO OUTFALL VOLUME (Mgal)****(LAST 5 YEARS)**

<b>CSO</b>	<b>5/18-10/18</b>	<b>11/18-4/19</b>	<b>5/19-10/19</b>	<b>11/19-4/20</b>	<b>5/20-10/20</b>	<b>Total</b>
002	317700	51010	71229	67721	205975	713635
003		11200				11200
004	20					20
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
Insert lines as needed						0
<b>Total Volume:</b>	317720	62210	71229	67721	205975	<b>724855</b>

**CSO WET WEATHER EVENTS PER MONTH****(LAST 5 YEARS)**

<b>MONTH</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
January				1	3	4
Febraury				2		2
March				1	1	2
April				1	3	4
May			2	1		3
June			3		2	5
July				5		5
August					2	2
September			3			3
October			2	1		3
November			1	2		3
December			3	4		7
<b>Total CSO Events:</b>	0	0	14	18	11	<b>43</b>



**CSO DRY WEATHER EVENTS PER MONTH****(LAST 5 YEARS)**

<b>MONTH</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
January						0
Febraury						0
March						0
April						0
May						0
June						0
July						0
August						0
September						0
October						0
November						0
December						0
<b>Total CSO Events:</b>	0	0	0	0	0	<b>0</b>

**CSO EVENTS**

**PRE & POST PROJECTS**

<b>SRF ID #</b>	<b>CSO EVENTS PRE-PROJECT</b>	<b>CSO EVENTS POST PROJECT</b>	<b># OF CSO'S ELIMINATED</b>	<b>LIST CSO'S ELIMINATED</b>
<b>C-544025</b>	16	10	0	
Insert lines as needed				

---

***Appendix D***

***Water Quality Data from the Phase 1 Project (2016)***

Post Construction Sampling Results for Dry/Wet Weather Sampling (8)

Test #/	Date	Location	Fec. Col.	Fec. Col.	ToTal	ToTal	Human	Human
Type			CFU/100 ml.	CFU/100 ml.	Bacteroides	Bacteroides	Bacteroides	Bacteroides
Dry/Wet			Above	Below	Ces/100 ml.	Ces/100 ml.	Ces/100 ml.	Ces/100 ml.
					Above	Below	Above	Below
		CSO 004	280	180 Est.	None	None	None	None
		12th Street			Detected	Detected	Detected	Detected
Dry								
Weather	5/25/16	CSO 003	27,000	29,000	None	201	None	13
Test # 1		Short Poplar			Detected		Detected	
		CSO 002	180 Est.	90 Est.	None Detected	16	None Detected	None Detected
		Maxwell Acres						
		CSO 004	646 Est.	540 Est.	615	94	None Detected	None Detected
		12th Street						
Dry	6/15/16							
Weather		CSO 003	5,800	13,000 Est.	1,916	1,431	109	None Detected
Test # 2		Short Poplar						
		CSO 002	560	510	1,375	904	None Detected	None Detected
		Maxwell Acres						
		CSO 004	819 Est.	1,354 Est.	2,280	1,841	None Detected	None Detected
		12th Street						
Dry	7/19/16							
Weather		CSO 003	3,800	3,700	3,774	3,629	None Detected	None Detected
Test # 3		Short Poplar						
		CSO 002	580	719 Est.	385	442	None Detected	None Detected
		Maxwell Acres						
		CSO 004	530	410	None Detected	None Detected	None Detected	None Detected
		12th Street						
Dry	8/9/16							
Weather		CSO 003	2,200	1,000 Est.	None Detected	None Detected	None Detected	None Detected
Test # 4		Short Poplar						
		CSO 002	480	530	None Detected	None Detected	None Detected	None Detected
		Maxwell Acres						

Dry Weather Results Continued:



## Wet Weather Testing:

(10)

Wet	Weather:							
Test #/	Date	Location	Fec. Col.	Fec. Col.	ToTal	ToTal	Human	Human
Type			CFU/100 ml.	CFU/100 ml.	Bacteroides	Bacteroides	Bacteroides	Bacteroides
Dry/Wet			Above	Below	Ces/100 ml.	Ces/100 ml.	Ces/100 ml.	Ces/100 ml.
					Above	Below	Above	Below
	6/23/16*	CSO 004	13,000 Est.*	5,400 *	422*	728*	None Detected*	206*
	6/24/16**	12th Street	1,600 Est.**	1,700 Est.**	7,833**	3,634**	235**	224**
Wet								
Weather	6/23/16*	CSO 003	40,000*	53,000*	None Detected*	None Detected*	None Detected*	None Detected*
Test # 1	6/24/16**	Short Poplar	2,200**	2,400**	1,072**	2,773**	None Detected**	249**
	6/23/16*	CSO 002	5,800*	13,000 Est.*	None Detected*	None Detected*	None Detected*	None Detected*
	6/24/16**	Maxwell Acres	170 Est.**	1,600 Est.**	4,638**	877**	None Detected**	None Detected**
	7/28/16*	CSO 004	105,000 Est.*	84,000 Est.*	44,015*	42,953*	1,716*	1061*
	7/29/16**	12th Street	4,000**	5,700**	48,089**	No Sample	400**	No Sample
						Bottle Broke		Bottle Broke
Wet								
Weather	7/28/16*	CSO 003	40,000*	254,000 Est.*	None Detected*	476,985*	1,039*	12,497*
Test # 2	7/29/16**	Short Poplar	8,000 Est.**	4,100**	16,881**	9,141**	None Detected**	122**
	7/28/16*	CSO 002	45,000*	51,000*	8,541*	29,850*	None Detected*	1,438*
	7/29/16**	Maxwell Acres	3,300**	3,800**	2,338**	1,340**	None Detected**	None Detected**
		CSO 004	NA	NA	NA	NA	NA	NA
		12th Street	NA	NA	NA	NA	NA	NA
	No Test							
Wet								
Weather	No Rain	CSO 003	NA	NA	NA	NA	NA	NA
Test # 3	Event To	Short Poplar	NA	NA	NA	NA	NA	NA
	Meet							
	Criteria							
		CSO 002	NA	NA	NA	NA	NA	NA
		Maxwell Acres	NA	NA	NA	NA	NA	NA

---

***Appendix E***

***Nine Minimum Controls Audit***

# CSO NMC Implementation Policy Audit

<u>City of Moundsville Sanitary Board</u>	<u>819 Lafayette Avenue, Moundsville, WV 26041</u>	<u>WV0023264</u>
FACILITY NAME	FACILITY ADDRESS	NPDES PERMIT NO.
<u>Larry Bonar</u>	<u>Superintendent</u>	<u>2/12/21</u>
CONTACT NAME	CONTACT TITLE	DATE OF AUDIT
<u>(304) 845-4360</u>	<u>(304) 845-8973</u>	<u>Larry Bonar</u>
PHONE NUMBER	FAX NUMBER	AUDIT LEADER

**1. Proper Operation and Maintenance** - The permittee shall prepare, maintain and implement a Combined Sewer Overflow (CSO) Operation and Maintenance Manual (OMM).

	YES	NO	N/A	Source*
a. Does the OMM describe routine operation, inspection, maintenance and training activities?	X			OMM
b. Is the OMM reviewed and updated at least one time a year to ensure accuracy?	X			OMM
c. Does the OMM describe the entities involved in developing and approving the <b>annual CSO budget</b> ?	X			OMM
d. Does the annual budget address adequate CSO staffing, equipment and training needs?	X			D
e. Has the annual budget been approved for the current year?	X			I
f. Does the OMM address a <b>documentation and recordkeeping</b> system?	X			OMM
g. Does a current and accurate sketch/map depict CSO outfall locations, receiving streams (and nearby tributaries of the receiving streams), any potential areas of concern (i.e. identified swimming or water recreational areas, drinking water intakes) and the location of rain gauges?	X			OMM
h. Does the recordkeeping system maintain the following records for a minimum of five (5) years:				
1) Collection system and outfall inspection reports and forms?	X			P
2) Operation and maintenance Logs?	X			D
3) Training records?	X			I
4) CSO related customer complaints?	X			OMM
5) Annual summaries of wet-weather and dry-weather CSO events?	X			CSR
6) Procedures that accurately describe the current operations, inspections and maintenance of CSO equipment and controls?	X			P
7) CSO Summary Reports (CSR) that are issued in a timely manner that accurately summarize CSO activities that occurred in the past reporting period, including a year-to-date wet and dry-weather CSO events?	X			D
i. Has the permittee implemented <b>municipal ordinances</b> to prevent connections of roof drains and to prevent the intentional dumping of trash or other unwanted solid waste into the collection system?	X			I

\*Information Source= **OMM** -Operations & Maintenance Manual, **CSR**-CSO Summary Report, **P** -Procedure, **L**=LTCP, **P**=Permit, **D**=Direct Observation, **I**=Interview



## CSO NMC Implementation Policy Audit

- j. Does the **Training Program** include such activities as: state certification for collection system, safe use tools, handling hazardous chemicals, electrical hazards, confined space, etc.?
- k. Are the Training Program activities adequately summarized in the OMM and CSRs?
- l. Does the permittee properly establish and maintain regularly scheduled **CSO outfall inspections** that accurately detect, identify and document all wet-weather and dry-weather discharges?
- m. Is the inspection frequency for dry-weather overflows based on the priority rating of the CSOs?
- n. Are the high priority CSOs inspected for dry-weather discharges on a daily basis?
- o. Are the lower rated priority CSOs inspected for dry-weather discharges on a weekly basis?
- p. Can the permittee ensure either by visual observations or by use of some other detection methods (flow meters, flow diction devices, wood blocks, chalk marks, etc.) that all wet-weather and dry-weather events are accurately detected?
- q. At a minimum do the **CSO outfall inspection records** include the following information:
  - 1) Date of inspection?
  - 2) CSO outfalls inspected?
  - 3) Name of inspector?
  - 4) Comments when outfall is discharging or not?
  - 5) Rain gauge precipitation measurements?
  - 6) Measured or estimated volumes discharged and/or durations of discharges ?
    - 7) General observations about condition of outfall warning signs?
  - 8) Presence of trash or sludge banks in or near the receiving stream?
  - 9) Comments about condition of outfall structure?
  - 10) Summary of any corrective actions taken?
- r. Does the permittee maintain a minimum of one (1) **rain gauge** to record the amount of precipitation?
  - 1) Has the permittee determined whether additional rain gauges are needed, based on the number of CSO outfalls, their location, and the relative location of areas of concern?
  - 2) Has the permittee developed more accurate characterization of their collection system by using the precipitation data?
- s. Does permittee maintain an updated list of **critical CSO equipment** and establish a preventative maintenance schedule for each item?
- t. Is a brief summary of the maintenance work being documented in the CSRs?

X			OMM
X			CSR
X			P
X			D
	X		I
X			I
X			CSR

X			I
X			D
X			D
X			OMM
X			P
X			CSR
X			I
X			OMM
X			D
X			OMM
X			D
X			D
X			CSR
X			P
X			D

- u. Has the permittee established the following **routine inspection and cleaning** for the critical CSO equipment list below:
  - 1) Inspection and cleaning of catch basins and manholes?
  - 2) Inspection, cleaning and maintenance of lift stations, including pumps?
  - 3) Vacuum cleaning and/or jet flushing of combined collection system?
  - 4) Street cleaning?
  - 5) Inspection and cleaning of known troublesome areas of the collection system?

X			D
X			I
X			I
X			P
X			OMM

- v. Other types of **miscellaneous inspections** may include the following:
  - 1) Grease traps at restaurants, schools or other services?
  - 2) Periodic visits to non-residential customers?

	X		CSR
X			P
X			I
X			OMM
	X		OMM
	X		P

- w. Has the permittee established a procedure for detailing how customer **CSO complaints** are recorded, tracked, processed and resolved?
- x. Does the permittee properly document the customer complaints in the CSR?
- y. Is the procedure of process the customer complaints described in the OMM?
- z. Is a five summary log of the customer complaints maintained and readily available for review by the public?

**2. Maximize Use of Storage in Collection System**

- a. Has the permittee identified and documented in the OMM, any portions of the combined sewer system that has usable storage (unused tanks, basins or piping) that could potentially be used a off-line storage?
- b. Has the permittee established any procedures, such as pre-storm drawdowns of lift station wet wells and interceptor collection lines, that could provide additional wet-weather storage?

X			D
		X	P

**3. Review and Modification of Pretreatment Programs**

- a. Has the permittee documented in the OMM, any procedures used to inspect and evaluate the pretreatment requirements for non-residential wastewater discharges (i.e., restaurants, gasoline stations, garges, funeral homes, hospitals, schools, etc) to minimize their impacts on CSO discharges?
- b. Does permittee maintain a list of non-residential customers that discharges to the combined collection systems and evaluate whether it is appropriate to require discharges to reduce or cease their discharges during wet-weather periods when CSO discharges are occurring?
- c. Does permittee document a summary of pretreatment inspections or evaluations in the CSR?

	X		D
X			D
X			P

## CSO NMC Implementation Policy Audit

**4. Maximization of Flow to POTW for Treatment** - The permittee shall deliver as much combined wastewater flow as possible to the treatment plant within the treatment plant's hydraulic capacity and within the treatment plant's imposed NPDES permit limitations and other limiting conditions.

- a. Does the permittee document the plans and procedures being used to maximize the combined wastewater flow to the POTW during wet weather events?
- b. Is the plan documented in the OMM and a summary of any ongoing activities documented In the CSR?
- c. Does the permittee annually evaluate and document any maximization procedures implemented:

		X	OMM
		X	P

- 1) Performance of critical equipment?
- 2) Raise diversion weirs or other devices to the maximum heights possible to reduce CSO discharges without causing problems like basement backups ?
- 3) Comparison between existing flow rates to the design capacity for both the POTW and the lift station pumps?
- 4) Capacities of major interceptors?
- 5) Compare wet-weather flow rates and dry-weather flow to POTW?
- 6) Diverting portion of wet-weather flow that could receive partial treatment at POTW?
- 7) Status of I&I projects?
- 8) Correcting bottlenecks in the collection system to increase flow to POTW?
- 9) Does wet-weather discharges ever occur when flow to POTW is below normal rates?

		X	OMM
X			P
		X	P
	X		P
X			P
		X	OMM
X			P
X			P
	X		D

**5. Elimination of CSOs During Dry Weather** – Dry weather overflows (DWO) from CSOs are prohibited. DWO shall be reported to the WVDEP spill line immediately upon its discovery, but no later than 24 hours rom its initial detection.

- a. Does permittee conduct annual reviews of the following items:
  - 1) Trend of the number of dry-weather overflows (DWO) occurring?
  - 2) Corrective actions to prevent recurring DWO?
  - 3) Effectiveness of existing inspection procedures for detecting the DWO?
  - 4) Adequate remediation procedures for the removal of objectionable materials being deposited in the receiving streams?
  - 5) Is method used to make these reviews of DWO documented in OMM?
  - 6) Are brief summary of these reviews annually documented in CSR?

X			OMM
X			OMM
X			P
		X	D
X			D
X			I

**6. Control of Solids and Floatable Materials** – The permittee shall control solid and floatable materials discharging from all CSO discharges. The permittee shall conduct an annual evaluation of past performance, and recommend corrective actions to reduce the presence of solids and floatable materials in CSO discharges and the receiving steam. The process of making these evaluations shall be documented in the OMM. Progress of action items shall be documented in the CSR. The following are items that should be reviewed:

- 1) The technologies currently in place to control solids and floatable materials outfall can be specific or a part of a larger solids control program such as street sweeping. Are the technologies properly implemented and documented?

X			I
---	--	--	---

## CSO NMC Implementation Policy Audit

- 2) Has the permittee evaluated installing screens at catch basins and/or at the CSO outfalls or the installation or outfall booms or netting?
- 3) Does the permittee have an annual leaf pickup program?
- 4) Does the community have a recycling program?
- 5) Does the community provide convenient trash containers in high traffic areas?
- 6) Does the community enforce illegal dumping of trash, especially into catch basins?
- 7) Does the community periodically evaluate the effectiveness of its street cleaning program?

X			D
X			OMM
X			P
X			P
X			P
X			OMM

### 7. Pollution Prevention

The pemrittee shall:

- 1) Have a Pollution Prevention program stated in its OMM?
- 2) Conduct an annual review on the effectiveness of its program?
- 3) Summarize Pollution Prevention activity in its CSR?
- 4) Provide public education concerning the need for public assistance
- 5) Evaluated the need of a program to collect and dispose of household hazardous waste?

X			P
	X		OMM
X			D
X			D
X			CSR

### 8. Public Notification – The permittee shall annually conduct a review and evaluate the effectiveness of their public notification procedures by addressing the following items:

- 1) Verify that adequate warning signs are installed at each CSO outfall that clearly notify and alert the public to avoid contact with waters near or downstream of active CSO outfalls?
- 2) Verify that adequate warning signs are installed at public stream access points( i.e., marinas and boat launches) that notify and alert the public to avoid recreational contact with water during or just after any CSO activity ?
- 3) Develop and document procedures to provide to the general public, and specific entities that might be expected to be affected by CSO discharges, information concerning CSO discharge occurrences and their impacts to water quality in the receiving stream(s) – i.e., newspaper public notifications, newspaper advertisements, public service announcements on radio and/or television.?
- 4) Develop and document procedures for public notification in circumstances where public notification concerning of CSO discharge activity is critical and immediate?
- 5) Ensure and document the availability of CSO pamphlets for distribution and education of the general public?
- 6) Ensure and document the availability of a logbook of CSO discharges and activities that is readily available for public review (i.e., payment offices, town halls, community centers, etc).
- 7) Evaluate and document public education programs concerning CSOs and the community’s response and plans addressing them?

X			OMM
	X		OMM
X			OMM
	X		OMM
X			D
X			I
X			P

- 8) Record and document any public involvement including comments or suggestions made by the public concerning CSOs.

X			OMM
---	--	--	-----

**9. Monitoring to Characterize CSO Impacts to Receiving Streams and the Efficiency of CSO Controls** – The permittee shall monitor CSO outfall discharges, the receiving waters into which these CSOs discharge. The permittee shall also characterize their impacts and make determinations about how well CSO controls are improving water quality in the receiving stream as noted below:

- 1) Are adequate number of rain gauge(s) in place?
- 2) Are available stream gauge information from the National Weather Service or the US Geological Survey being used to specify the amount and intensity of rain or snow events that could trigger CSO activity and also to obtain stream flow data for additional analysis ?
- 3) Are all CSO outfalls being prioritized in relation to the their contribution to water quality impacts, as well as locations of sensitive areas?
- 4) Does the permittee collect and summarize data concerning total number of CSO events (both wet and dry-weather) and the frequency and duration of CSO activities for at least a representative number - minimum of 10% of total CSO outfalls?
- 5) Is the permittee able to correlate the precipitation data and the CSO activity data in order to predict what measured amount and intensity of rainfall/snowmelt will trigger CSO activity?
- 6) Does the permittee collect water quality monitoring data and other information on chemical, physical, and biological impacts resulting from representative CSO discharges such as: swimming area closing, excessive solid and floatable materials in streams, fish kills, sludge banks, identified habitat impairments for aquatic life?

X			D
X			P
X			D
X			D
X			CSR
	X		CSR

---

***Appendix F***

***Litter Ordinance***

## ARTICLE 953

### Refuse Regulation and Collection

- 953.01 Definitions.**
- 953.02 Compliance with article.**
- 953.03 Disposition.**
- 953.04 Scattering refuse.**
- 953.05 Violations.**
- 953.06 City refuse collection and disposal.**
- 953.07 Precollection requirements.**
- 953.08 Collection requirements.**
- 953.09 City garbage vehicles; dumpsters.**
- 953.10 Fees; billing and collection.**
- 953.11 Appeals from regulations and fees.**
- 953.12 Private collection of refuse forbidden.**
- 953.99 Penalty.**

#### CROSS REFERENCES

- Power to regulate - see W.Va. Code 8-12-5(10) et seq.
- Placing material in streets - see TRAF. 311.01
- Loads dropping or leaking - see TRAF. 347.04

#### 953.01 DEFINITIONS.

For the purpose of this article, the following words and phrases shall have the meanings respectively ascribed to them by this section:

- (a) "Ashes" means the residue from the burning of wood, coal, coke or other combustible materials.
  - (b) "Commissioner" means the Commissioner of Public Works of the City of Moundsville.
  - (c) "County Health Officer" means the County Health Officer of Marshall County.
  - (d) "Garbage" means putrescible animal and vegetable wastes resulting from the handling, preparation, cooking and consumption of food.
  - (e) "Refuse" means all putrescible and nonputrescible solid wastes, except body wastes, including garbage, rubbish, ashes, street cleanings, dead animals, abandoned automobiles and solid market and industrial wastes.
  - (f) "Rubbish" means nonputrescible solid wastes, excluding ashes, consisting of both combustible and noncombustible wastes, such as paper, cardboard, tin cans, yard clippings, wood, glass, bedding, crockery and similar materials.
  - (g) "User" means any resident, entity, or business located in the City.
- (Passed 5-21-02.)

#### 953.02 COMPLIANCE WITH ARTICLE.

No person shall dump, burn, scatter, deposit or otherwise dispose of any garbage, rubbish, refuse, offal, ashes, glass, cans or other waste material, including both vegetable and animal matter, in the City except as provided in this article.

(Passed 5-21-02.)

#### 953.03 DISPOSITION.

No person shall, by himself or through another, accumulate any garbage or refuse on private property within the City, except such refuse or garbage as is being properly collected and stored for collection by the City, nor shall any person, by himself or through another, place any refuse in any street, alley or other public place or upon any private property, whether owned by such person or not, within the City except it be in proper containers for collection or under express approval granted by the Commissioner of Public Works.

No person shall throw or deposit any refuse in any stream or other body of water.

(Passed 5-21-02.)

#### 953.04 SCATTERING REFUSE.

No person shall cast, place, sweep or deposit anywhere within the City any refuse in such a manner that it may be carried or deposited by the elements upon any street, sidewalk, alley, sewer, parkway or other public place, or into any occupied premises within the City.

(Passed 5-21-02.)

#### 953.05 VIOLATIONS.

The imposition of any fine or penalty for any violation of this article shall not excuse the violation or permit it to continue; and any person convicted of a violation of this article shall be required to remedy such violation forthwith after notice to do so; and each day that the prohibited condition is maintained shall constitute a separate offense. The application of any fine or penalty shall not be held to prevent the enforced removal of the prohibited conditions as provided by law.

(Passed 5-21-02.)

#### 953.06 CITY REFUSE COLLECTION AND DISPOSAL.

- (a) Except as provided otherwise in this article, all refuse accumulated in the City shall be collected, conveyed and disposed of by the City, and no other person or business shall collect, or dispose of any refuse accumulated in the City.
- (b) This article shall not prohibit collectors of refuse from outside the City from hauling such refuse over City streets; provided, that such collectors comply with provisions of this article and meet the approval of the Commissioner and the County Health Officer and meet the requirements of any other governing law or ordinance.
- (c) The collection, conveyance and disposal of refuse within the City shall be done under the supervision of the Commissioner and the County Health Officer. The Commissioner, with the approval of the City Manager, shall make regulations concerning the days of collection, type and location of waste containers and such other matters pertaining to the collection, conveyance and disposal of refuse as

he shall find necessary, and he may change and modify such regulations, with the City Manager's approval, after notice to the public; provided, that such regulations are not contrary to the provisions of this article.

(Passed 5-21-02.)

#### **953.07 PRECOLLECTION REQUIREMENTS.**

(a) Preparation of Refuse.

- (1) Garbage. All garbage before being placed in refuse storage containers or plastic bags for collection shall have drained from it all free liquids and may be wrapped in paper.
- (2) Rubbish. All rubbish shall be drained of liquid before being deposited for collection.
  - A. Cans and bottles. All cans and bottles which have contained food shall be thoroughly rinsed and drained before being deposited for collection.

(b) Refuse Containers.

- (1) All refuse, except cardboard, newspapers and magazines, trash compactor bags, and grass and tree clippings shall be stored in an approved refuse container.
  - A. Approved for refuse storage containers. Refuse containers used for storage of refuse between collections, except as provided elsewhere in this article, shall have a capacity of not more than thirty-two gallons and shall be made of plastic or metal of a rigid construction suitable for outdoor use. The container shall have suitable handles and tight-fitting covers and shall be watertight. The container shall be kept in a neat, clean and sanitary condition at all times. The filled container shall be of such a weight that it can be handled safely by one person. The container may not have ragged or sharp edges or other defects liable to hamper or injure the person collecting the content.
  - B. Cardboard, newspapers, magazines and trash compactor bags must be stored between collections in a manner so that they remain dry and do not create a nuisance or a menace to public health or safety.
  - C. Grass clippings and tree trimmings and similar materials stored between collections must be stored so as not to create a nuisance or a menace to public health or safety.
  - D. Nothing in this section shall authorize storage of refuse longer than the time between collections. Refuse containers shall be provided by the owner, tenant, lessee, or occupant of the premises. Refuse containers shall be maintained in good condition. Any container that does not conform to the provisions of this article shall be promptly repaired or replaced upon notice. (Passed 5-21-02.)
  - E. Refuse and refuse containers shall be kept in a location so as not to be visible from the street in front of or adjacent to the residence, business, or property which has refuse collection service, except on the day of garbage collection and the day before garbage collection.

(Passed 8-16-11.)

- (2) Refuse placed on the right-of-way line or other approved location for collection shall be in containers or bundles as follows:

- A. All type of refuse in an approved refuse storage container.
- B. All type of refuse except broken glass or heavy or sharp objects in a sealed plastic garbage bag.
- C. Cardboard shall be crushed or folded and tied in bundles which can be safely handled by one person. Cardboard so bundled need not be in containers but must be secured so as to prevent scattering by wind.
- D. Newspapers and magazines must be bundled and bound with heavy tape or heavy string. Newspapers and magazines so bundled and bound need not be placed in containers.
- E. Compacted trash in a heavy trash compactor bag need not be placed in an approved container.
- F. Grass clippings may be placed in a sealed plastic bag.
- G. Tree trimmings, hedge clippings and similar material shall be cut to lengths not to exceed four feet and securely tied in bundles for collection. Bundles shall be a size which can be handled safely by one person. Trimmings and clippings so bundled need not be placed in a container.

(c) Notice of Refuse Containers in Violation of this Section. Notice to the individual responsible for maintaining the refuse container which is in violation of this section shall be provided by placing a waterproof notice on the container advising the responsible individual that the container is in a condition so as not to comply with this section and that repair or replacement is required within two weeks. The Commissioner of Public Works shall have the authority to refuse collection service for failure to comply with the notice after the two week period.

(d) The Commissioner may immediately suspend service when the weight or condition of the container, bag or bundle makes it totally unsafe to handle.

(e) Points of Collection. Collection will be made by the City crews from the alley whenever practical. When alley collection is not practical collection will be from the street. Customers will be required to place the refuse in approved containers and on ground level at the right-of-way line of the alley or street from which collection is made, or at such other point designated by the Commissioner. Special arrangements may be made, if deemed necessary, for those customers who cannot bring the refuse to the right-of-way line because of age or illness.

(Passed 5-21-02.)

#### **953.08 COLLECTION REQUIREMENTS.**

(a) Frequency of Collection.

- (1) Residential. Refuse accumulated by residences shall be collected at least once each week.
- (2) Commercial. Hotels, restaurants and such other businesses and institutions as deem it necessary may enter into an agreement for a greater frequency of collection. Where necessary to protect the public health, the Commissioner of Public Works shall have the authority to require that more frequent collections be made.

(b) Limitation on Quantity.

- (1) Residential. The Commissioner shall collect a reasonable accumulation of refuse of each family during a collection period for the standard charge.
- (2) Commercial. The Commissioner shall collect a reasonable accumulation of refuse of hotels, restaurants and other business and institutions during the collection period at a fair charge based upon the average weight or volume; and he shall



have authority to refuse to collect unreasonable amounts or to make an additional charge for such amounts. The Commissioner may require commercial establishments to utilize dumpsters when the accumulation of refuse can not be efficiently handled in smaller refuse containers. The Commissioner's decision may be appealed to the City Manager and if not satisfactorily resolved it may be further appealed to City Council.

(c) Special Refuse Problems.

- (1) Contagious disease refuse. The removal of wearing apparel, bedding or other refuse from homes or other places where highly infectious or contagious diseases have prevailed shall be performed under the supervision and direction of the County Health Officer. Such refuse shall not be placed in containers for regular collections.
- (2) Flammable or explosive refuse. Highly flammable or explosive materials shall not be placed in containers for regular collection but shall be disposed of as directed by the Commissioner at the expense of the owner or possessor thereof.
- (d) Refuse Property of City. Ownership of refuse material set out for collection shall be vested in the City.

(Passed 5-21-02.)

**953.09 CITY GARBAGE VEHICLES; CITY DUMPSTERS.**

- (a) The collection of garbage in vehicles owned, leased or used by the City provided for that purpose shall be under the supervision of the City Manager and directed by the Commissioner of Public Works.
- (b) When the City has available residential dumpster carts, the same may be rented to residential users on a first come, first served basis. The rental fee for 65 gallon dumpster carts shall be \$2.00 per month. The rental fee for 95 gallon dumpster carts shall be \$2.50 per month. The fee for any other such dumpster shall be established by the City Manager.
- (c) When the City has available dumpsters, the cost of service will be \$175.00 for a regular dumpster with an additional pickup fee of \$115.00 each. (Passed 6-17-14.)

**953.10 FEES; BILLING AND COLLECTION.**

- (a) Fees are hereby imposed upon all residents, entities, and businesses located in the City of Moundsville as users and beneficiaries of the protections and services provided by this article of the City Code. These fees are imposed regardless of whether such residents, entities, or businesses use the City's garbage collection services.
  - (1) For single-family or multiple-family residences: \$16.50 every month per family or unit for one collection per week of garbage, rubbish and ashes. There shall be a limit for each residence of 10 bags (30 gallon size) or the equivalent thereof per weekly pickup. There shall be a charge of \$1.00 for each additional bag beyond 10 picked up. Additional pickup collections beyond once weekly shall be charged at the commercial rates set forth below, unless the City determines that the volume requires a dumpster, in which case the dumpster fees set forth above shall apply.
  - (2) For commercial, industrial, public buildings and other nonresidential customers:
    - A. Class I Commercial. (Those small offices which produce mainly paper waste and which do not use dumpsters): \$17.52 per month.
    - B. Class II Commercial. (Those small commercial, business, or service establishments which do not use dumpsters): \$23.41 per month.
    - C. Class III Commercial. (Those commercial, business, or service establishments which use dumpsters shall be charged the following rate times the cubic yard size of their dumpster(s) times the number of pickups made per week): \$6.27 per cubic yard.
    - D. Class IV Commercial. (Those commercial, business, or service establishments which regularly dispose of bottles or other heavy items in addition to regular refuse, and which use dumpsters shall be charged the following rate times the cubic yard size of their dumpster(s) times the number of pickups made per week): \$6.73 per cubic yard.
    - E. Class V Commercial. (Those larger commercial establishments requiring special accommodation to be negotiated and established by the City Manager based on Class III or Class IV rates.)
    - F. Notwithstanding any of the foregoing rates established herein, the City Manager may adjust fees in accordance with subsection (a)(3) hereof.
    - G. Any person aggrieved by an order of the City Manager fixing the fee under this section shall have the right to a hearing before City Council by requesting such hearing in writing addressed to the City Manager. The City Council shall, as soon as possible thereafter, hear the aggrieved party and make a ruling thereon. Any ruling of the City Council after such hearing shall be final.
    - H. Commercial, industrial or public buildings, or other nonresidential customers utilizing dumpsters may be eligible upon petition to the City Manager and subject to his approval to an adjusted rate as may be established in accordance with subsection (a)(3) hereof. Any person aggrieved by an order of the City Manager fixing the fee under this section shall have the right to a hearing before the City Council by requesting such hearing in writing addressed to the City Manager. The City Council shall, as soon as possible thereafter, hear the aggrieved party and make a ruling thereon. Any ruling of the City Council after such a hearing shall be final.
    - I. Additional fees may be charged for collection of refuse at locations other than ground level.
  - (3) The City Manager and City Council shall in establishing or adjusting fees consider:
    - A. The cost of collection and disposal of the garbage, rubbish and ashes;
    - B. The fees charged establishments with the similar amounts and types of rubbish, garbage and ashes and the disposal containers utilized;
    - C. Where the cubic yard volume of refuse is not established by a commercial entity to the satisfaction of the City Manager, the City Manager (or City Council upon appeal) may estimate the same.
  - (4) Security deposits may be required from new customers in an amount equal to two month's fee, before beginning service.
- (b) (1) Payment of fees; delinquent accounts. All fees shall be paid to the City Treasurer. All delinquent accounts are subject to stoppage of service without notice. If a delinquent account is not paid within thirty days, the Commissioner of Public Works shall cease all refuse collection for that account unless otherwise directed by the City Manager. Service shall be resumed thereafter only on payment of the accumulation of fees for the period of the

noncollection unless the City Manager specifically directs otherwise.

- (2) Legal remedy. The stoppage of collection services hereinbefore authorized for nonpayment of fees shall be in addition to the right of the City to proceed for the collection of such unpaid charges in a manner provided by law for the collection of a Municipal claim.

(Passed 6-17-14.)

**953.11 APPEALS FROM REGULATIONS AND FEES.**

Any person aggrieved by a regulation or fee charged in this article, shall have the right to file a written appeal with City Council, which shall set a time and place for hearing of which the applicant shall be notified. After hearing, City Council may confirm, modify or revoke any such regulation or fee. Decision of City Council shall be final.

(Passed 5-21-02.)

**953.12 PRIVATE COLLECTION OF REFUSE FORBIDDEN.**

(a) In General. Except as hereafter provided, collection of refuse by any person or entity other than the City of Moundsville is forbidden.

(b) Exceptions Where City Unable to Provide Services. Where the City, in its sole discretion and opinion, does not have the equipment or manpower to provide efficient collection for a commercial or industrial firm, corporation or business because of the type or quantity of refuse, the City Manager, with approval of the City Council may provide an exemption to permit the commercial or industrial entity to use a third party or entity, approved by the City Manager and City Council, to supply collection and disposal services.

(Passed 5-21-02.)

**953.99 PENALTY.**

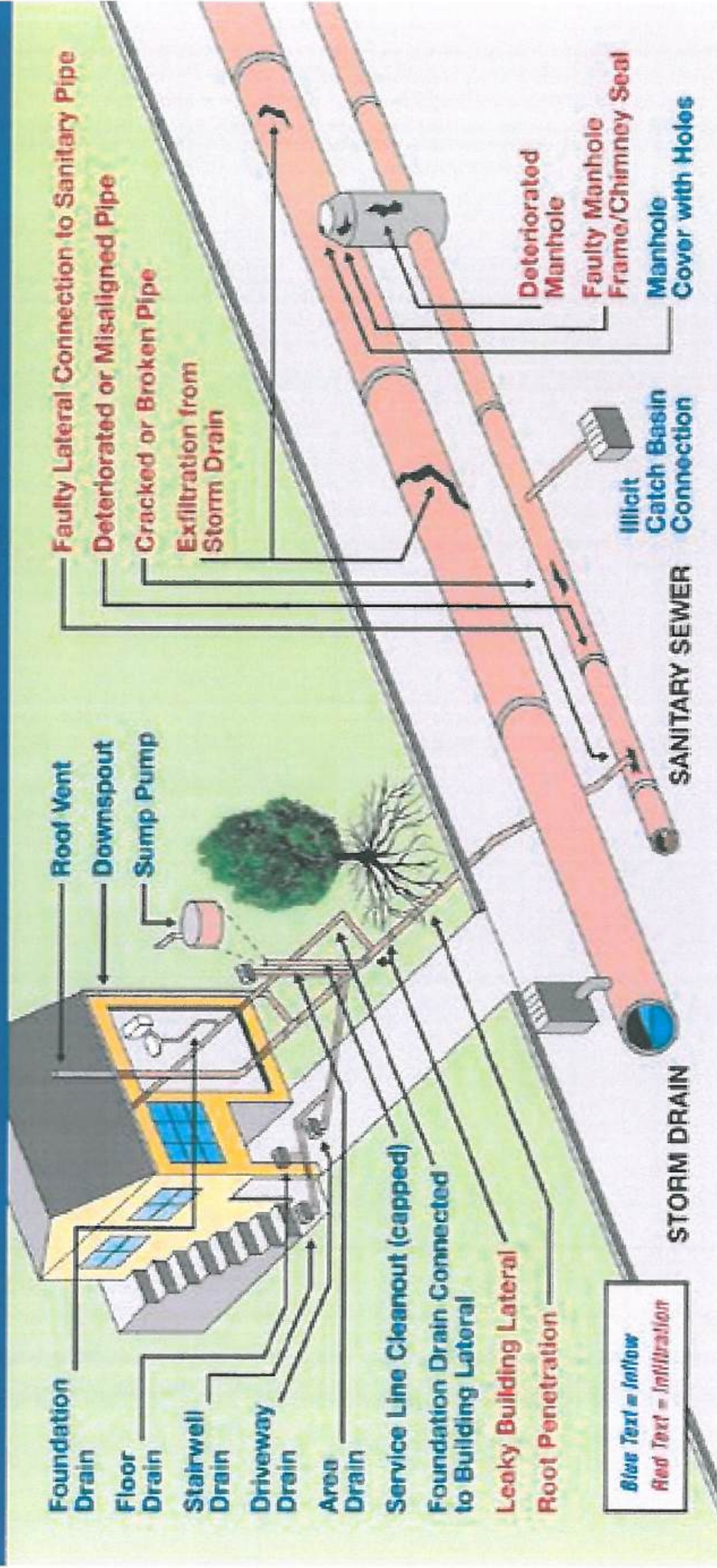
(EDITOR'S NOTE: See Section 101.99 for general Codified Ordinances penalty.)

---

# ***Appendix G***

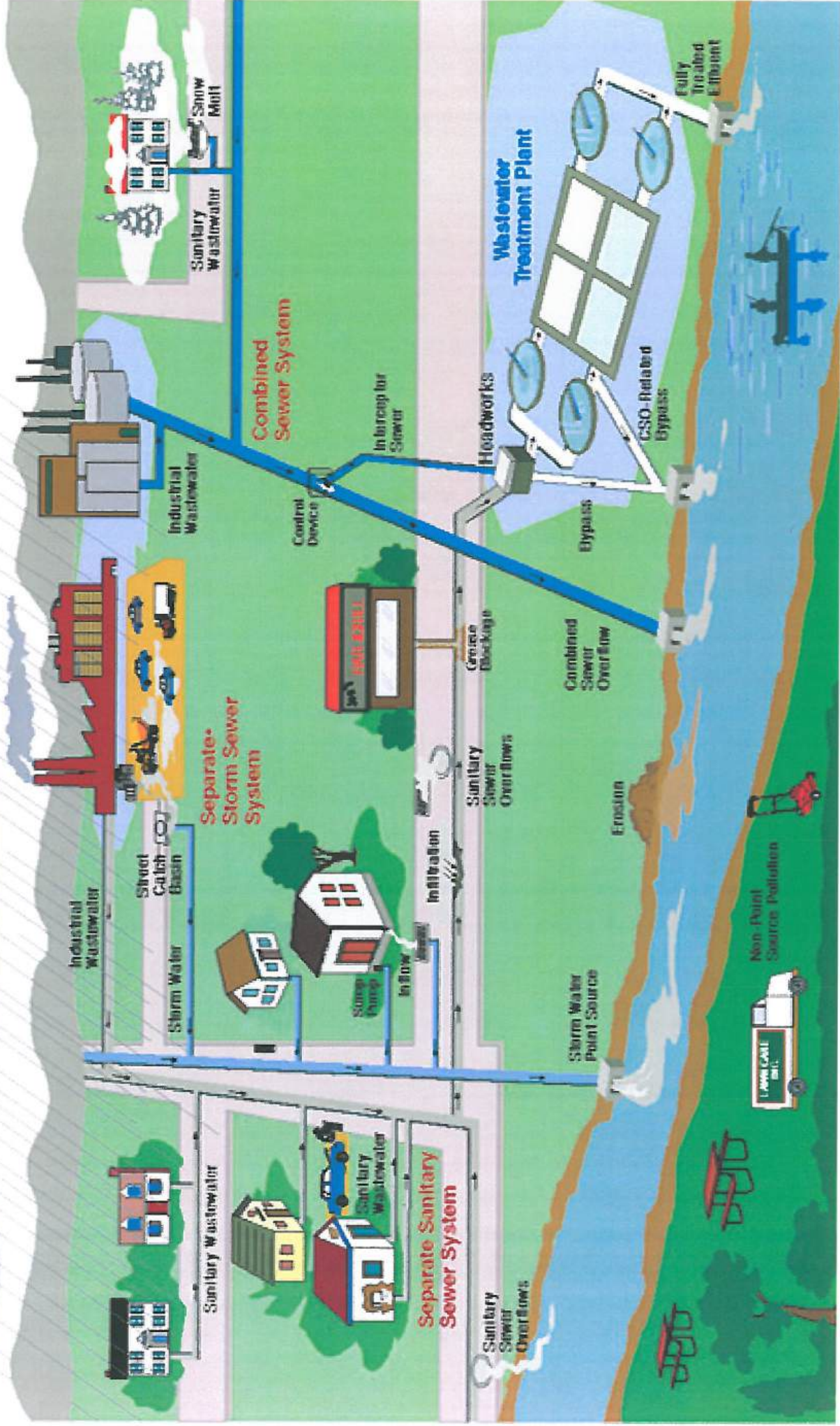
## ***Brochures***

# SEWER CAPACITY IMPACTED BY INFILTRATION AND INFLOW





# Urban Wet Weather Flows





## Rain Barrels

Collecting rainwater will save you money and help the environment at the same time. You can collect a great amount of rainwater with a simple system. This should have a great impact on your water bill. Stormwater Benefits rooftops, roads, parking lots, driveways, and compacted soils are impervious surfaces. Rain Barrels reduce runoff by collecting and storing rainwater from your rooftop. An additional 10% of impervious surface alters the natural rainfall runoff pattern and has the potential to damage sensitive ecosystems. Infiltration, allowing the water to soak into nearby soils, will recharge groundwater supplies by using a more natural water cycle path. Rain Barrels conserve water and lower costs

(a rain barrel can save approximately 1,300 gallons of water during peak summer months)



**Wash Your Vehicle on the lawn or other unpaved surface to minimize the amount of dirty soapy water flowing into a catch basin or stream.**

**Use a commercial car wash; they have devices which screen the polluted water Wastewater Plant for treatment.**

**Use a hose with a shutoff nozzle, you will save money and there will be less run off**

**Use detergents sparingly, use biodegradable, phosphate-free detergents.**

## **Stormwater and Illicit Discharge**

The Stormwater runoff is contaminant free. In reality, it picks up pollutants such as soil, animal waste, salt, pesticides, fertilizers, oil and grease, and debris and transports them to the waterways where they go into with no treatment. This is Stormwater pollution.

### **The "illicit Discharge"**

An illicit discharge is any discharge to a municipal storm sewer system that is not composed entirely of stormwater. Pollutants end up in storm sewer systems in a lot of different ways, many of which are easily preventable. In some instances, companies and individuals have waste pipes tapped into stormwater pipes. In other cases, individuals use the storm drain inlets to dispose of various types of waste. Disposal of anything other than stormwater in storm sewers is illegal.

The Moundsville Sanitary Board is providing public notice that it currently owns and maintains four (4) combined sewer overflows that have the potential to discharge diluted sewage within the Sanitary Board Service Area. This may affect Parrs Creek from Fostoria Avenue to the Ohio River, Middle Grave Creek from Valley Fork Park to entry of Big Grave Creek and from every point of Big Grave Creek to the Ohio River, the Ohio River and all points between during and immediately after rainfall events. Also CSO discharge points have been marked for easy identification with a sign at the end of each pipe. Therefore it is advised

B  
O  
O  
K  
M  
A  
R  
K



[HOME](#)