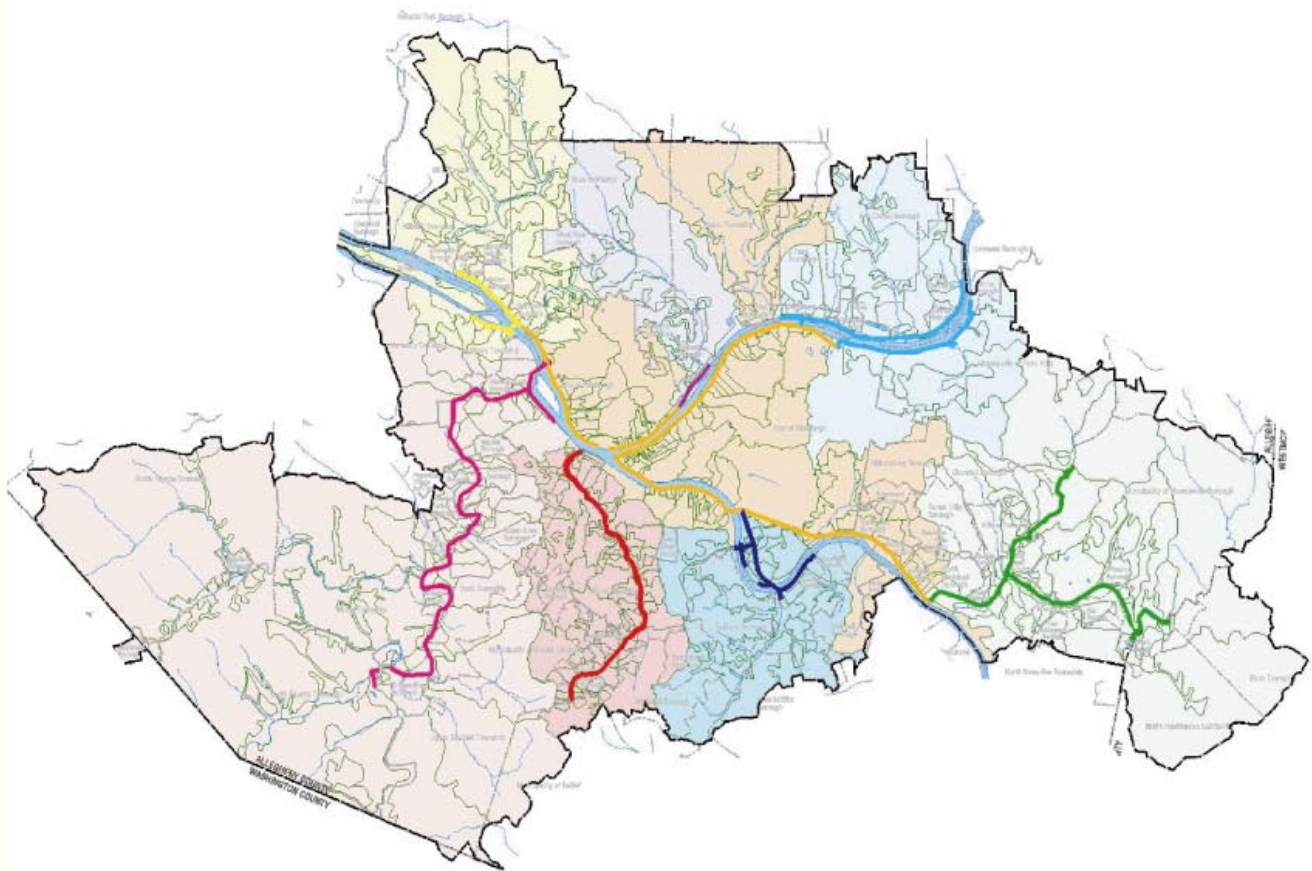


THE REGIONALIZATION REPORT:

*An initial study on options for regionalizing the management of
sewage collection within the ALCOSAN service area*



January 2002
Allegheny County, Pennsylvania

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This report was commissioned by the Board of 3 Rivers Wet Weather, Inc. as a foundation for discussing options for regional management of sewage collection in the ALCOSAN service area. Many other areas face similar challenges in which the sewage collection system is owned and operated by many municipalities and the sewage treatment facility is owned and operated by an authority. Elected officials from these areas also may find this report useful.

3 Rivers Wet Weather wishes to thank and acknowledge the following for their assistance, input and remarks as this document was developed: 3 Rivers Wet Weather Core Basin Group; the chairs and vice chairs of the 3 Rivers Wet Weather Stakeholders' Committee and Advisory Panels; Don Berman, Environmental Consultant; and Josh Donner, Pennsylvania Economy League.

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About This Report

The primary audience for this report is expected to be municipal officials whose communities are served by the Allegheny County Sanitary Authority (ALCOSAN). This report should be read as a discussion of sewage infrastructure problems, primarily the collection system, within the ALCOSAN service area and an overview of several options for the rehabilitation, effective management and continued operation of the collection system.

The collection system within the ALCOSAN service area is a complex network of combined and separate sanitary sewer systems that has evolved over the past 100 years. Today's elected officials are challenged with rehabilitating a system that has, in many areas, been neglected for decades. Adding to the complexity of the problem is the number of municipalities involved, each of which owns a piece of the total system.

Most of the municipalities within the ALCOSAN service area are now participating in the 3 Rivers Wet Weather Basin Groups. These groups meet monthly in a process designed to provide a forum for elected officials to begin developing a comprehensive strategy to deal with this issue. This report was written as a tool to guide these discussions. It is expected that this report will also be distributed beyond the basin groups.

Important, reoccurring terms are in **bold** text the first time they appear in the main body of the report. The Glossary of Terms in the back of the report includes a definition of these terms for quick reference.



Forward

Each day elected officials and municipal managers of Allegheny County are faced with the range of challenges of modern municipal government in all its complexity. They routinely accomplish extraordinary results, one step at a time, working tirelessly to provide their residents with a safe place to live, work and play.

Many of these leaders recognize that the deteriorated state of our sewage infrastructure is creating unsafe conditions in our streams and rivers. These leaders are tackling an issue that is complex and controversial—how to efficiently and cost-effectively rehabilitate our sewage infrastructure in order to meet federal, state and local requirements, as well as to improve the water quality of our rivers and streams.

The report you are about to read was commissioned by the 3 Rivers Wet Weather Demonstration Program. It outlines a broad overview of the problem and goes on to describe three general solutions. This report was written as a tool for beginning the discussions that will move our region toward efficient and cost-effective management and operation of the sewage collection system. The report does not make recommendations other than emphasizing the need to act cooperatively and to act now.

One way to do that is to actively participate in the 3 Rivers Wet Weather Basin Groups, which were convened to provide a monthly forum for elected officials to discuss this issue and begin developing the strategies to solve the problem. Your council or commission probably has already appointed members to one of these groups—the Eastern, Southern or Northern Communities Basin groups. If your community is not yet represented, I urge you to join fellow elected officials in the appropriate 3 Rivers Wet Weather Basin Group as they collaborate on identifying the best solution for this region.

The office of the County Chief Executive stands ready to support your efforts.

Jim Roddey
Allegheny County Chief Executive



Executive Summary

The aging sewage infrastructure within Allegheny County allows billions of gallons of untreated sewage and stormwater to overflow into our rivers and streams every year. These sewer problems have a direct, negative impact on our environment and economy.

CHAPTER 1: UNDERSTANDING SEWERS



HOW THE SEWER SYSTEM WORKS

The collection system is a vast network of underground pipes that collects and transports sewage from each home or business to a sewage treatment plant. Two types of sewage collection systems are present in the ALCOSAN service area:

- Combined sewer systems are designed to carry wastewater and stormwater (rainwater or snow melt).
- Separate sanitary sewer systems are designed to carry only wastewater.

Collection system pipes empty into large sewer pipes called trunk sewers. Trunk sewers collect sewage from multiple communities before emptying into pipes called interceptors. The interceptors carry the sewage to a sewage treatment plant.

HOW THE SEWER SYSTEM FAILS

Sewer systems are designed to rely on gravity to move sewage, rather than pumping it. Sewer pipes are rarely completely full when wastewater is flowing from homes to the sewage treatment plant. Therefore:

- Unlike drinking water pipes that leak out when they break, cracked and broken sewer pipes allow groundwater and stormwater to leak in.

- When groundwater or stormwater leaks into a sewer system, it takes up the space that could be used to carry wastewater.

Stormwater and groundwater get into a sewer system in two ways:

- 1. Inflow** is stormwater directly piped into a separate sanitary sewer system to control runoff through storm drains in streets, parking lots and driveways, and roof gutters. Stormwater should never be connected into a sanitary system designed to carry only wastewater.
- 2. Infiltration** is excess water that gets into the sewer system through open joints, cracks, and breaks in the pipes.

During dry weather, the sewage system generally operates effectively. During wet weather, the deteriorated state of the system increases the amount of water to be transported, and the effects of wet weather can last for days. Inflow and infiltration can contribute as much as 3,000 gallons of stormwater per person per day to the sewers.

This additional flow exceeds the capacity of the sewers causing sewage to regularly overflow into creeks, streams and rivers at hundreds of locations across the county.

An estimated 16 billion gallons of sewage and stormwater are discharged each year.

- Sewage problems present a public health risk. The main source of drinking water for 90 percent of Allegheny County residents is the rivers.
- During wet weather, our waterways are contaminated with sewage resulting in warnings against recreational contact.



Executive Summary (con't)

- Sewage problems hinder economic development. Water is an abundant resource in our region that represents a vital part of our economy, and it needs to be protected to promote economic growth.
- Fixing the problem will require a substantial long-term financial commitment. Estimates of the total cost to rehabilitate the sewage collection system in the ALCOSAN service area is approximately \$2 billion over the next 50 years.

As a region, we must respond by investing in the sewage infrastructure. We face a challenge to fix the sewage infrastructure to make the rivers cleaner and allow our communities to grow.

CHAPTER 2: THE SEWER CHALLENGE



THE CHALLENGE STARTS NOW

For many reasons it is imperative that we begin to address the challenges associated with sewer rehabilitation now.

- *Without evidence of immediate action, the EPA will likely begin traditional enforcement actions.* The initial phases of rehabilitation will require comprehensive assessment and evaluation of the system. Unless we begin these tasks now, EPA has indicated its intention to begin traditional enforcement action against municipalities, which could include imposing costly fines and dictating short time frames for construction projects.
- *If we don't plan our investments, we will have to make more costly quick-fixes.* Well-planned, strategic investments can bring the greatest possible improvements to the collection system at the lowest cost to ratepayers.

- *Implementing comprehensive operation and maintenance practices can significantly improve the situation.* The EPA estimates that up to a 50% reduction in volume of overflows can be gained through proper operation and maintenance procedures.

MUNICIPALITIES MUST FACE THE CHALLENGE

- *By law, municipalities are responsible for ensuring that all sewage collected within their boundaries is conveyed and treated.* The Sewage Facilities Act and the Clean Streams Law combined with the federal Clean Water Act enable state and federal regulators, as well as private citizens' groups, to pursue legal action against municipalities that don't live up to this responsibility.
- *Rehabilitating the collection system is required to solve the problem, and ALCOSAN does not have the authority to take charge of the collection system.* ALCOSAN cannot suggest how municipalities should invest in the collection system, nor can it force communities to reduce their flows. Therefore, municipalities must act to reduce flows in the collection system in order for the problem to be resolved.
- *House laterals represent a large part of the problem, but homeowners do not have the resources to fix the problem alone.* The municipal sewer system operator is responsible for assessing system performance and determining which laterals need to be fixed. The cost of addressing house lateral repairs could be reduced if tackled collectively by municipalities.

Executive Summary (con't)

CHAPTER 3: A REGIONAL PARTNERSHIP IS CRITICAL



THE STATUS QUO

Currently, in the ALCOSAN service area, numerous municipalities and authorities operate and maintain individual portions of the collection system independent of each other.

However, this current process has limitations.

- *Individual management is ineffective because municipal systems are interconnected.* Municipalities do not have complete control over flow from other communities—upstream and downstream. Therefore, municipalities need to work together to identify the causes of overflows and develop a system-wide, sustainable solution.

- *Individual management is expensive due to the equipment and services required for the regular operation and maintenance of a sewer system.*

- *Individual management is not the most cost-effective approach.* If individual municipalities make costly investments in one small part of the system, the investment may burden ratepayers more than necessary.

THE BENEFITS OF REGIONALIZATION

Communities must work together to create a common vision for the future—one that incorporates the benefits of area-wide management and organizational strength and sustainability. The growing interest and participation in 3 Rivers Wet Weather basin groups is a positive sign of progress toward regional cooperation.

Regional cooperation will result in a system-wide and cost-effective solution.

- *Municipalities must develop a plan to assess and evaluate the entire collection system in a standardized, methodical manner.* If municipalities continue to work only within their own boundaries to assess, evaluate and rehabilitate their own portion of the system, compliance will be more difficult to achieve and more costly overall to the region.

- *Regional planning identifies the investments that are needed the most.* Addressing problems only within individual municipal boundaries is ineffective because the repair or rehabilitation may not significantly contribute to a system-wide reduction in overflows.

- *Regional organizations have greater buying power.* Municipalities can purchase public works supplies in bulk and pass the savings on to its communities.

- *Regional action reduces duplication.* Rather than each community owning all of the equipment necessary to maintain its sewage infrastructure, municipalities can share these resources.

- *Regional financing saves money.* Cooperative financing mechanisms, such as bond pools, can decrease the cost of borrowing money.

- *New regulations require collaboration among neighboring municipalities.* Municipalities are subject to increasingly stringent requirements covering the management and operation of a sewage collection system. With hundreds of interconnections among the municipal collection systems, regionalizing the operation can save time and money by consolidating operations, which would reduce the number of permits and inter-municipal agreements needed.

Executive Summary (con't)

- *Regionalization reduces municipal burden.* Removing the responsibility for the sewer collection system from municipal government allows officials to focus on projects that can be addressed within an individual community's boundaries.
- *Regionalism results in a stronger voice in Harrisburg and Washington.* Where a single municipal voice is often lost at the state or federal level, a regional voice can carry significant influence.

CHAPTER 4: CREATING A LONG-RANGE VISION



Chapter 4 proposes three options for ownership and operation of the sewers.

- *Option 1: Redefine ALCOSAN as the regional sewage authority.* Consolidate responsibility for the entire sewage collection system within ALCOSAN, creating an entity responsible for both aspects of sewage—collection and treatment.
- *Option 2: Regionalize the responsibility for sewage collection under a new authority.* Create a regional authority to assume ownership and decision-making responsibilities for the entire collection system within the ALCOSAN service area. This authority would become the body that assumes responsibility for management activities and liabilities regarding the collection system.
- *Option 3: Consolidate the responsibility for sewage collection under a combination of new and existing authorities.* Identify those authorities with the resources and sustainability to remain solvent, and create an authority or

authorities to assume the responsibility for the other areas of the collection system.

EVALUATING THE OPTIONS

The following guidelines define some critical issues that need to be addressed in order for an area-wide management structure to be successful. These seven guidelines should be used to evaluate the three options presented in this report.

Guideline #1: Treat sewage infrastructure as a single, dynamic system. Localized management of our sewers does not provide the type of strategic planning and investment necessary to ensure cost-efficient and compliant sewer system operation. Successful investment and operation can only occur if we view the system as a whole, rather than in parts.

Guideline #2: Bring system into compliance with regulations. Significant investment will be required to bring the entire sewage system into compliance. If one part of the system is not being maintained, it affects the entire system. The goal must be achieving compliance for the entire system.

Guideline #3: Foster comprehensive planning and strategic investment for sustainability. We can no longer react to infrastructure problems as they arise. To make the strategic plan sustainable, we must proactively maintain and invest in the collection system.

Guideline #4: Empower the entity to complete necessary tasks. An institution(s) must be in place with the authority to accomplish the necessary tasks.

Executive Summary (con't)

Guideline #5: Utilize existing knowledge and resources. We must build upon what municipalities have accomplished and learned, and use existing personnel and equipment in the most efficient manner.

Guideline #6: Address local concerns. We must recognize and address the varying needs and economic constraints of municipalities.

Guideline #7: Address existing infrastructure and debt. Our municipal collection system is in varying states of disrepair. The transition from local to regional management will require agreement on existing problems and debt.

THREE OPTIONS FOR REGIONALIZING SEWAGE MANAGEMENT

For details on evaluating each option according to the seven guidelines just discussed, please see page 19 of the report.

WHAT SHOULD WE DO NOW

This report outlines the need for action. It will take the cooperation and commitment of community leaders to ensure this region moves toward a viable solution to the wet weather sewage overflow issue. An important action for community leaders is to participate in the 3 Rivers Wet Weather Basin Groups. These groups of elected officials will regularly collaborate to gain information and work together to make informed decisions about creating a partnership for sewage management.

At this point, the most effective and efficient solutions and mode of operation have not yet been defined. To define a plan, a series of steps will be needed, including:

- Strengthening inter-municipal relationships
- Improving local sewer infrastructure through proper operations and maintenance practices
- Expanding the current 3 Rivers Wet Weather basin group mapping project to include assessment and evaluation of the system
- Convening engineers' working groups to identify the appropriate technical solutions
- Convening a task force of municipal solicitors to explore financial and legal challenges and solutions

The aim of this report is to promote active discussion about each of these options through the continuing and expanding efforts of the 3 Rivers Wet Weather basin groups, as well as other forums. Only through this discussion can elected officials ultimately reach agreement on a vision for managing our sewage collection system. Then we can begin the task of implementing the changes required to reach this vision. ♦

Chapter 1: Understanding Sewers

Each of us uses about 100 gallons of water a day for tasks such as washing, cooking, and cleaning. We expect an ample supply of clean water when we turn on a faucet and expect the water to disappear down the drain after it has been used. We don't think about what happens to water after it enters the drain as long as it leaves our home or property via the sewer system.

Within the **Allegheny County Sanitary Authority (ALCOSAN)** service area, the sewer system is a complex network of 83 municipal collection systems all flowing to a single treatment plant. In order to address the **wet weather** overflow issue, it is important to first understand the basic operation of the sewer system in the ALCOSAN service area.

How The Sewer System Works

WHAT IS A SEWER SYSTEM?

When someone uses a shower, washes dishes, or flushes a toilet, the **wastewater** ("used" water or sewage) flows through the pipes in the house to a pipe called a **lateral**. A lateral carries the wastewater from the home to a larger pipe, usually at the street that is part of the **sewage collection system**. The collection system is a vast network of underground pipes that collects and transports sewage from each home or business to a sewage treatment plant. Two types of sewage collection systems are present in the ALCOSAN service area:

- **Combined sewer systems** are designed to carry wastewater and **stormwater** (rainwater or snow melt). They are called "combined" systems because they combine wastewater and stormwater in the same pipes. These systems are prevalent in older communities with collection systems built before the 1940s.

- **Separate sanitary sewer systems** are designed to carry only wastewater. Stormwater needs to be managed through a different collection system of pipes, culverts or ditches. Separate sanitary sewers were required for any new systems built after the 1940s.

Collection system pipes empty into large sewer pipes called **trunk sewers**. Trunk sewers collect sewage from multiple communities before emptying into pipes called **interceptors**. The interceptors carry the sewage to a **sewage treatment plant**. Sewage treatment plants, such as ALCOSAN, treat sewage through the removal of organic and inorganic wastes and disinfection to meet the discharge standards required by regulation.

How The Sewer System Fails

STORMWATER GETS INTO THE SYSTEM

Sewer systems are designed to rely on gravity to move sewage, rather than pumping it. Unlike water pipes, always full because of the pressure used to deliver water into homes, sewer pipes are rarely full when wastewater is flowing from homes to the sewage treatment plant. Therefore:

- Unlike drinking water pipes that leak out when they break, cracked and broken sewer pipes allow groundwater and stormwater to leak in.
- When groundwater or stormwater leaks into a sewer system, it takes up the space that could be used to carry waste water. If enough extra water gets into the sewer line, there may not be enough room for all the wastewater that needs to get to the treatment plant.

Stormwater and groundwater get into a sewer system in two ways:

1. Inflow is stormwater that is directly piped into a separate sanitary sewer system to control runoff. These connections, which may include storm drains in streets, parking lots and driveways and roof gutters, exist in a combined sewer system because it is designed to carry both wastewater and stormwater. Stormwater should never be connected into a sanitary system designed to carry only wastewater.

Some examples of the way inflow affects the sewer system:

- In some cases, contractors have illegally attached roof drain pipes and basement sump pumps to the sanitary sewer.

As much as 50%-60% of inflow and infiltration comes from leaking household laterals and illegally connected roof and foundation drains.

- Streams can be directly piped into the sewer system. ALCOSAN has identified at least 11 streams that were diverted directly into the sewer system in the course of constructing roads or homes, draining millions of gallons of water from 4,500 acres of land and clogging the sewers with gravel, rocks, sticks and debris.
- Tens of thousands of designed stormwater connections drain volumes of water into the combined sewer system.

2. Infiltration is excess water that gets into the sewer system through open joints, cracks, and breaks in the pipes. These deficiencies may allow constant infiltration of groundwater. The average sewer pipe is designed to last about 20-50 years, depending on the material. In many cases in this region, collection system pipes and household laterals have gone much longer without inspection or repair and are likely to be cracked or broken.

Some examples of the way infiltration affects the sewer system:

- Cracked or collapsed sewer pipes, caused by deterioration over time, or poor design, installation or maintenance, allow groundwater into the collection system.
- Sewer lines are installed beneath a creek or stream because creeks are usually at the lowest point in the area, and it is more expensive to install pipes under a street. These sewer lines are therefore highly susceptible to infiltration when they crack or break. In some cases, broken lines have been known to drain entire streams into the local sewer system.
- Runoff from streets and parking lots is drained into the sewers through manholes installed below the level at which stormwater collects.

During dry weather, about 40% or more of all flow reaching the ALCOSAN treatment plant is from inflow and infiltration of stormwater and groundwater.

Chapter 1 (con't)

STORMWATER OVERLOADS THE SYSTEM DURING WET WEATHER

During **dry weather**, the sewage system generally operates effectively. However, the effects of wet weather can last for days, especially when the ground is saturated and the groundwater table is high. Inflow and infiltration can contribute as much as 3,000 gallons of stormwater per person per day to the sewers. Since we average 100 gallons of personal water use a day, the sewers can be overloaded with as much as 30 times more flow per day during wet weather events.

This additional flow exceeds the capacity of the sewers causing sewage to regularly overflow into creeks, streams and rivers at hundreds of locations across the county. This additional water is primarily stormwater that seeps into the sewage system during and after rain or periods of snow melt through broken or improperly connected pipes.

When an overflow occurs in a separate sanitary collection system, it is called a **sanitary sewer overflow (SSO)**. This may occur at an **overflow structure**, into a street from a manhole cover or into the basements of homes. An overflow structure is intentionally designed to discharge flow into nearby streams when the system is overburdened. Both design overflow structures, which were legal at the time of construction, and unintentional overflows, are now illegal in separate sanitary sewer systems.

How Much Water Do We Put In Our Sewers?

Average daily water use, per person:
100 gallons per day



Sewer system design capacity, per person:
200 – 250 gallons per day



Range of wet weather peak flow, per person:
200 – 3,000 gallons per day

When an overflow occurs in a combined collection system, it is called a **combined sewer overflow (CSO)**. Because combined sewer systems are intended to carry stormwater, they were designed with overflow structures to deliberately release excess stormwater and wastewater from the system when capacity is reached, normally during wet weather. Overflow structures in combined systems are legal, but require permits, and communities will soon be responsible for many long-term controls to dramatically limit the frequency of overflows. CSOs may also occur at unintended locations, such as manholes and basements. Like SSOs, these types of CSOs are illegal.

Throughout the system, 317 overflow structures were designed and constructed to relieve the treatment plant during peak wet weather flows. Of these structures, 265 are within combined sewer systems and 52 are within separate sanitary sewer systems. In addition to these structures, an unknown number of combined and sanitary overflows exist in the municipal collection system upstream from the points of connection with ALCOSAN. Both overflows at the points of connection with the ALCOSAN system and the upstream overflows must be addressed.



Overflowing sewage creates a health hazard in the waterways that we use for drinking water and recreation. In many places, sewer systems are in such poor condition that communities cannot build new homes or develop commercial property until the sewer systems are fixed.

SSOs damage the environment, create public health risks and are illegal under federal and state law, and therefore, must be eliminated.

THE PROBLEM IS SERIOUS

We are discharging large volumes of untreated sewage into our rivers and streams during wet weather. Whether through a designed overflow structure, a basement backup or an overflowing manhole, an estimated 16 billion gallons of sewage and stormwater are discharged each year.

In some communities, a chronic problem exists as basement backups, as well as overflows in the creeks where children fish and play, putting them at risk of contact with untreated sewage.

Sewage problems present a public health risk. The main source of drinking water for 90 percent of Allegheny County residents is the rivers. Certain biological contaminants found in sewage, such as giardia and cryptosporidiosis, can cause gastrointestinal discomfort. For those with weaker immune systems, such as young children and the elderly, exposure to these pathogens can be more serious or even life-threatening. The public water systems do an excellent job of purifying water before sending it to our homes. However, those in the drinking water business

regard source protection as the cheapest and most effective way to ensure drinking water quality.

During wet weather, our waterways are contaminated with sewage resulting in warnings against recreational contact.

Preliminary studies by government agencies, universities and local and regional interest groups suggest that:

- Bacterial contamination tends to linger where the current is weaker along the banks of the rivers and streams. Recreation tends to occur in these areas.
- Many of the tributary streams violate established recreational contact standards almost all the time, rain or shine. (It should be noted that other sources of bacterial contamination, such as **non-point run-off**, can affect tributary streams.)
- The major rivers violate established recreational contact standards nearly every time it rains.

During the 2000 recreational boating season (May 15-Oct. 1), the Allegheny County Health Department issued warnings against contact with the rivers and streams about 70 days because of sewage overflows.

Sewage problems hinder economic development. Water is an abundant resource in our region that represents a vital part of our economy and it needs to be protected to promote economic growth.

- *Regional growth.* As a region, we have many new residential, commercial, and industrial development opportunities that can help boost municipal revenues, create



Chapter 1 (con't)

jobs, and stimulate our regional economy. However, due to the sewage overflow problem in this region, many municipalities are restricted from adding new connections to the existing sewer system.

- *Community (re)vitalization.* As we work to revitalize our older communities, waterfront aesthetics can play a key part in nurturing development. The sight or smell of a nearby sewage overflow, or the discoloration of a local stream, can make development of waterfront property more difficult.
- *Tourism.* The nearly 4 million people who visit Allegheny County each year create \$1.2 billion in economic activity that supports 30,000 jobs. Poor water quality can have a devastating impact on our many water-based attractions.

Fixing the problem will require a substantial, long-term financial commitment.

Estimates of the total cost to rehabilitate the sewage collection system in the ALCOSAN service area is approximately \$2 billion over the next 50 years. ALCOSAN has also committed \$1 billion to expand the carrying and treatment capacity of the ALCOSAN system. Some state and federal support may be available to help offset this cost, but the ratepayers will have to bear increases in sewer rates.

WHO IS RESPONSIBLE FOR THE SEWAGE INFRASTRUCTURE?

As a region, we must respond by investing in the sewage infrastructure. We face a challenge to fix the sewage infrastructure to make the rivers cleaner and allow our communities to grow.

The ALCOSAN service area is a network of combined and separate collection systems that have been operated individually, but that function as a single system carrying sewage to a single treatment facility. Property owners, municipalities and ALCOSAN each are responsible for different components of the sewage infrastructure.

Property owners are responsible for the condition of their private laterals. Private laterals—the pipes that carry sewage from the house to the street—represent approximately 3,000 miles of pipe, the distance from Pittsburgh to Yellowstone National Park in Wyoming and back.

Under Pennsylvania law, municipalities are responsible for ensuring that all sewage collected within their boundaries is collected and treated. The sewage collection system, for which municipalities are responsible, represents approximately 3,000 miles of combined and separate sewers within the ALCOSAN service area. Some municipalities operate their sewer systems through public works departments, while others have created **municipal authorities**, which have full responsibility for their collection system. However, this is an assigned responsibility; municipalities are still ultimately responsible for the collection system.

Pprivate laterals—the pipes that carry sewage from the house to the street—represent about 3,000 miles of pipe, the distance from Pittsburgh to Yellowstone National Park in Wyoming and back.



Chapter 1 (con't)

ALCOSAN is responsible for the operation and maintenance of the treatment plant and 90 miles of interceptors. In 1949, 60 municipalities, including the City of Pittsburgh and Allegheny County, created ALCOSAN, which constructed a treatment plant with the capacity to treat about 200 million gallons of wastewater each day. While ALCOSAN was created to take responsibility for treating the wastewater from its customer communities, the municipalities chose not to make ALCOSAN responsible for the maintenance and operation of their sewage collection system.

It is important to understand how the collection system in the ALCOSAN service area evolved in order to understand why the region has both separate and combined sewers.

Prior to the legislation requiring sewage to be treated, municipalities constructed combined sewer systems to carry their sewage and stormwater together to a nearby river. Municipalities without direct access to a major waterway connected their sewer systems to other communities that did have river access, or if necessary, linked many communities together in a row so that eventually all sewage would reach a major waterway.

When it was decided to treat sewage rather than dumping it into the river, it was cheaper to connect these combined and separate sewer systems along the rivers with large pipes that run to a single treatment plant, rather than building individual treatment plants for each collection system. As the population grew and suburbs were built, new sewer systems were connected to inner-ring communities to extend the network. ♦



Chapter 2: The Sewer Challenge

This chapter describes the urgency with which the problem must be addressed, the responsibility of municipalities, and some of the tough choices that will need to be made.

THE CHALLENGE STARTS NOW

For many reasons it is imperative that we begin to address the challenges associated with sewer rehabilitation now.

Without evidence of immediate action, the EPA will likely begin traditional enforcement actions. Illegal sanitary sewer overflows and uncontrolled combined sewer overflows in our region violate the Clean Water Act. Rehabilitation of the collection system will be necessary to comply with this federal regulation and municipalities are the responsible parties. The initial phases of rehabilitation will require comprehensive assessment and evaluation of the system. Unless we begin these tasks now, EPA has indicated its intention to begin traditional enforcement action against municipalities, which could include imposing costly fines and dictating short time frames for construction projects.

To move the region toward compliance, EPA began negotiating the terms of a **consent decree** with ALCOSAN in the fall of 2000. The final consent decree, a legally binding document, will require ALCOSAN to take specific actions, such as maximizing the capacity of its treatment plant and interceptors. Initially, the EPA wanted the bulk of the overflow problems addressed through ALCOSAN's consent decree. However, the collection system is under municipal jurisdiction, and the problem cannot be fully resolved without reducing the flow from the communities.

If we don't plan our investments, we will have to make more costly quick-fixes. Well-planned, strategic investments can bring the greatest possible improvements to the collection system at the lowest cost to ratepayers. Putting off capital investment in the sewer system may result in expensive emergency repairs or quick fixes, rather than long-term sustainable solutions.

For example, communities under regulatory pressure to stop an overflow problem may be forced to build large, expensive storage tanks to capture and hold excess flow during wet weather events, rather than first addressing the inflow and infiltration that are the underlying cause of the overflows. While at some point it may be necessary to build infrastructure such as storage tanks, the need for and size of these tanks should be based on comprehensive assessment after reducing flows through rehabilitation.

Without a sign of significant regional effort to address collection system problems, the EPA will target municipalities with traditional enforcement action.

Implementing comprehensive operation and maintenance practices can significantly improve the situation. Implementing comprehensive operation and maintenance practices, such as cleaning and televising sewer lines and cleaning catch basins will have immediate, positive results toward reducing overflows. It also can save money and prevent higher rates in the future. The EPA estimates that up to a 50% reduction in volume of overflows can be gained through proper

operation and maintenance procedures. This can be one of the most cost-effective near-term approaches to improving the system and demonstrating progress to the EPA.

MUNICIPALITIES MUST FACE THE CHALLENGE

By law, municipalities are responsible for ensuring that all sewage collected within their boundaries is conveyed and treated.

In Pennsylvania, The Sewage Facilities Act and the Clean Streams Law together establish the municipality as the responsible body for sewage management. These laws, combined with the federal Clean Water Act, enable state and federal regulators, as well as private citizens' groups, to pursue legal action against municipalities that don't live up to this responsibility. Civil action lawsuits have already been filed against some communities in Allegheny County, and regulatory action has already been taken against others to fix sewage problems.

ALCOSAN has no authority to suggest how municipalities should invest in the collection system, nor can it force communities to reduce their flows.

Rehabilitating the collection system is required to solve the problem, and ALCOSAN does not have the authority to take charge of the collection system.

ALCOSAN has no authority to suggest how municipalities should invest in the collection system, nor can it force communities to reduce their flows. ALCOSAN has started construc-

tion to maximize the capacity of its interceptors and expand its treatment plant at a cost of \$1 billion. Providing treatment capacity beyond the scope of the current expansion would require building new interceptors and constructing a second plant at a different location at a staggering cost to ratepayers.

Therefore, municipalities must take the action required to reduce flows in the collection system in order for the problem to be resolved. These investments must be protected by ensuring that the capacity created will not be exceeded by the continuing deterioration of the municipal collection system.

House laterals represent a large part of the problem, but homeowners do not have the resources to fix the problem alone.

The maintenance and repair of household laterals is the responsibility of the homeowner, but the municipal sewer system operator is responsible for assessing system performance and determining which laterals need to be fixed. In addition, repairing house laterals can cost thousands of dollars, a burden many homeowners cannot afford. The cost of addressing house lateral repairs could be reduced if tackled collectively by the municipalities.

A recent public survey conducted among the ALCOSAN customer communities indicated that homeowners were willing to take responsibility for repairs to their sewer laterals. However, homeowners were unaware of the water quality problem caused by wet weather sewage overflows and also unaware of the fact that their house laterals may be a major contributing factor to the problem. In order to mobilize individual ratepayers, municipalities need to educate homeowners and identify laterals that need to be repaired. ♦

Chapter 3: A Regional Partnership is Critical

This chapter establishes the need for a cooperative approach to rehabilitating and managing the sewage collection system. It discusses why municipalities working alone are not able to make the investments that are vital to fixing our sewers, and why partnership is needed to reach our goal. Elected officials must recognize the need for, and begin to develop, sustainable strategies to deal with this area-wide problem.

THE STATUS QUO

Currently, in the ALCOSAN service area, numerous municipalities and authorities operate and maintain individual portions of the collection system independent of each other. Although some communities have developed working committees or other inter-municipal relationships to collaborate on sewage issues, each of these communities or authorities works on its own particular segment of the system.

Maintaining the status quo would relieve municipal officials of coping with the challenges of making major changes in the way communities operate their collection system. Under current practices, ratepayers can participate at council or commission meetings to voice their opinions regarding sewage issues as they do with all other municipal issues. With this process in place, municipal officials may feel they have better ability to serve their residents' sewage needs.

The current process for individually managing the collection system, does however, have limitations.

Individual management is ineffective because municipal systems are interconnected. Municipal leaders have control over investment decisions, which gives them the

opportunity to manage the cost burden on their ratepayers. These municipalities do not have complete control over flow from other communities—upstream and downstream. This lack of control can have a significant impact on the collection system within individual municipal boundaries. Municipal sewer systems are interconnected like branches of a tree across the ALCOSAN service area. Therefore, municipalities need to work together to identify the causes of overflows and develop a systemwide, sustainable solution.

Individual management is expensive. Individual municipalities managing their own segment of a collection system face the expense of maintaining equipment and services required for the regular operation and maintenance of a sewer system. This is not cost-effective, especially for small communities servicing fewer homes.

Individual management is not the most cost-effective approach. To reduce overflows in the entire collection system, a cost-effective rational strategy based on sewershed boundaries is required. This area-wide plan can only be accomplished from a system-wide perspective. If individual municipalities make costly investments in one small part of the system, the investment may burden ratepayers more than necessary.

THE BENEFITS OF REGIONALIZATION

Communities must work together to create a common vision for the future—one that incorporates the benefits of area-wide management and organizational strength and sustainability.

Many municipalities have recognized the regional nature of our sewers, and have begun taking the first steps toward partnering with

Chapter 3 (con't)

neighboring communities. The growing interest and participation in 3 Rivers Wet Weather Basin Groups is a positive sign of progress toward regional cooperation.

The benefits of regionalization are substantial. Coordination of services and planning provides better, less costly results. Cooperative financing efforts for a broader area reduces the finance cost of the investment, and can provide long-term stability. A regional strategy also provides a focused, unified voice to appeal for financial support from the state and federal governments.

WHAT ARE THE 3 RIVERS WET WEATHER BASIN GROUPS?

3 Rivers Wet Weather developed the Eastern, Northern and Southern Basin Groups comprising elected officials from the 83 ALCOSAN communities in early 2001. For nearly 12 months, these municipal officials have met monthly to learn about new regulations, share information, such as sewer rates and resources for sewer rehabilitation, and begin a basin-wide integrated Geographic Information System (GIS) mapping project to take inventory of the sewer system on a regional basis.

In 2002, communities will have the opportunity to take advantage of an unconventional enforcement approach by the Environmental Protection Agency: a voluntary enforceable agreement which commits communities to a two-phase plan to assess and evaluate their sewer system. This assessment and evaluation information will help municipalities to develop of a comprehensive rehabilitation plan for the sewage overflow problem.

The basin groups will lead that effort while simultaneously exploring regionalization issues and building consensus on one regional approach for the most efficient and cost-effective manner to operate and maintain the municipal sewage collection system in the ALCOSAN service area.

REGIONALIZATION WILL RESULT IN A SYSTEM-WIDE AND COST-EFFECTIVE SOLUTION

Municipalities must develop a plan to assess and evaluate the entire collection system in a standardized, methodical manner. The data collected in a system-wide assessment and evaluation can be used to develop a rational long-term plan for the required rehabilitation. If municipalities continue to work only within their own boundaries to assess, evaluate and rehabilitate their own portion of the system, compliance will be more difficult to achieve and more costly overall to the region.

Regional planning identifies the investments that are needed the most. We must prioritize our investments to first address the overflows and backups that are causing the greatest public health risks and property damage. Due to the integrated nature of the collection system throughout the ALCOSAN service area, addressing problems only within individual municipal boundaries is ineffective because the repair or rehabilitation may not significantly contribute to a system-wide reduction in overflows.

For example, a municipality cannot control all sources of overflows within its boundaries, and may be forced to implement an ineffective rehabilitation, such as a large storage tank to handle flow during a wet weather event.

This expensive approach treats the symptoms, rather than the cause of the overflow. If the communities contributing to the overflow work together to identify and correct the cause of the problem, they might avoid the need for costly construction. Storage tanks may be required, but these solutions should be undertaken after flows are reduced through rehabilitation. A regional plan would ensure that the investment in sewage infrastructure is most efficient and sustainable.



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Although sewer rate increases will be required to solve this problem, by pursuing the most cost-effective solutions, municipalities can minimize the financial burden to their ratepayers.

REGIONALIZATION SAVES MONEY

Regional organizations have greater buying power. Most municipalities belong to a **Council of Governments (COG)** that purchases public works supplies in bulk and passes the savings on to its communities. This principle also can be applied to professional and technical services, such as sewer inspections (closed circuit TV), routine maintenance (cleaning) and repairs ultimately reducing the financial burden on ratepayers.

Regional action reduces duplication.

Municipalities may own the equipment, such as vacuum trucks and backhoes, to maintain their sewer systems. This equipment represents a significant capital investment, but may be underutilized. Rather than each community owning this equipment, municipalities can share these resources.

Regional financing saves money. Cooperative financing mechanisms, such as bond pools, can decrease the cost of borrowing money. Fees are lower for larger-sized pools. For example, it would cost less for a regional authority to finance a \$1 million project in a community as part of a package of many projects than it would for an individual municipality to borrow the \$1 million on its own. Municipalities participating in such a regional financing strategy can experience financial advantages.

New regulations will require cooperation.

New regulations require collaboration among neighboring municipalities. Municipalities are subject to increasingly stringent require-

ments covering the management and operation of a collection system. The proposed **CMOM (Capacity, Management, Operation and Maintenance)** regulation will require all sewage collection systems to obtain **National Pollution Discharge Elimination System (NPDES)** permits. NPDES requires sewer system operators to establish agreements regarding flow, operation and management practices with surrounding communities. With hundreds of interconnections among the municipal collection systems, regionalizing the operation can save time and money by consolidating operations, which would reduce the number of permits and inter-municipal agreements needed.

REGIONALIZATION REDUCES MUNICIPAL BURDEN

Removing the responsibility for the sewer collection system from municipal government allows officials to focus on projects that can be addressed within an individual community's boundaries. Collection system rehabilitation is a long-term, complex issue that elected officials are attempting to accomplish within short terms of office. Regionalizing the operation of the system will provide long-term continuity in the decision-making process.

REGIONALISM RESULTS IN A STRONGER VOICE IN HARRISBURG AND WASHINGTON

With the size of the area's sewage problem, financial support from Harrisburg and Washington can reduce the financial burden on residents. Where a single municipal voice is often lost at the state or federal level, a regional voice can carry significant influence. ♦

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COMPARING INDIVIDUAL MUNICIPAL OPERATION TO COOPERATIVE OPERATION

The following table outlines the many advantages of community partnerships in these areas:

- Operations (planning, maintenance, billing, customer service, etc.)
- Ownership (regulatory compliance, liability, permitting, etc.)
- Financing (bonding, special local revenue sources)
- Advocacy (state or federal financing sources, statutory and regulatory support)

	Individual Municipal Operation	Cooperative Operation
Operations	<ul style="list-style-type: none"> • Communities do not have control over flow received from other communities that contributes to sewer problems within their boundaries • Sewage needs compete for community resources 	<ul style="list-style-type: none"> • Cost of providing service could be lower • Quality of service (emergency response time, customer service hours) could be better with a larger, more specialized staff
Ownership	<ul style="list-style-type: none"> • Communities are burdened by the permitting process for their portion of the collection system • Regulations are specifically written to require cooperation 	<ul style="list-style-type: none"> • Burden of municipal liability for compliance issues is reduced
Financing	<ul style="list-style-type: none"> • Smaller communities may have difficulty finding lenders at reasonable rates • All communities will continue paying higher costs to borrow money 	<ul style="list-style-type: none"> • Financial burden is decreased on ratepayers because of lower borrowing costs
Advocacy	<ul style="list-style-type: none"> • Ability to reach the ear of legislators and congress is limited 	<ul style="list-style-type: none"> • A louder, unified lobbying voice for financial support from Harrisburg and Washington available • Greater resources available to pursue long-term policy and funding options available

Chapter 4: Creating a Long-Range Vision

The previous chapter proposes establishing area-wide management of the sewers to address immediate and future needs. This chapter advances this idea by proposing three options for cooperative ownership and operation of the sewers.

- *Option 1: Redefine ALCOSAN as the regional sewage authority.* Consolidate responsibility for the entire sewage collection system within ALCOSAN, creating an entity responsible for both aspects of sewage—collection and treatment.
- *Option 2: Regionalize the responsibility for sewage collection under a new authority.* Create a regional authority to assume ownership and decision-making responsibilities for the entire collection system within the ALCOSAN service area. This authority would become the body that assumes responsibility for management activities and liabilities regarding the collection system.
- *Option 3: Consolidate the responsibility for sewage collection under a combination of new and existing authorities.* Identify those authorities with the resources and sustainability to remain solvent, and create an authority or authorities to assume the responsibility for the other areas of the collection system.

In addition to describing these three options for area-wide sewage management, this chapter outlines some basic elements of sewage management to guide the discussion, and offers a glimpse at some of the later issues we will face in making the transition from local to area-wide sewage management.

EVALUATING THE OPTIONS

The following guidelines define some critical issues that need to be addressed in order for an area-wide management structure to be successful. These seven guidelines should be used to evaluate the three options presented in this report. Information on each option is provided in the following section and can be used to discuss the pros and cons of each option.

Guideline #1: Treat sewage infrastructure as a single, dynamic system. Localized management of our sewers does not provide the type of strategic planning and investment necessary to ensure cost-efficient and compliant sewer system operation. Successful investment and operation can only occur if we view the system as a whole, rather than in parts.

These **7** guidelines define some of the needs for an area-wide management structure to be successful. The guidelines should be used to evaluate the **3** options presented.

Guideline #2: Bring system into compliance with regulations. Significant investment will be required to bring the entire sewage system into compliance. If one part of the system is not being maintained, it affects the entire system. The goal must be achieving compliance for the entire system.

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Guideline #3: Foster comprehensive planning and strategic investment for sustainability. We can no longer react to infrastructure problems as they arise. To make the strategic plan sustainable, we must proactively maintain and invest in the collection system.

Guideline #4: Empower the entity to complete necessary tasks. An institution(s) must be in place with the authority to accomplish the necessary tasks.

Guideline #5: Utilize existing knowledge and resources. We must build upon what municipalities have accomplished and learned, and use existing personnel and equipment in the most efficient manner.

Guideline #6: Address local concerns. We must recognize and address the varying needs and economic constraints of municipalities.

Guideline #7: Address existing infrastructure and debt. Our municipal collection system is in varying states of disrepair. The transition from local to regional management will require agreement on existing problems and debt.

THREE OPTIONS FOR REGIONALIZING SEWAGE MANAGEMENT



OPTION 1: REDEFINE ALCOSAN AS THE REGIONAL SEWAGE AUTHORITY

Guideline #1: Treat sewage infrastructure as a single, dynamic system.

This option would place responsibility for the entire collection system under a single entity that manages both collection and treatment.

This could be a more efficient system because all aspects of sewer management, from

planning and investment to customer service, would be centralized. To centralize the entire system under ALCOSAN would require a complete reorganization of the authority.

Guideline #2: Bring system into compliance with regulations.

If ALCOSAN were redefined, it would become the permit holder for the entire system. Each municipality would no longer be responsible for permitting and compliance. By uniting responsibility for 83 municipal collection systems under ALCOSAN, it might be easier to ensure that all investments necessary are made for system compliance. ALCOSAN has permitting experience and considerable background operating in a highly regulated environment.

Option 1:
Redefine ALCOSAN as the regional sewage authority.

Guideline #3: Foster comprehensive planning and strategic investment for sustainability.

One regional authority would be responsible for developing a comprehensive plan that covers long-term investment for both collection and treatment. Municipal governments face the challenge of short election cycles, which limits their ability to plan and implement long-term strategies. However, ALCOSAN would have the ability to make long-term investments based on system performance and needs.

Guideline #4: Empower the entity to complete necessary tasks.

ALCOSAN would need to be restructured in order to assume the additional authority for the collection system. ALCOSAN's charter would need to be amended, which would require approval by the City of Pittsburgh and Allegheny County. This increased responsibility in day-to-day operations would require an increase in staff and capital needs, and revised organizational policies and processes.

Having ALCOSAN assume responsibility for the collection system would reduce municipal burdens. Although state laws and policies confer ultimate responsibility for sewage operation on municipal government, with ALCOSAN as the regional collection and treatment authority, municipal leaders can remove themselves from the challenges and costs of day-to-day sewer system operation.

Guideline #5: Utilize existing knowledge and resources.

Aside from already having a broad understanding of basic sewage issues and specific sewage concerns around the region, ALCOSAN has expertise in areas such as customer service and billing, regulatory compliance, litigation, financing, bonding, engineering, planning, and state and federal advocacy. Expanding existing capabilities within ALCOSAN might be easier than creating capabilities in a new organization.

ALCOSAN has the institutional infrastructure in place. With 300 employees, an annual budget of \$60 million, and 50 years of experience in the wastewater industry, ALCOSAN has a base upon which to expand.

Guideline #6: Address local concerns.

By assuming responsibility for the collection system, ALCOSAN's scope of authority would

expand, but its basic mission of providing cost-effective and efficient service to municipalities would not change.

ALCOSAN's Board would need to be reconstituted to provide fair and equitable representation to all municipalities. ALCOSAN's current board consists of representatives appointed by Allegheny County and the City of Pittsburgh. The expansion of ALCOSAN's role will require a vehicle by which municipalities have a voice in the policies and direction of ALCOSAN.

In this expanded role, ALCOSAN would need to focus on customer needs. In any regional change of this magnitude, an institution would need to build confidence with municipal officials and ratepayers. ALCOSAN would need to address existing problems, such as billing, to build this confidence.

Guideline #7: Address existing infrastructure and debt.

As an existing entity, ALCOSAN has the stability and familiarity with the problem to address the challenge of the region's existing infrastructure and debt and begin developing creative solutions that include the cooperation of the municipalities.



OPTION 2: REGIONALIZE THE RESPONSIBILITY FOR SEWAGE COLLECTION UNDER A SINGLE NEW AUTHORITY.

A new regional authority can be created to assume ownership and decision-making responsibilities for the collection system in the region. A new regional authority would become the leadership body that ultimately assumes responsibility for all planning, decisions and liability surrounding the collection system. ALCOSAN would remain the treatment authority.

Guideline #1: Treat sewage infrastructure as a single, dynamic system.

Coordination between the new entity for collection and the treatment authority is likely to be simpler than coordinating with 83 communities. The new authority would manage the collection system on a regional basis, utilizing efficiencies, developing plans and making cost-effective investments.

Guideline #2: Bring system into compliance with regulations.

One authority would act as the permittee for the collection system in all communities, thereby uniting responsibility under one collection system authority. In addition, it might be easier to ensure that all investments necessary are made for system compliance.

Option 2:
Regionalize the responsibility for sewage collection under a single new authority.

Guideline #3: Foster comprehensive planning and strategic investment for sustainability.

The regional authority would be responsible for developing a comprehensive plan that addresses long-term investment for the collection system. This plan would require coordination with the treatment authority's plan in order to effectively address the entire system.

As a regional provider, the authority would have the ability to make long-term investments based on system performance and needs. Municipal governments face the challenge of short election cycles, which limits their ability to plan and implement long-term strategies.

A new authority would face the challenge of setting up an organizational structure concurrent with developing a comprehensive investment plan for the collection system.

Guideline #4: Empower the entity to complete necessary tasks.

The new authority would need an organizational structure to be operating before assuming responsibility for the entire collection system. This effort could be time-consuming, complex and might require the leadership of an existing regional entity, such as Allegheny County.

In addition, a new authority would reduce municipal burdens. Although state laws and policies confer ultimate responsibility for sewage operation on municipal government, by creating a regional collection authority, municipal leaders can remove themselves from day-to-day sewer system operation. Municipalities also would have flexibility in designing a management structure to meet their needs through a new collection authority.

Guideline #5: Utilize existing knowledge and resources.

Local expertise and resources, such as engineering, equipment operation, geographic information system management, etc., currently exist within other entities. To be successful, the new authority will need to utilize that expertise to help form the foundation of the regional authority.

Guideline #6: Address local concerns.

The new authority would need to focus on customer needs. In any regional change of this magnitude, an institution would need to build confidence with municipal officials and ratepayers.

Guideline #7: Address existing infrastructure and debt.

The authority would need to build confidence in its ability to address the challenges of the region's existing infrastructure and debt. It would need to develop creative solutions to integrate the many disparate parts of the system under its umbrella. Building confidence of the municipalities and ratepayers would be crucial for success.



OPTION 3: CONSOLIDATE SEWAGE COLLECTION UNDER A MIXTURE OF NEW AND EXISTING AUTHORITIES

Rather than creating a single collection system authority, authorities with the resources and sustainability could remain in place. An authority or authorities could be created to assume the responsibility for the rest of the collection system. These authorities would need to work together in a strategic partnership toward system-wide goals. *This option defines a basic strategy that could be implemented in many different ways.*

Guideline #1: Treat sewage infrastructure as a single, dynamic system.

This approach will require coordination with the treatment authority and among multiple authorities responsible for portions of the collection system. Without this cooperation, effective regional strategies and solutions could not be developed and subsequently implemented.

Guideline #2: Bring system into compliance with regulations.

This option might result in multiple permittees and multiple plans. Each authority would be evaluated for compliance separately, making the goal of attaining regional compliance more challenging.

Guideline #3: Foster comprehensive planning and strategic investment for sustainability.

Coordination among authorities would be required to develop strategies for sustainability. Reducing the number of entities responsible for the collection system can help to unify the region's planning and investment strategies.

Guideline #4: Empower the entity to complete necessary tasks.

Existing sewage authorities have the

Option 3: Consolidate sewage collection under a mixture of new and existing authorities.

necessary processes in place and the authority required to complete tasks for their portion of the collection system. New authorities would need to develop an organizational structure and coordinate activities with the existing entities. This effort could be time-consuming, complex and require the leadership of an existing regional entity, such as Allegheny County.

This mix of existing and new authorities would reduce burdens by removing municipal leaders from day-to-day operations. Municipalities would have flexibility in designing management structures to meet their needs when creating a new collection authority or authorities to augment existing authorities.

Guideline #5: Utilize existing knowledge and resources.

This option can capitalize on present institutional strengths by maintaining existing

authorities where appropriate and provide new resources where they are needed by creating a new authority or authorities. The new authority or authorities would need to tap into existing expertise to form a solid foundation of operation.

Guideline #6: Address local concerns.

In any regional change of this magnitude, an institution would need to build confidence with municipal officials and ratepayers. This confidence may already be in place between existing authorities and their customers, but new authorities will need to focus on customer needs to build this level of trust.

Guideline #7: Address existing infrastructure and debt.

Integrating the many disparate parts of the system under one or multiple authorities will require resources, expertise and cooperation. Under this option, multiple authorities would need to develop a coordinated plan for addressing the sewage infrastructure problems.

WHAT SHOULD WE DO NOW

This report outlines the need for action. It will take the cooperation and commitment of community leaders to ensure this region moves toward a viable solution to the wet weather sewage overflow issue. An important action for community leaders is to participate in the 3 Rivers Wet Weather Basin Groups.

The aim of this report is to promote active discussion. Only through this discussion can elected officials ultimately reach agreement on a vision for managing our sewage collection system.

These groups of elected officials will regularly collaborate to gain information and work together to make informed decisions about creating a partnership for sewage management.

At this point, the most effective and efficient solutions and mode of operation have not yet been defined. To define a plan, a series of steps will be needed, including:

- Strengthening inter-municipal relationships
- Improving local sewer infrastructure through proper operations and maintenance practices
- Expanding the current 3 Rivers Wet Weather basin group mapping project to include assessment and evaluation of the system
- Convening engineers' working groups to identify the appropriate technical solutions
- Convening a task force of municipal solicitors to explore financial and legal challenges and solutions

The aim of this report is to promote active discussion about each of these options through the continuing and expanding efforts of the 3 Rivers Wet Weather Basin Groups, as well as other forums. Only through this discussion can elected officials ultimately reach agreement on a vision for managing our sewage collection system. Then we can begin the task of implementing the changes required to reach this vision. ♦

Glossary of Terms

- **Allegheny County Sanitary Authority (ALCOSAN)** — The sewage treatment authority serving 83 municipalities in Allegheny County since 1959.
- **CMOM (Capacity, Management, Operation and Maintenance)** — Also known as the SSO Rule, this proposed regulation sets stringent guidelines for the capacity, management, operation and maintenance of municipal sanitary sewer collection systems.
- **Combined sewer overflow (CSO)** — Discharge of a mixture of stormwater and wastewater when the flow capacity of a combined sewer system is exceeded during wet weather events, such as rainstorms.
- **Combined sewer system** — A system that is designed to carry both stormwater and sewage in the same pipe. Combined sewer system communities are regulated by the CSO Policy (Nine minimum controls).
- **Consent decree** — a judicial decree that sanctions a voluntary agreement between parties in dispute.
- **Council of Government (COG)** — Affiliations of municipalities established to enable a group of municipalities to work together on programs of mutual interest. Often, COGs are used to combine the buying power of communities to lower the cost of capital purchasing.
- **Dry weather** — In reference to sewage flows, the weather condition during which there is no rain or snow melt, and the flow in the sewers returns to normal levels. This condition usually occurs two to three days after significant rainfall or snow melt.
- **Infiltration** — When water enters the sewer system through leakage, such as a cracked pipe. This can be caused by rainfall or by a high groundwater table in the soil.
- **Inflow** — When water enters into the sewer system through an opening, such as a manhole lid or a direct connection, such as a roof or area drain.
- **Interceptor** — Large sewer lines that transport flow from community collection systems to a sewage treatment plant. In our system, ALCOSAN operates about 90 miles of interceptors that transport sewage from our 83 municipal collection systems to the ALCOSAN sewage treatment plant.
- **Lateral** — The pipe that conveys sewage from the house to the public sewer system connection.
- **Municipal authority** — An agency incorporated by one or more municipalities or counties to carry out the purpose of acquiring, holding, constructing, improving, maintaining and operating, owning and/or financing municipal infrastructure.
- **NPDES (National Pollutant Discharge Elimination System)** — A federal permit system for all discharges to waterways, including combined sewer overflows. NPDES permit programs are administered by states, and under proposed legislation, operators of separate municipal sewage collection systems will soon need NPDES permits for both sewage and stormwater.
- **Non-point runoff** — The pollution that occurs when rainfall, snow melt, or irrigation runs over land or through the ground, picks up pollutants, and deposits them into rivers or lakes, or introduces them into groundwater.
- **Overflow structure** — A structure in a combined sewer system designed to direct sewage flows to the treatment plant in dry weather, but in wet weather the structure bypasses increased sewage flows to a stream or river.
- **Sanitary sewer overflow (SSO)** — Discharge of a mixture of stormwater and wastewater when the flow capacity of a separate sewer system is exceeded during wet weather events, such as rainstorms.

Glossary of Terms (con't)

- **Separate (sanitary) sewer system** — A system that is designed to carry only sewage. Sanitary sewer system communities will be obligated to meet standards outlined in the new SSO Rule (CMOM) in the very near future.
- **Sewage collection system** — The network of pipes that transport wastewater from homes and businesses to a large sewer line called an interceptor. This includes both public sewers and private laterals.
- **Sewage treatment plant** — A facility that cleans flow from a sewer system by removing and disposing of solids and harmful bacteria, thereby ensuring that the water meets health standards when it is returned to nature.
- **Stormwater** — Water from rain or snow melts. Some stormwater is absorbed by the soil and becomes groundwater, but especially in urbanized areas, can often be trapped on the surface by solid surfaces and must be managed using collection systems.
- **Storm sewer system** — A collection system that is designed to carry only stormwater (from streets, roofs, driveways, etc.), and not wastewater.
- **Trunk sewer** — Larger diameter sewers, generally along streams and valleys, which connect to smaller branch sewers from developed areas.
- **Wastewater (sewage)** — Spent or used water from a home or business containing waste products or contaminants.
- **Wet weather** — Occurrences of rain, sleet, or snow melts that contribute stormwater to a local area.