

**COMBINED SEWER SYSTEM  
OPERATION & MAINTENANCE PLAN,  
POLLUTION PREVENTION PLAN and  
PUBLIC NOTIFICATION PROGRAM**

**for the**

**CITY OF MARSEILLES, ILLINOIS**

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## **Introduction**

The City of Marseilles is located in the Illinois River Valley about 75 miles southwest of Chicago. With a population of about 5,094, the City occupies both the valley and the surrounding bluff areas on the north side of the river. Collection and treatment facilities for sanitary wastewater are operated and maintained in strict accordance with the NPDES permit held by the City. The receiving stream for wastewater treatment plant effluent is the Illinois River.

A natural stormwater drainage system, which discharges to the river through a series of creeks and ravines, is augmented by an extensive storm sewer system. Also, portions of the sanitary and storm sewer systems are combined, which allow the treatment plant to receive storm water runoff directly. However, in recent years some effort has been made to separate portions of the combined sewer system in an effort to alleviate the high flows received by the collection system and treatment plant during wet weather. Although large flows remain a significant problem, it is believed that the direct inflow component has been reduced.

Excess wet weather flows add considerably to the operational cost of the wastewater treatment plant and are generally detrimental to its operation. The potential for expansion of the system, as well as the possibility of attracting new industry to the area, is inhibited by daily average flows, which approach the design criteria of the treatment plant. Also, the adverse effects of untreated wastewater discharges on the receiving stream, which are unavoidable when the treatment plant hydraulic capacity is exceeded, are undesirable from both health and aesthetic viewpoints. For these reasons, it is necessary to formulate an operational plan which, will ensure that the collection and treatment facilities are operated in a manner which reduces the impact to the City and the environment.

The purpose of this plan is threefold. First, a preventive maintenance schedule will be developed to insure that the maximum degree of treatment possible with the present facilities is provided for all received wastewater streams. Secondly, a schedule of activities for resolving known problems will be established to reduce the extent of storm water infiltration to the system as much as possible within the bounds of economic feasibility. Thirdly, a plan must be developed for future detection of infiltration sources. This will require a careful investigation and analysis of the collection system to isolate problem areas and determine cost-effective solutions.

In accordance with the goals stated above, this plan deals with both operational and maintenance aspects of the system. An inventory of the sanitary sewer system and wastewater treatment plant facilities is given in Chapter 1. Treatment capacities and design criteria are noted and operational conditions for the "first flush" facility are detailed. In Chapter 2, administrative aspects of the treatment system are reviewed, including a description of the NPDES permit requirements and conditions as well as the City ordinances, which cover operation and funding of the sewer system. Chapter 3 establishes the preventive maintenance schedules for both the sanitary collection system and the treatment plant "first flush" facilities. Maintenance procedures for storm sewers are also briefly discussed.

Control strategies for the treatment system under wet weather conditions are indicated in Chapter 4. Since there are not control mechanisms present in the collection system, control options are limited to operation of the "first flush" facility at the treatment plant. An explanation of operational procedures is given. Finally, Chapter 5 lists the activities, which have been undertaken to help reduce the volume of storm water flows in the system. Work completed over the past several years are described, and the remaining known problems are identified and scheduled for repair. Future investigative options are described, although decisions on some future projects are still pending.

**TABLE 1****BREAKDOWN OF MANHOLES AND SEWER LENGTHS BY AREA**

<u>AREA</u>	<u>GEOGRAPHY</u>	<u>MANHOLES</u>	<u>APPROXIMATE SANITARY SEWER LENGTH</u>
1	Valley Bottom	22	6,920 ft.
2	Sloping Valley	34	10,040 ft.
3	Valley Bottom	26	11,920 ft.
4	Sloping Valley	38	13,400 ft.
5	Steep Bluff	25	11,120 ft.
6	Top of Bluff	41	12,960 ft.
7	Top of Bluff	28	6,880 ft.
8	Sloping Valley	24	6,720 ft.
9	Top of Bluff	26	7,200 ft.
10	<u>Top of Bluff</u>	<u>26</u>	<u>4,800 ft</u>
	Total	290	91,960 ft. (17.42 mi.)

## **Chapter 1 System Inventory**

The City of Marseilles waste treatment system is composed of a sanitary waste collection system and a municipal activated sludge treatment plant. Discharges to the Illinois River occur only from the plant – and include treated dry weather and first flush flows as well as wet-weather excess flows that have received preliminary treatment. The Marseilles collection system is entirely independent from other municipal collection systems. It neither receives flow from, nor conveys flow to another entity.

### **1.1 Collection System Description**

The collection system serves the majority of the City residences. The majority of the system is based on gravity flow, due to the naturally sloping river valley. Three lift stations are currently located within Area 3. Collected wastes from the northernmost areas, which are located on a bluff with considerable elevation over the valley, are delivered to the main valley trunks which run in a westerly direction to deliver flow to the treatment plant. The City is laced with many creeks and ravines, which provide drainage from the bluff areas to the river. Sanitary sewer lines necessarily pass below these waterways at several locations. The abandoned Illinois and Michigan Canal traverses the City from east to west, crossing over sanitary sewers in two locations. The Chessie System Railroad parallels the I&M Canal, and crosses sanitary sewers in three places.

Appendix A contains a map of the City of Marseilles, which indicates the locations of the various sanitary sewers and manholes, which comprise the collection system. The map is an updated version of a drawing prepared for the 1984 SSES report. For the purposes of the SSES, the collection system was divided into 6 areas, each of which is tributary to a primary sewer trunk. Since 1984, sanitary sewer service has been extended in several locations, requiring the addition of 4 tributaries to the map for a total of 10 areas. All manholes are numbered within each area, and sewer sizes are also specified. Table 1 is a summary of the number of manholes and approximate linear feet of sewer in each area.

The steeply graded areas, which represent the valley bluff, begin north of Bluff Street and incorporate Areas 6,7,9 and 10, as well as portions of Areas 4 and 5. At the top of the bluff, near Walnut Street the ground elevation is a few hundred feet above the Bluff Street elevation. Areas 2, 4, 5 and 8, located mostly south of Bluff Street have a steady grade down to the railroad, which is perhaps 50 feet below the Bluff Street elevation. The remaining Areas 1 and 3 are located in the flood plain and slope gently down to the river. Several levees protect residences and the treatment plant from high river levels. It should be noted that the Marseilles Dam causes a differential of about 15 feet in the river level between the east and west sides of Main Street. The river shown west of Main Street is actually a spillway for the Dam and typically flows at a depth of a few feet.

Inspection of the map indicates that the treatment plant, located in Area 1, is fed by 2 trunk lines. The first runs west on Commercial Street and carries the flow from the entire City proper. The second runs south on Spicer Street and connects Area 8, which is composed entirely of new sewer. Of interest in Area 1 is the primary 27" trunk which begins in MH 1-12 at Lincoln and Aurora Streets, runs west on Lincoln and Young Streets to MH 1-5, then crosses beneath the I&M Canal to meet MH 1-4 before heading west on Commercial Street.

Area 2 is tributary to the primary trunk in Area 1 through an 18" sewer connecting MH 2-1 to MH 1-5, which passes beneath the railroad grading and Long Creek. This area also includes the trunk, which carries the flow from Area 7.

Area 3 includes the low-lying residential district protected by the levee. The original SSES study identified this as an older area of town where the sewers were formerly combined. The probability of infiltration is high in this area, especially along River Street. In 2014, sanitary sewers on Wallace and River Streets were replaced. This project converted the existing sanitary sewer to a storm sewer, a new sanitary sewer was installed and a new sanitary and stormwater lift station was installed. Additionally, all homes in the area were required to install new overhead sewers and any stormwater discharge was routed to the converted storm sewer. This area is tributary to the primary trunk in Area 2 through a 21" line passing beneath the I&M Canal on Aurora Street between MH 3-01 and MH 1-12.

As referenced earlier, Area 3 also houses two lift stations. The Infra-Metals lift station is located on East Broadway St., where sewage is pumped to MH 3-12. The Riverfront lift station is located at the corner of Mill and Main Streets, where sewage is pumped to MH 3-20. The East Broadway lift station contains two pumps, each with the capacity to pump 260 GPM at 21 feet of head. The Riverfront lift station also contains two pumps, each with the capacity to pump 225 GPM at 27 feet of head. The aforementioned Wallace St. lift station discharges to MH 13B. Wallace St. contains two pumps, each with the capacity to pump 66 GPM at 30 feet of head.

Areas 5 and 6 are both tributary to Area 4. Area 5 is serviced by the 10" main on Washington Street between MH 5-01 and MH 4-16. Area 6 drains through a 10" sewer connecting MH 6-01 to MH 4-06, near the intersection of Orange Avenue and Bluff Street. Because of the steep gradient of the main running down Orange Avenue and the infiltration which occurs in Area 6, considerable pressure can be developed in MH 6-01.

Area 7 is located on Rutland Street and Bratton Avenue and is composed of new sewer. This area, like Area 8, is not expected to be a significant source of

infiltration. Area 7 is tributary to Area 2 through an 8" sewer running south on Rutland Street between MH 7-01 and MH 2-17.

The service area for this section is all residential. Area 8 is not expected to be a significant source of infiltration. The sewers are all plastic and are 8- and 10-inch diameter constructed of plastic material. This area drains to MH 1-2.

Area 9 contains some of the newer sections of sewer in town. Area 9 services the west bluff and drains via 8" sewer into Area 2. The west section of Area 9 drains to MH 2-42 at the corner of Bluff and Sycamore. On the east end, Area 9 flows into MH 2-2 at Sample.

Area 10 is the newest area of the collection system and is constructed of 6" and 8" PVC pipe. Area 10 flows off the east bluff discharging into MH 4-38 on First Ave. The far east section of Area 10 flows to MH 5-5 on Bluff St. The section also collects all waste discharges from the Glenwood RV park, which operated a private sewer system.

Due to the relative flatness of the collection system in the river valley near the treatment plant, the storage capacity of the system is limited. Under high flow conditions, surcharging of the sewers takes place very rapidly if an attempt is made to restrict the flow at the treatment plant to prevent the bypass of raw influent. The resulting health hazard created by the flooding of residential basements while the sewers are surcharged is significant. For this reason, the City applied for the CSO waiver which led to the construction of the "first flush" retention facility. A copy of the exemption granted by the Illinois Pollution Control Board is included in the appendix to this plan.

Collection system hydraulic capacity is also limited by shallow grades. The 27" main trunk has design capacity of about 8 MGD. With the addition of the "first flush" facility, the influent pumping capacity of the plant is now sufficient to prevent surcharging of the collection system for flows below 8 MGD.

## **1.2 Treatment Plant Facilities**

The Marseilles Wastewater Treatment Plant is located within Area 1 at the southwestern edge of the City limits. Treatment processes provided by the plant include bar screening, grit removal, primary clarification, biological reduction with activated sludge, secondary clarification, chlorination of the final effluent and Flood Pump Station. The City holds an NPDES permit for treatment plant discharges, which incorporates an authorized bypass of treatment plant facilities for wet weather flows after storage of "first flush" flows. The CSO outfall is located approximately 40°, 19', 43" latitude and 88°, 43', 30" longitude.

The plant has a design average flow of 1.23 MGD into its primary treatment system. Secondary treatment design flow capacity is somewhat larger due to a



pre-treated industrial flow, which was present at the time of construction of the plant. The industry is now closed, so that this flow no longer contributes to hydraulic loading. The design maximum flow into the primary system is 3.15 MGD, which is considerably less than the 8 MGD hydraulic capacity of the collection system.

In 1986, the plant was granted a storm water bypass waiver, which authorized the construction of a first-flush capture facility. The facility includes an above ground storage tank with a storage capacity of 0.6 MG. Results from CSO and SSES studies indicated that typical first-flush volumes were on the order of 0.4 MG. An excess flow pumping station fills the tank during a "first flush" event and pumps the excess flow directly to the river after the tank is full. Influent to this station is screened prior to entry and flows from a rectangular weir, which surcharges when the plant inflow exceeds the primary treatment design maximum flow of 3.15 MGD.

Three submersible pumps in the excess flow pumping station provide a pumping capacity of 8 MGD to the first-flush tank, which matches the hydraulic capacity of the collection system. The capture tank is equipped with an overflow for automatic discharge to the river upon filling, but standard procedure calls for Motor Operated Valves to automatically turn valves, directing excess flow to the river without further treatment. Automatic alarms are in place to warn the operator of an impending full tank. Upon notification, the operator responds, ensuring proper valve orientation has been completed.

After the overflow event has ended and the treatment plant inflow has been decreased below the design maximum, the captured "first flush" volume is drained into the plant influent by gravity. In this way, full primary and secondary treatment is given to the captured wastewater.

## Chapter 2 Administrative Aspects

This chapter describes the regulations governing operation of the City wastewater treatment facilities, including NPDES permit requirements as well as City ordinances.

### 2.1 NPDES Permit Conditions

The City holds a National Pollutant Discharge Elimination System (NPDES) permit No. IL0021059, valid until April 30, 2025 for discharge of its treated wastewater effluent to the Illinois River. This permit places limitations on the type, duration, and concentrations of the allowed effluents. Operation of the treatment facilities must be in accordance with the permit conditions at all times.

Plant effluents, which are less than or equal to the design maximum flow of the primary treatment, facilities must satisfy the following requirements:

Parameter	Load Limits lbs/day DAF (DMF)			Concentration Limits mg/L		
	<u>Mo</u>	<u>Wk</u>	<u>Daily</u>	<u>Mo</u>	<u>Wk</u>	<u>Daily</u>
	<u>Avg</u>	<u>Avg</u>	<u>Max</u>	<u>Avg</u>	<u>Avg</u>	<u>Max</u>
CBOD5	205(525)	410 (1051)		20	40	
TSS	256(657)	462 (1182)		25	45	
Fecal Coliform	Daily Maximum shall not exceed 400 per 100 mL (May-Oct)					
pH	Shall be in the range of 6 to 9 Standard Units					
Cl2 Residual						0.75
Ammonia Nitrogen as (N)						
March-						
May/Sept-Oct			64(163)			6.2
June-Aug			65(166)			6.3
Nov-Feb			62(158)			6
Phosphorus	Monitor Only					
Total Nitrogen	Monitor Only					

Plant effluents, which exceed the primary treatment design maximum flow, may be allowed to bypass the treatment facilities provided the following conditions are met:

- a. The plant must be receiving its design maximum flow and providing a level of treatment consistent with the conditions given for flows below the design maximum.
- b. The plant must capture and hold for further treatment the first .6 MG of the flow over the design maximum. The stored wastewater must then be

treated to a level consistent with conditions given for flows below the design maximum.

- c. The remaining overflow must be screened before direct discharge to the river.

The Marseilles Wastewater Treatment Plant has consistently been well operated and maintained since start up of the secondary treatment system. All flows are treated in strict accordance with the NPDES specifications. Exceedances of the specified permit requirements for discharge pollutants have been rare, and have usually been caused by factors external to the plant.

## **2.2 Sewer Use Ordinances**

The City has adopted several ordinances, which establish by law the proper use and fees for sanitary sewer service, using the general provisions of the NPDES permits as a guide. Appendix B contains copies of the four City ordinances, which govern sewer service. Ordinances 51.075 – 51.084 establish the sewer user charges and billing policy. Ordinances 51.035 – 51.065 govern connection to and use of the sanitary sewer.

Of particular interest is the composite ordinance, which establishes proper and watertight sewer connection procedures in Ordinance 51.041. In Ordinances 51.055 and 51.056, users are prohibited from discharging any type of storm water to the sanitary sewer. Additionally, users are required by law to remove any connections, which may now exist between storm drains and the sanitary system. Enforcement policy is outlined in 51.999, which provides for penalties where violations of the ordinance are known to exist. These penalties range from monetary fines to the shutoff of City water services.

## **2.3 Monitoring and Reporting**

The City of Marseilles currently monitors all CSO discharges. Data collected includes flow rates, volumes, and associated rainfall data (duration and total accumulation). Per our NPDES permit, the City is required to analyze CSO discharges daily when discharging for BOD5, TSS, Fecal Coliform and pH. This data is reported to IEPA on a monthly basis with the Discharge Monitoring Reports. A long-term control plan (LTCP) will be developed by the City in accordance with its NPDES permit. This LTCP will specify activities that the City will complete in order to reduce the number of CSOs per year. The existing monitoring and reporting procedures will be used to document the effectiveness of these activities in reducing CSO events.

## **2.4 Updating the Operations & Maintenance Plan**

The LTCP prepared by the City must ensure that the CSO discharges allowed under its permit comply with all applicable standards, including water quality standards. The LTCP may identify additional improvements or policies required to meet the water quality standards. Also, the City is required to present this plan to the public. The City will update this plan to be consistent with the LTCP and as required to address comments received during the public presentation. Also, the City will review this plan on an annual basis and make appropriate changes to keep this plan current.

## **2.5 Recordkeeping**

Basement backups, street flooding, collapsed sewers, blocked sewers and other collection system problems are logged on the Sanitary Sewer Department's daily log sheets. Any work that is done to the sewers to correct identified problems are logged on the Maintenance Department's daily log sheets. Cost sheets with explanations are also updated daily on any projects that are being done by the City's Maintenance Department.

All maintenance logs and records, and data collected for CSO discharges (including flow rates, volumes and associated rainfall) are retained for a minimum of five years.

## **Chapter 3 System Maintenance**

The City has established several maintenance procedures for the proper operation and maintenance of the City's combined sewer system and wastewater treatment facility during dry and wet weather flows. The purpose of the maintenance is to reduce excessive inflow and infiltration in the system, to prevent basement backups, to reduce the amount of solids in the system and to maximize the capture the "first flush" at the treatment plant. Schedules for routine maintenance are established for both the collection system and treatment facilities.

### **3.1 Manhole Inspection/Flow Monitoring Schedule**

The City sanitary sewer system contains approximately 290 manholes, each of which is a potential contributor to storm water infiltration. Table 1 gives a breakdown of the number of manholes in each area. Under the old combined sewer system, many manholes were fitted with perforated covers to enhance storm drainage. These covers have been replaced with solid covers as part of the separation process. Infiltration can occur at manholes by other means as well, such as improper fit of the pre-cast sections and cap, and leakage through the grouting for brick-lined manholes.

To aid in reducing the extent of infiltration, a routine manhole inspection and maintenance program has been created. Manholes have been numbered and scheduled for inspection on a yearly basis. Various areas defined on the map in appendix A will be inspected each quarter of the year. The inspection schedule is listed in Table 2.

Manhole inspections will check for cover fit, elevation, and frame condition, and also wall and tile conditions. Problems, deficiencies, and evidence of infiltration or surcharging will be recorded and the manhole will be scheduled for repair. Hydraulic conditions in the manhole will be noted, and a portable velocity meter will be used to measure the various flows in the manhole where possible. Weather conditions prior to the flow measurement will also be recorded to develop a history of area flow patterns. These data should be helpful in determining sources of infiltration. Figure 1 is a sample manhole inspection form.

Inspections will be performed in a safe manner, using the appropriate safety equipment for manhole maintenance. This equipment includes an oxygen detector and a portable ventilator. Entrance to the manhole will not be made unless at least two employees are present.

### **3.2 Sewer Inspection and Cleaning Schedule**

Approximately 91,960 feet of tile are contained within the City sanitary sewer system. Accumulation of debris within individual sewers can significantly reduce the hydraulic capacity of the system, leading to surcharged flow conditions and the health risks associated with flooded residential basements. Relatively flat areas are especially prone to sedimentation within the sewer due to small wastewater transport velocities.

**TABLE 2**

**YEARLY MANHOLE AND CATCH BASIN INSPECTION SCHEDULE**

<u>MONTH</u>	<u>AREA</u>	<u>MANHOLES TO INSPECT</u>
April	6	41
May	7	28
June	5	25
July	2	34
August	4	38
September	8	24
October	3	26
November	1	22
December	9	26
January	10	<u>26</u>
	Total	290

**CITY OF MARSEILLES SEWER DEPARTMENT**

**MANHOLE INSPECTION SHEET**

MH# \_\_\_\_\_ DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_ BY: \_\_\_\_\_

LOCATION: Pavement / Berm / Gravel

DESCRIPTION OF THE LOCATION: \_\_\_\_\_

---

**MANHOLE EXTERIOR**

1. LID & CASTING CONDITION: Good/Bad Construction: \_\_\_\_\_  
Construction Type: Solid/Holes
2. ELEVATION OF LID & CASTING: Above/Below/Flush
3. DIAMETER OF OPENING: \_\_\_\_\_ DIAMETER OF HOLES: \_\_\_\_\_
4. SURROUNDING AREA: Dry / Damp / Wet / Standing Water

**MANHOLE INTERIOR**

1. WALLS: Good/Fair/Poor Construction: \_\_\_\_\_  
Leaking: Yes/No Depth: \_\_\_\_\_  
Steps: Good/Fair/Poor/None
2. DEBRIS: None/Little/Much
3. DEPTH OF WATER: \_\_\_\_\_ SURCHARGE MARK: Y/N HEIGHT: \_\_\_\_\_
4. INCOMING LINES: MH# \_\_\_\_\_ MH# \_\_\_\_\_  
OUTGOING LINES: MH# \_\_\_\_\_ MH# \_\_\_\_\_

**SKETCH**

NOTE THE FOLLOWING ITEMS ON THE DRAWING:

- A. Pipe sizes of all sewers entering
- B. Locations of where pipes are entering.
- C. Pipe types (Clay, etc.)
- D. Direction of flow
- E. Sewer Service: Yes \_\_\_\_\_ No \_\_\_\_\_ How Many \_\_\_\_\_

Show by marking on the sketch.

Figure 1: Sample Manhole Inspection Data Sheet

Staffing levels at the City do not allow for regular inspection and cleaning of sewers. Closed circuit television (CCTV) inspection of trunk sewers is completed on an as needed basis to address potential problems in the system. Sewers are selected for CCTV inspection based on maintenance concerns, or if flow metering data indicates that additional investigation of particular sewers is required. CCTV inspection will continue on an as-needed basis.

Cleaning of trunk and interceptor sewers is completed on an as-needed basis for maintenance or as part of any televising or rehabilitation working being conducted. The City will make an effort to clean all trunk and interceptor sewers on a six-year cycle. This frequency of cleaning may need to be adjusted based on future regulatory requirements.

The maintenance form shown in Figure 2 will be completed for each cleaning task. This form will serve as an inspection record and will note that amount and type of material removed from the sewer. Observations of broken tiles or excess flow will also be documented.

### **3.3 Street Sweeping/Catch basin Cleaning**

Street sweeping and catch basin cleaning are important to ensure the proper operation of the storm sewer system and to minimize solids deposition in the combined system. Where inadequate storm drainage occurs, there is the likelihood of additional infiltration into the sanitary sewer. In the City of Marseilles, all curbed and guttered streets are swept on a weekly basis, weather permitting.

The City's street sweeper is used annually for leaf removal. The sweepings are transferred to a dump truck, which then hauls the leaves to an appropriate disposal area. The majority of leaves are collected in about a three-week period.

Catch basin cleaning (top of grate) is done continuously in the City. City crews go out two times a month and clean basin grates as needed. Larger storm sewer boxes are cleaned several times a year with a Vactor truck, especially during leaf-off in the fall and during the spring.

Interior catch basin inspections will be performed on a regular basis as a part of the manhole inspection program and will follow the schedule given in Table 2. Maintenance personnel will immediately clear an obstructed catch basin and record any observed problems. A sample maintenance form is given in Figure 3. Due to the large number of catch basins in the City, a numbering system similar to that for manholes does not yet exist. Therefore, maintenance records will refer to them by location.



### 3.4 Treatment Plant Equipment Maintenance

The "first flush" facility constructed at the wastewater treatment plant requires preventive maintenance to assure that its operational readiness and capacity are maintained. Routine maintenance is primarily confined to the excess flow pumps and their controls. Tank wash down is accomplished after each excess flow event.

There are three submersible pumps located in the excess flow pumping station. Preventive maintenance for the pumps consists of periodic cleaning and testing of hydraulic capacity. Pump cleaning should be performed quarterly by lowering the level of the excess flow wet well to just above the volute of the pumps. A hose may be used to wash off any fats or grease that have accumulated on the pumps. Such contamination will prevent the transfer of motor heat to the surrounding liquid.

Pump performance may be tested in two ways; the first with the discharge valve shut to determine the extent of impellor, ring, and bearing wear, and the second with the pumps actually delivering excess flow to the storage tank or the river. The second test is only performed during excess flow storm events.

The procedure for the first test should be carried out twice yearly. First, the pump should be started and allowed to operate momentarily to remove trapped gasses. With the pump running the discharge valve should then be closed and readings taken of the motor amperage and discharge pressure. These readings are recorded on the data sheet shown in Figure 4a. If the pressure has significantly changed from the previous reading then serious wear may have taken place on the wear ring or impeller. If the motor amperage has changed from the previous reading, then friction in the pump is greater, probably caused by worn bearings. Either of these circumstances should be investigated immediately.

The second test, which checks the hydraulic capacity of the pumps must be performed during an excess flow event. While the excess flow pumps are discharging to the storage tank, the motor amperages and the total flow rate from the flow transmitter should be recorded. Readings should be taken when the tank is full, so that the operating head will be the same for all tests. Figure 4b is a sample data sheet for this test. The discharge valves should then be changed once the tank is full, to direct flow to the river. The measurements of motor amperage and flow rate should be repeated. After completion of the measurements, the readings should be compared to those recorded previously. Significant changes in pumping capacity should be investigated as soon as possible.

The final maintenance task is to clean the floats, which act as secondary controls for the excess flow wet well level. This should be done quarterly, at the same

time as the cleaning of the pumps. Contamination will also accumulate on the four float switches, causing them to not operate properly. The float switches should be individually lifted out of the wet well, cleaned with a mild detergent, and replaced. Currently the excess flow wet well level is controlled by transducers.

### **3.5 Illegal Sewer Connection Identification and Elimination**

The City does not currently have a written policy for finding and removing illegal sewer connections. The City requires residents and business owners to remove illegal connections as they are located. Illegal connections are typically located through a sanitary sewer evaluation study (SSES) or by via building inspections. The City will continue to conduct both SSES's and building inspections as necessary in areas where flow monitoring data indicated excessive infiltration and inflow

### **3.6 Lift Station Inspection**

Lift Stations within the collection system are inspected on a weekly basis to ensure proper operation. Weekly inspections include confirmation of properly working level sensing equipment, proper operation of pumping equipment, identification of unusual odors present at the lift station and overall visual inspection of the lift station wet well.

**TABLE 3****Sewer Cleaning Schedule**

<b><u>AREA</u></b>	<b><u>SCHEDULE</u></b>	<b><u>AMOUNT OF SEWER TO BE CLEANED</u></b>
	YEAR 1	
6	APRIL-JULY	12,960 FT
7	AUGUST-NOVEMBER	<u>6,880 FT</u>
		<b>19,840 FT TOTAL</b>
	YEAR 2	
5	APRIL-JULY	11,120 FT
2	AUGUST-NOVEMBER	<u>10,040 FT</u>
		<b>21,160 FT TOTAL</b>
	YEAR 3	
4	APRIL-JULY	13,400 FT
8	AUGUST-NOVEMBER	<u>6,720 FT</u>
		<b>20,120 FT TOTAL</b>
	YEAR 4	
3	APRIL-JULY	11,920 FT
1	AUGUST-NOVEMBER	<u>6,920 FT</u>
		<b>18,840 FT TOTAL</b>
	YEAR 5	
9	APRIL-JULY	7,200 FT
10	AUGUST-NOVEMBER	<u>4,800 FT</u>
		<b>12,000 FT TOTAL</b>
	<b>GRAND TOTAL</b>	<b><u>91,960 FT</u></b>

**TABLE 4**  
**SEWERS REQUIRING YEARLY CLEANING**

<u>LOCATION</u>	<u>MANHOLE NUMBERS</u>
1. Aurora Street from Wallace to Lincoln	3-12A to 1-12
2. Rose Street from Bluff to Washington	4-06 to 4-05
3. Washington Street from Rose to Grant	4-05 to 4-02
4. Grant Street from Washington to Lincoln	4-02 to 4-01
5. Lincoln Street from Grant to Aurora	4-01 to 1-12
6. Spicer Street from Commercial to Plant	1-02 to 1-01
7. East Broadway from East end of sewer to Chicago Street. (Flushed quarterly, cleaned yearly)	3-12 to 3-06

**CITY OF MARSEILLES  
SANITARY SEWER DEPARTMENT  
SEWER CLEANING PROJECT SHEET**

Date Scheduled: \_\_\_\_\_

Project Number: \_\_\_\_\_ Date Started: \_\_\_\_\_

Date Completed: \_\_\_\_\_

LOCATION: \_\_\_\_\_

\_\_\_\_\_

PROJECT ACTIVITY: \_\_\_\_\_

\_\_\_\_\_

ESTIMATED AMOUNT OF MATERIAL REMOVED: \_\_\_\_\_

\_\_\_\_\_

TOTAL COST OF THE PROJECT: \_\_\_\_\_

TOTAL MAN-HOURS: \_\_\_\_\_

PROBLEMS ENCOUNTERED: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

OTHER COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

Figure 2: Sample Sewer Cleaning Data Sheet

**CITY OF MARSEILLES  
STREET DEPARTMENT  
CATCH BASIN CLEANING**

LOCATION: \_\_\_\_\_

\_\_\_\_\_

DATE CHECKED: \_\_\_\_\_ DATE SCHEDULED: \_\_\_\_\_

OBSTRUCTED:     YES \_\_\_\_\_ NO \_\_\_\_\_

CLEANED:         YES \_\_\_\_\_ NO \_\_\_\_\_

REPAIR REQUIRED: \_\_\_\_\_

\_\_\_\_\_

DATE REPAIRED: \_\_\_\_\_

DESCRIPTION OF PROBLEM: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

Figure 3: Sample Catch Basin Cleaning Data Sheet

Figure 4a: Sample Excess Flow Pump Shutoff Head and Amperage Test Sheet

### Excess Flow Shutoff Head and Amperage Test

[illegible]

Figure 4b: Sample Excess Flow Pump Performance Data Sheet

## Excess Flow Pump Performance

[illegible]



## **Chapter 4 Control Strategy**

This chapter describes the system control procedures for excess flow events. The sanitary sewer system in Marseilles has no active controls. Changes in system operation due to wet weather flows are required only at the treatment plant. Within the plant, a control strategy is needed only for the "first flush" facility.

### **4.1 Operation of the First Flush Facility**

As stated previously, the secondary treatment system, which was originally designed for a strong industrial waste that is no longer present, has sufficient capacity to undergo large charges in hydraulic loading with no serious impacts.

Start up of the excess flow facility is automatic, and operator intervention is required only at the end of the excess flow event, when the tank must be drained back into the plant influent.

The treatment plant can treat 3.15 MGD (2,188 GPM) through the existing primary and secondary treatment systems. Flows in excess of 2,188 GPM are diverted automatically to the excess flow pumping station by way of a 2' rectangular weir. The weir elevation is set to prevent the complete treatment system from becoming overloaded and to minimize potential for basement backup and surcharging to the street. The flow passes through a mechanically cleaned screen just prior to entering the excess flow pumping station. Upon filling of the pumping station wetwell, one or two of the three submersible pumps will be automatically activated, depending on the flow rate entering the pumping station. The three pumps are identical.

Initially, the pumping station discharge is directed to the storage tank, which captures the first .628 MG of excess flow. When the tank becomes full, Motor Operated Valves automatically turn the valves, which divert the pumping station discharge directly to the river. This procedure insures that all of the wastes contained in the "first flush" of the sanitary sewers remain in the tank. Although an automatic overflow exists, it is not currently being used.

When the plant inflow again recedes below the 3.15 MGD level, the rectangular weir overflow, and thus the flow into the excess pumping station, will cease. The submersible pumps will automatically shutdown, terminating the bypass flow into the river. As the plant inflow continues to drop, the excess flow tank drain valve is opened and the stored contents of the tank are directed to the plant inflow for treatment. Finally, the tank is washed out and inspected and the lines are drained in preparation for the next event.

## **Chapter 5. Combined Sewer Improvements**

In an effort to reduce wet weather flows to the treatment plant, the City of Marseilles prepared a Facility Plan Report and conducted an SSES for part of its collection system in 1984. The Facility Plan led to the construction of the “first flush” storage facility at the treatment plant. The SSES report included recommendations for reducing I/I through repair and maintenance of the collection system. Specifically, the report called for the general sealing of manholes, replacement of non-sealing manhole lids, disconnection of residential stormwater connections such as downspouts, and minor repair of several sewers and building laterals.

The City has completed all of the cost-effective manhole and sewer repairs identified in the SSES report. In addition, the City has located and repaired other manholes and sanitary sewers that were contributing significant amounts of I/I to the system. Work has been done to notify residents with downspout and sump pumps illegally connected to the sanitary sewer system that these connections must be eliminated. During the last permit cycle, 28 properties had illegal sump pump connections removed from the sanitary sewer.

Below is a list of significant improvements completed in the collection system during the last permit cycle for the City of Marseilles.

### **5.1 Wallace Street Sanitary Sewer Project**

Located within Area 3, the Wallace Street Sanitary Sewer Project encompassed an area of the collection system where significant amounts of I/I can be attributed. The project consisted of the construction of about 3700 feet of 8” sanitary sewer, about 15 manholes, about 1900 feet of 6” service sewers, a sanitary sewer lift station with about 300 feet of 6” force main, several hundred feet of 10” storm sewer.

The new sanitary sewer will be constructed parallel to, but two feet deeper than the existing sanitary sewer. New 6” service lines will be constructed from the sanitary sewer to at least the right of way line and connected to the existing house service sewer. The existing sanitary sewer will then be converted to a storm sewer where possible.

Additionally, all homes located within the project area were required to convert to overhead sewers and direct storm water into the converted storm sewer.

### **Grant Street Sewer Replacement**

Located in Area 4, the sewer system flows from Washington St. to Lincoln St. via MH 4-2 and MH 4-1 on Grant St. This location has been identified as an area where the sewer system bottlenecks. The City abandoned the existing line, placing a new and appropriately sized sewer line parallel to it. This will relieve much of the flow issues which result in this area following heavy rains.

### **Clark Street Sewer Lining**

Entire section of sewer main was lined in Area 2 between MH 2-20 and MH 2-30 on Clark St.

### **Orange Ave. Sewer Lining**

Lined 65' of sanitary sewer in Area 6 along Orange Ave. The work was done from MH 6-42 to an unnumbered manhole at the intersection of Bluff St. and Orange Ave.

As indicated in Section 2.4, additional improvements may be identified in the LTCP to ensure that the City's combined sewer system complies with all applicable standards, including water quality standards. This plan should be modified as necessary to include the improvements identified in the LTCP.

## **Chapter 6 Pollution Prevention Plan**

This chapter describes the efforts undertaken by the City to keep contaminants from entering the combined sewer system.

### **6.1 Street Cleaning**

The City of Marseilles conducts regular street sweeping to reduce litter and other materials from streets and curbsides. Street sweeping is conducted daily for at least 4 hours during the spring, summer and fall months. Sweeping frequency is increased in the fall for a three- or four-week period during leaf off.

### **6.2 Public Education**

The City of Marseilles does not currently have a public education program. However, prior to completion of the long-term control plan, the City will initiate a program to make available educational pamphlets at the City Hall. The educational pamphlets will focus on awareness of stormwater pollution and measures that residents can take to reduce pollution.

### **6.3 Solid Waste Collection**

Weekly curbside refuse collection in the City of Marseilles is provided by Waste Management.

### **6.4 Recycling**

Weekly unlimited curbside recycling is provided by Waste Management.

### **6.5 Product Substitution or Bans**

Currently, the City of Marseilles does not ban any non-biodegradable products or require any non-biodegradable product be substituted with a biodegradable alternative.

### **6.6 Product Use Control**

Currently, the City of Marseilles has no provisions for controlling the application of herbicides, pesticides or other chemicals used by the City.

### **6.7 Illegal Dumping**

Illegal dumping is prohibited by City ordinance and occurrences are investigated. “No Illegal Dumping” signs are posted in area where illegal dumping is noted.

Items that have been illegally dumped are collected by the Public Works Department.

#### **6.8 Bulk Refuse Collection**

The majority of bulk refuse items are collected by the City's regular waste hauler (Waste Management). Additionally, certain items not accepted by Waste Management are collected for a fee by the City of Marseilles at an annual City cleanup.

#### **6.9 Hazardous Waste Collection**

LaSalle County holds an annual household hazardous waste collection day in conjunction with the Illinois Environmental Protection Agency. These collection days are open to all LaSalle County residents and are advertised locally.

#### **6.10 Water Conservation Efforts**

The City of Marseilles does not currently enforce dry weather water use restrictions.

#### **6.11 Commercial/Industrial Pollution Prevention Activities**

The City of Marseilles does not currently conduct pollution prevention activities specifically targeted for commercial or industrial properties.

### **Chapter 7 Public Notification Program**

The objective of public notification is to inform the public of the location of CSO outfalls, the occurrences of CSO's, the possible health and environmental effects of CSO's and the recreational activities (e.g. swimming, fishing, etc.) curtailed as result of CSO's. The purpose for this plan is to provide a method to ensure that the general public is adequately informed of the presence and effects of CSO's.

#### **7.1 Website Notifications**

The City of Marseilles has made substantial information about CSO events available to the public by posting the data on their website located at [www.cityofmarseilles.com](http://www.cityofmarseilles.com).

In general, the website includes the following information:

- General information about CSO's.
- Various Reports regarding CSO's.

- CSO identification name and number.
- Location of CSO.
- Yearly CSO, Rain and Flow Data

## **7.2 Signs Posted at CSO Outfalls**

Signs are posted at the CSO outfall advising the public “Elevated Levels of Bacteria May Be Present When Outfall is in Use.”

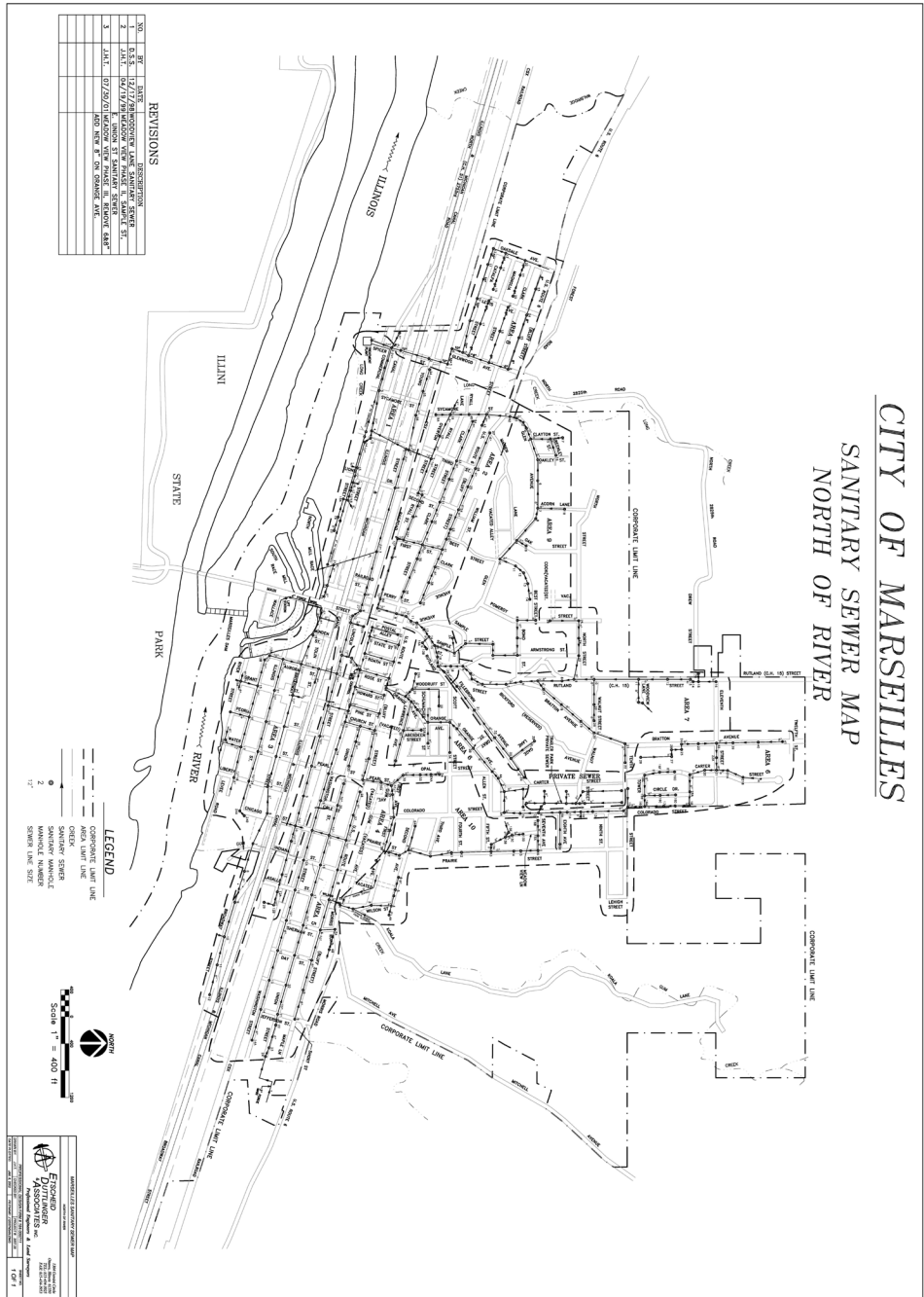


## Appendix A

### Future Repairs

<b><u>From MH</u></b>	<b><u>To MH</u></b>	<b><u>Rehabilitation Source</u></b>	<b><u>Method</u></b>
1-27	1-4	Sewer Main Under Long Creek	Line Sewer
1-8		Cross Connection from Storm Sewer Entering Sanitary	Reroute Storm Sewer
2-8A	2-6	Major I&I Source Due to Butt Joints and Damage	Line Sewer
5-5	5-6	Major I&I Source Running Under Gumm Creek Due to Damaged Pipe	Line Sewer
5-16	5-17	Major I&I Source Running Under Gumm Creek Due to Damaged Pipe	Replace Sewer

# APPENDIX B CURRENT SYSTEM MAP



\*Larger scale map available upon request.



## APPENDIX C

### SEWER USE AND USER CHARGES ORDINANCES

Ordinances are available for viewing at Marseilles City Hall, 209 Lincoln Street  
Marseilles, IL 61341, or online at [http://www.amlegal.com/marseilles\\_il/](http://www.amlegal.com/marseilles_il/)

## APPENDIX D

### MAP OF TELEVISED AND VACTOR CLEANED SECTIONS

Available upon request.

## APPENDIX E

### CSO EVENTS SINCE 1997

Year	Total Treated MG	Treated Average MGD	Total CSO MGD	CSO Average MGD	CSO Events Actual #	Rainfall Total "	Rainfall Average"
1997	344	0.94	32.76	1.64	4	22.07	0.25
1998	423	1.16	67.91	1.19	12	36.74	0.10
1999	419	1.15	31.09	0.94	9	30.25	0.36
2000	396	1.08	18.3	0.87	6	25.99	0.28
2001	433	1.19	32.49	0.90	8	34.22	0.28
2002	400	1.1	15.2	0.72	6	28.67	0.20
2003	370	1.01	7.22	0.40	8	36.39	0.26
2004	410	1.12	17.14	0.57	7	32.87	0.23
2005	351	0.96	13.42	0.71	3	25.34	0.21
2006	431	1.18	62.98	1.54	11	39.54	0.30
2007	486	1.332	128	2.28	6	41.02	0.27
2008	468	1.283	109	2.22	12	42.02	0.27
2009	517	1.417	137	1.67	14	46.31	0.29
2010	396	1.085	15	1.88	5	35.09	0.23
2011	439	1.204	28	1.80	7	42.75	0.29
2012	351	0.959	17.7	3.54	1	28.13	0.24
2013	513	1.406	78.38	2.80	7	42.80	0.37
2014	489	1.339	15.15	0.89	9	36.49	0.37
2015	567	1.553	67.78	2.421	10	49.12	0.42
2016	537	1.466	11.5	0.958	5	44.6	0.37
2017	474	1.299	30.8	2.369	6	36.8	0.32
2018	416	1.138	25.59	3.656	2	36.4	0.29
2019	591	1.619	69.47	2.043	12	56.51	0.38

## DIAGRAM OF CSO AND TREATMENT FACILITIES

