

# FROM THE EXECUTIVE DIRECTOR



I am honored to present to you our modified consent decree and updated Clean Water Plan.

ALCOSAN first entered into a consent decree in 2008 and completed the required plan in 2012. Although comprehensive, the public challenged the authority to make the plan more affordable for ratepayers yet flexible enough to take advantage of advances in the field of green stormwater and wastewater management. In order to meet that question, further negotiations were necessary.

The solution is comprehensive. We will be removing (7) seven billion gallons of combined sewer overflow every year. That work is necessary to ensure our rivers and streams remain the community asset that they are today. In order to offset the cost of the required improvements, rates will be increased.

The consent decree meets the challenges from the public while also meeting the regulatory requirements of the Clean Water Act:

- Affordable. Keeping the cost of the Clean Water Plan as affordable as possible for the majority of our system users is important. Because of the changes contained in this amended consent decree, the cost has been spread out over a longer period of time. Additionally, the authority has been more proactive with its own finances to keep the costs down.
- Adaptable. The plan allows ALCOSAN and its customer municipalities to use the best technology, including green stormwater infrastructure. We will be able to adapt our planning based on how the systems perform - a significant component of the Clean Water Plan.
- Regional. ALCOSAN will be assuming the responsibility for the largest sewers and sewer facilities in the service area. This reduces the financial burden on municipalities and allows ALCOSAN to more directly manage and reduce excess flows into the system.

The revised decree and plan will improve and protect the quality of our region's rivers and streams, eliminating more overflows than were projected under the 2012 plan. An additional phase of work will occur after this Clean Water Plan is completed in order to further reduce overflows.

We have not waited to begin our work. While negotiating the modified consent decree, ALCOSAN began work on many of the methods outlined for addressing overflows. Our GROW program is in its fourth cycle of grant awards; an investment that has levered additional municipal, authority and third-party funding for projects that are removing significant amounts of water from our system. We have been working with our customer municipalities to transfer ownership of multi-municipal trunk sewers and other structures. We have completed the report for our plant expansion and are working on the detail for projects to increase treatment capacity. We are evaluating conveyance upgrades and required tunnels to meet our combined sewer overflow reduction requirements.

This booklet offers a brief summary of the modified consent decree and Clean Water Plan. You can review the entire updated decree and plan at [www.alcosan.org](http://www.alcosan.org). If you are unable to access to our website, would like a presentation to your group, or need additional copies of this booklet, please contact ALCOSAN's Communications Division at 412-734-6274 or at [public.relations@alcosan.org](mailto:public.relations@alcosan.org).

This work is going to be one of the largest infrastructure projects in the region and will help continue to ensure our rivers and streams remain the community asset they are today. We take our stewardship responsibility seriously and look forward to working together with you to meet the plans' goals.

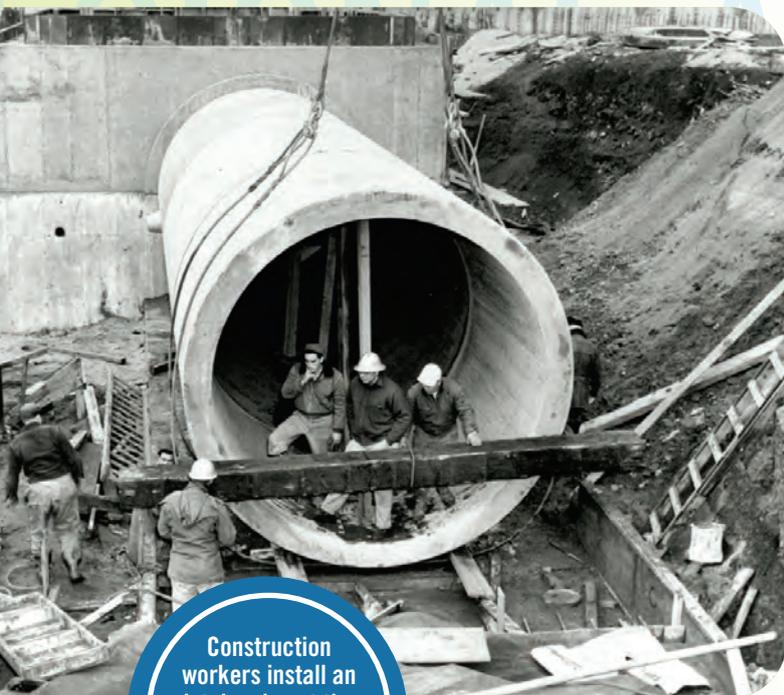
A handwritten signature in blue ink that reads 'Arletta Scott Williams'.

Arletta Scott Williams, Executive Director



**3 RIVERS  
PROUD**

## HOW WE GOT HERE



Construction workers install an intake pipe at the ALCOSAN treatment plant site circa 1958

**1946** The Allegheny County Sanitary Authority is created under the Pennsylvania Municipal Authorities Act to provide regional wastewater conveyance and treatment. Negotiations begin with local municipalities to join the ALCOSAN system.

**1959** ALCOSAN's system goes live. Until that time, all but 2% of sewage was delivered to our region's rivers and streams, with little or no treatment. Overflows from combined pipes (carrying both sewage and stormwater) during heavy rain and snow melt were built into the system.

**1972** The federal Water Pollution Control Act of 1948 is expanded and reorganized as the Clean Water Act, establishing a new regulatory structure for controlling water pollution. ALCOSAN's proactive planning beginning in the late 1960s results in compliance with new regulations by 1973.

**1994** ALCOSAN begins planning for requirements under the Clean Water Act and the U.S. Environmental Protection Agency's Combined Sewer Overflow (CSO) Policy. Communities throughout the nation face similar challenges.

**2008** After decades of discussion and planning, ALCOSAN signs its first consent decree to comply with the Clean Water Act, which gives ALCOSAN 18 years to repair broken sewer lines, reduce inflow and infiltration from streams and groundwater, reduce the frequency and volume of CSOs and eliminate overflows in the portions of the system with separate pipes for stormwater and wastewater

**2012** ALCOSAN releases a \$3.6 billion plan to the public. Municipalities express great concern that the cost to families and businesses is too great. Members of the public ask for the inclusion of green stormwater technology in meeting the Clean Water Act requirements. ALCOSAN also provides two other, more affordable options that partially meet regulatory requirements.

**2013** Faced with a legal deadline, ALCOSAN presents the required plan but asks the agencies for more time to make changes so the plan will be affordable and include green technologies. Based on the options provided, the regulatory agencies begin negotiations with the authority to create a plan that emphasizes water quality, adaptive management and affordability. ALCOSAN begins its study of source controls.

**2016** ALCOSAN creates its Green Revitalization of Our Waterways (GROW) program to assist municipalities with funding and technical assistance for green infrastructure projects.

**2018** The regulatory agencies conclude negotiations, giving ALCOSAN until December 31, 2036 to complete the first phase of the Clean Water Plan, costing \$2 billion, which will eliminate almost seven billion gallons of overflow every year. The process of inter-agency approval continues through 2019. ALCOSAN also begins work on Controlling the Source, a science-based evaluation of all methods of source control. This evaluation will provide data to municipalities on where they can build projects that are cost-effective and are most beneficial to control overflows.

# WHERE WE ARE GOING



2019

The Green Revitalization of Our Waterways grant program continues with its fourth cycle of municipal applications. Because ALCOSAN is required to accept all wastewater sent by its municipalities, it is assisting them in finding ways to divert stormwater and groundwater. Treatment plant expansion design work continues.

2020

Planning concludes on plant expansion, conveyance system optimization, flow reduction studies and development of a preliminary design report. ALCOSAN makes best faith effort to take ownership of 200 more miles of large, municipal-owned sewers and associated facilities in its service area. Construction begins on plant expansion.

2023

Construction begins on the second phase of plant expansion to 600 million gallons per day. Construction begins on the Ohio River tunnel segment.\*

2024

ALCOSAN will submit a revision to the Clean Water Plan that identifies projects necessary to control overflows from regionalized sewers.

2025

Plant expansion to 480 million gallons per day and 295 million gallons per day of secondary treatment is completed.

2027

Plant expansion to 600 million gallons per day and Ohio River tunnel work is completed.

2028

Construction begins on the Allegheny River tunnel segment.\*

2033

Construction begins on the Monongahela River tunnel.\*

2034

Construction completed on the Allegheny River tunnel.\*

2036

Construction completed on the Monongahela River tunnel.\* Regulators evaluate the effectiveness of the Clean Water Plan.



Demolition of the original Operations & Maintenance facility will afford space for plant expansion

\* Projects subject to change



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# THE PROBLEM TO BE SOLVED

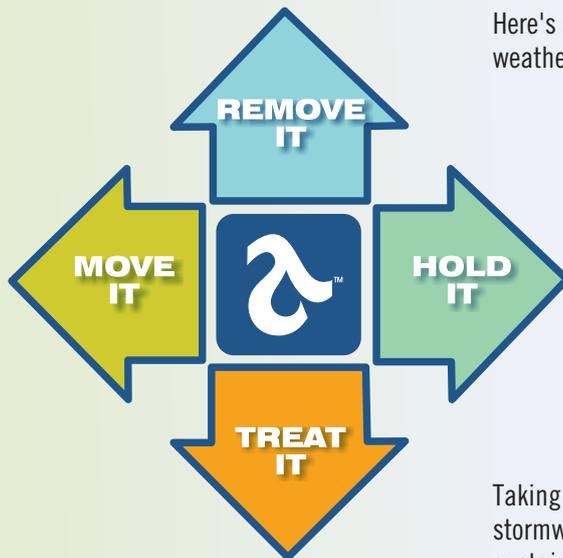


Wet weather overflows are caused by excess stormwater and groundwater entering the region's sewer and stormwater system during and following rain and snow events. That excess water doesn't need to be treated, as wastewater from homes and businesses does, but it gets into the collection system because of how sewers were designed long ago, geography and deterioration that has occurred over time. When there is more water than can be handled by the system that carries it to ALCOSAN's treatment plant, diluted, untreated wastewater can be discharged into rivers and streams.

The primary goal of the consent decree is to reduce these combined sewer overflows (CSO) and eliminate sanitary sewer overflows (SSO). The Clean Water Plan is ALCOSAN's approach for doing so.

Our first step is to stop flows at the source, which is why we are using and expanding the use of green infrastructure and other source controls. These methods include lining leaky, old sewers or removing stream waters from the collection system by restoring natural features of the watershed.

ALCOSAN's partnerships with our customer municipalities have been crucial. Together, we developed the original plan, and we continue working together to develop new strategies and procedures to reduce overflows. Questions remain about how much stormwater can be diverted using green infrastructure and other source control methods.



Here's an easy way to think of possible solutions to wet weather overflows:

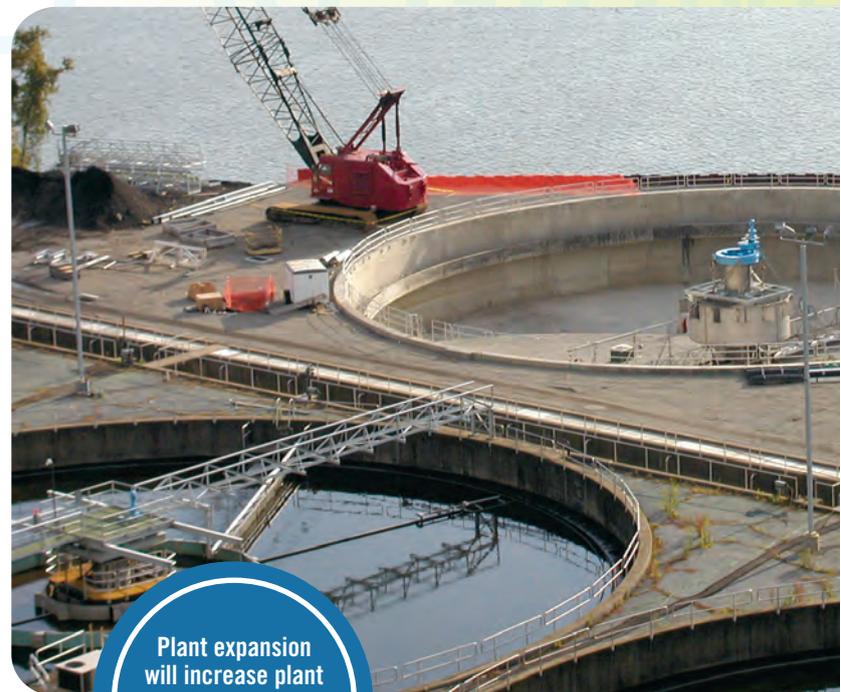
- You can stop flow from entering the system in the first place;
- You can move it through the network of pipes;
- You can hold it for release or treatment later; or
- You can treat it immediately.

Taking advantage of the right combination of these sewer and stormwater management methods to design an efficient and sustainable solution for our region is the goal.

# KEY FEATURES OF THE PLAN



-  The focus of the plan is improved water quality, eliminating approximately 7 billion gallons of Combined Sewer Overflows (CSOs), which is more than the 5.4 billion gallons projected under the 2012 plan.
-  Time to complete the first phase is extended from September 30, 2026, to December 31, 2036.
-  Cost is estimated at \$2 billion for phase one of the current plan. The early plan was estimated to cost \$3.6 billion. All figures are in 2010 dollars.
-  ALCOSAN's North Side plant will be expanded to nearly double wet weather capacity from the current 250 million gallons per day to 480 million gallons per day by December 31, 2025 and to 600 million gallons per day by December 31, 2027.
-  ALCOSAN makes a good faith effort to assume ownership and maintenance of at least 200 miles of large, multi-municipal trunk sewers and associated facilities by January 31, 2020, in addition to the 90 miles it currently owns. This will result in a more efficient system and relieve municipalities of some of their maintenance costs, reducing their financial burden.
-  ALCOSAN will continue working with its municipalities to reduce the amount of stormwater and groundwater entering the collection system, using a variety of technologies, including green stormwater infrastructure.
-  As new technologies are assessed, the plan can be adapted to take their effectiveness and cost-efficiency into account as long as improved water quality is the result.
-  ALCOSAN will complete an evaluation of the existing deep tunnel system and conduct additional inspections, maintenance and rehabilitation.
-  Future phases of the plan call for construction of tunnels beginning in 2023.



Plant expansion will increase plant secondary treatment capacity from 250 to 295 MGD



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# MAKING THE PLAN AFFORDABLE



ALCOSAN used valuable input from our ratepayers in the development of the Clean Water Assistance Fund

A problem with ALCOSAN's 2012 recommended Clean Water Plan was the cost. At \$3.6 billion, it would have imposed too much of a burden on families and businesses. There is a nationwide formula for determining overall affordability, and the \$3.6 billion figure exceeded it.

That meant ALCOSAN and its regulators needed to determine how to achieve the clean water goals and meet legal requirements at a lower cost.

The newly negotiated revisions carry a price tag of \$2 billion for the first phase of the plan – less, but still a very high price. (Figures computed in 2010 dollars so the comparisons are apples-to-apples).

One way this has been accomplished is by extending the length of time to meet the Clean Water Act's requirements. The compliance date for the \$3.6 billion plan was September 30, 2026. ALCOSAN now has until December 31, 2036 to complete the Clean Water Plan.

Fortunately, ALCOSAN is in excellent fiscal health. It continues to receive high marks from both of the major bond rating agencies, Standard and Poor's and Moody's, which allows the authority to borrow money at lower interest rates. Bond funds pay for capital projects, including components of the Clean Water Plan. The four-year rate structure that was set in 2017 remains sufficient to cover ALCOSAN operations and debt service payments, so no additional increases are anticipated through 2021.

Keeping the cost of the Clean Water Plan as affordable as possible for the majority of our system users is important, and ALCOSAN recognizes that even the new plan's cost may require rates that are out of reach for some. Therefore, the ALCOSAN Board of Directors in 2016 created our Clean Water Assistance Fund, which provides up to \$1 million per year to help low-income homeowners. The fund is managed by Dollar Energy, which works with social service agencies across the region to help families apply for this assistance. Income eligibility levels for the Clean Water Assistance Fund are determined by the federal government and are adjusted on an annual basis. For more information on the Clean Water Assistance fund, contact Dollar Energy Fund at 1-800-683-7036.

# MAKING THE PLAN ADAPTABLE



The public response to ALCOSAN's earlier plan called attention to the developments in stormwater treatment and ways in which those methods, particularly green stormwater infrastructure (GSI), could be integrated into the plan. The revised plan allows for an adaptive management approach.

As with the earlier plan, there are four main components of ALCOSAN's approach – expanding its wastewater treatment plant, improving the efficiency of the system that delivers wastewater to the plant, reducing stormwater that enters the system, and planning for additional storage capacity in deep tunnels to supplement those that already exist.

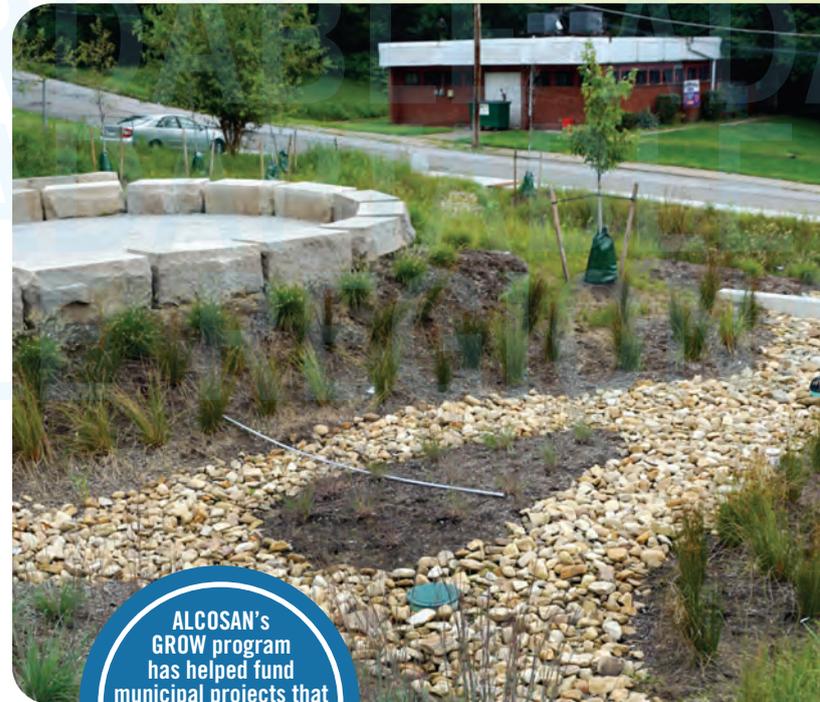
We have already accomplished a great deal. The main pump station underwent a multi-million-dollar upgrade so it will be able to move more than twice the amount of water that ALCOSAN currently can handle. A new vehicle maintenance facility was built, allowing space for additional treatment. In addition, significant design work is complete.

By the end of 2025, the treatment plant will be able to process as much as 480 million gallons of wastewater per day, up from the current 250 million gallons. By the end of 2027, the capacity will be 600 million gallons per day.

Improving the efficiency of the system takes many forms. One is a regional approach, discussed further in the next section. Another is keeping stormwater and groundwater out of the system in the first place.

Prior to 2016, ALCOSAN invested in stream removal projects, sewer lining and GSI in some of its customer municipalities. In 2016, the authority took a big step forward by launching the Green Revitalization of Our Waterways (GROW) grant program for our customer municipalities. The program provides matching grants to municipalities that work to reduce excess flow using a variety of methods including GSI, sewer separation, sewer lining and stream removal. To date, GROW has awarded \$22 million to 80 projects distributed among its 38 customer municipalities. This investment has leveraged another \$25 million in municipal, authority and third-party funding for projects that are projected to remove 127 million gallons of water from the system.

These projects – required to operate for at least 20 years – are designed to use the most effective technology available. Because of the adaptability in the plan, ALCOSAN will be able to evaluate the actual performance of GSI under local conditions. Depending on GSI performance, it may be possible to alter some tunnels. When there is an alternative that will provide equal or greater overflow reduction than a provision in the plan, the consent decree gives ALCOSAN the ability to make a change.

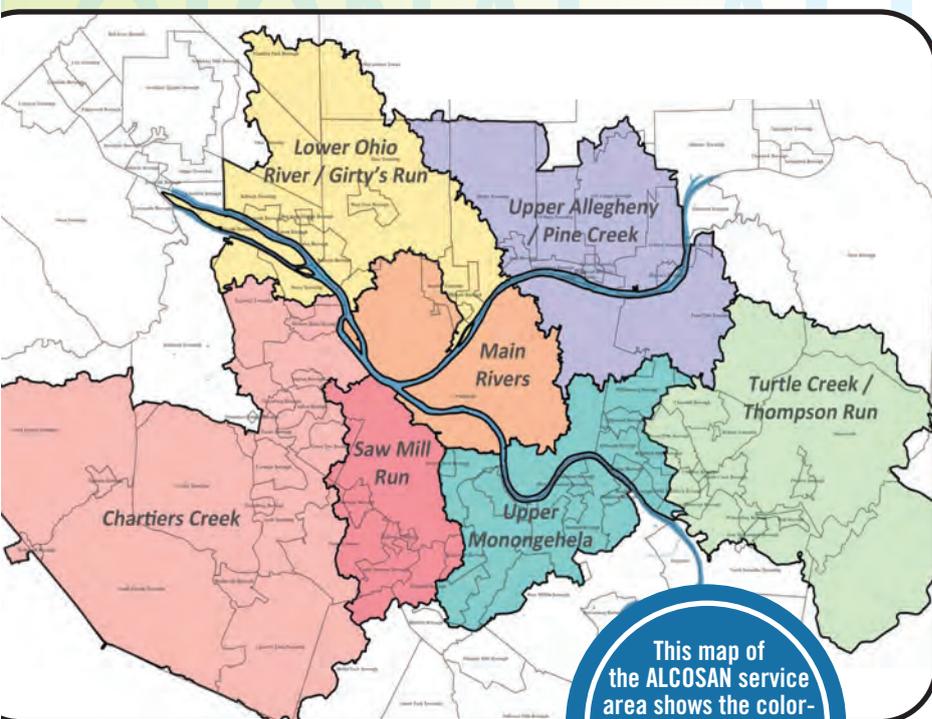


**ALCOSAN's GROW program has helped fund municipal projects that are projected to reduce overflows by 127 million gallons annually**



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## MAKING THE PLAN REGIONAL



This map of the ALCOSAN service area shows the color-coded planning basins used in formulating the Clean Water Plan

The consent decree requires ALCOSAN to consider taking ownership of more of the region's sewer system than has historically been the case. Until now, ALCOSAN's ownership outside the treatment plant included just 90 miles of the region's largest sewers and their associated gates, pumps and outfalls. That's out of more than 4,000 miles of sewers in the wastewater collection system. The majority of the pipes are the responsibility of the 83 municipalities that send their waste to ALCOSAN.

Under the Clean Water Plan, ALCOSAN will make a good faith effort to assume ownership of at least 200 more miles of sewers. The ones eligible for transfer to ALCOSAN are at least 10 inches in diameter and carry flow from more than one municipality. This will help overcome some of the institutional challenges and inefficiencies associated with the current fragmented ownership, operation and maintenance.

Significant work already has been accomplished. The vast majority of the eligible sewer lines have been inspected using closed circuit television cameras, and municipalities have been given reports detailing the defects that exist. Some of the defects must be repaired by the municipalities before the lines can be

transferred to ALCOSAN. In order to help them, the authority has hired firms that specialize in this work so our municipal customers can benefit from the economies of scale that come with larger contracts.

In addition, ALCOSAN has agreed to take on the more extensive, necessary repairs in these lines. That, coupled with ALCOSAN's assumption of ownership and thus the duty to maintain them in the future, is a benefit to the affected municipalities. Because these lines are subject to overflow control requirements, municipalities will be relieved of the burden of meeting them under ALCOSAN's Clean Water Plan, while also realizing economies-of-scale for long-term maintenance costs.

Another major revision in the Clean Water Plan focuses on flow reduction. ALCOSAN is required to accept the flow sent through the conveyance system for treatment at the plant. However, the entire system will benefit if flow can be reduced by keeping stormwater and groundwater out in the first place. That's where the GROW program, discussed in the preceding section, comes in.

ALCOSAN also will expand its pursuit of outside funding to help municipalities, extend its flow monitoring services, work cooperatively with municipalities on their flow reduction plans and take the lead in developing and implementing a regional flow optimization strategy.