CITY OF EVANSTON

Evanston, Illinois

COMBINED SEWER SYSTEM OPERATIONAL PLAN

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COMBINED SEWER OVERFLOW OPERATIONAL PLAN

CITY OF EVANSTON, ILLINOIS

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CHAPTER 1

INTRODUCTION / EXECUTIVE SUMMARY

Introduction

Combined sewer systems (CSS) are sewer collection systems designed to convey wastewater, consisting of domestic, commercial, and industrial wastewater, and storm water or snowmelt in a single conduit. In the event of significant rainfall or snowmelt, the total combined wastewater flows can exceed the capacity of the CSS and the downstream treatment facilities. When this occurs, combined sewage may be discharged directly to surface water bodies, such as lakes or rivers, and the mechanism is called combined sewer overflow (CSO). Since most CSOs are not treated, they can contribute a significant source of pollution in the receiving waters.

In order to address the problem, the U.S. Environmental Protection Agency (USEPA) issued a Final National Combined Sewer Overflow Control Strategy on April 11, 1994. The main objectives of the CSO strategy are to:

- Ensure that if CSOs occur, they are only as a result of wet weather
- Bring all wet weather CSO discharge outfalls into compliance with the technology based and water quality based requirements of the Clean Water Act (CWA)
- Minimize the impacts of CSOs on water quality, aquatic biota, and human health from CSOs.

Although the strategy has increased the public's attention on CSOs, their control has been found to be extremely complex and expensive. As a result, a CSO Control Policy was later developed with the intent to provide sufficient flexibility and guidance to municipalities and related authorities, to consider the site specific nature of CSOs, and to determine the most cost effective means of CSO management practices and controls in meeting CWA objectives and requirements. Consequently, Nine Minimum Controls (NMC) were adopted. Municipalities and related authorities are required to take appropriate and necessary actions to evaluate and implement the Nine Minimum Controls as defined in the CSO Control Policy which are listed below:

1. Proper operation and regular maintenance programs for the sewer system and CSO outfalls,
2. Maximum use of the collection system for storage,
3. Review and modification of pretreatment requirements to ensure that CSO impacts are minimized (Compliance with this item is under the control of the treatment authority – the Metropolitan Water Reclamation District of Greater Chicago, MWRDGC),

4. Maximization of flow to the Publicly Operated Treatment Works (POTW) for treatment,
5. Prohibition of CSOs during dry weather,
6. Control of solids and floatables materials in CSOs flow,
7. Pollution prevention programs which focus on source control activities,
8. Public notifications to ensure that the public receives adequate notifications of CSO occurrences and CSO impacts, and
9. Monitoring to effectively characterize CSO impacts and the efficiency of CSO controls.

This CSO Operational Plan evaluates the strategies and policies that the City of Evanston currently utilizes and/or plans to utilize in order to address its CSOs and the NMCs. The information collected for this plan along with the analysis of data, and findings are documented and discussed in detail in the following chapters:

Chapter 2 Evanston Combined Sewer System

- The City of Evanston local CSS and its relationships with other collection entities are characterized and the City of Evanston schemes and procedures to eliminate and/or reduce CSOs are evaluated.

Chapter 3 Administrative Controls

- The City of Evanston administrative controls and measures taken to address CSOs are described.

Chapter 4 Operational & Maintenance (O & M) Programs

- This chapter documents the O&M programs and demonstrates steps the City of Evanston has implemented to address NMCs and CSOs.

Evanston Combined Sewer System

The City of Evanston is within the service area of the Metropolitan Water Reclamation District of Greater Chicago (MWRD) and is served primarily by a combined sewer system (CSS). The City of Evanston is not responsible for the treatment and disposal of its wastewaters, which are discharged into the MWRD North Shore Interceptor sewer and the MWRD Tunnel and Reservoir Plan (TARP) deep tunnel system. Since Evanston is so reliant on the MWRD regional system, CSO events are closely related to rainfall in the entire MWRD drainage basin, and not to rainfall in the local Evanston area only.

The City of Evanston combined sewer system consists of an older combined sewer system and a recently constructed system of relief-combined sewers. The combined

sewer system is approximately 100 years old and is undersized by current standards. The relief sewer system relieves the system by providing additional hydraulic capacity.

The older combined sewer system consists of a series of street sewers and trunk sewers that are sub divided into fifteen (15) drainage basins Each of the combined sewer system basins includes a separate trunk sewer and an independent connection to the MWRD facilities. Twelve (12) out of the fifteen (15) drainage basins discharge directly to the TARP tunnel system through drop shafts. The remaining three (3) systems (Basins B03, B04 and B4A) discharge indirectly to TARP through the MWRD interceptor sewer system.

As part of the City of Evanston's Long Range Sewer Program, the City supplemented the limited capacity of the original combined sewer system with a series of relief-combined sewers. The relief-combined sewer system consists of seven (7) drainage basins. The drainage basin boundaries of the original combined sewer system and of the relief-combined sewer system are independent of each other and in many cases overlap. All of the sewer relief-combined sewer basins have direct connections to TARP.

Basins B01, B02, B3A, B4A, & B12 are tributary to drop shafts with uncontrolled, direct discharge to the TARP system. In addition, the old Evanston outfall pipes at these locations have been plugged. Consequently, no CSOs are possible from these five (5) basins.

Basins B03, B05, B09, S09, B10, B11, & B13 are tributary to drop shafts with uncontrolled, direct discharge to the TARP system. Consequently, as soon as local tributary flows exceed the dry weather allowance to the MWRD interceptor sewer, excess flows are automatically diverted to the TARP tunnel. Because of this arrangement, few Evanston CSOs are anticipated from these seven (7) basins.

Basin B07 is tributary to a drop shaft with uncontrolled, direct discharge to the TARP system and there are no Evanston outfall pipe at this location. Consequently, as soon as local tributary flows exceed the dry weather allowance to the MWRD interceptor sewer, excess flows are automatically diverted to the TARP tunnel. Because of this arrangement, few MWRD CSOs are anticipated from this basin.

Basins B04 and B08 are tributary to drop shafts and with controlled discharge to the TARP system. However, Evanston does not have outfall pipes at these locations. If a CSO occurs at these two (2) basins, it would be through a MWRD outfall pipe.

At Basins S07A and S13 there are partial controls of discharges to the TARP system. At Emerson Street (S07A) the flows from this basin are subject to control by a manually operated sluice gate located on the relief sewer serving the system. However, this gate is generally left open to permit free discharge to TARP. At Mulford Street (S13), a similar situation exists, but in this case, the sluice gate on the relief sewer system can

be remotely operated to limit flows discharged to TARP. The Mulford Street sluice gate is generally opened or closed by MWRD depending on water levels in the TARP tunnel. Based on this arrangement, there are potential CSOs from these two (2) basins.

Basins B06, S06, S07, S10, & S82 are tributary to drop shafts where the discharge to TARP is controlled by sluice gate structures. These sluice gates are remotely operated by MWRD depending on the water levels in the TARP tunnel. When the sluice gates are closed, combined sewage overflows to the North Shore Channel from Evanston outfall pipes at these five (5) basins.

Administrative Controls

The City of Evanston has adopted and administrated the following ordinances and regulations in order to enforce the City's CSO and pollution control strategies:

- City Evanston Sewer Use Ordinance
- MWRD Ordinance
- City of Evanston Plumbing Code

The City of Evanston is using a computer database system to maintain physical data on its sewer collection system and to keep an inventory of all other activities, including sewer system operational and maintenance activities.

Operational and Maintenance Programs

The Water Production Bureau of the Public Works Agency has the overall responsibilities to oversee the Operational and Maintenance (O&M) programs for the City of Evanston. Routine sewer system maintenance tasks are carried out by designated staff from the Sewer Section and are closely supervised by crew chiefs and/or the Sewer Supervisor.

The Evanston O&M programs were specifically designed to ensure that its CSS will function effectively, and will reduce the magnitude, frequency, and duration of CSOs to the minimum level. The current O&M programs are including the following:

- Sewer Inspection/Rehabilitation Program
- Sewer Cleaning/Flushing Program
- Catch Basin Cleaning Program
- Emergency Sewer Repairs Program
- Regular Street Cleaning Program

CHAPTER 2

EVANSTON COMBINED SEWER SYSTEM

General

The City of Evanston is a densely developed community located just north of the City of Chicago. The City area is approximately 4,665 acres with a population of approximately 75,000. Evanston is within the service area of the Metropolitan Water Reclamation District of Greater Chicago (MWRD) and is served primarily by a network of combined sewers in which sanitary sewage and stormwater are conveyed in the same conduits. Because of its location within the MWRD service area, the City of Evanston is not responsible for treatment and disposal of intercepted wastewater flows. Instead, all wastewater flows conveyed in the City's sewers are discharged to MWRD facilities for eventual treatment and disposal in a series of processes.

The City of Evanston is served by a 100-year old system of combined sewers and a system of relief-combined sewers constructed between 1991 and 2008. The relief-combined sewers are designed to supplement the limited capacity of the original combined sewer system and in conjunction with the installation of catch basin flow restrictors, eliminate basement back up in the City of Evanston.

Combined sewage flows from the original combined sewer system of up to two times dry weather flow are diverted to the MWRD North Shore Interceptor sewer, by way of diversion structures as shown in Figure 2-1. Flows diverted in this manner are conveyed directly to the MWRD O'Brien Reclamation Plant for secondary treatment and eventual discharge to the North Shore Channel.

Flows in excess of the capacity of the historic combined sewer system are intercepted locally by a system of relief-combined sewers designed to relieve the combined system and convey wet weather flows up to the 10-year storm event. The relief sewers convey combined flows to the MWRD TARP facilities via connections to TARP drop shafts as discussed below.

When local Evanston wastewater flows either exceed the allowable discharge rate to the North Shore Interceptor or are conveyed by the relief-combined sewer, the flows are diverted to the MWRD deep tunnel system via deep drop shafts, as shown in Figure 2-2. Flows diverted to the TARP system are treated at the MWRD Southside plant prior to disposal. As currently proposed, the TARP deep tunnel and reservoir system are intended to accept and accommodate excess flows from the storm of record. However, the TARP reservoir has not yet been completed and the tunnel system fills several times a year. As filling occurs, the MWRD closes control gates where these exist, to prevent further discharges to the tunnel. In Evanston, control gates have been installed on six of the fourteen drop shafts. At these locations, as the gates are closed, flows are diverted to the North Shore Channel as Combined Sewage Overflows (CSOs).

CSO events in Evanston are a result of the capacity of the TARP system, and are related to rainfall in the entire MWRD catchment area and not to rainfall in the local Evanston area only. Also, because of the current mode of operation of the MWRD facilities, all Evanston first flush flows are generally intercepted and conveyed for treatment. The MWRD TARP system operational plan, which is designed to minimize CSO events using completed facilities, is currently on file with the Illinois Environmental Protection Agency (IEPA).

Local Sewer System

The local Evanston sewer system includes a series of principal sewers as shown on Figures 2-3 and 2-4. The system is divided into a series of "B" basins, which designate the historic combined sewer drainage basins, and a series of "S" basins, which are used to designate the relief-combined sewer basins and storm sewer basins. The historic combined sewer system is sub-divided into fifteen drainage basins as shown on Figure 2-5, with each basin containing a separate trunk sewer and an independent connection to the MWRD facilities. The relief-combined sewer system is divided into seven basins, as shown on Figure 2-6. The major characteristics of all drainage outfalls and sewer systems are summarized in Table 2-1 and Table 2-2, respectively. Basin descriptions are provided in the following sections.

Basin B01: Basin B01 covers the extreme northeasterly corner of the City of Evanston. The sewer systems in Basin B01 are also unique in that sanitary flows from both the Isabella Street and Roslyn Place trunk sewers are directed to the Wilmette Pump Station for eventual discharge to the MWRD sewers. In this case, excess flows are diverted through weir structure 7F to TARP DS 112 as shown on Figure 2-7. DS 112, which is an ungated or uncontrolled structure with a finished inside diameter of 4 feet and a capacity of 80 cfs, conveys tributary flows down into the TARP tunnel as shown in Figure 2-2. There is no outfall at this location as the former outfall pipe was plugged off in approximately 1980.

Basin B02: Basin B02 is located in the northeasterly corner of the City and is bordered by Isabella Street, Ridge Avenue, Lincoln Street and the North Shore Channel. In this case, intercepted wastewater flows are conveyed south along Girard Avenue to Central Street and then west on Central to the MWRD structures near the North Shore Channel. As shown on Figure 2-8, dry weather flows from this basin are conveyed to the MWRD interceptor through an 8-inch syphon across the North Shore Channel. Wet weather flows in excess of the interceptor allowance are transferred through the 15-inch connecting sewer to TARP DS 111 and into the TARP tunnel through a similar arrangement as shown on Figure 2-2. Since DS 111 is an ungated or uncontrolled structure with a finished inside diameter of 4 feet and a capacity of 80 cfs. Excess flows will be continuously discharged to TARP. The original combined sewer outfall was plugged off in approximately 1980.

Basin B03: Basin B03 is located in the North Central part of the City and is bordered by Isabella Street, the North Shore Channel and Green Bay Road. The area is served both by combined sewers and separate storm sewers. The principal combined sewers on Central Street and Lincoln Street discharge to a main trunk sewer on Asbury Avenue which terminates at the MWRD facilities near the North Shore Channel, as shown on Figure 2-9. At this point, all flows are diverted to the MWRD interceptor through 10-inch and 36-inch by-pass sewers. In the event that the MWRD interceptor is surcharged, excess flows can be discharged to the North Shore Channel through a 36-inch diameter sewer and outfall No. 003 on Asbury Avenue as shown on Figure 2-9.

Basin B3A: Basin B3A is located in the Northern Central part of the City and is bordered by Lincoln Street, Ridge Avenue, Leon Place, Green Bay Road, and the North Shore Channel. The principal combined sewers are located on Noyes Street and Simpson Street and discharge into a 36-inch diameter main trunk sewer on Asbury Avenue, which terminates at the MWRD facilities near the North Shore Channel as shown on Figure 2-10. Flows from this basin are directed to TARP DS 110 through a 48-inch diversion sewer. DS 110 is a 4-foot diameter, ungated structure with a capacity of 80 cfs. There is no outfall at this location, the former outfall having been plugged off in approximately 1980.

Basin B04: Basin B04 is located in the North Western part of the City and is bordered by Isabella Street, Green Bay Road, Grant Street and Lincolnwood Avenue. The total tributary area in this basin is approximately 400 acres. It is served by a series of street sewers which run from west to east along Isabella, Thayer, Park, Hartzell, Central, Harrison, Lincoln, Colfax and Grant Streets. In general, these street sewers discharge into a 48-inch diameter trunk sewer on Prairie Avenue, which connects to the terminal section of the 48-inch Grant Street sewer. All sewers in this basin terminate at the MWRD structures located near the intersection of Grant Street, Green Bay Road and McCormick Boulevard as shown on Figure 2-11.

As shown on Figure 2-11, dry weather flows are diverted to the MWRD 54-inch interceptor sewer through a 20-inch sewer. Currently, there is no direct connection for diversion of excess flows to a TARP drop shaft. Instead, excess flows are conveyed through a 3-ft by 5-ft box interceptor to the MWRD 54-inch sewer and then to TARP DS 109 through a weir structure a shown on Figure 2-12. Flow in excess of the drop shaft capacity will be conveyed to the North Shore Channel at an MWRD outfall. There is no City of Evanston outfall at this location, the former outfall having been plugged off in approximately 1980.

Basin B4A: Basin B4A is located immediately south of Basin B04 in the North West part of Evanston and covers a small area adjacent to Noyes Street from Ewing Avenue to the North Shore Channel. The principal sewer in this basin extends along Noyes Street from Ewing Avenue and terminates at the MWRD facilities near the North Shore Channel.

At this location, dry weather flows are diverted to the MWRD interceptor through a 10-inch diversion sewer as shown on Figure 2-13. As shown on this figure, excess flows are also diverted to the MWRD 54-inch interceptor through a 24-inch interceptor sewer constructed as part of the TARP system. There is no City of Evanston outfall at this location, the former outfall having been plugged off in approximately 1980.

Basin B05: Basin B05 is immediately south of Basin B4A and covers a relatively small area that includes properties adjacent to Payne and Simpson Streets from Central Park Avenue to the North Shore Channel. In this basin, the principal sewer extends from west to east along Payne Street and terminates near the North Shore Channel on Bridge Street.

In this basin, sanitary dry weather flows are diverted to the MWRD 54-inch interceptor through an existing 12-inch pipe as shown on Figure 2-14. Excess flows are then diverted to DS 106I, which is an ungated, 4 foot diameter drop shaft, with connections to the TARP tunnel. Because there is no control of flows to TARP and because of the approximately 5 foot difference in elevation between the Basin B05 sewer and the TARP diversion pipe, all excess flows should be accommodated by the TARP drop shaft. In the event that TARP is surcharged, excess flows can be diverted to the existing outfall on Bridge Street.

Basin B06: Basin B06 covers the extreme northwestern corner of Evanston and extends west from Central Park Avenue to the western city limits and north from Simpson Street to the northern city limits. Street sewers in this basin typically extend from north to south and discharge into east/west trunk sewers located on Central, Harrison, Grant and Simpson Streets. All trunk sewers in turn, discharge to the principal sewer which extends as a 48-inch pipe from north to south along Central Park Avenue to Simpson Street and east on Simpson Street and Elgin Road as a 60-inch pipe which terminates at the MWRD facilities near the North Shore Channel as shown on Figure 2-15.

Dry weather flow from Basin B06 is diverted to the MWRD 54-inch interceptor sewer through an 18-inch sewer along McCormick Boulevard, as shown on Figure 2-15. Excess flows from the 60-inch sewer, which cannot be accommodated as dry weather sanitary sewage, is then diverted through two collecting structures to DS 107 as shown on Figure 2-15. DS 107 is a gated and controlled structure with an inside diameter of 12 feet and a capacity of 1,200 cfs and also receives overflows from the MWRD 54-inch interceptor sewer on McCormick Boulevard and a Village of Skokie 84-inch sewer. As the TARP tunnel system is filled, the sluice gates controlling flows to DS 107 are closed and excess flows are then diverted to the North Shore Channel through Evanston outfalls No. 006 and A06 near Elgin Road. Simultaneously, there will also be overflows from the MWRD and Skokie sewers through an existing Skokie/MWRD outfall at the same location.

Basin B07: Basin B07 is located in the west central part of the City and serves an area of 392 acres. Street sewers in this basin generally extend north/south and discharge

into the MWRD primary trunk sewer on Emerson Street which extends from east to west and terminates at the MWRD structure near the North Shore Channel.

Sanitary, dry weather wastewater flows from Basin B07 are diverted to the MWRD interceptor through a 15/12 inch diameter syphon across the North Shore Channel, as shown on Figure 2-16. Excess flows from the combined sewer system, including the combined relief sewers are diverted to DS 108. DS 108 has an inside diameter of 5'-8" and a capacity of 140 cfs. Excess flows from the 54-inch sewer at this location are diverted to the drop shaft without any control. In the event that TARP is surcharged, excess flows will be diverted to the 54-inch diameter MWRD outfall.

Basin B8: Basin B08 is the largest drainage basin in the City and serves approximately 2,000 acres or some 43 percent of the total city's area. The main sewer in this basin is a MWRD 10-foot diameter trunk sewer on Lake Street. This sewer flows from east to west along Lake Street and receives flows from several sub-basins as shown in Figure 2-17 and described below:

Sub-basin B08 includes all areas adjacent to the Lake Street MWRD trunk sewer which discharge directly into that sewer.

Sub-basin B81 includes all areas from Lake Street to the southern City boundary between Ridge and Chicago Avenues and some adjacent areas immediately west of Ridge Avenue. South of Main Street, street sewers in this sub-basin are generally oriented east/west and discharge to two MWRD interceptor sewers on Custer and Sherman Avenues, which extend north/south. Flows from these two sewers are eventually combined at the intersection of Sherman and Main. Combined flows are then conveyed in a single 54-inch MWRD interceptor sewer westwards to Elmwood Avenue and then north along Elmwood. North of Main Street sewers are also generally oriented east/west and discharge into the MWRD interceptor sewer on Elmwood Avenue. This sewer terminates at Lake Street and Elmwood Avenue where it discharges by gravity into the 120-inch MWRD trunk sewer on Lake Street.

Sub-basin B82 includes all areas north of Lake Street and extending west from Chicago Avenue/Sheridan Road to Ridge Avenue. The principal sewer in this basin is a MWRD interceptor sewer that extends northwards along Sherman Avenue from Lake Street and then along Orrington Avenue from the intersection of Orrington and Sherman. This sewer is subdivided and extended to receive flows from the entire B82 tributary area and discharges by gravity to the Lake Street MWRD trunk sewer.

Sub-basin B83 includes all areas south of Greenleaf Street and extending east from Chicago Avenue to Lake Michigan. Originally, all sewers in this basin discharged directly into Lake Michigan and in order to eliminate such discharges, a MWRD interceptor sewer was installed along Sheridan Road. The interceptor sewer therefore now collects all flows from Sub-basin B83 and conveys then to the MWRD pump station at Lake Street and Elmwood Avenue. This station lifts all flows and discharges them to the 120-inch diameter MWRD trunk sewer on Lake Street.

Sub-basin B84 includes all areas north of Greenleaf Street between Chicago Avenue and Lake Michigan. Wastewater flows from this area are discharged into a MWRD 48-inch trunk sewer on Davis Street from Chicago Avenue to Sheridan Road. At Sheridan Road, the MWRD interceptor sewer flows south and discharges into the Lake Street sewer at Sheridan Road and Lake Street, where they are combined with flows from sub-basin B83.

The combined flows from all sub-basins in Basin B08 are conveyed west along Lake Street to the MWRD facilities as shown in Figure 2-18. From this point, sanitary dry weather flows are diverted to the MWRD interceptor sewer by way of two 18-inch syphons which extend across the North Shore Channel. Excess flows, which cannot be discharged to the North Shore interceptor, are diverted to TARP DS 106 and conveyed to the TARP deep tunnel. DS 106 is a gated structure and as the TARP tunnel fills, these gates will be closed, forcing overflow of combined sewage to the North Shore Channel through an MWRD outfall located east of the Channel. .

Basin B09: Basin B09 covers a small west central section of the City bordered by Dempster Street, Florence Avenue, Main Street and the North Shore Channel. This area is served by both a combined sewer and separate relief combined sewer. In both systems, local street sewers discharge into main trunk sewers on Greenleaf Street which extend west from Florence Avenue to the North Shore Channel.

At the North Shore Channel, sanitary dry weather flows from the combined sewer system are diverted to the MWRD interceptor sewer through a 14-inch syphon across the channel as shown in Figure 2-19. Excess flow from the combined sewer system are then combined with flows in the relief combined sewer system and conveyed to TARP DS 105 as shown in Figure 2-19. DS 105 is an ungated structure with an inside diameter of 7' 2" and a capacity of 280 cfs. Since the full capacity of the two sewers combined is less than 280 cfs and since this DS structure is ungated, there should be limited combined sewage overflows to the North Shore Channel through outfall No. 009.

Basin B10: Basin B10 includes a single sewer, which serves a section of Main Street between Dodge Avenue and the North Shore Channel as shown in Figure 2-20. Sanitary dry weather flows are diverted south through a MWRD sewer to Cleveland Street where it is diverted to the MWRD interceptor through two 12-inch syphons across the North Shore Channel as shown in Figure 2-21. Excess combined flows are then discharged to the TARP tunnel system through DS 103. DS 103 is an ungated structure with an inside diameter of 5' 8" and a capacity of 140 cfs. Due to this arrangement of sewers coupled with the uncontrolled discharge to TARP, few CSOs should occur at Outfall No. 011 at Cleveland Street and even fewer CSOs should occur at Outfall No. 010 at Main Street.

Basin B11: Basin B11 covers an area generally bordered by Main Street, Ridge Avenue, Oakton Street and the North Shore Channel. This area is served by a combination of separate storm sewers and a combined sewer system. Combined sewers discharge into main trunk sewers on Cleveland Street which extends from Dodge Avenue to the North Shore Channel.

Sanitary dry weather flows conveyed in the 54-inch Cleveland Street combined sewer are diverted to the MWRD interceptor through two 12-inch syphons across the North Shore Channel as shown in Figure 2-21. Excess combined flows are then discharged to the TARP tunnel system through DS 103. DS 103 is an ungated structure with an inside diameter of 5' 8" and a capacity of 140 cfs. Due to this arrangement of sewers coupled with the uncontrolled discharge to TARP, few CSOs should occur at Outfall No. 011 at this location.

Basin B12: Basin B12 includes a single sewer, which serves a section of Oakton Street from the North Shore Channel to midway between Hartrey and Grey Avenues as shown in Figure 2-22. All sanitary dry weather flows in this basin are conveyed through a 24-inch sewer on Oakton and then diverted north into a MWRD sewer to Cleveland Street. At Cleveland Street the flows are diverted to the MWRD interceptor through two 12-inch syphons across the North Shore Channel as shown in Figure 2-21. Excess combined flows are then discharged to the TARP tunnel system through DS 102. DS 102 is an ungated structure with an inside diameter of 4’-0” and a capacity of 80 cfs. Due to this arrangement of sewers coupled with the uncontrolled discharge to TARP, few CSOs should occur at Outfall No. 012 at Oakton Street. There is no outfall at Oakton Street, the former outfall having been plugged in approximately 1980.

Basin B13: Basin B13 serves the extreme southwestern corner of Evanston and is bordered by Oakton Street, Ridge Avenue, Howard Street and the North Shore Channel. Sewers in this basin generally extend from east to west and discharge into a major trunk sewer on Dodge Avenue. At Dodge and Mulford all flows in the Dodge Avenue sewer are diverted into a 48-inch sewer on Mulford which extends west to the North Shore Channel.

Near the North Shore Channel, sanitary flows are diverted to the MWRD interceptor sewer through 10-inch and 12-inch syphons across the channel, as shown on Figure 2-23. Excess flows, which cannot be accommodated as dry weather flow are then diverted to TARP DS 101, an uncontrolled structure which has an inside diameter of 7'-2" and a capacity of 280 cfs.

Excess flows from the original sewer system are diverted directly to DS 101 without any controls. Therefore, unless DS 101 is non-functional for some reason, no combined sewage overflows should occur at outfall No. 013.

Basin S06: Basin S06 is in the northwest corner of Evanston and extends west from Green Bay Road to the western city limits and extends south from the northern city limits to Elgin Road and the North Shore Channel. Relief-combined sewers constructed

in this area extend generally in a north to south direction to discharge in to the MWRD TARP facility located adjacent to the intersection of Elgin Road and McCormick Boulevard as shown on Figure 2-15. The main interceptor is a 108 inch combined relief sewer constructed on McDaniel and Payne Street that intercepts major trunks at Central Park, Lincolnwood, and at the intersection of Payne and McDaniel. The relief sewer system in Basin S06 relieves the combined sewer Basins B04, B04A, B05 and B06.

The 108-inch relief-combined sewer terminates at the MWRD collecting structure located adjacent to the intersection of Elgin Road and McCormick Boulevard as shown on Figure 2-15. Excess combined sewage flows transported by the relief sewer are directed to a second MWRD structure and from there to DS 107. As noted in the description of Basin B06 above, DS 107 is a gated and controlled structure with an inside diameter of 12 feet and a capacity of 1200 cfs. As the TARP tunnel system is filled, the sluice gates controlling flows to DS 107 are closed and excess flows are then diverted to the North Shore Channel through Evanston outfalls No. 006 and 006A near Elgin Road. Simultaneously, there will also be overflows from the MWRD and Skokie sewers through an existing Skokie/MWRD outfall at the same location.

Basin S07: Basin S07 is in the west central portion of the City. The Basin extends from the North Shore Channel on the west to Ridge Avenue on the east and generally from Emerson on the north to Crain Street and Greenleaf Street on the south. The primary relief sewer in the basin is a 113-inch relief-combined sewer in Greenwood Street which intercepts major trunks at the intersection Dodge Avenue and Greenwood Street.

The 113-inch diameter relief-combined sewer reduces to 108-inch diameter just before it terminates at the MWRD facilities located east of the North Shore Channel at Lake Street as shown on Figure 2-18. Excess combined sewage flows transported by the relief sewer are directed to DS 106. DS 106 is a gated structure and as the TARP tunnel fills, these gates will be closed, forcing overflow of combined sewage to the North Shore Channel through an MWRD outfall located east of the Channel.

Basin S07A: A second relief-combined sewer serves the northern portion of Basin S07. The primary relief sewer consists of a 36-inch sewer connecting to MWRD facilities located a Emerson Street and the North Shore Channel as shown on Figure 2-16. Excess combined sewage flows transported by the relief sewer are directed to a MWRD collecting structure and from there to DS 108. The collecting structure has a manually operated gate that is generally left open and therefore any CSO's through Outfall 007A should be limited.

Combined sewer basins served by the relief-combined sewers in Basin S07 include Basins B07 and B8.

Basin S82: Basin S82 is in the north central portion of the City. The basin extends from the North Shore Channel on the west to Sheridan Road on the east and from Lincoln Street on the north to Clark Street on the south. The primary relief sewer in the

basin is a 113-inch relief sewer on Noyes from the North Shore Channel to Orrington and major trunks on Ashland Avenue, Wesley Avenue, Orrington Avenue and Noyes Street.

The 113-inch diameter relief-combined sewer terminates at the MWRD facilities located west of the North Shore Channel near the intersection of McCormick Boulevard and Green Bay Road as shown on Figure 2-11.

Excess combined sewage flows transported by the relief sewer are directed to newly constructed DS109S. This dropshaft is a gated structure and as the TARP tunnel fills, these gates will be closed, forcing overflow of combined sewage to the North Shore Channel through Outfall 04A located northwest of the Channel.

Combined sewer basins served by the relief sewers in Basin S07 include Basins B3A and B8.

Basin S09: This basin covers a small west central section of the City bordered by Dempster Street, Brown Avenue, Main Street and the North Shore Channel. The primary relief sewer in the basin is a 21- inch and 27-inch diameter relief sewer on McDaniel Avenue. Main sewer tributary to this sewer are located on east / west streets. The relief sewers on McDaniel Avenue flow into a 30-inch diameter sewer on Greenleaf Street which extends west to the North Shore Channel.

The 30-inch relief sewer terminates at the MWRD facilities located east of the North Shore Channel as shown in Figure 2-19. The flows are conveyed to TARP DS 105 as shown in Figure 2-19. DS 105 is an ungated structure with an inside diameter of 7' 2" and a capacity of 280 cfs. Since the full capacity of the relief combined sewer and the excess flow from the combined sewer is less than 280 cfs and since this DS structure is ungated, there should be limited combined sewage overflows to the North Shore Channel through outfall No. 009.

Basins S10: This basin is located in the southeastern portion of the City. The basin extends from the Dodge Avenue on the west to Lake Michigan on the east and from Howard Street on the south to Clark Street on the north. The primary sewer is a 120-inch / 108-inch relief sewer tunnel in Main Street which extends from the North Shore Channel to Judson Avenue. The primary sewer intercepts major trunks at Dodge Avenue, Maple Avenue, Sherman Avenue and Judson Avenue.

The 120-inch diameter relief-combined sewer terminates at the MWRD facilities located east of the North Shore Channel and just south of Main Street as shown on Figure 2-20.

Excess combined sewage flows transported by the relief sewer are directed to newly constructed DS104E. This drop shaft is a gated structure and as the TARP tunnel fills, these gates will be closed, forcing overflow of combined sewage to the North Shore Channel through Outfall 010A.

Combined sewer Basin B8 is served by the relief sewers in Basin S10.

Basin S13: Basin S13 is located at the southwestern corner of the City. The basin extends from the North Shore Channel on the west to Ridge Avenue on the east and from Mulford Street on the north to the southern city limits on the south (Howard Street). The primary relief sewer in the basin is a 72-inch diameter relief sewer on Mulford extended in James Park. Main trunks tributary to this sewer are 48-inch diameter sewers on Mulford and Brummel.

The 72-inch diameter relief-combined sewer terminates at the MWRD facilities located east of the North Shore Channel just south of the CTA right of way as shown on Figure 2-23.

Excess combined sewage flows transported by the relief sewer are directed to TARP DS 101 through a gated collecting structure. As the TARP tunnel fills, these gates will be closed, forcing overflow of combined sewage to the North Shore Channel through Outfall 013A located east of the Channel.

Combined sewer Basin B13 is served by the relief sewers in Basin S13.

Sewer System Modeling

The City of Evanston developed a computer model using the USEPA Storm Water Management Model (SWMM) for all drainage basins. The main objective of the computer model was to evaluate the adequacy of the existing combined sewer system, and to develop improvement alternatives to mitigate city-wide basement backup and street flooding while making full use of TARP systems in Evanston.

Existing trunk and local combined sewers with diameter equal to or greater than 12-inch were modeled in the SWMM computer model. All surcharged conditions and "bottleneck" situations in the existing combined sewer system, which may lead to possible basement backup and CSOs, were identified and evaluated. Based on the hydraulic analyses on the SWMM model, the older, existing combined sewer system in the City of Evanston has been confirmed to be undersized to convey storm runoff from major storm events. In most cases, the local street sewers and the trunk sewers were found equally restrictive. This led to surcharging of existing sewers and consequently to basement and street flooding. Due to this surcharging of the entire sewer system, the storage capacity of all sewers is fully utilized and no further storage is possible.

In order to overcome these difficulties, the City of Evanston implemented the Long Range Sewer Improvement program between 1991 and 2008. This program provided for the installation of a complete system of relief storm and combined sewers that are fully integrated with the TARP system.

Public Notification Plan

Evanston's CSO public notification plan is completed in conjunction with the MWRD since the occurrence of CSOs is directly impacted by the operation of the MWRD sewer system. The MWRD has created a web page on their website to inform the general public of the occurrence of CSOs on the Chicago Area Waterways (CAWS). A Geographic Information System (GIS) based map of the waterways appears on the web page depicting the occurrence of CSOs and waterway diversions to Lake Michigan. This map is updated on a daily basis seven days per week. The North Shore Channel through Evanston is depicted on the map. Upon occurrence of a CSO along the Channel, a point on the map will designate the location of that CSO discharge.

The MWRD monitors CSO discharges at seven (7) locations in Evanston. Five (5) of these locations are at CSO outfalls owned by Evanston and two (2) are owned by the MWRD. The outfalls that are monitored for a CSO by the MWRD are indicated in Table 2-1.

Summary

The local Evanston combined sewer system (historic) is sub-divided into 15 sub-basins as shown in Figure 2-5. In all cases, sanitary dry weather flows conveyed by the local Evanston sewer system are diverted to the MWRD interceptor sewer which extends from north to south across the City, along the west bank of the North Shore Channel as shown in Figure 2-1. These dry weather flows are then conveyed to the MWRD O'Brien Water Reclamation Plant located at the northwest corner of the Howard/McCormick intersection, for treatment and eventual disposal to the North Shore Channel.

As currently conceived, excess flows which cannot be accommodated by the MWRD interceptor sewer are diverted either directly or indirectly to the TARP deep tunnel system. Direct discharge to TARP is accomplished by means of TARP drop shafts which directly connect the local sewer system to the TARP tunnel some 200 feet below ground as shown in Figure 2-2. In the case of Evanston, 12 of the 15 sewer systems in the historic combined sewer system discharge directly to the TARP tunnel system through drop shafts as summarized in Table 2-1. The remaining three systems discharge indirectly to TARP through the MWRD interceptor sewer system. In addition, the seven relief combined sewer drainage basins have direct connections to the TARP system.

In thirteen of these cases with direct discharge to the TARP system, this discharge is uncontrolled. As soon as local tributary flows exceed the dry weather allowance, excess flows are diverted to the TARP system. In all of these cases, the capacity of the drop shaft exceeds the capacity of the local trunk sewer system as shown on Table 2-2. Consequently, at all of these locations, few Combined Sewage Overflows (CSOs) to the North Shore Channel are anticipated. In effect, such overflows will only occur if the drop shaft at a specific location is taken out of service for maintenance or some other reason.

At two locations, Emerson and Mulford, there is partial control of discharges to the TARP system. At Emerson Street, two sewers discharge to the drop shaft; the original 54-inch sewer and a recently installed 48-inch sewer. Flows from the original 54-inch to TARP are uncontrolled. Flows from the newly installed 48-inch sewer to TARP may be controlled by way of a manually operated sluice gate. However, this gate is generally left in the open position and flows to the TARP drop shaft are uncontrolled.

At Mulford, where the capacity of the local sewers exceeds the drop shaft capacity, a gated structure was constructed at the end of the recently constructed relief combined sewer. This structure permits flows in excess of the drop shaft capacity to be discharged to the North Shore Channel as overflows. Computations currently indicate that drop shaft capacity will not be exceeded for storms of intensity less than the five (5) year event and therefore few overflows should occur for smaller storms, due to these capacity constraints only. If the TARP tunnel is filled, the control gate may be closed forcing overflows of all wastewater conveyed by the relief sewer system. There is some indication that such closure will occur several times a year, but this has not been confirmed.

At the other five locations with direct discharge to drop shafts – Green Bay Road, Elgin (2), Lake and Main Street, flows to the drop shaft can be controlled. At these locations, like at the Mulford relief structure site, sluice gates may be throttled or closed as the TARP tunnel fills, to limit flows reaching the tunnel. When this occurs, excess flows will be diverted to the North Shore Channel as Combined Sewage Overflows (CSOs). Currently, such CSOs occur several times a year. However, as the TARP reservoir is completed, the system should be able to accommodate all run-off from the storm of record and CSOs should be minimized.

At the three locations where there is no direct connection for discharge of excess flows to TARP, facilities have been put in place to divert all such flows to the MWRD interceptor sewer. At these locations therefore, the MWRD interceptor sewer will accept both sanitary dry weather flows and excess wet weather discharges. However, since the capacities of both the MWRD interceptor sewer and the Northside Plant are limited, facilities have also been constructed that force overflows from the interceptor sewer as soon as it becomes more than half full. Typical overflow structures of this type, as shown on the schematic sections of connecting structures on Figure 2-12, have been installed near Elgin Road and Green Bay Road in Evanston.

CSO Operational Plan - Checklist

The following section briefly describes the general information incorporated in this operational plan in order to show compliance with these aspects of IEPA's requirements for CSO control. Table 2-3 provides a summary of the IEPA Operational Plan Checklist for General Information and indicates how applicable items were addressed.

Item	Remarks
1. Sewer System Description:	The combined sewer collection system for the entire City of Evanston, including all outfalls, connecting and diversion structures to MWRD's TARP systems are described in detail in this chapter. Individual drainage basin, sewer system, and layouts and capacities are also described.
2. Relationship to other systems:	The relationship of the City's collection system to MWRD's interceptor sewer and TARP systems are discussed in detail and schematics of system interconnections are provided to show how dry weather flows and wet weather excess flows are handled.
3. IPCB Orders:	The Illinois Pollution Control Board has not issued any orders to the City of Evanston regarding any of the outfalls discussed in this plan.
4. Outfall description:	None of the Evanston's CSO outfalls discussed in this plan, to the best of the City's knowledge, discharge to sensitive areas, such as designated Outstanding National Resources Waters, National Marine Sanctuaries, bathing beaches, shellfish beds, drinking intakes, etc.
5. Minimize CSO discharges	The City has taken extraordinary efforts to minimize the discharge of pollutants from all CSO outfalls, such as: • Completed the CSO abatement master plan to relieve older combined sewers and to fully integrate the City's sewer system into MWRD's TARP system to eliminate and/or reduce possible CSOs. • Implementation of an inlet control program to maximize storage of storm runoff on streets and limit flows in the combined sewer system.

Item	Remarks
	• The City administration has taken an active role in regulating sewer use within the ordinances as discussed in detail in Chapter 3. • The City has established practical operational and maintenance (O&M) programs for its sewer collection system. Chapter 4 provides greater details on the City's sewer system O&M programs.
6. Storage:	The local Evanston combined sewer system is fully utilized as storage facilities due to surcharge of the sewers. The system is also fully integrated into MWRD's TARP system. This means that during heavy rain events all storm runoff is and/or will be conveyed to TARP tunnels for maximum storage, as discussed in this chapter.
7. Pollution prevention:	The pollution prevention aspects of the Operational Plan are discussed in this chapter, which discusses details of how the Evanston sewers discharge to MWRD TARP facilities.
8. Monitoring:	The efforts to monitor CSO impacts and the efficacy of CSO controls are only discussed briefly in this chapter and in Chapter 4 since the City of Evanston has little direct control over its CSOs.
9. Public notification program:	The City CSO Public Notification Plan is completed in conjunction with the MWRDGC since the occurrence of CSOs is directly impacted by the operation of the MWRDGC sewer system. As such, the MWRDGC is aware of when CSO events occur and will display the occurrence of CSOs on their website. Additionally, the City has post signage at the City's CSO Outfall locations, not posted by the MWRDGC, with signs similar to those developed by the MWRDGC and the City of Chicago. The City created a web page on the City's website

Item	Remarks
	(www.cityofevanston.org) that will link to the District's website. The District's website includes an electronic "Address Book" that contains a list of email addresses of interested parties. These parties will be sent an email alert in the event of a CSO.
10. Outfall location:	The street location and the State Planar Coordinates of each outfall are included in the Operational Plan.

Table 2-1 Summary of Combined Sewer System Outfalls

Basin Number	Location	Description of System Hydraulics	Outfall Number	Monitored by MWRD for CSO Event	Planar Coordinates X(Easting), Y(Northing)	Remarks
B01	Isabella Street	Uncontrolled discharge to TARP DS 112				No CSO – Outfall Plugged
B02	Central Street	Uncontrolled discharge to TARP DS 111				No CSO – Outfall Plugged
B03	Asbury Avenue	Uncontrolled discharge to MWRD 54" Interceptor	003	No	1159095.11, 1965766.72	Potential Evanston CSO
B3A	Asbury Avenue	Uncontrolled discharge to TARP DS 110				No CSO – Outfall Plugged
B04	Green Bay Road	Uncontrolled discharge to MWRD 54" Interceptor; excess flows discharge to controlled TARP DS 109	MWRD	Yes		Potential CSO at MWRD's outfall
S82	Green Bay Road	Controlled discharge to TARP DS 109S	004A	Yes	1157384.11, 1964567.39	Potential Evanston CSO
B04A	McCormick Blvd	Uncontrolled discharge to MWRD 54" Interceptor				No CSO – Outfall Plugged
B05	Bridge Street	Uncontrolled discharge to TARP DS 106I	005	No	1155970.9, 1963689.02	Potential Evanston CSO
B06	Elgin Street	Controlled discharge to TARP DS 107	006	No	1153949.34, 1962252.54	Potential Evanston CSO & Potential Skokie/MWRD CSO
S06	Elgin Street	Controlled discharge to TARP DS 107	006A	Yes	1153864.64, 1962143.04	Potential Evanston CSO and Potential Skokie/MWRD CSO

Basin Number	Location	Description of System Hydraulics	Outfall Number	Monitored by MWRD for CSO Event	Planar Coordinates X(Easting), Y(Northing)	Remarks
B07	Emerson Street	Uncontrolled discharge to TARP DS108.	MWRD	No		Potential CSO at MWRD's outfall
S07A	Emerson Street	Controlled discharge to TARP DS 108	007A	No	1154035.02, 1962185.46	Potential Evanston CSO
S07	Lake Street	Controlled discharge to TARP DS 106	008A	No	1153704.25, 1959302.1	Potential Evanston CSO
B08	Lake Street	Controlled discharge to TARP DS 106	MWRD	Yes		Potential CSO at MWRD's outfall
B09	Greenleaf Street	Uncontrolled discharge to TARP DS 105	009	Yes	1153675.55, 1956819.53	Potential Evanston CSO
S09	Greenleaf Street	Uncontrolled discharge to TARP DS 105	009A	No	1153682.45, 1956827.79	Potential Evanston CSO
B10	Main Street	Uncontrolled discharge to MWRD 12" Sewer; excess flows discharge to uncontrolled TARP DS 103	10	No	1153678.57, 1955438.88	Potential Evanston CSO
S10	Main Street	Controlled discharge to TARP DS 104 E	010A	Yes	1153697.23, 1955372.92	Potential Evanston CSO
B11	Cleveland Street	Uncontrolled discharge to TARP DS 103	011	No	1153654.49, 1954138.17	Potential Evanston CSO
B12	Oakton Street	Uncontrolled discharge to TARP DS 102				No CSO – Outfall Plugged
B13	Mulford Street	Uncontrolled discharge to TARP DS 101	013	No	1153620.90, 19515141.28	Potential Evanston CSO

Basin Number	Location	Description of System Hydraulics	Outfall Number	Monitored by MWRD for CSO Event	Planar Coordinates X(Easting), Y(Northing)	Remarks
S13	Mulford Street	Controlled discharge at Collecting Structure prior to uncontrolled discharge to TARP DS 101	013A	Yes	1153643.85, 1951293.86	Potential Evanston CSO

Table 2-2 Comparison of Trunk Sewer and Drop Shaft Capacities

Basin Number	Area Served (acres)	Sewer				TARP Drop Shafts			
		Description	Trunk Diameter (inch)	Design Capacity (cfs)	Total Capacity (cfs)	Diameter (ft-in.)	Capacity (cfs)	Location	Discharge to DS Controlled
B01	19	Combined Trunk Sewer	15	7	7	4'-0"	80	Isabella Street DS 113	No
B02	15	Combined Trunk Sewer	15	5	5	4'-0"	80	Central Street DS 111	No
B3A	94	Combined Trunk Sewer	36	30	30	4'-0"	80	Asbury Avenue DS 110	No
B04	400	Combined Trunk Sewer	48	65	65	9'-0"	900	Green Bay Road DS 109	Yes
S82	781	Relief-Combined Trunk Sewer	108	600	600	9'-0"	900	Green Bay Road DS 109S	Yes
B05	100	Combined Trunk Sewer	24	16	16	4'-0"	80	Bridge Street DS 106I	No
B06	504	Combined Trunk Sewer	60	104	104	12'-0"	1,200	Elgin Street DS 107	Yes
S06	1,032	Relief-Combined Trunk Sewer	108	572	676	12'-0"	687*	Elgin Street DS 107	Yes
B07	392	Combined Trunk Sewer	54	120	120	5'-8"	140	Emerson Street DS 108	No
S07A	37	Relief-Combined Trunk Sewer	36	18	138	5'-8"	140	Emerson Street DS 108	No
S07	641	Relief-Combined Trunk Sewer	108	515	935	12'-0"	1,200	Lake Street DS 106	Yes
B09	242	Combined Trunk Sewer	60	133	133	7'-2"	280	Greenleaf Street DS 105	No

Basin Number	Area Served (acres)	Sewer				TARP Drop Shafts			
		Description	Trunk Diameter (inch)	Design Capacity (cfs)	Total Capacity (cfs)	Diameter (ft-in.)	Capacity (cfs)	Location	Discharge to DS Controlled
S09	128	Former Storm Trunk Sewer	30			7-2"	280	Greenleaf Street DS 105	No
B10	32	Combined Trunk Sewer	21	6	6	5'-8"	140	Cleveland Street DS103	No
S10	1878	New Relief Sewer	120	906	912	12'-0"	1,200	Main Street DS 104 E	Yes
B11	303	Existing Trunk Sewer	54	93	93	5'-8"	140	Cleveland Street DS 103	No
B12	44	Existing Trunk Sewer	24	12	12	4'-0"	80	Oakton Street DS 102	No
B13	278	Existing Trunk Sewer	60	45	45	7-2"	280	Mulford Street DS 101	No
S13	383	New Relief Sewer	72	282	327	7-2"	280	Mulford Street DS 101	Yes

* - Drop shaft capacity available to Evanston

Table 2-3 Summary Checklist for CSO Operational Plan

		Included		
Item	**Description**	**Yes**	**No**	**Not Applicable**
1	Describe the collection system including all outfalls and overflows, control (diversion) structures, treatment facilities, pumping stations, and associated capacities.	✓		
2	Describe the relationship to other collection entities, especially other CSO collection entities	✓		
3	Has the Illinois Pollution Control Board issued any orders, currently in effect, regarding any of these outfalls?	✓		
4	Are any of these outfalls to sensitive areas (designated Outstanding National Resource Waters, National Marine Sanctuaries, bathing beaches, shellfish beds, waters with threatened or endangered species and their habitat, contact recreation, or drinking water intakes)	✓		
5	Describe efforts undertaken to minimize the discharge of pollutants from all CSO outfalls	✓		
6	Describe efforts undertaken to maximize storage of pollutants in the collection system	✓		
7	Describe the pollution prevention aspects of this Operational Plan	✓		
8	Describe efforts to monitor CSO impacts and the efficacy of CSO controls	✓		
9	Describe the public notification program for CSO occurrences and impacts	✓		
10	Latitude and longitude information given for each outfall	✓		

CHAPTER 3

ADMINISTRATIVE CONTROLS

This section of the City of Evanston Combined Sewer Overflow Operational Plan describes Administrative Controls the City currently has in place for monitoring the operation and maintenance of the Combined Sewer System.

City of Evanston Sewer Use Ordinance

The City of Evanston Sewer Use Ordinance governs use of the City sewer system by area residents and also describes the development of the Sewer User Charge Rates, which are applied for sewer services provided by the City.

The principal issues addressed by the Ordinance are:

1. **Wastewater Discharge:** Discharge of wastewater to any local water body is prohibited unless suitable treatment is first provided.

2. **Individual Sewage Treatment Facility:** Use of individual wastewater treatment/disposal systems such as septic tanks, privies etc. is prohibited.

3. **Toilet Facilities:** All buildings must be provided with appropriate toilet facilities with connections to the public sewer system.

4. **Use of Public Sewers:** No connections shall be made to the Public sewer system without a permit.

5. **Wastewater discharges to Public System:** Wastewater discharges to the public system shall be in compliance with federal laws and the more stringent local requirements including the MWRD minimum requirements.

6. **Responsibility for Building Sewer:** Owners shall be responsible for installing the building sewers from the point of service to the point of connection to the public sewer system.

7. **Number of Service Connections:** A separate and independent sewer shall be provided for every building.

8. **Minimum Requirements for Sewer Connections:** All sewer connections shall conform to the requirements of the Building and Plumbing Codes, the MWRD sewer permit ordinance and other applicable City rules.

Metropolitan Water Reclamation District Ordinances

Since all wastewater flows intercepted by the City of Evanston local sewer system are discharged to MWRD facilities and systems, all MWRD regulations and ordinances also apply to all wastewater discharges in Evanston. Specific ordinances of concern are:

- The Sewer Permit Ordinance which governs the issuance of Permits for the Construction, Operation and Maintenance of Sewers, Sewer Systems and treatment plants.

- The Sewage and Waste Control Ordinance which regulates the quantity and quality of sewage and industrial waste that may be discharged into the sewer system and the minimum pretreatment requirements for industrial wastewater prior to such discharge.

City of Evanston Plumbing Code

The City of Evanston Plumbing code, which governs the installation of all plumbing systems within the City was modified to include a requirement that all buildings in R-1, R-2, and R-3 zoning districts, and all one and two family dwelling units shall drain roof storm water by gutters and downspouts in a matter which will not disturb adjoining property. No connections to the combined sewer shall be made in the above zoning districts. All roofs of buildings not mentioned above may drain directly into the storm sewer system.

The impact of this ordinance is to eliminate the direct discharge of roof drainage into the sewer system. Instead, all roof drainage is forced to flow along streets and alleys before being intercepted by drainage inlets connected to the combined sewer system. The impact of this action is to increase the time of concentration for flows reaching the sewer system and simultaneously, to reduce peak run-off rates.

Record Keeping

The City of Evanston currently uses a maintenance management software (MMS) program along with their established Geographical Information System (GIS) to maintain physical data, record alterations, upgrades and all maintenance activities to the City's combined sewer system. This MMS, which is directly linked to the aforementioned GIS package, has four basic functions:

1. To maintain inventories of all sewer lines, manholes, and drainage structures
2. To record all maintenance and management activities performed on the system;

3. To schedule regular maintenance and repair work; and

4. To display any one of the aforementioned functions (or combinations thereof) in a visual, map format.

Currently the MMS/GIS has been updated to include all inventory information of the structures that make up the local sewer system. The GIS map portion of this system is maintained in conjunction with this inventory information. The inventory and the associated maps are updated whenever construction or alteration work is completed.

The MMS/GIS is also used to track all scheduled and non-scheduled maintenance activities. The MMS is capable of automatically scheduling certain assets for maintenance activities, and then automatically rescheduling these activities when changes occur, or after the work is completed. Maintenance staff can also add or alter activities to this existing schedule based on inspections, reports, and field observations.

With the assistance of the MMS/GIS, maintenance staff can generate reports to monitor maintenance crew schedules, workloads, & productivity. In addition, staff can also track all time and dollars spent on any asset or maintenance activity in regards to labor, equipment, and material costs. With the collaboration of the GIS, these costs can be accessed across geographical boundaries as well. These calculations are especially useful in determining if outside help is needed, required, or would be beneficial using a cost-benefit approach.

The Sewer Division creates an annual report that is incorporated in the Water & Sewer Annual report. This report is available on the City's website. Pertinent pages from the 2018 annual report are included as Figure 3-1. This 7 page exhibit summarizes the revenue and expenditures from the sewer fund, an inventory of sewer system assets, and a breakdown of In-House maintenance costs.

Maps and Diagrams

The City maintains record drawing information on its complete combined sewer system in its GIS system described above. Information contained in GIS format includes all combined and relief-combined sewers including all structures (including manholes, catch basins, diversion structures, outfalls, etc), sizes and slopes of pipe, pipe locations, pipe materials and other information typically maintained on hard copy sewer atlases. This information is readily available electronically and hard copy print outs can be produced.

CHAPTER 4

OPERATION AND MAINTENANCE PROGRAMS

The City of Evanston Water Production Bureau of the Department of Public Works Agency has the overall responsibility to oversee the sewer system operation and maintenance (O&M) programs for the City. Funding for the sewer system O&M as well as capital project is available from the Sewer Fund. This is an enterprise fund with revenues generated by a sewer service charge. This chapter provides a description of the City's sewer system O&M program, discusses program staff and O&M Procedures and shows how these satisfy the nine minimum controls identified by the USEPA for correcting Combined Sewer Overflows (CSO's).

Personnel

The City of Evanston Water Production Bureau has a full complement of staff required for Operation and Maintenance of the local sewer system. As shown on Figure 4-1, the department is headed by a Bureau Chief who has overall responsibility for the division.

The Bureau Chief is supported by a Sewer Public Works Supervisor, a Water & Sewer Senior Project Manager, a Civil Engineer II, and two GIS/Engineering Technicians.

Ongoing routine sewer system maintenance tasks are carried out by staff of the Sewer Division, under the direction of the Sewer Public Works Supervisor. Major maintenance works and system upgrades are generally contracted out to private contractors.

Sewer System Maintenance

In order to plan and execute routine maintenance tasks, the City has sub-divided the sewer service area into four sub-systems as shown on Figure 4-2. As indicated in Figure 4-2, the maintenance performed within these areas includes structure (catch basins & inlets) cleaning, pipe line cleaning and root treatment.

Sewer Cleaning: The sewer cleaning program in the City of Evanston is carried out every year in one of the four areas, as shown in Figure 4-2, on a rotation basis. In general, during the cleaning exercise, all sewers with diameters of 24 inches or less are cleaned by hydroflushing and or a rodding method. In Evanston, it was found that rodding of sewers is an effective method for removal of minor tree roots and other obstructions which may be partially blocking sewage flow. Sewers identified with significate root intrusions and treated with a herbicide chemical to kill the roots.

Sewers larger than 24 inches are visually inspected and bucket cleaned if necessary. Based on actual experience in the City, this bucket cleaning is rarely required as these large diameter sewers tend to be self-cleaning at full flow. In general, the sewer

cleaning work in the City of Evanston is carried out by private local contractors under close supervision of City O&M staff.

Catch Basin Cleaning

Evanston utilizes both catch basins and inlets to collect storm water for street. Storm water flow must pass through a catch basin before discharging into a sewer pipe. Catch basins generally have a four foot deep sump which serves to trap both settleable and floatables before they enter the sewer system. Drainage structures are cleaned on a once every four year schedule.

As catch basins and inlets are cleaned, they are also visually inspected and repairs carried out as appropriate. In some cases, where structures have deteriorated significantly, catch basin structures may also be replaced.

Sewer Inspections/Rehabilitation

On average, City crews use closed circuit TV equipment to inspect approximately 50,000 feet of sewer mains annually. Deficiencies observed during these inspections are remedied by completing sewer spot repairs and / or rehabilitation of the entire sewer main by using a Cured In Place Pipeline (CIPP) lining process. Over the past five years, an average of 2.2 miles of the original combined sewer system has been rehabilitated using the CIPP lining process.

In accordance with the City's NPDES permit, City crews check the outfalls on the combined sewer system monthly to determine if a combined sewer overflow is occurring or has occurred. This is generally completed after a rainfall of 0.20 inches.

The CSO inspection Report form used for these inspections is included as Figure 4-3

Emergency Sewer Repairs

The City of Evanston budgets $75,000 annually for emergency sewer repairs that a needed and are beyond the capability of the City crews and equipment. Fortunately, due to the robust inspection and routine maintenance performed by the City crews, very few emergency sewer repairs are actually needed.

Street Cleaning

The City of Evanston also undertakes a street cleaning program which is in effect from March 1 until December 15 each year, weather permitting. All streets are cleaned once per month and the cleaning schedule is available on the City's website.
Additional employees and pieces of equipment are used from mid-October to mid-December in order to collect leafs before street sweeping to prevent the leafs from enter the sewer system.

CSO Operational Plan - Checklist

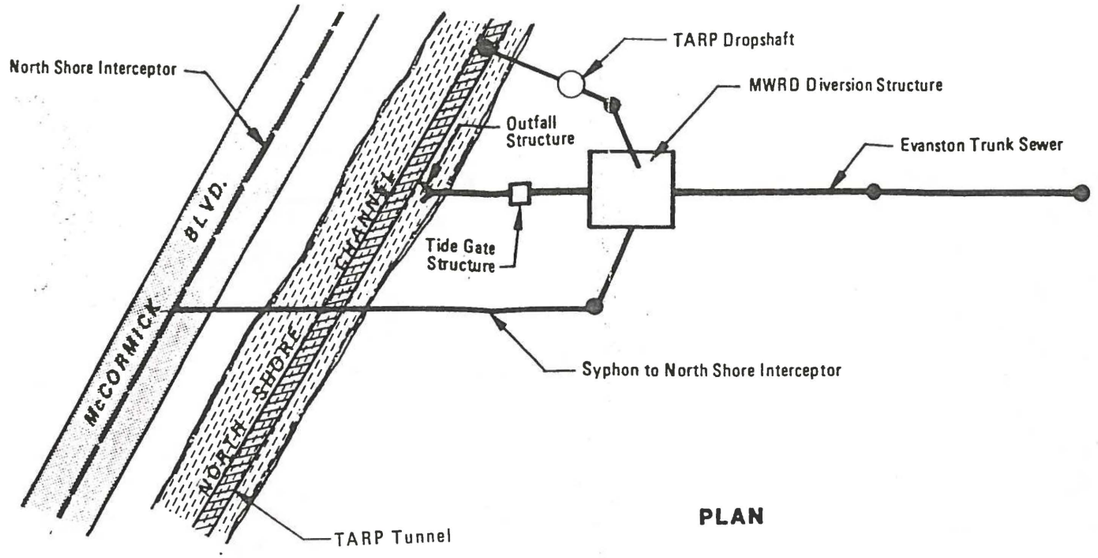
The following section briefly describes how the City addresses items involving Inspection, Maintenance and Monitoring of the sewer system as identified in the IEPA's Checklist. Table 4-1 presents a summary of the Checklist for Maintenance, Inspection, and Monitoring items.

Table 4-1 Maintenance

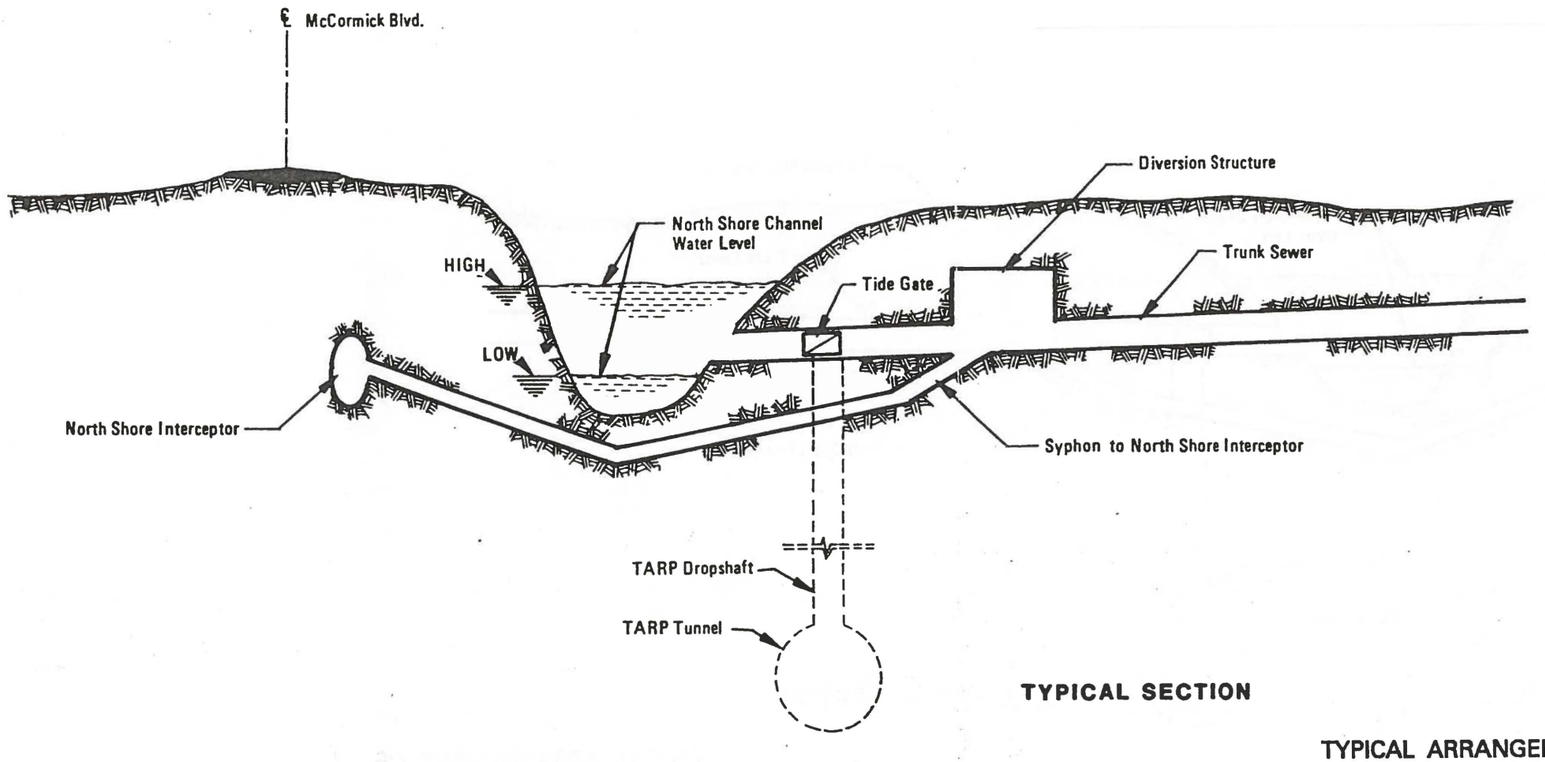
Item	Remarks
1a. Street cleaning:	Schedules for regular street cleaning in combined sewer areas have been prepared. The official street cleaning schedule for Evanston is included in the Operational Plan.
1b. Leaf removal:	The street cleaning program is accelerated in the Fall in order to enhance leaf removal from the streets.
2. Catch basin cleaning:	All catch basins in Evanston are cleaned on a triennial basis. Catch basin repairs and rehabilitation activities are carried out at the same time.
3. Sewer Cleaning:	Local street sewers are cleaned by high pressure jet rodding method every three years. At the same time, trunk and interceptor sewers visually inspected and bucket cleaned if necessary.
4. Stop planks:	The City of Evanston does not use stop planks in the combined sewer system. Therefore, this item is not applicable.
5. Adjustment of stop planks:	The City of Evanston does not use stop planks in the combined sewer system. Therefore, this item is not applicable.
6a. Cleaning of screens:	The connecting structures to MWRD's interceptor and TARP systems, such as diversion and weir chambers, are managed by MWRD and do not involve screens. Therefore, this item is not applicable.
6b. Diversion structures:	Same as item (6a) above.
6c. Solid deposition:	All sewers in Evanston are designed to be self-cleaning at full flow in order to prevent and minimize deposition of solids. Since sewers surcharge frequently, this self-cleaning occurs several times a year.

Table 4-1 (continued) Inspection and Monitoring

Item	Remarks
7. Inspection of Diversion Structures:	The connecting structures to MWRD's interceptor and TARP systems, such as regulator, diversion and weir chambers, are managed by MWRD. Therefore this item is not applicable.
8. Pump station maintenance:	The City does not have any pump/lift stations. Therefore this item is not applicable.
9. Sewer Inspection:	The sewers in Evanston are inspected (electronic televise, visual inspection, etc.) on a continuing basis as described in this chapter.
10. Surface water intrusion:	The connecting structures to MWRD's interceptor and TARP systems, such as regulator, diversion and weir chambers, are managed by MWRD. Therefore, this item is not applicable.
11. Illegal sewer connections:	Storm sewer outfalls are inspected annually after a period of 14 days without a measureable rain event to determine if illegal sanitary connection has been made.
12. Dry weather overflows procedures:	Combined sewer outfalls are inspected annually after a period of 14 days without a measureable rain event to confirm that there are no dry weather overflows from the combined sewer system.



PLAN



TYPICAL SECTION

Figure 2-1
TYPICAL ARRANGEMENT OF MWRD SEWER DIVISION STRUCTURE
COMBINED SEWER SYSTEM OPERATIONAL PLAN
City of Evanston, Illinois

f0005/fbr/2-2.dgn

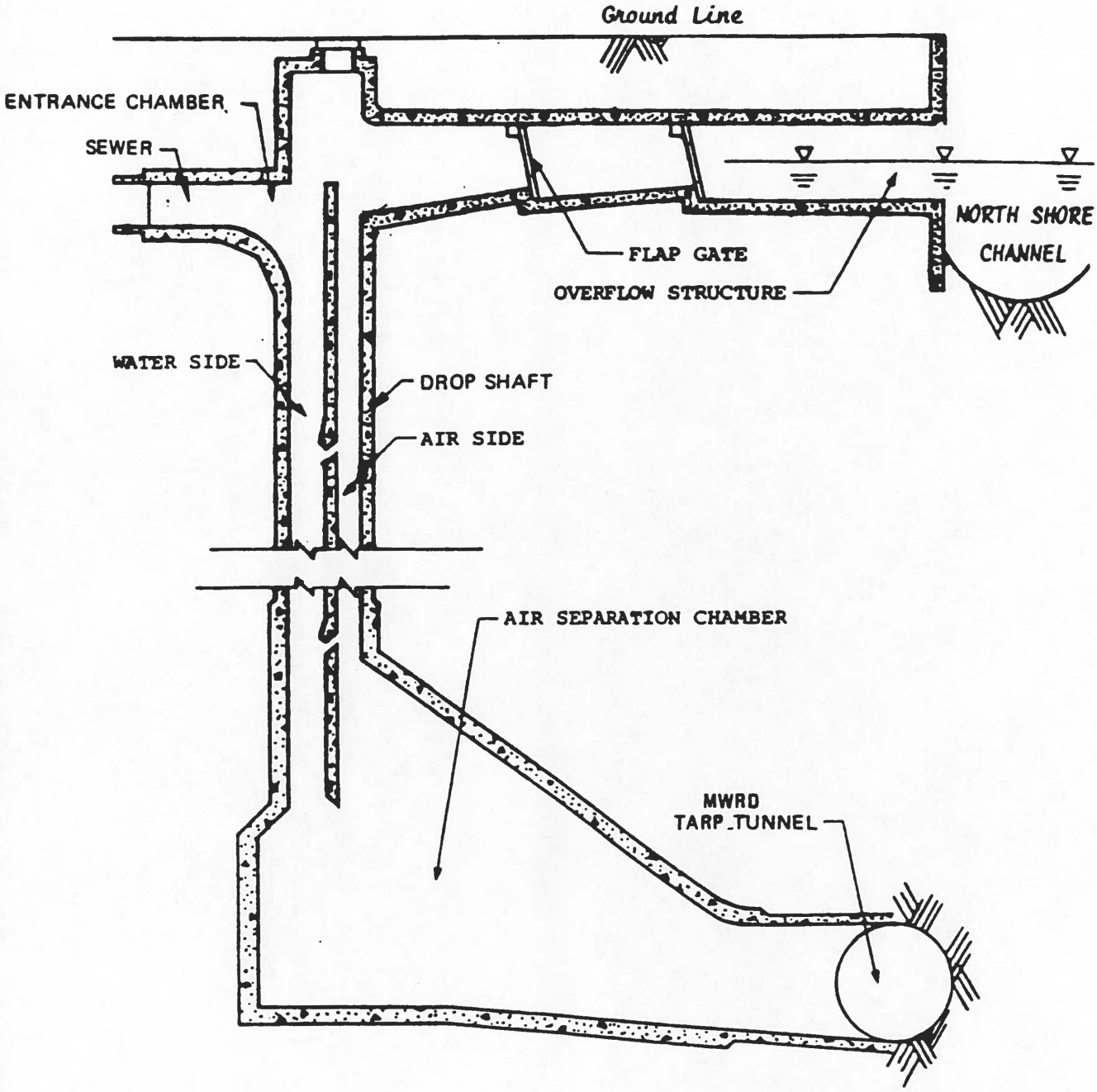


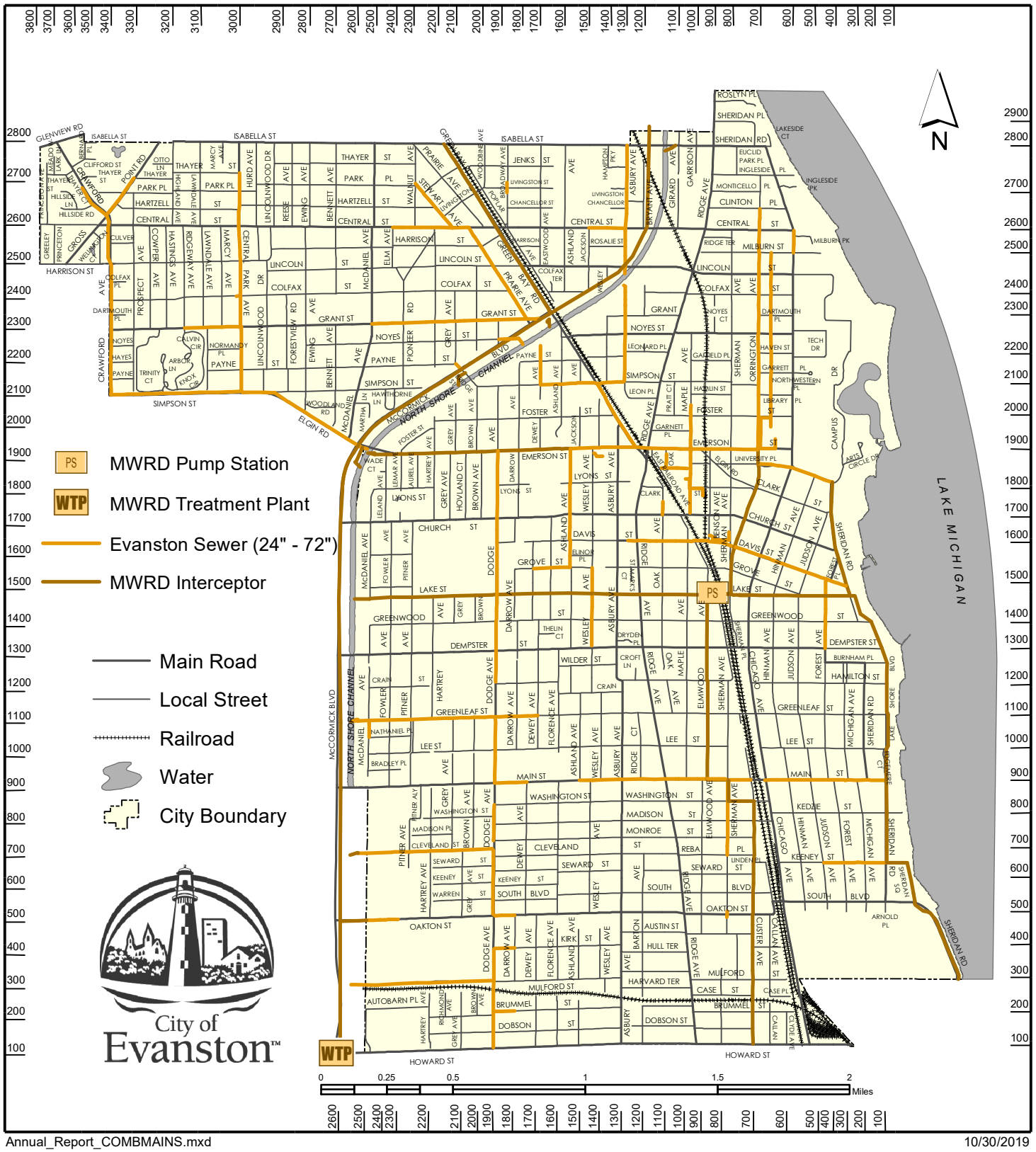
Figure 2-2

TYPICAL ARRANGEMENT OF TARP DROPSHAFT AND OVERFLOW STRUCTURE

COMBINED SEWER SYSTEM OPERATIONAL PLAN
City of Evanston, Illinois

V:\0005\fig\2-3.dgn

CITY OF EVANSTON
Major Combined Sewer System

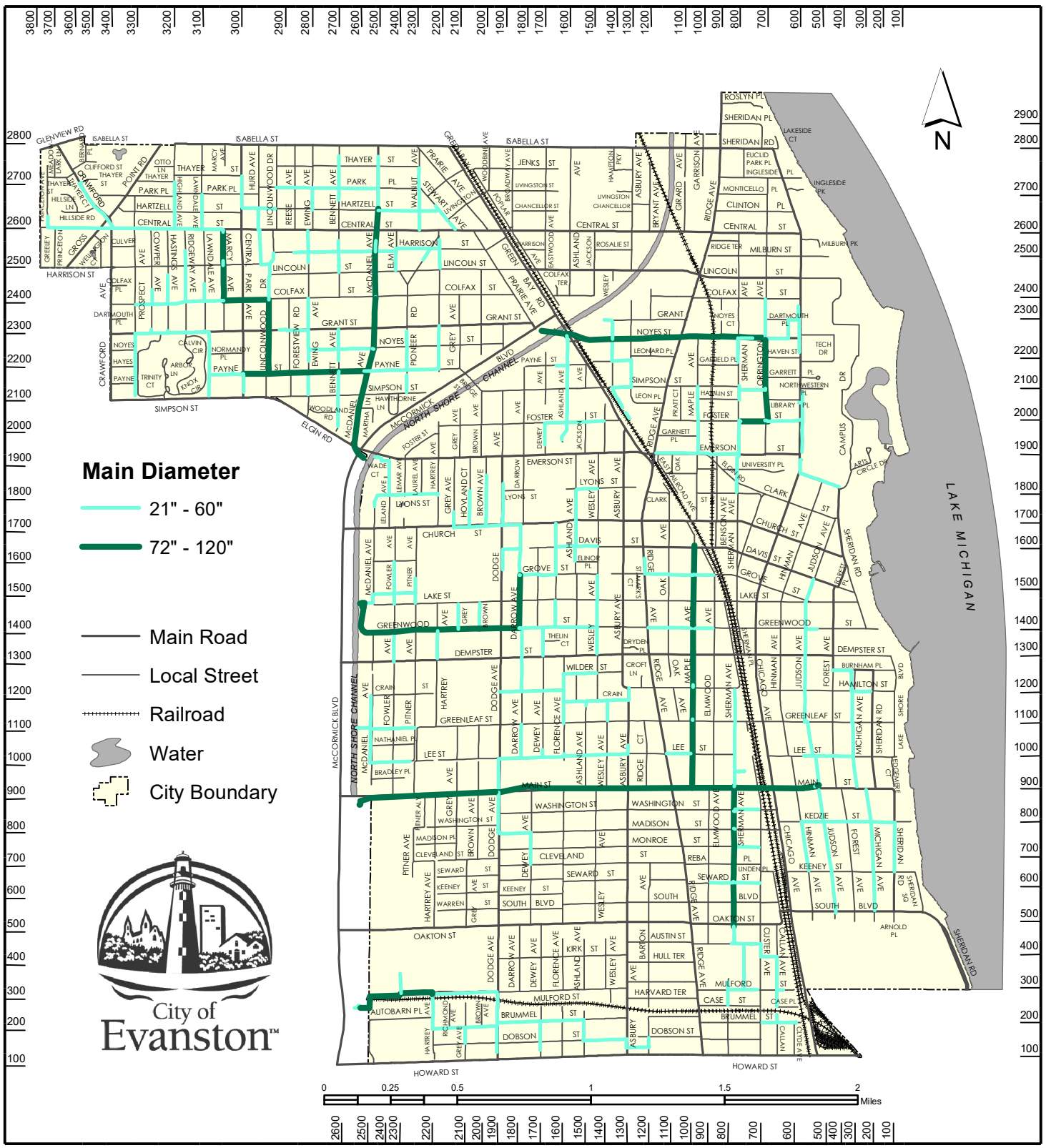


Annual_Report_COMBMAINS.mxd 10/30/2019

This map is provided "as is" without warranties of any kind. See www.cityofevanston.org/mapdisclaimers.html for more information.

Figure 2-3

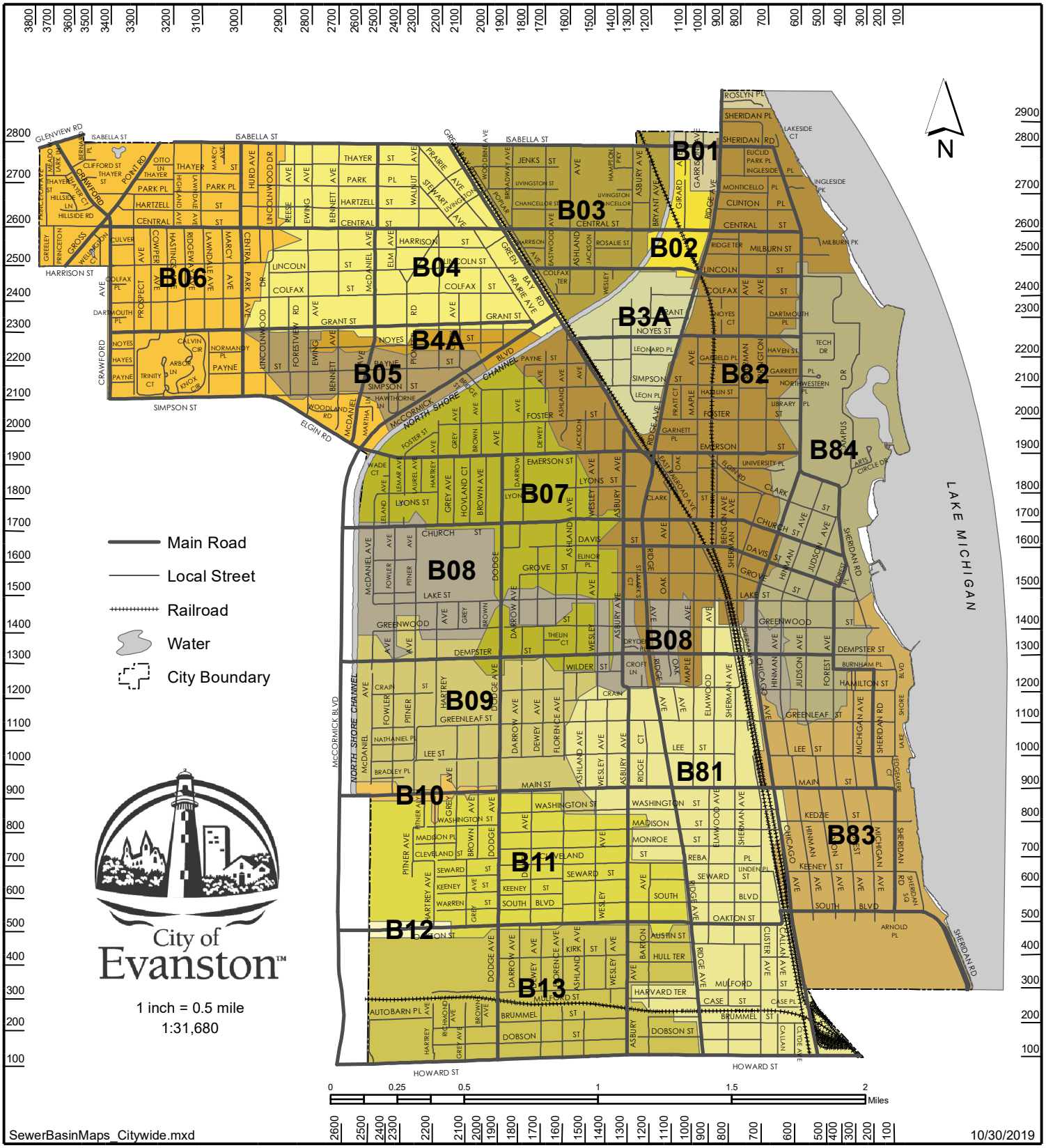
CITY OF EVANSTON
Major Relief Sewer System



Annual_Report_RELMAINS.mxd 10/30/2019

Figure 2-4

The City of Evanston
Combined Sewer Basins



City of Evanston™

1 inch = 0.5 mile
1:31,680

SewerBasinMaps_Citywide.mxd

10/30/2019

Figure 2-5

The City of Evanston
Relief and Storm Sewer Basins

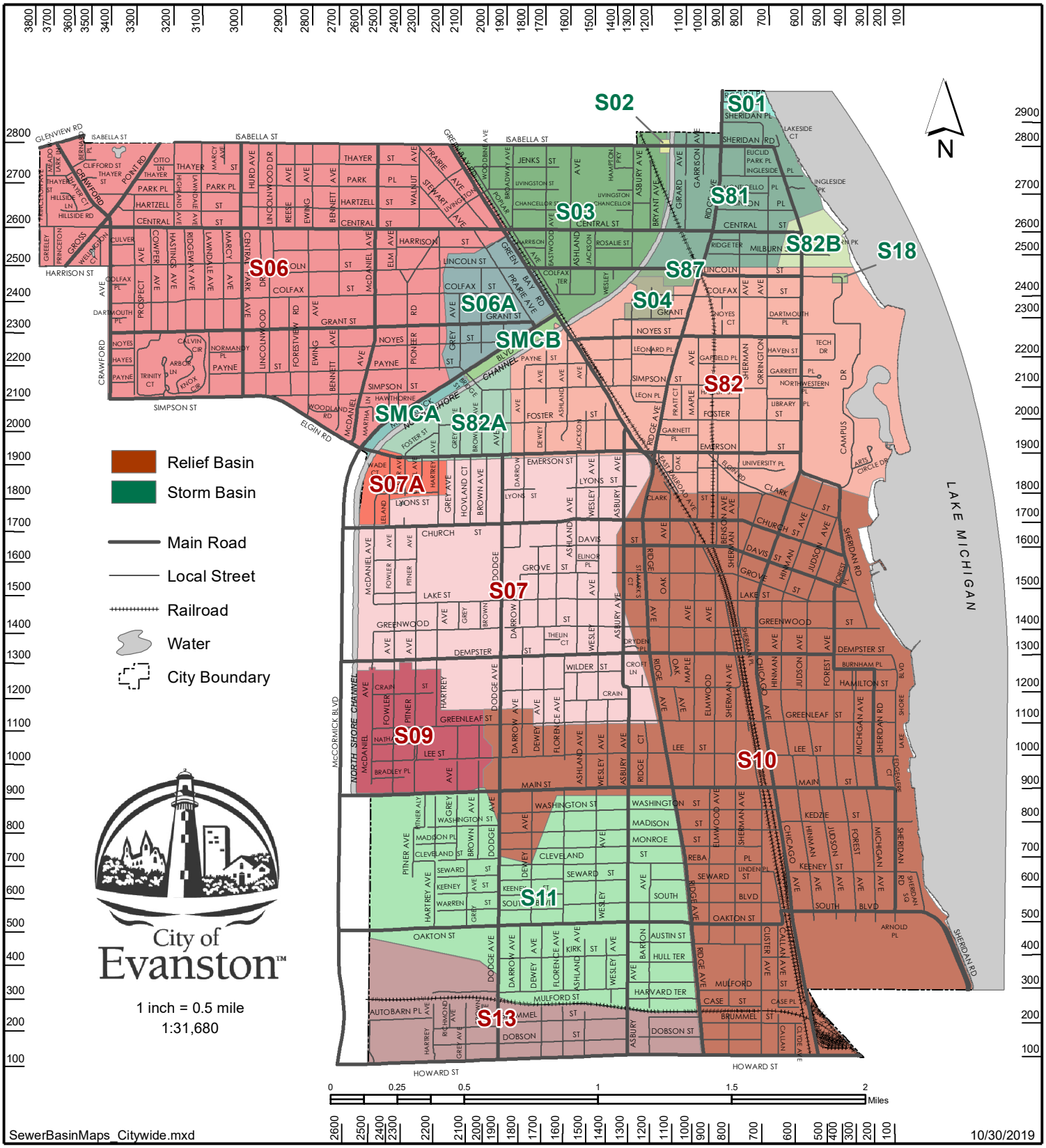
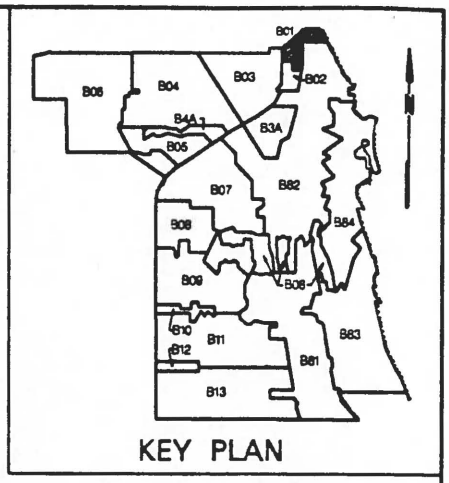
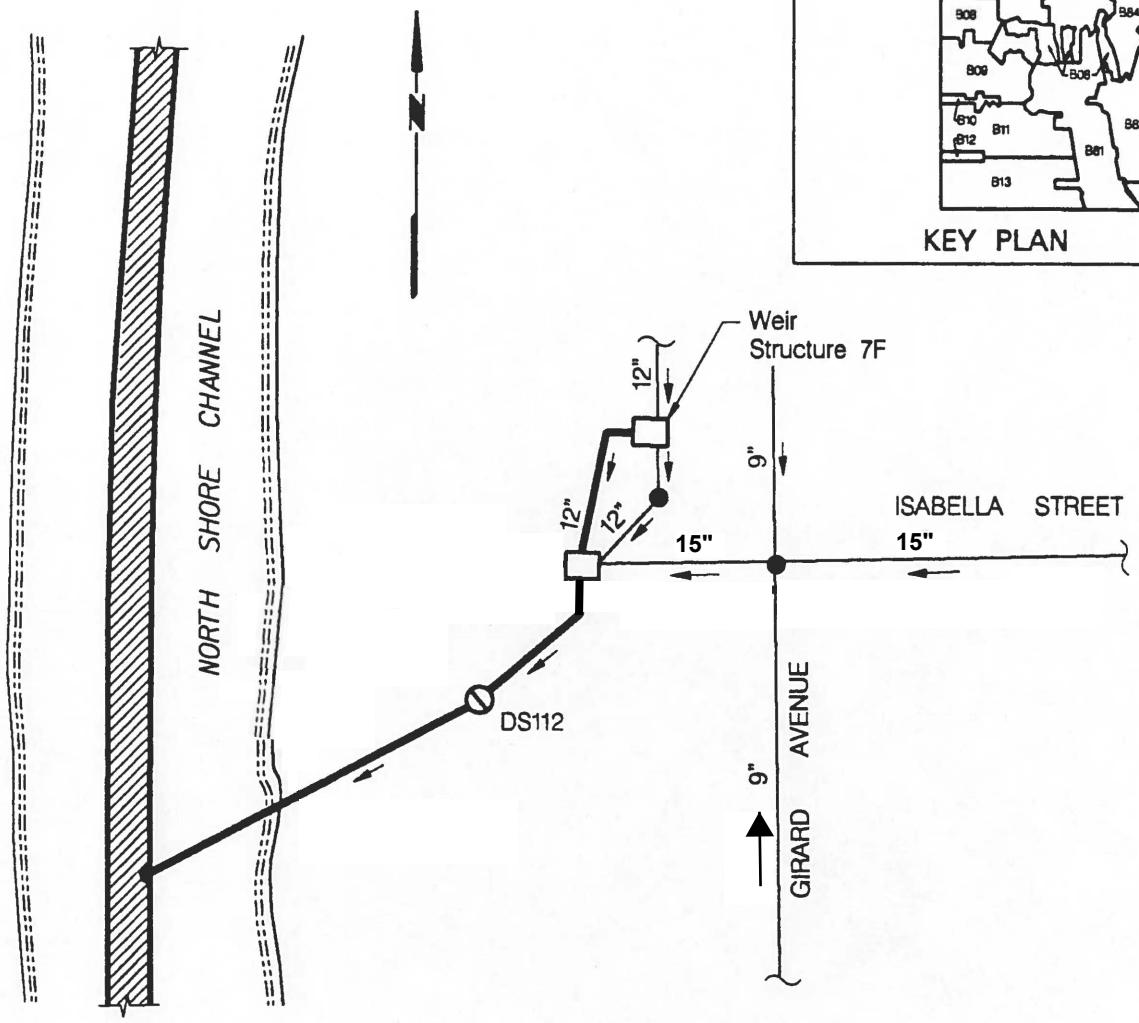


Figure 2-6



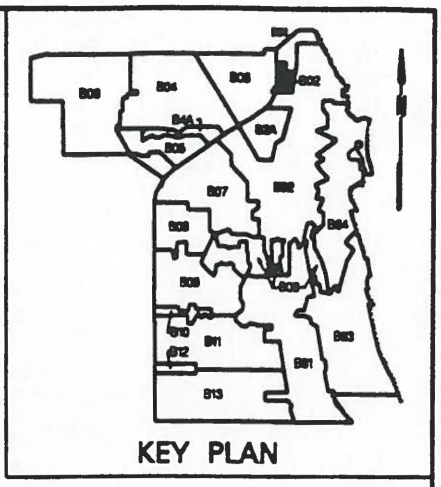


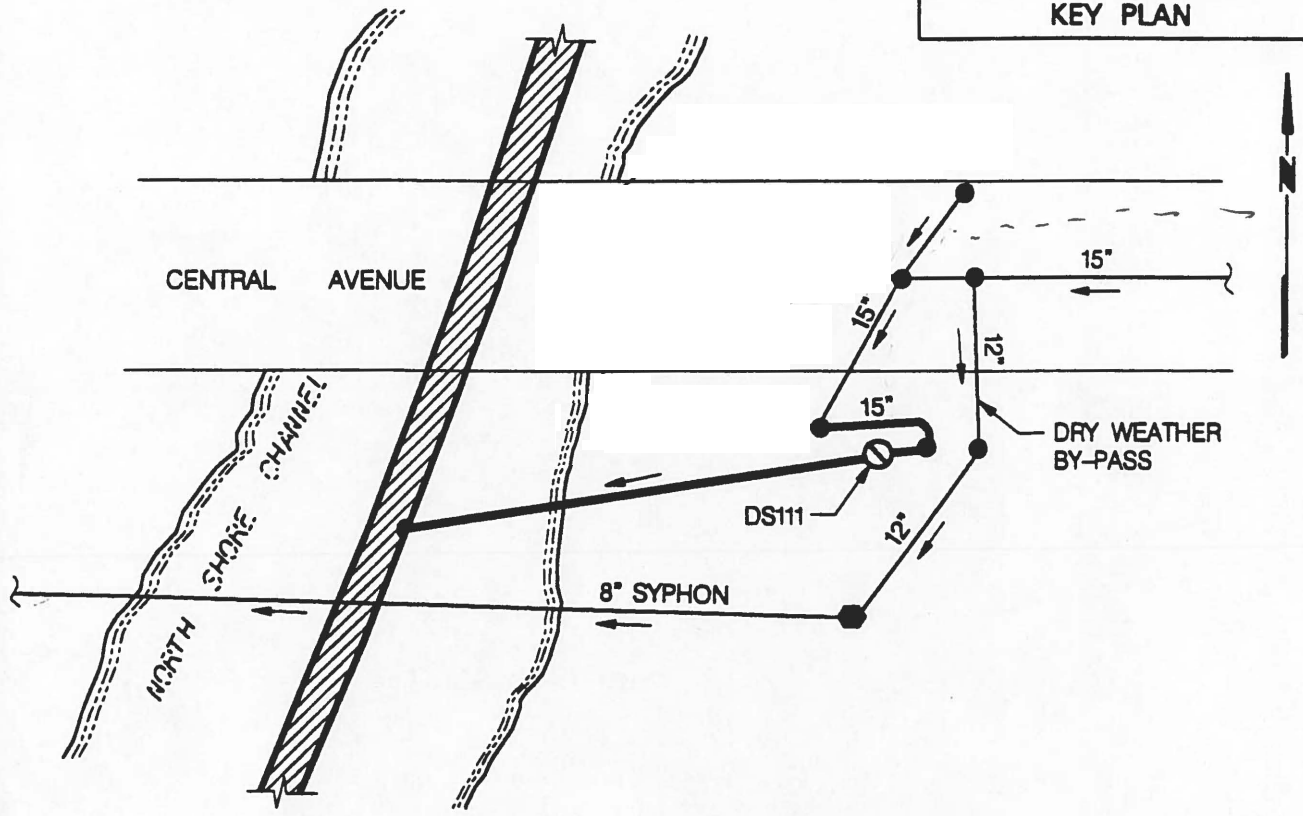
LEGEND:

- PROPOSED 48" ø RELIEF SYSTEM
- CONNECTING SEWER
- COMBINED SEWER SYSTEM
- 22'-0" TARP TUNNEL
- OUTFALL
- DROPSHAFT
- COLLECTING STRUCTURES
- MANHOLE

Figure 2-7
Basin B01
DROPSHAFT ARRANGEMENT AT ISABELLA STREET
COMBINED SEWER SYSTEM OPERATIONAL PLAN
City of Evanston, Illinois

h0005:/hb/shaft1.dgn





LEGEND:

- CONNECTING SEWER
- COMBINED SEWER SYSTEM
- 22'-0" TARP TUNNEL
- OUTFALL
- DROPSHAFT
- COLLECTING STRUCTURES
- MANHOLE
- MWRD SIPHON CHAMBER

Figure 2-8

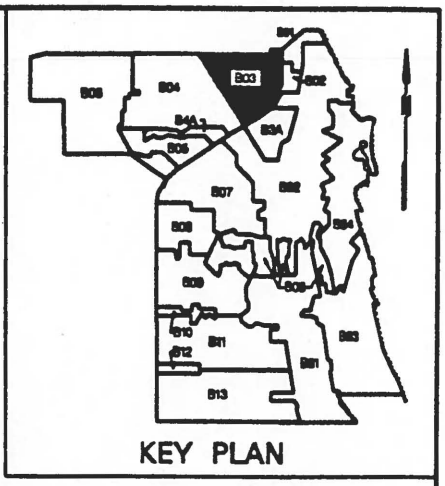
Basin B02

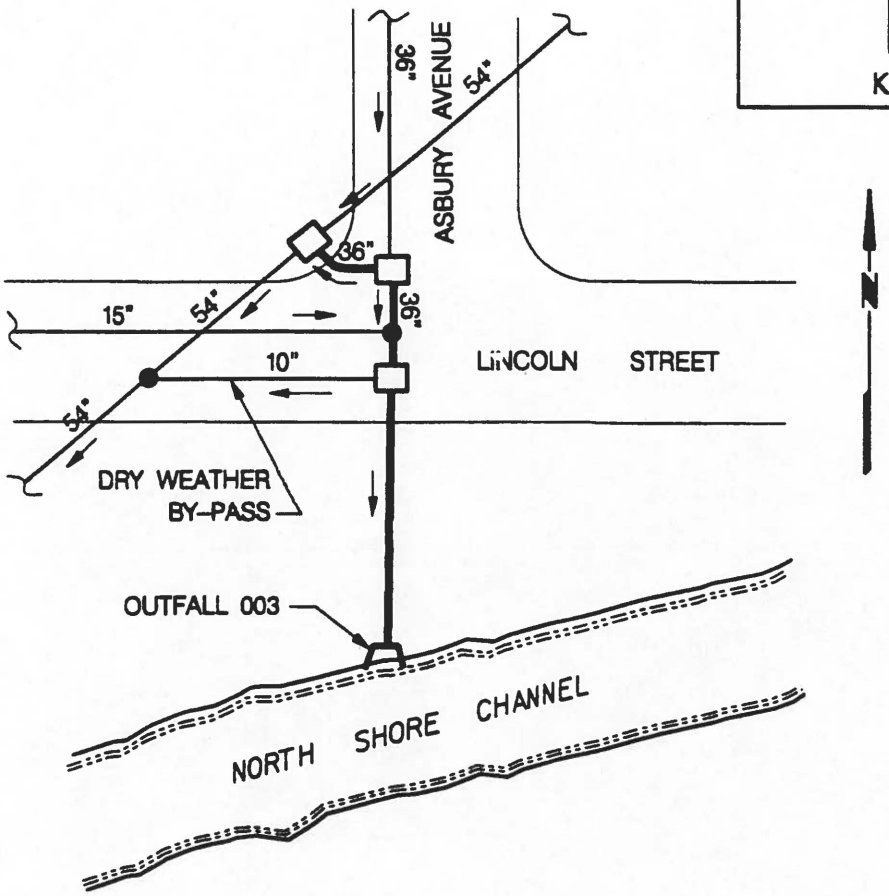
DROPSHAFT ARRANGEMENT AT CENTRAL STREET

COMBINED SEWER SYSTEM OPERATIONAL PLAN

City of Evanston, Illinois

V0005\vb\shaft12.dgn





LEGEND:

- CONNECTING SEWER
- COMBINED SEWER SYSTEM
- OUTFALL
- COLLECTING STRUCTURES
- MANHOLE

Figure 2-9

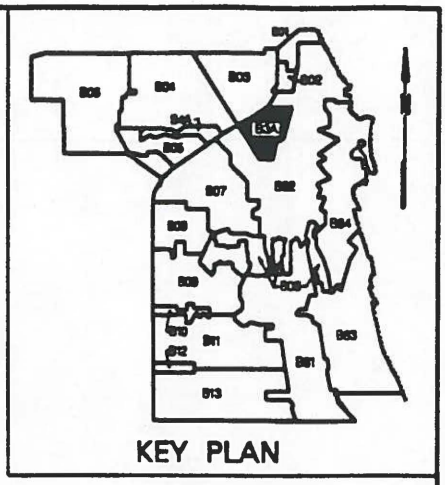
Basin B03

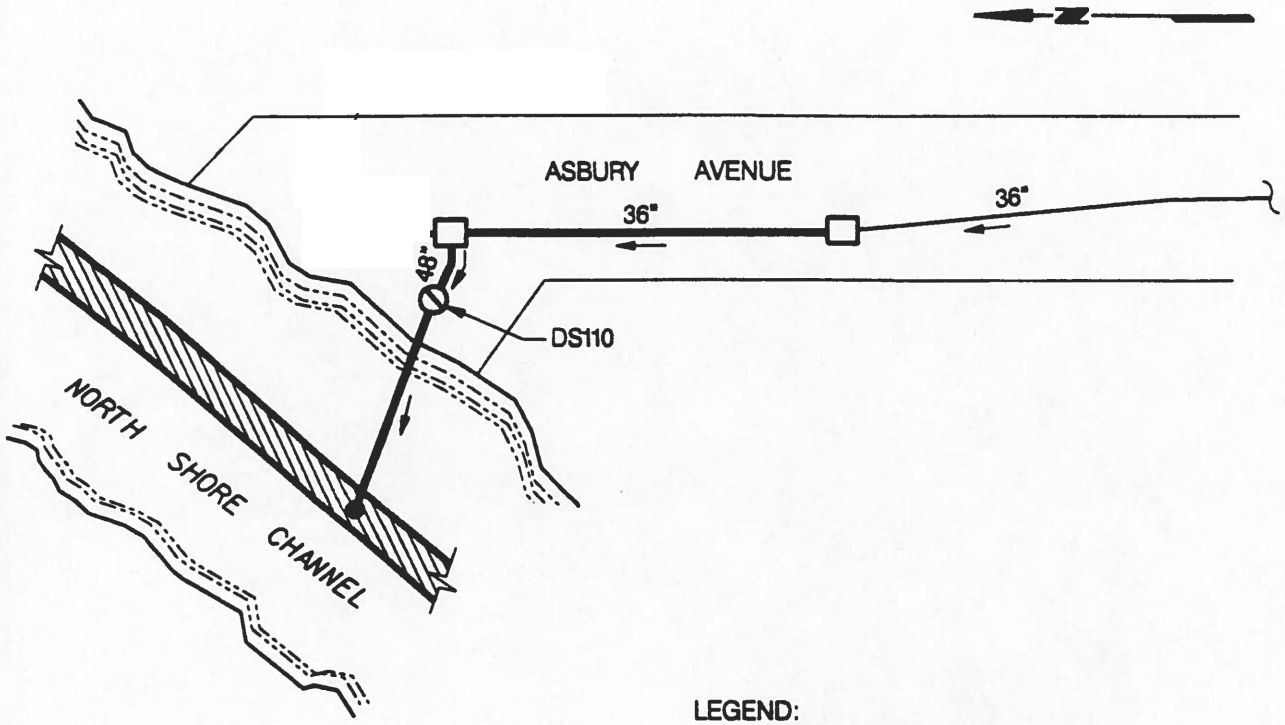
SEWER ARRANGEMENT AT ASBURY AVENUE AND LINCOLN STREET

COMBINED SEWER SYSTEM OPERATIONAL PLAN

City of Evanston, Illinois

V0005\vb\shaf13.dgn





LEGEND:

- CONNECTING SEWER
- COMBINED SEWER SYSTEM
- 22'-0" TARP TUNNEL
- OUTFALL
- DROPSHAFT
- COLLECTING STRUCTURES
- MANHOLE

V0005V\b\shaft3a.dgn

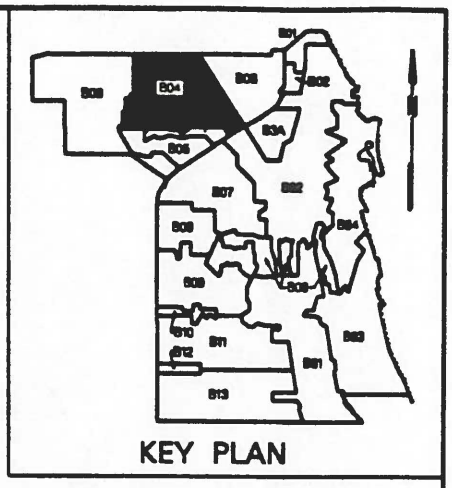
Figure 2-10

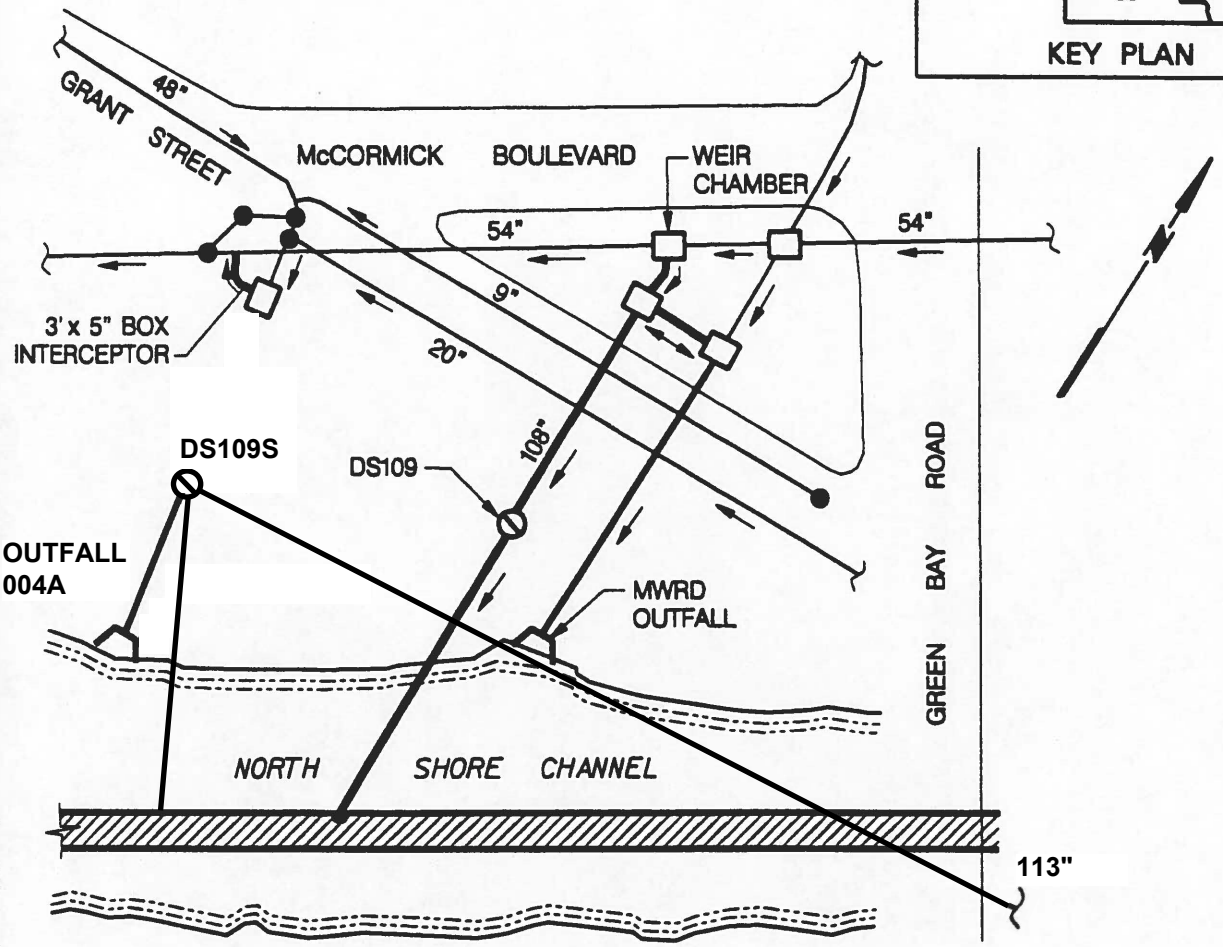
Basin B3A

DROPSHAFT ARRANGEMENT AT ASBURY AVENUE

COMBINED SEWER SYSTEM OPERATIONAL PLAN

City of Evanston, Illinois





LEGEND:

- CONNECTING SEWER
- COMBINED SEWER SYSTEM
- 22'-0" TARP TUNNEL
- OUTFALL
- DROPSHAFT
- COLLECTING STRUCTURES
- MANHOLE

V:\0005\vb\shaf14.dgn

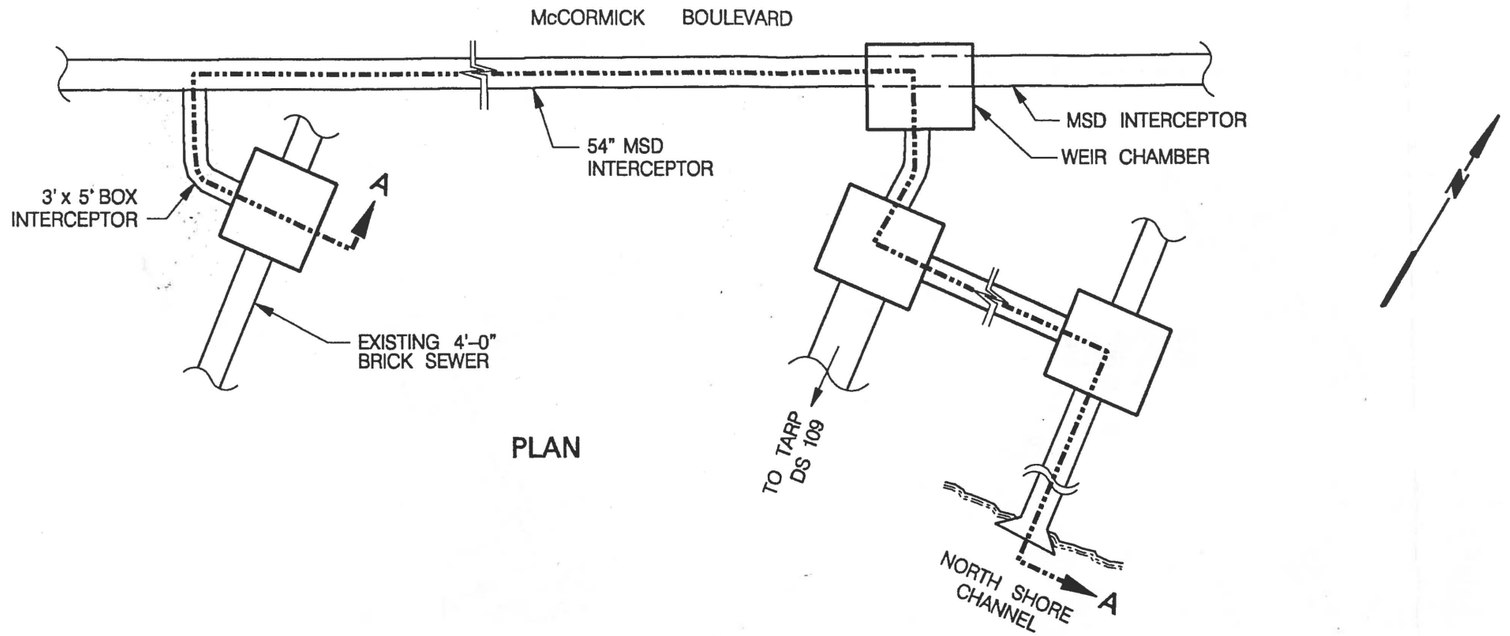
Figure 2-11

Basin B04

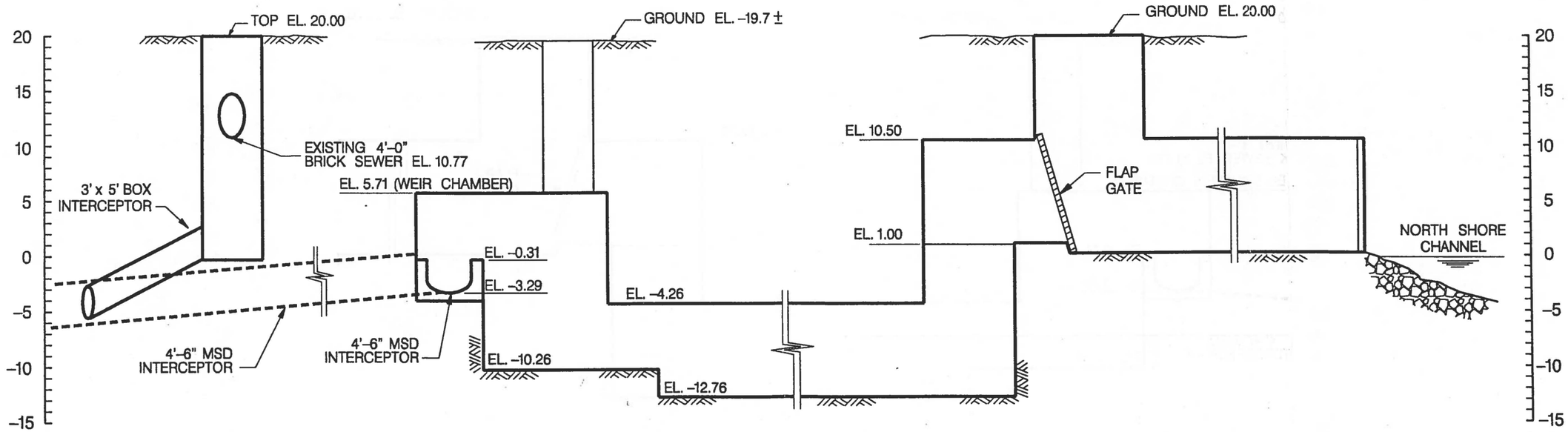
DROPSHAFT ARRANGEMENT AT GREEN BAY ROAD

COMBINED SEWER SYSTEM OPERATIONAL PLAN

City of Evanston, Illinois



PLAN



NOTE: Not to scale except elevation.

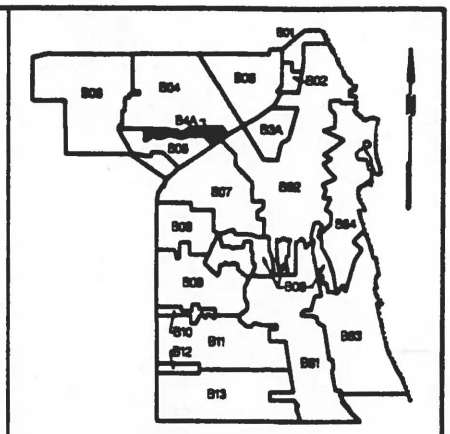
SECTION A–A

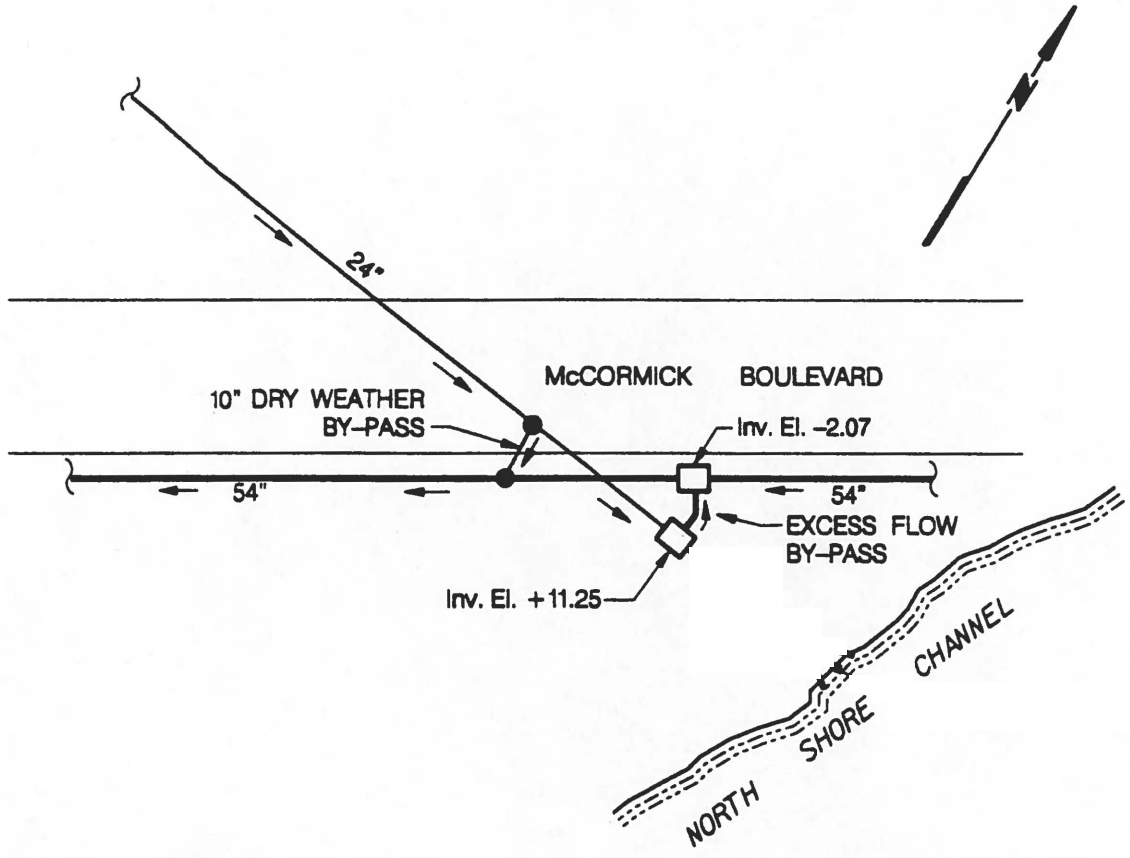
Figure 2-12

PLAN AND SCHEMATIC SECTION OF CONNECTING STRUCTURES OF GREEN BAY ROAD

COMBINED SEWER SYSTEM OPERATIONAL PLAN
City of Evanston, Illinois

10005/hb/ev-sect.dgn





LEGEND:

- CONNECTING SEWER
- COMBINED SEWER SYSTEM
- COLLECTING STRUCTURES
- MANHOLE
- OUTFALL

Figure 2-13

Basin B4A

SEWERS ARRANGEMENT AT McCORMICK BOULEVARD

COMBINED SEWER SYSTEM OPERATIONAL PLAN

City of Evanston, Illinois

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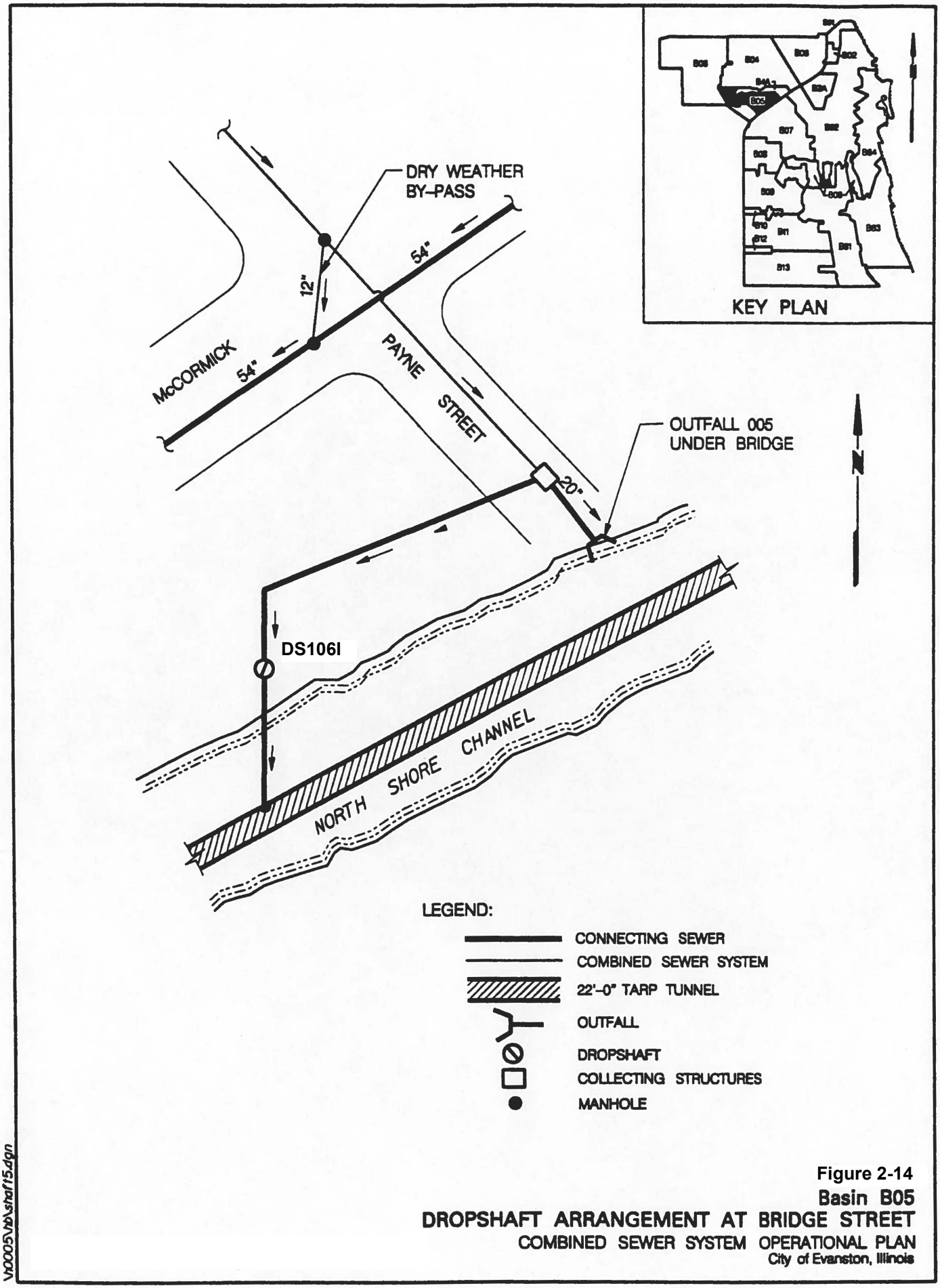

V0005\vb\shaf15.dgn

Figure 2-14

Basin B05

DROPSHAFT ARRANGEMENT AT BRIDGE STREET

COMBINED SEWER SYSTEM OPERATIONAL PLAN

City of Evanston, Illinois

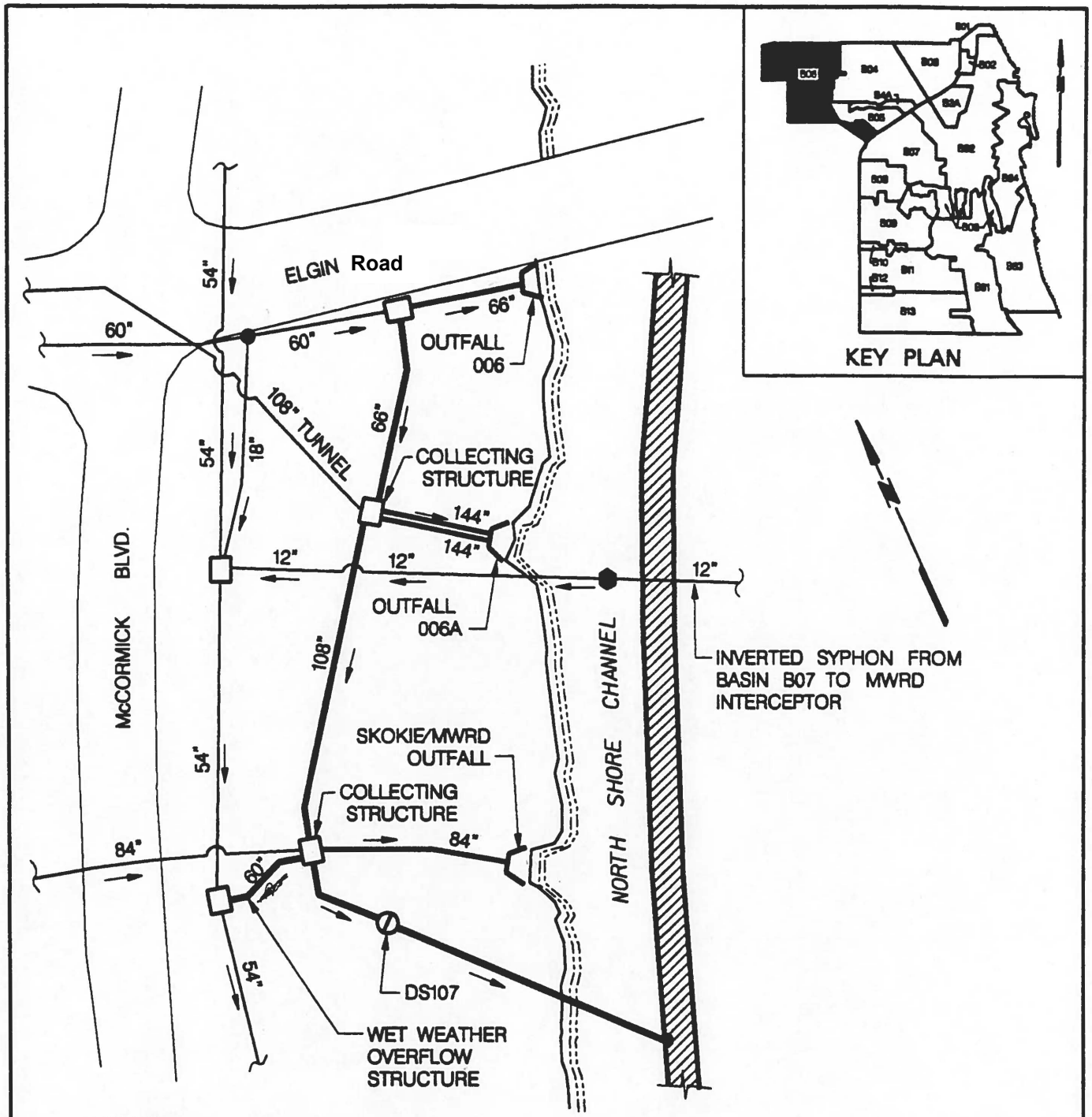

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Figure 2-15

Basin B06

DROPSHAFT ARRANGEMENT AT ELGIN STREET

COMBINED SEWER SYSTEM OPERATIONAL PLAN

City of Evanston, Illinois

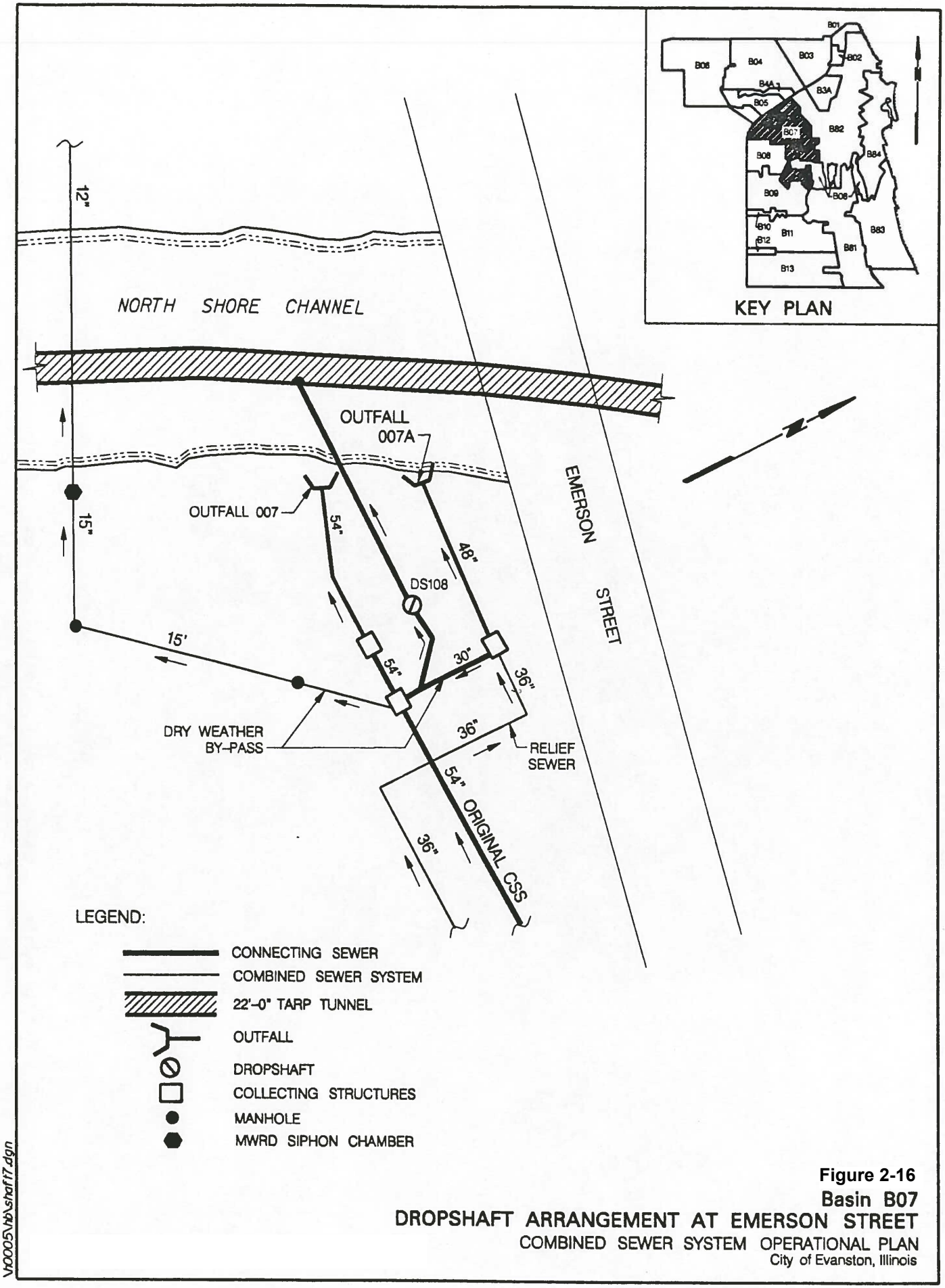

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Figure 2-16

Basin B07

DROPSHAFT ARRANGEMENT AT EMERSON STREET

COMBINED SEWER SYSTEM OPERATIONAL PLAN

City of Evanston, Illinois

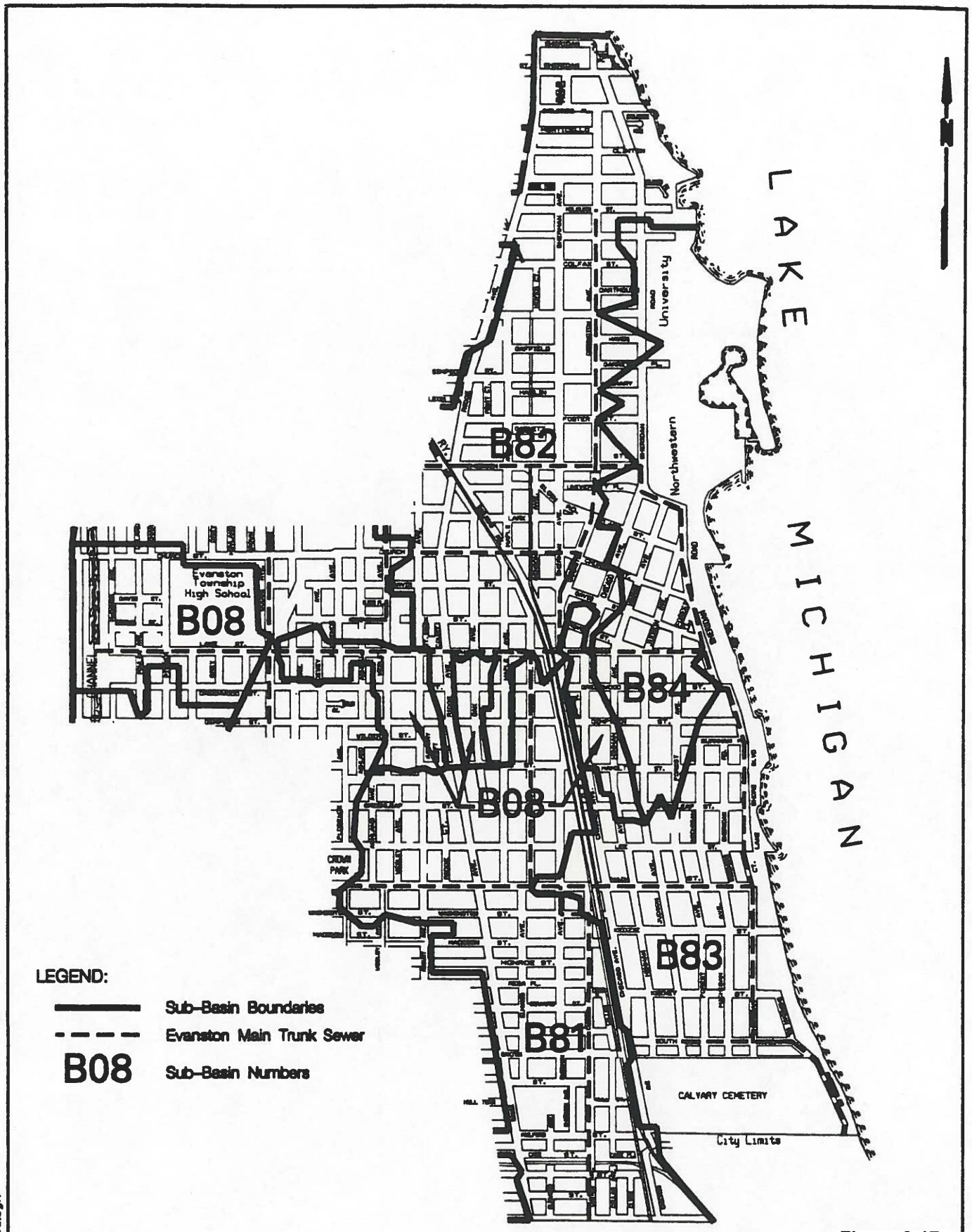
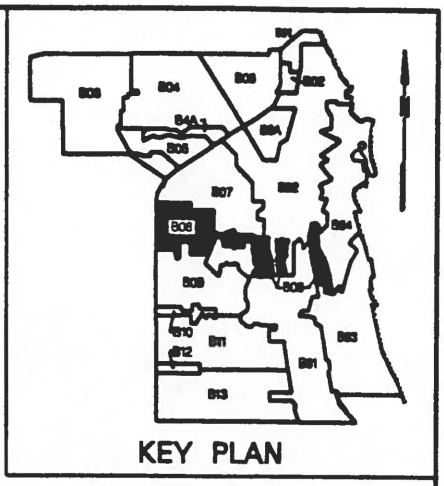


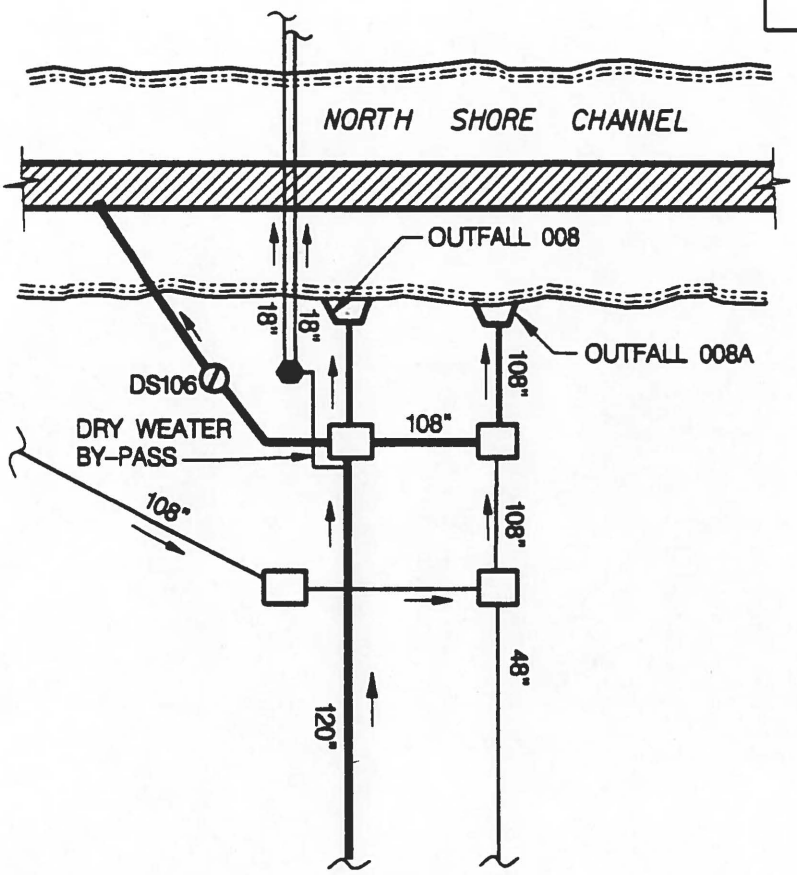
Figure 2-17

LAYOUT OF TRUNK SEWERS FOR B8 SUB-AREAS

COMBINED SEWER SYSTEM OPERATIONAL PLAN
City of Evanston, Illinois

h0005/hb/12-15adgn





LEGEND:

- CONNECTING SEWER
- COMBINED SEWER SYSTEM
- 22'-0" TARP TUNNEL
- OUTFALL
- DROPSHAFT
- COLLECTING STRUCTURES
- MANHOLE
- MWRD SIPHON CHAMBER

Figure 2-18

Basin B08

DROPSHAFT ARRANGEMENT AT LAKE STREET

COMBINED SEWER SYSTEM OPERATIONAL PLAN

City of Evanston, Illinois

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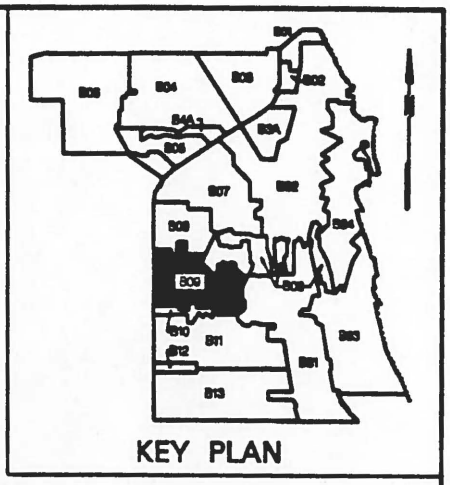

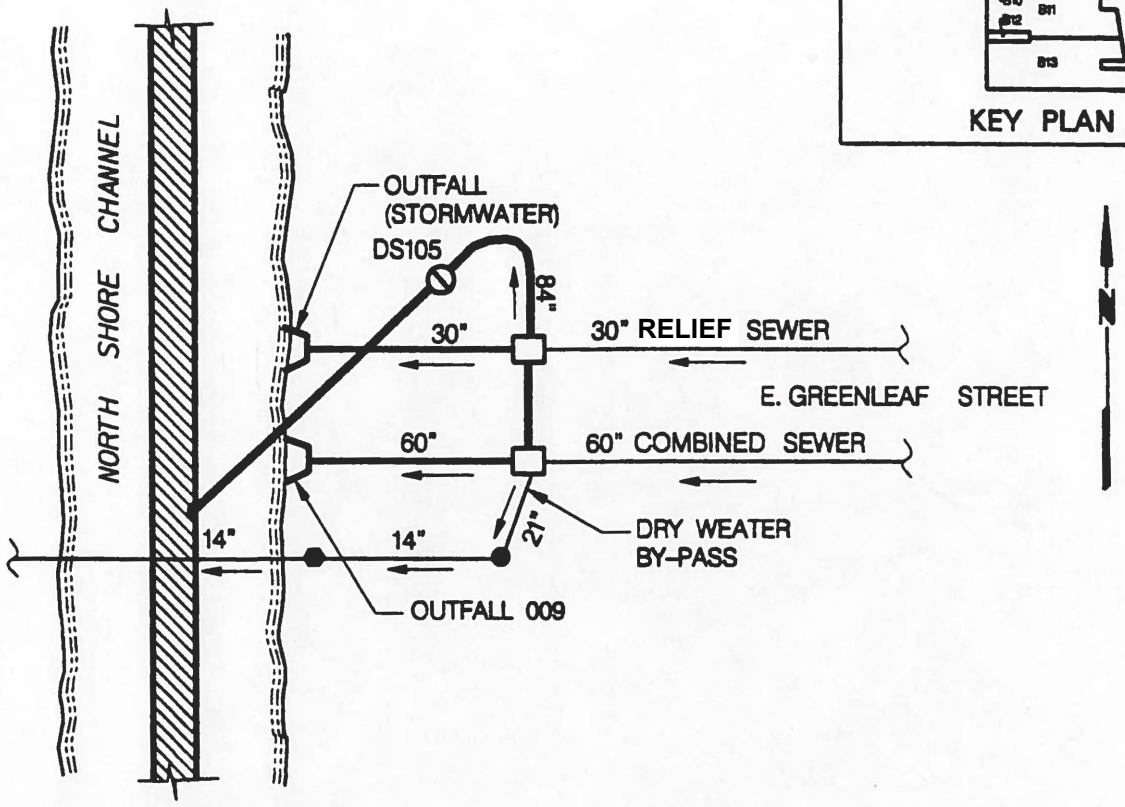

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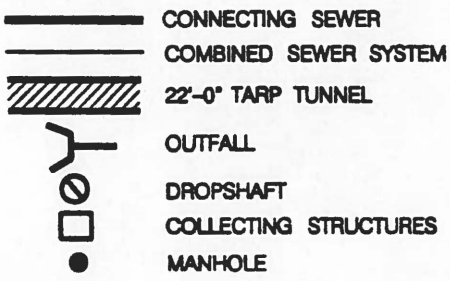


Figure 2-19

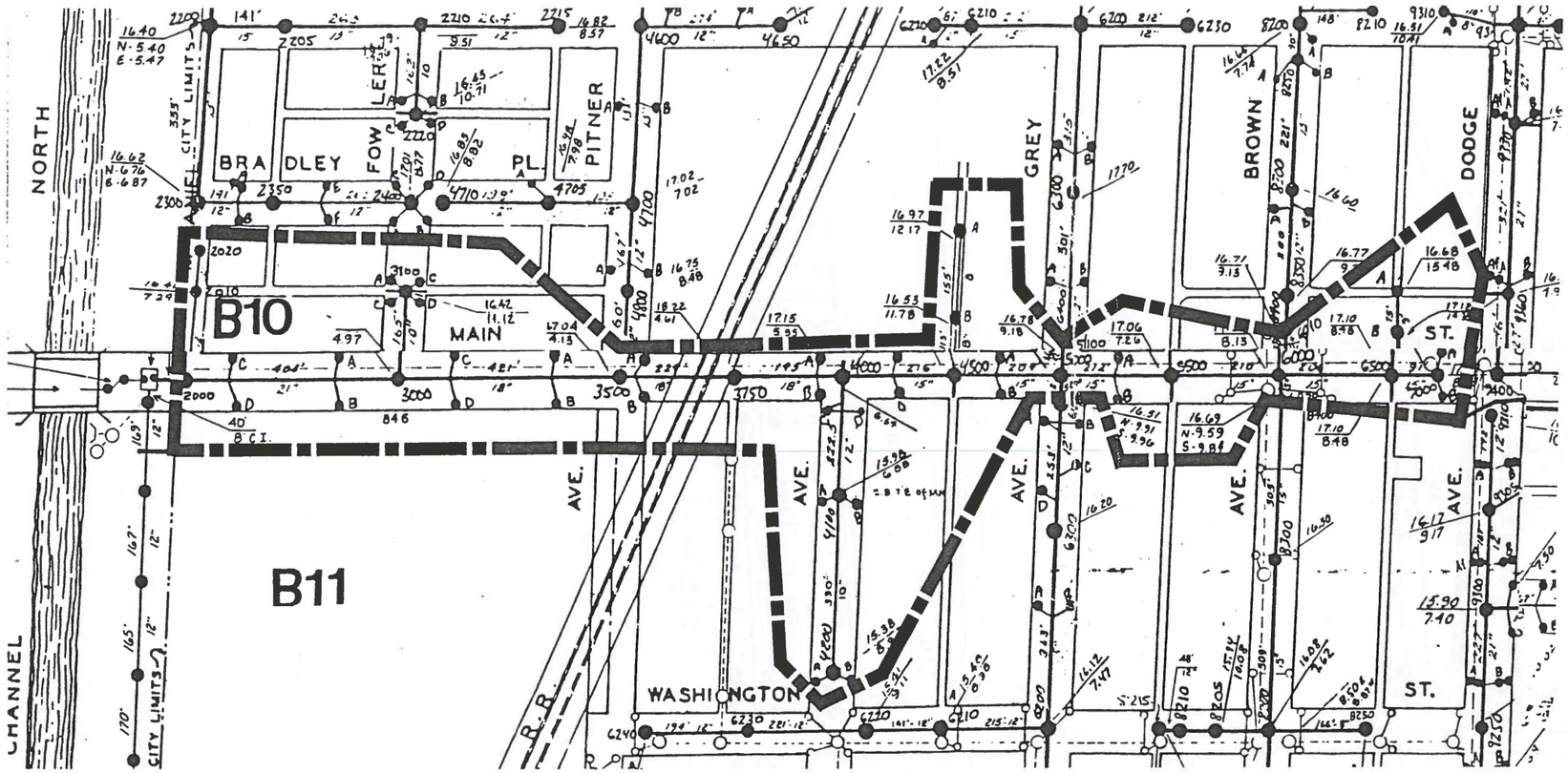
Basin B09

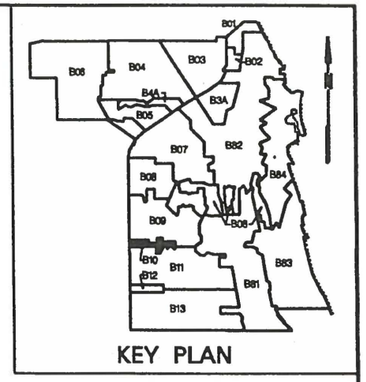
DROPSHAFT ARRANGEMENT AT GREENLEAF STREET

COMBINED SEWER SYSTEM OPERATIONAL PLAN

City of Evanston, Illinois

V0005\Vdb\shaf19.dgn





EXISTING COMBINED SEWER SYSTEM LAYOUT

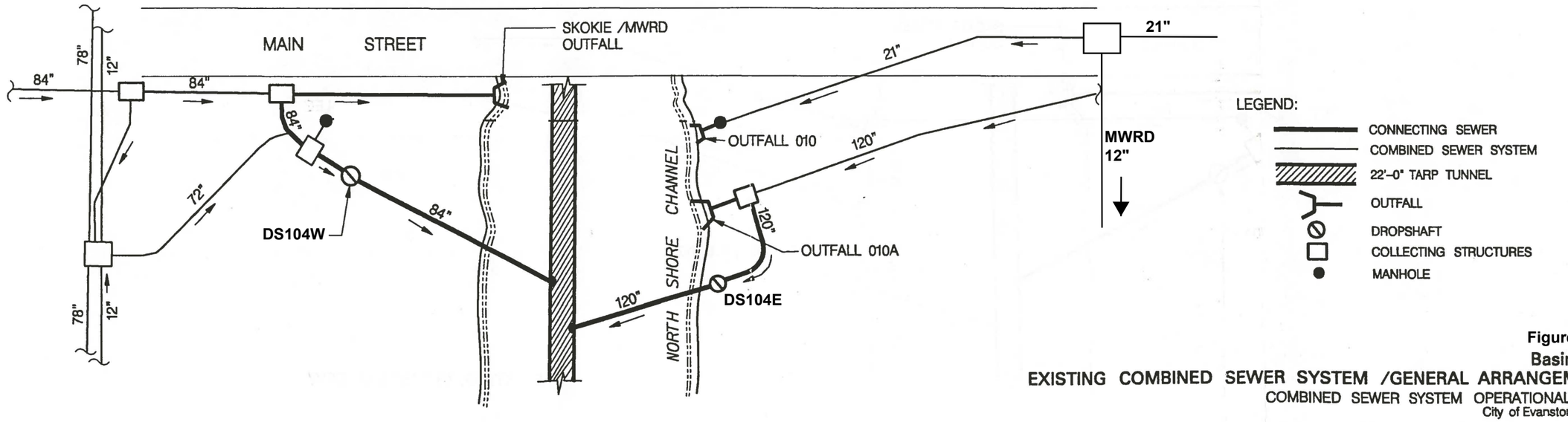
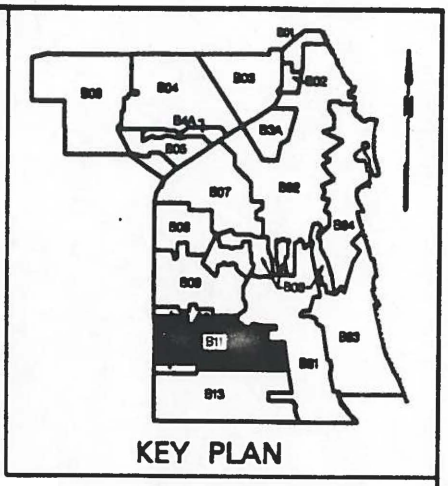
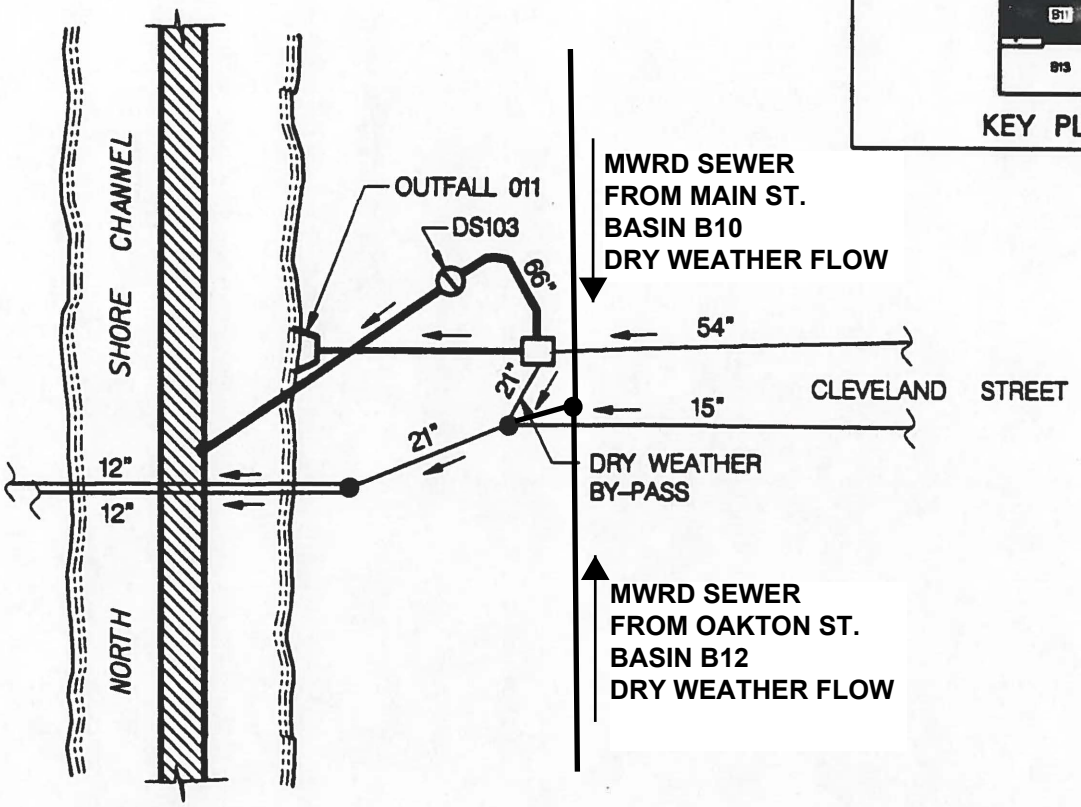


Figure 2-20
Basin B10
EXISTING COMBINED SEWER SYSTEM /GENERAL ARRANGEMENT
COMBINED SEWER SYSTEM OPERATIONAL PLAN
City of Evanston, Illinois

n0005/hb/shaft10.dgn





LEGEND:

- CONNECTING SEWER
- COMBINED SEWER SYSTEM
- 22'-0" TARP TUNNEL
- OUTFALL
- DROPSHAFT
- COLLECTING STRUCTURES
- MANHOLE

Figure 2-21
Basin B11
DROPSHAFT ARRANGEMENT AT CLEVELAND STREET
COMBINED SEWER SYSTEM OPERATIONAL PLAN
City of Evanston, Illinois

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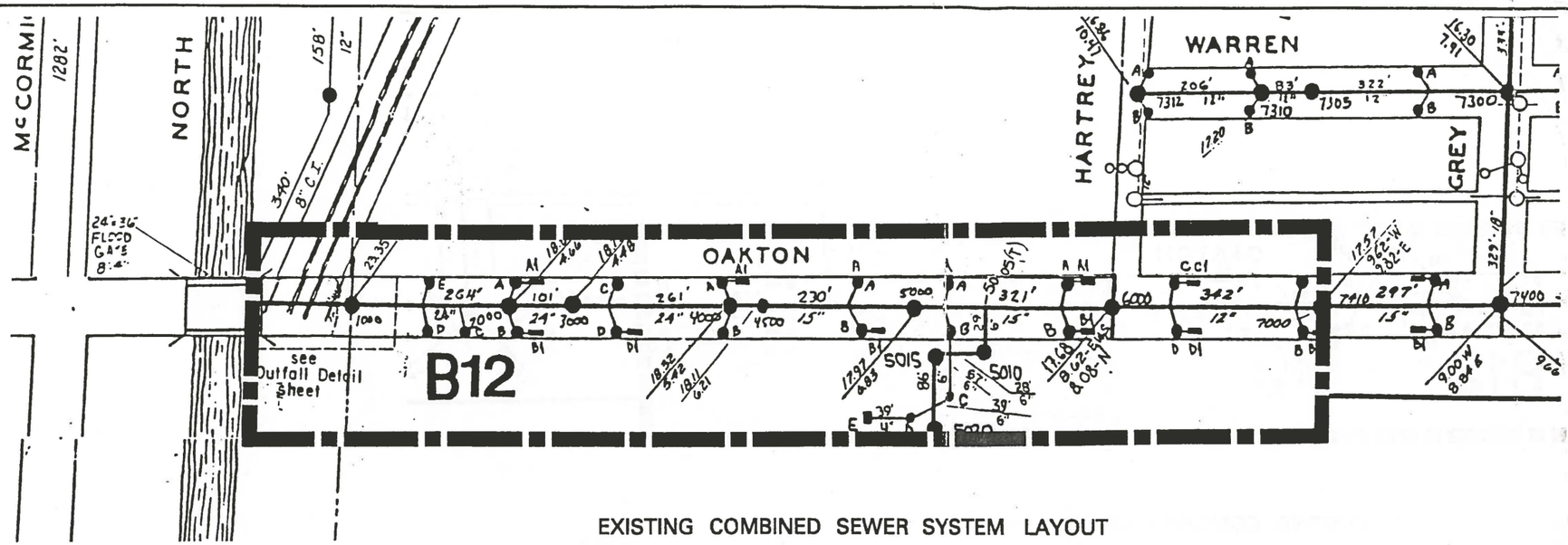
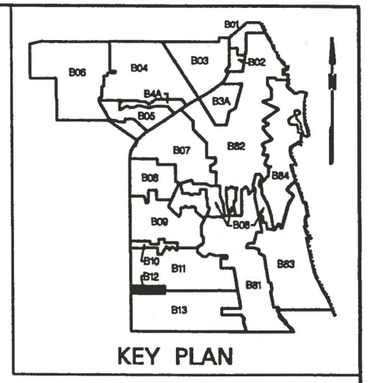
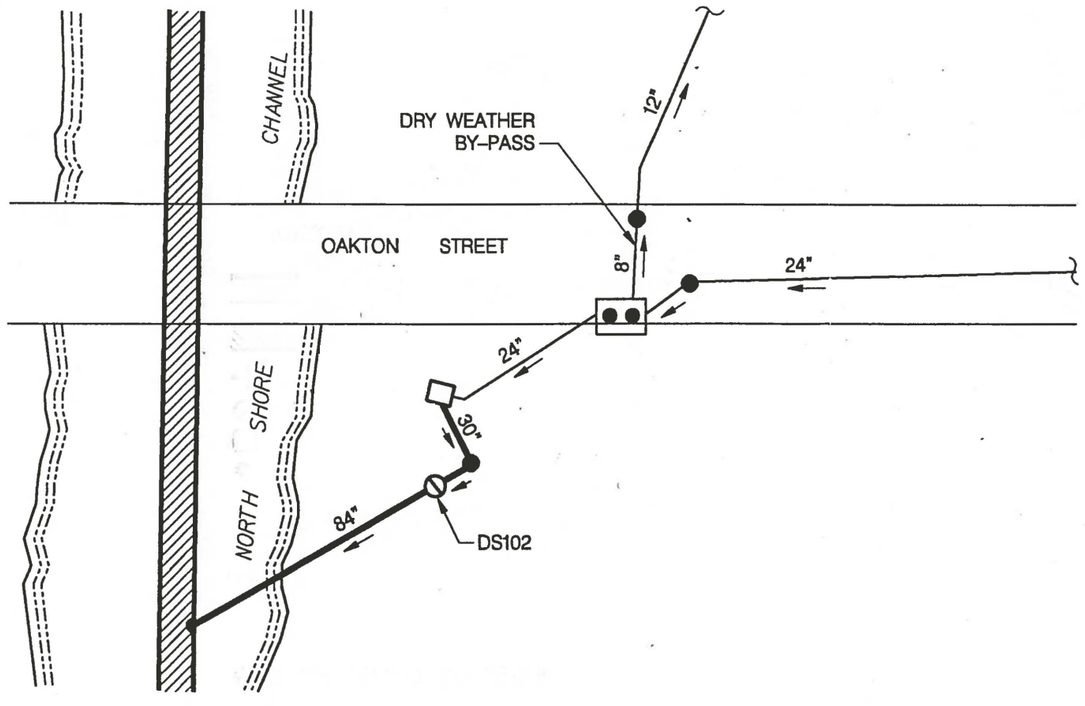




EXISTING COMBINED SEWER SYSTEM LAYOUT



LEGEND:

- CONNECTING SEWER
- COMBINED SEWER SYSTEM
- 22'-0" TARP TUNNEL
- OUTFALL
- DROPSHAFT
- COLLECTING STRUCTURES
- MANHOLE

Figure 2-22

Basin B12

EXISTING COMBINED SEWER SYSTEM /GENERAL ARRANGEMENT

COMBINED SEWER SYSTEM OPERATIONAL PLAN

City of Evanston, Illinois

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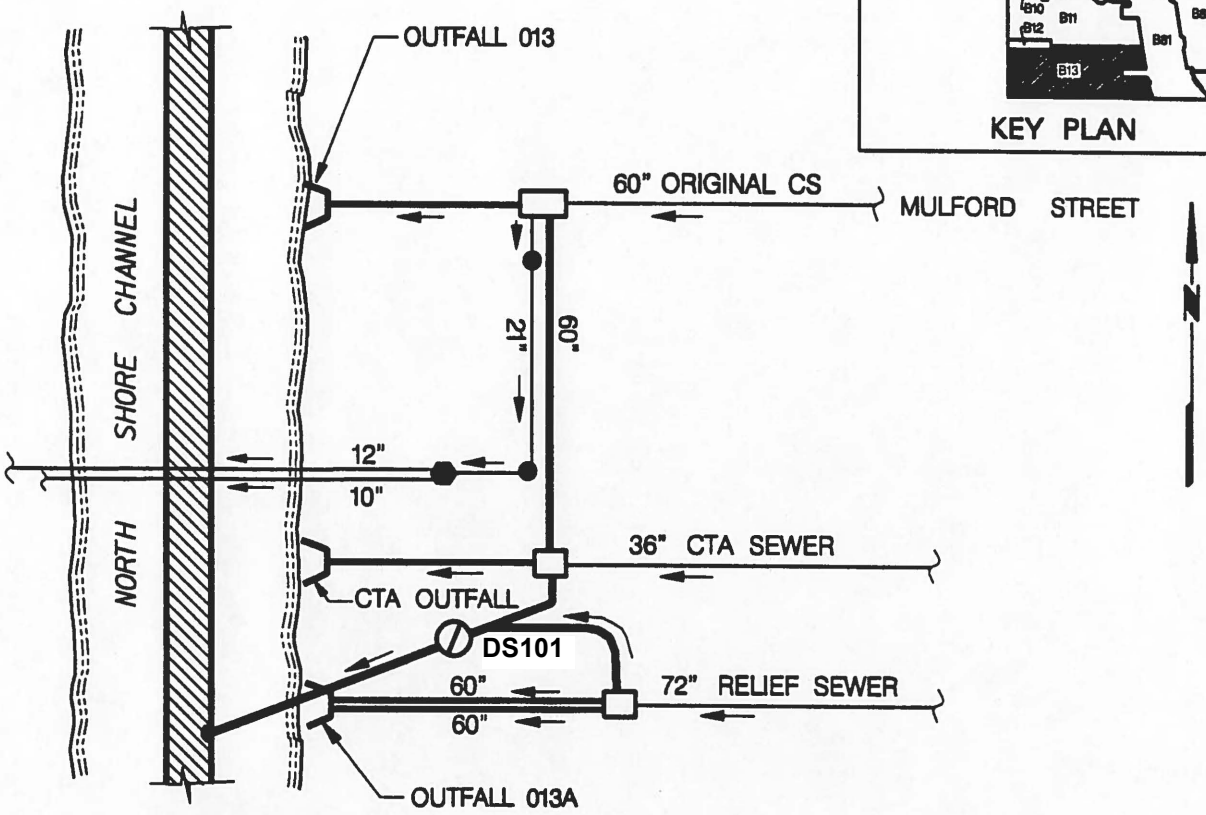

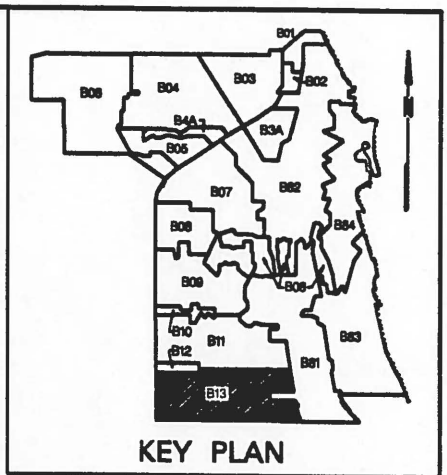

LEGEND:

- CONNECTING SEWER
- COMBINED SEWER SYSTEM
- 22'-0" TARP TUNNEL
- OUTFALL
- DROPSHAFT
- COLLECTING STRUCTURES
- MANHOLE
- MWRD SIPHON CHAMBER

Figure 2-23

Basin B13

DROPSHAFT ARRANGEMENT AT MULFORD STREET

COMBINED SEWER SYSTEM OPERATIONAL PLAN

City of Evanston, Illinois

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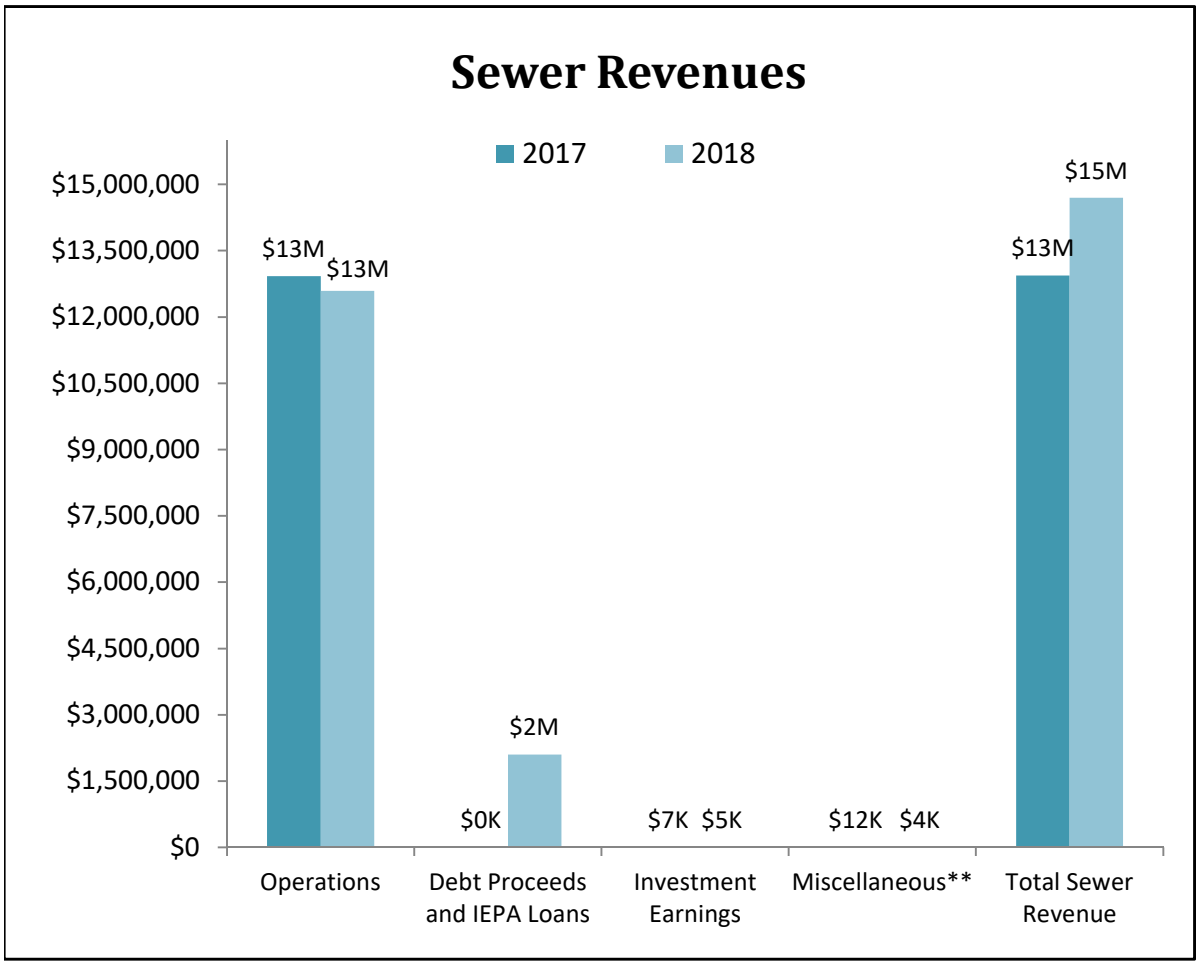
Sewer Revenues*

	2017	2018
Operations	$12,921,749	$12,589,650
Debt Proceeds and IEPA Loans	$0	$2,100,000
Investment Earnings	$6,500	$5,000
Miscellaneous**	$12,000	$4,000
Total Sewer Revenue	$12,940,249	$14,698,650

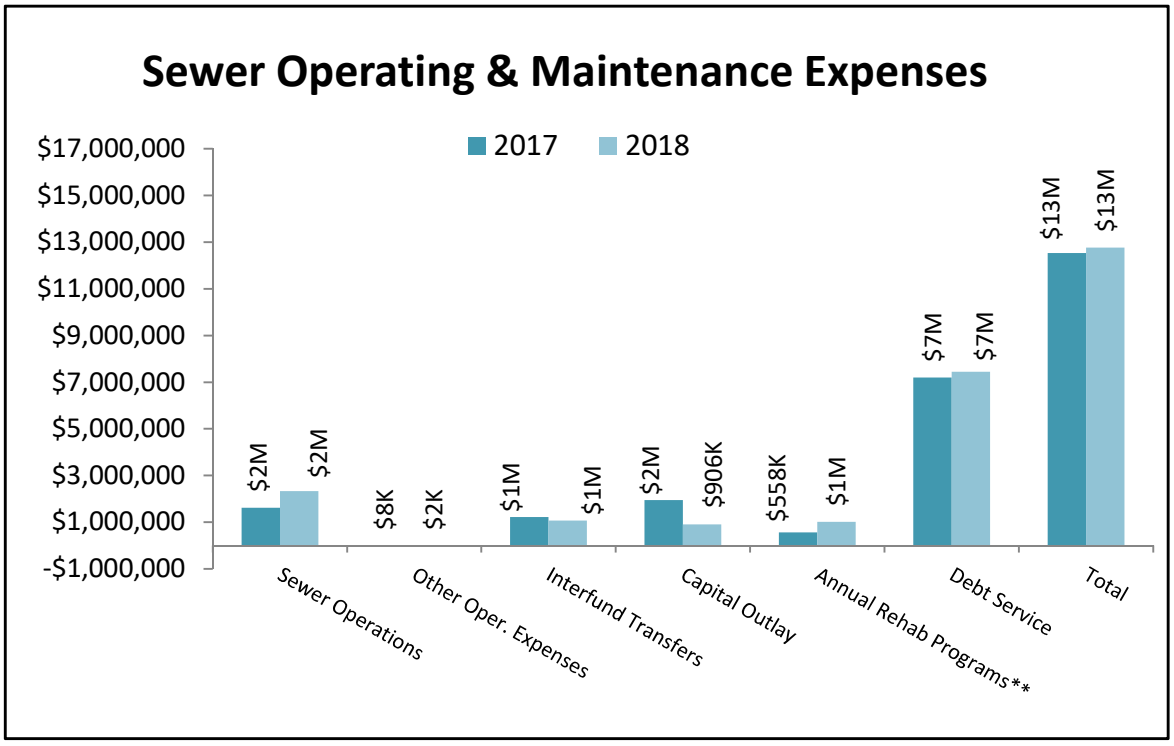


* Financial data are based on actual expenses and do not include audit adjustments such as depreciation and inventory. For audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston, https://www.cityofevanston.org/government/transparency/budget-financial-reports/.

** Miscellaneous Revenue includes fees, grants, and merchandise sales.

Sewer Operating & Maintenance Expenses*

	2017	2018
Sewer Operations	$1,615,026	$2,332,207
Other Oper. Expenses	$7,676	$1,700
Interfund Transfers	$1,219,451	$1,069,452
Capital Outlay	$1,943,160	$905,883
Annual Rehab Programs**	$557,574	$1,010,000
Debt Service	$7,198,860	$7,447,026
Total	$12,541,747	$12,766,268



* Financial data are based on actual expenses and do not include audit adjustments such as depreciation and inventory. For audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston, https://www.cityofevanston.org/government/transparency/budget-financial-reports.

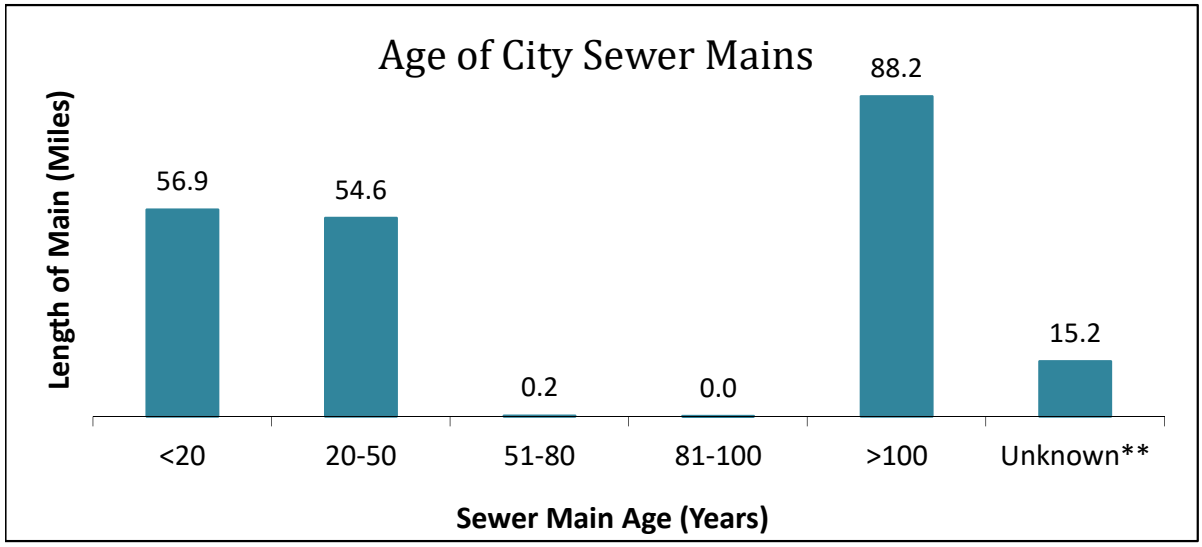
**Includes CIPP sewer rehabilitation, drainage structure replacement, stormwater management improvements, and emergency sewer repairs

Sewer Mains

System Data and Maintenance

	Pipe Length (miles)				
Sewer Length by Type	2014	2015	2016	2017	2018
Combined Sewer	143.85	144.30	144.27	144.30	144.53
Relief Sewer	52.82	53.54	53.69	53.78	54.54
Storm Sewer	16.31	16.29	16.30	16.30	16.30
Total Length	212.98	214.13	214.26	214.38	215.37

Sewer Installation	Pipe Length (feet)				
and Maintenance	2014	2015	2016	2017	2018
Installed (new)	0	2,782	0	501	2,311
Replaced	0	0	0	178	760
CIPP Rehabilitation (Lining)	12,059	11,330	7,753	13,921	4,662
Spot Repair	780	2,143	2,943	1,048	3,107
Clean - Hydroflush	136,679	110,419	217,566	253,055	45,575
Clean - Root Cut	14,412	39,987	8,400	1,907	1,618
Inspection - General	26,570	45,777	28,492	19,881	9,509
Inspection - Televised	69,805	50,300	51,602	50,901	42,897
Inspection - Storm-related*	971	530	0	161	1,304



* Inspection of City sewer mains as a result of sewer surcharge during or after a wet weather event, and inspection of storm sewer outfalls into the North Shore Channel.

** Mains of unknown age were installed prior to detailed record keeping on sewer installations.

Figure 3-1

Length of Sewer Mains

By Type and Diameter

	Combined Sewer		Relief Sewer		Storm Sewer	
Diameter	Feet	Miles	Feet	Miles	Feet	Miles
<6"	2,926	0.55	243	0.05	0	0.00
6"	1,578	0.30	0	0.00	0	0.00
8"	21,749	4.12	11,426	2.16	1,933	0.37
9"	124,692	23.62	7,536	1.43	989	0.19
10"	110,556	20.94	30,551	5.79	11,054	2.09
12"	223,627	42.35	26,777	5.07	9,729	1.84
14"	1,019	0.19	0	0.00	0	0.00
15"	91,985	17.42	5,903	1.12	5,249	0.99
16"	2,085	0.39	6,791	1.29	724	0.14
18"	61,823	11.71	16,592	3.14	7,693	1.46
20"	8,410	1.59	127	0.02	0	0.00
21"	14,959	2.83	2,747	0.52	1,910	0.36
22"	858	0.16	0	0.00	0	0.00
24"	21,405	4.05	47,321	8.96	15,967	3.02
27"	6,434	1.22	6,373	1.21	3,240	0.61
30"	6,973	1.32	19,107	3.62	3,913	0.74
33"	3,771	0.71	1,309	0.25	482	0.09
36"	19,757	3.74	18,386	3.48	6,730	1.27
39"	421	0.08	0	0.00	0	0.00
40"	377	0.07	0	0.00	0	0.00
42"	6,700	1.27	12,282	2.33	3,570	0.68
45"	1,029	0.19	0	0.00	0	0.00
48"	13,182	2.50	22,580	4.28	7,966	1.51
51"	1,104	0.21	0	0.00	0	0.00
54"	1,981	0.38	3,159	0.60	609	0.12
57"	784	0.15	0	0.00	0	0.00
60"	7,215	1.37	5,262	1.00	3,633	0.69
72"	4,077	0.77	11,640	2.20	0	0.00
78"	0	0.00	5,440	1.03	0	0.00
84"	0	0.00	88	0.02	0	0.00
96"	0	0.00	2,366	0.45	0	0.00
108"	0	0.00	5,025	0.95	0	0.00
113"	0	0.00	9,275	1.76	0	0.00
120"	0	0.00	7,340	1.39	0	0.00
Unknown	1,639	0.31	2,324	0.44	691	0.13
Totals	**763,114**	**144.53**	**287,968**	**54.54**	**86,084**	**16.30**

Total Sewer Main Length: 215.37 miles

Figure 3-1

Sewer Structures

System Data and Maintenance

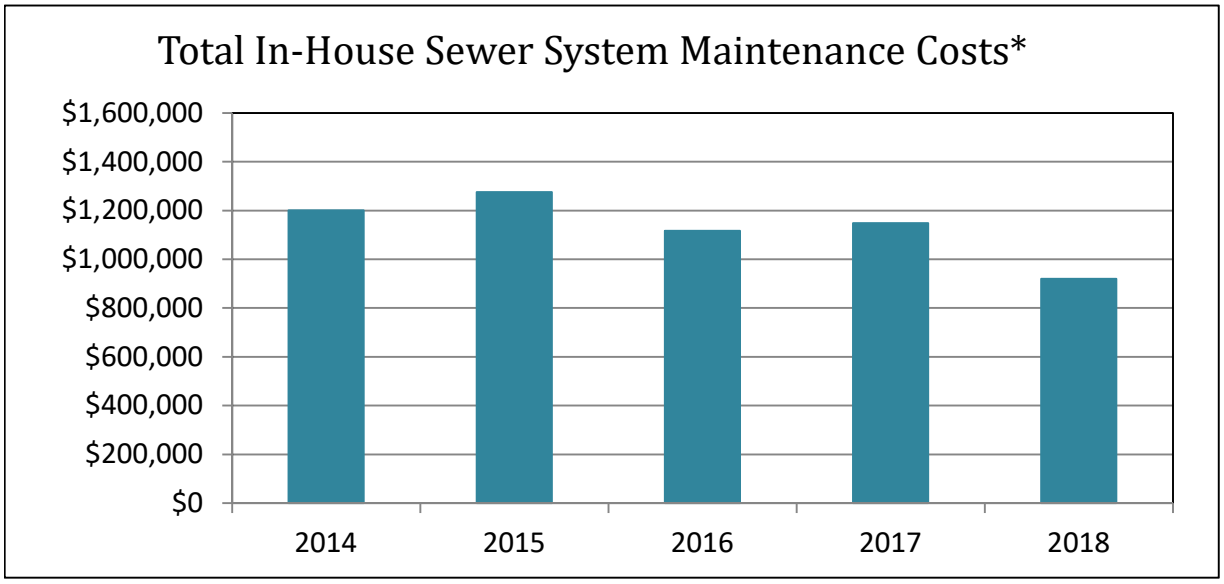
Number of Sewer Structures	2014	2015	2016	2017	2018
Manholes	5,566	5,582	5,583	5,588	5,620
Inlets	2,974	3,018	3,024	3,025	3,092
Catch Basins	6,208	6,238	6,246	6,241	6,280
Total	14,748	14,838	14,853	14,854	14,992

Sewer Structure Installation & Maintenance	2014	2015	2016	2017	2018
Installed (new)	1	41	3	4	27
Replaced	21	18	9	15	6
Repair	55	73	89	97	116
Clean	3,181	3,262	2,779	1,889	3,006
Inspect - General	161	614	156	196	668
Inspect - Storm-Related*	985	935	689	995	998

* Inspection of City drainage structures as a result of street or alley flooding during or after a wet weather event.

Breakdown of In-House Maintenance Costs

Description	2014	2015	2016	2017	2018
Sewer Mains	$355,398	$344,407	$396,738	$377,668	$238,526
Sewer Structures	$353,667	$547,051	$388,196	$434,624	$360,072
Equip/Facility Maint.	$87,884	$162,452	$122,994	$164,159	$117,291
Assist W&S Divisions	$73,275	$80,729	$52,271	$41,226	$36,266
Snow & Ice Removal	$243,207	$68,538	$32,077	$12,423	$66,934
Assist Contractors	$18,681	$16,637	$16,955	$23,378	$20,102
Assist Other City Depts.	$35,943	$17,107	$61,226	$31,302	$41,396
Safety & Training	$18,759	$27,486	$30,844	$23,472	$26,350
Miscellaneous	$13,868	$10,588	$14,874	$39,778	$12,525
JULIE Locates	$553	$193	$357	$236	$648
Total	**$1,201,233**	**$1,275,188**	**$1,116,533**	**$1,148,265**	**$920,111**



* Costs fluctuate from year to year due to changes in maintenance needs and prioritization of repair projects.

Figure 3-1

Sewer Mains Rehabilitated (Lined)

The Public Works Agency manages an annual sewer improvement program, with the goal of rehabilitating at least 1.5 miles of combined sewer mains annually (minimum 1% annual system-wide renewal rate).

Due to weather, the remaining 1.18 miles of combined sewer mains to be lined in 2018 will be completed in Quarter 1 of 2019.

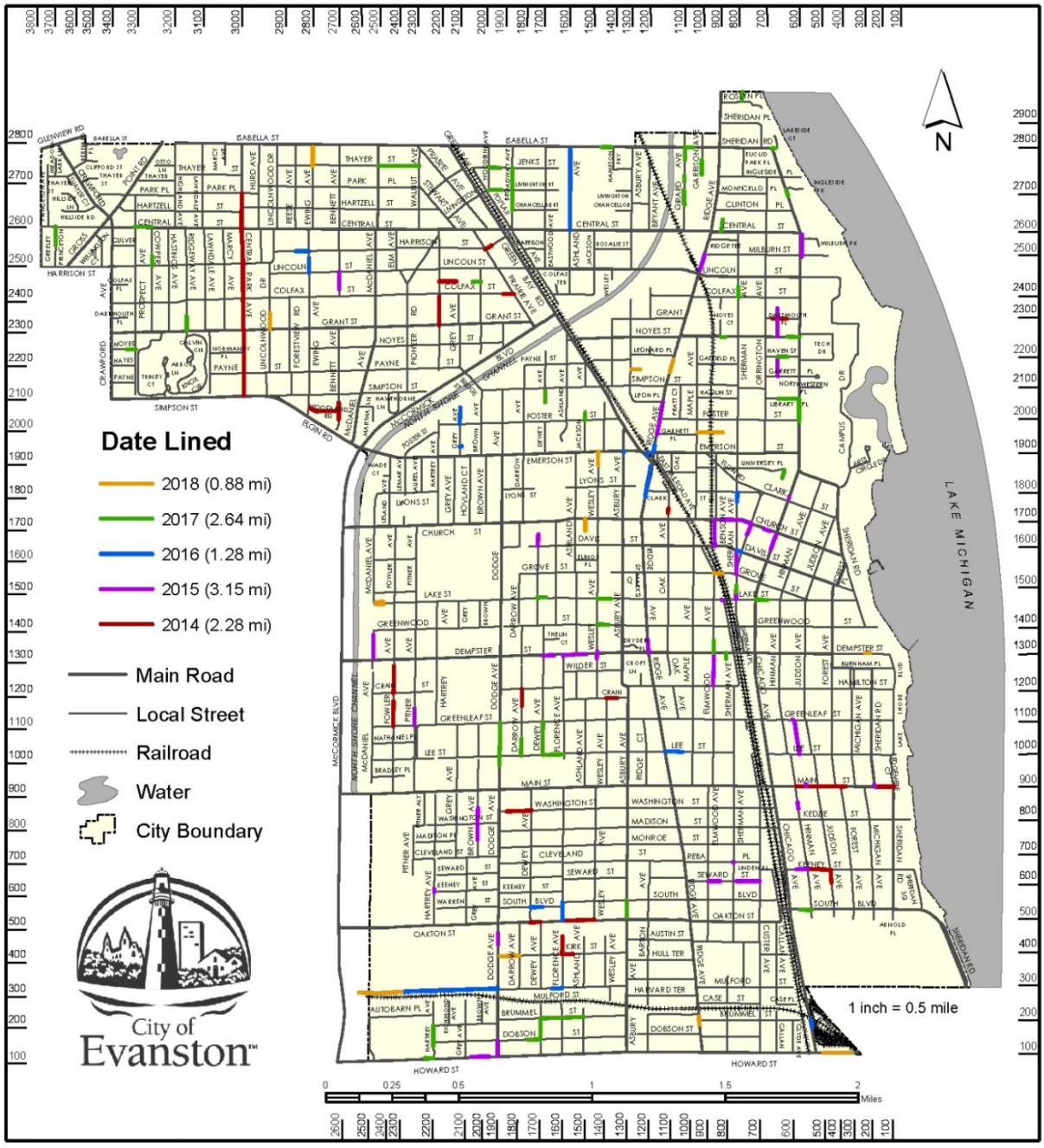


Figure 3-1

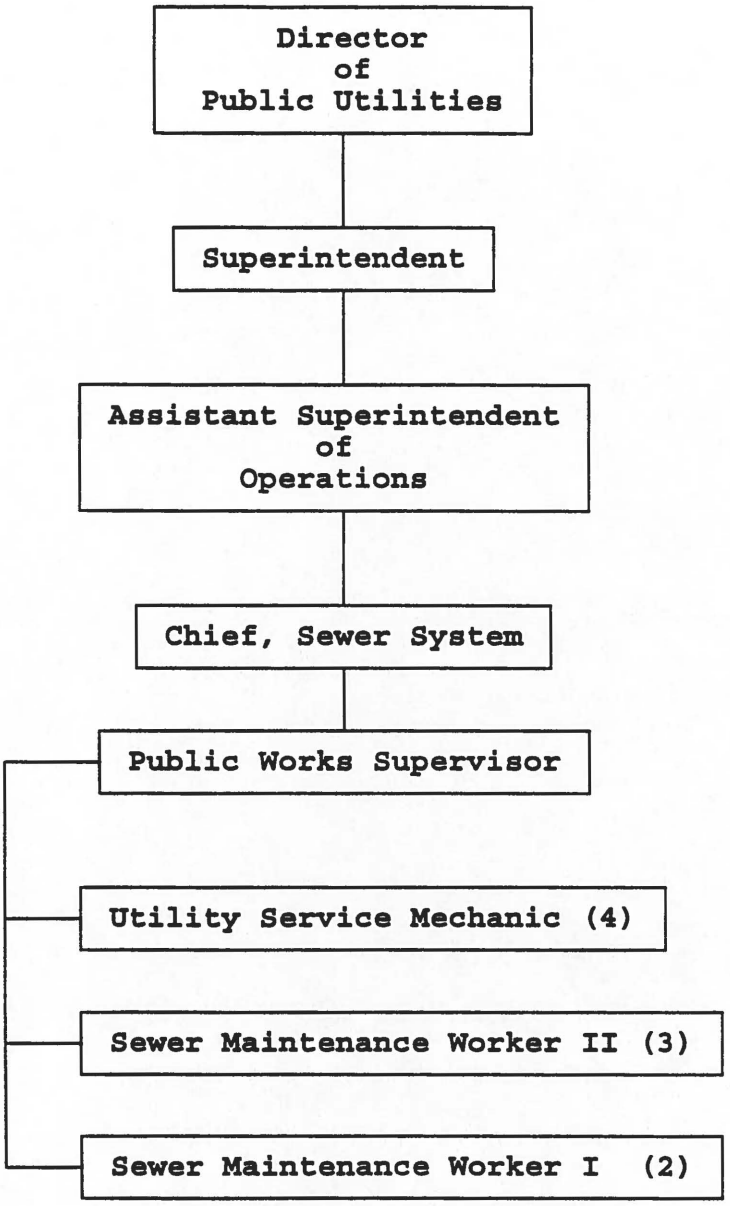
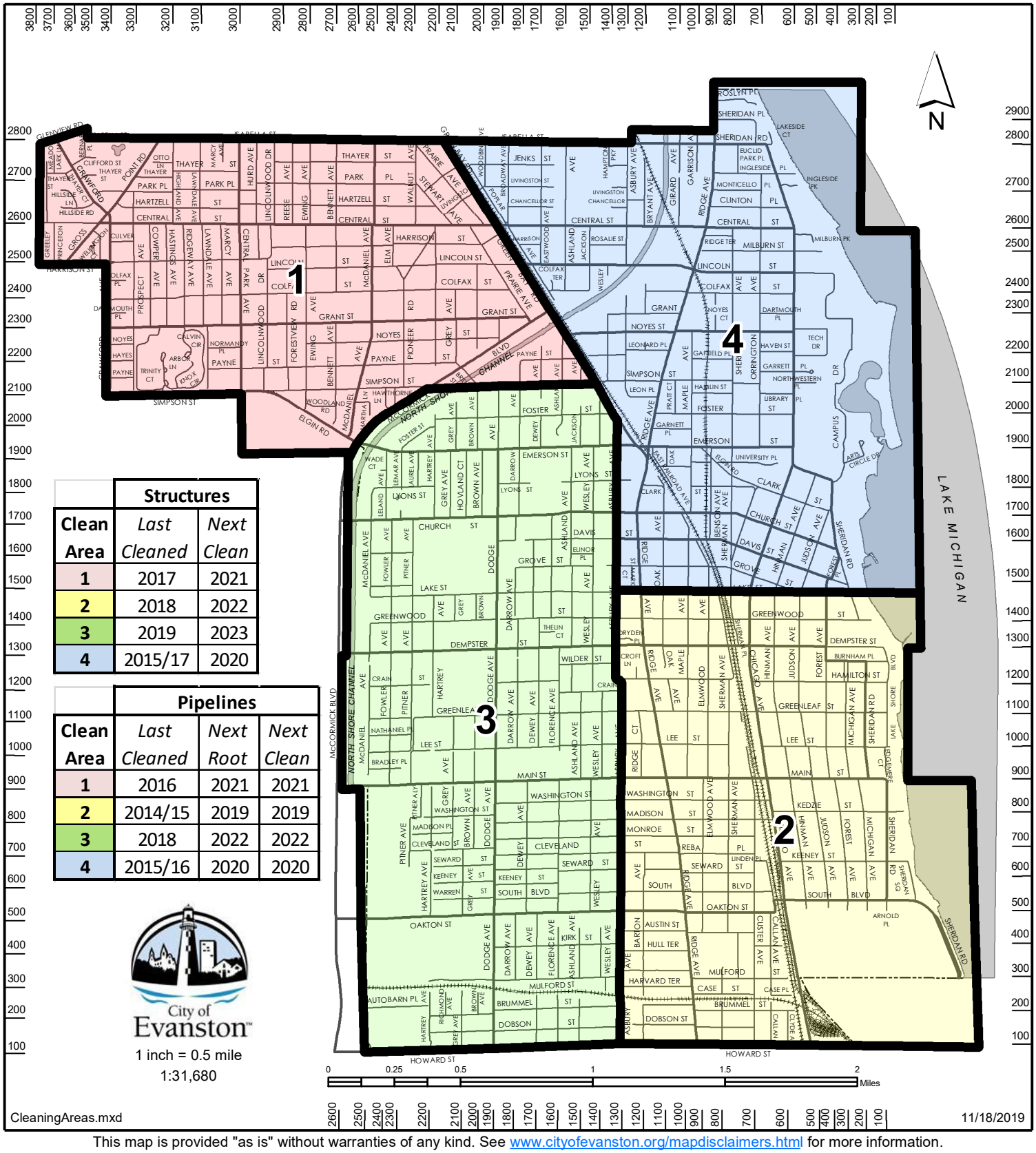


FIGURE 4-1 ORGANIZATION CHART OF SEWER DIVISION
CITY OF EVANSTON, ILLINOIS

The City of Evanston
Sewer Cleaning Program
Cleaning & Root Treatment Areas



	Structures	
Clean Area	*Last Cleaned*	*Next Clean*
1	2017	2021
2	2018	2022
3	2019	2023
4	2015/17	2020

	Pipelines		
Clean Area	*Last Cleaned*	*Next Root*	*Next Clean*
1	2016	2021	2021
2	2014/15	2019	2019
3	2018	2022	2022
4	2015/16	2020	2020

City of Evanston

1 inch = 0.5 mile
1:31,680

CleaningAreas.mxd

11/18/2019

Figure 4-2

CSO INSPECTION REPORT

City of Evanston, NPDES Permit Number ILM580002

Inspector's Name(s) _____ Inspection Date _____

End Date of Last Rain _____ Amount of Last Rain _____

COMPLETE BOTH SIDES OF FORM

OUTFALL NUMBER	LOCATION	OUTFALL FLOWING? Yes	OUTFALL FLOWING? No	RAIN ONGOING? Yes	RAIN ONGOING? No	Receiving Stream and Bank Condition Downstream of Outalll. Describe presence of any floating or settled sewage related debris or solids in waterway, bank, or entangled in low branches overhanging the waterway. (State none if nothing observed)
003	Asbury extended south of Lincoln Street 36" CS discharges to 54" MWRD interceptor on west side of Channel visible from Lincoln Street bridge					
A04	Green Bay Road 120" RS constructed by McNally discharges to controlled Dropshaft # 109S visible from old Permalawn Site					
005	Bridge Street, under bridge on north side 20" CS discharges to un-controlled Dropshaft #106 visible from west side of bridge					
006	Elgin Road, on west side of Channel 60" CS (lined) discharges to controlled Dropshaft # 107 visible from Emerson Street bridge					
A06	Elgin Road, on west side of Channel 120" RS constructed by McNally discharges to controlled Dropshaft # 107 visible from Emerson Street bridge					
A07	Emerson Street, on east side of Channel 36" RS discharges to un-controlled Dropshaft # 108 visible from Emerson Street bridge					

OUTFALL NUMBER	LOCATION	OUTFALL FLOWING? Yes	OUTFALL FLOWING? No	RAIN ONGOING? Yes	RAIN ONGOING? No	Receiving Stream and Bank Condition Downstream of Outalll. Describe presence of any floating or settled sewage related debris or solids in waterway, bank, or entangled in low branches overhanging the waterway.
A08	Lake Street, behind D65 Admin. Bldg. 108" RS constructed by Shea discharges to controlled Dropshaft # 106 visible from Skokie sculpture park					
009	Greenleaf Street 60" CS discharges to controlled Dropshaft # 105 visible from Skokie sculpture park					
A09	1300' S. of Dempster St (East side) or Greenleaf St - 30" relief sewer. discharges to controlled Dropshaft # 105 visible from Skokie sculpture park					
010	Main Street, east side 21" CS, submergered divereted to MWRD interceptor visible from Main Street bridge					
A10	Main Street, east side 120" RS constructed by Marino discharges to controlled Dropshaft #104E visible from Main Street bridge					
011	Cleveland Street 54" CS discharges to un-controlled Dropshaft # 103 visible from Skokie sculpture park					
013	Mulford Street 60" CS discharges to un-controlled Dropshaft #101 visible from west side of Channel					
A13	Mulford Street 72" RS discharges to un-controlled Dropshaft #101 visible from west side of Channel					

Signature of Authorizing Agent _____