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PIPELINE

MICHIGAN ASSOCIATION OF COUNTY DRAIN COMMISSIONERS
MANAGING MICHIGAN'S WATER RESOURCES SINCE 1899

2025 INNOVATION & EXCELLENCE AWARD WINNERS

2025 NEW DRAIN SCHOOL A SUCCESS

STORMWATER & LAKES

Managing the Runoff in a Changing Regional Climate

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CONTACT FOR ADVERTISING INFORMATION
120 N. Washington Sq., Suite 110A, Lansing, MI 48933
Phone: 517-484-9761, **Fax:** 517-371-1170

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PRESIDENT'S MESSAGE

Michael Hard
Branch County
Drain Commissioner

Greetings everyone,

The 125th Annual Winter Conference of the Michigan Association of County Drain Commissioners was a success. I would like to take this opportunity to thank all of the presenters, staff, associate members, volunteers and commissioners who helped to make it so. The conference could not happen without your help. I would like to welcome the new Drain Commissioners. Please do not hesitate to reach out to the association and other commissioners with questions. Being a drain commissioner is a very unique opportunity with many challenges. I think you will find the association to be like a family and always willing to help when needed.

The weather is starting to warm up and the frost is starting to go out of the ground. I find this time of year to be an exciting time, with all of the planning for the drain projects that must be done so crops can be planted. Dam projects that must be done to prepare for the boating season, and projects to alleviate road flooding.

I am often reminded of the importance of the Drain Commissioner when I read the old files from the 1890s. They talk about how many men with horses, slip scrapes and shovels worked to install a drain for month after month. They understood the importance of good drainage. Drainage is just as important today as it was back then. Climate change is only making our job that much tougher, and more important.

Drain Commissioners face many challenges. One of the problems is that there is never enough money for many projects. The Association has been working on increasing the maintenance limit for years. We were successful this past year. Effective April 2, 2025 the maintenance limit will be raised to $10,000 per mile of drain per year with an inflationary adjustment each year.

Hopefully this will help many of you with some of those borderline projects.

Now on to politics, I strongly urge each of you to get to know your County Commissioners, Road Commissioners, State Legislators and Township Officials. It is all about building relationships. You want to be the first person they call when a drainage question comes up.

I am looking forward to seeing each of you at the summer conference July 16-18th at Shanty Creek Resort.

Once again welcome to all of the new commissioners. I wish each of you a safe and happy spring.

Sincerely,

Michael Hard

2025 MACDC INNOVATION & EXCELLENCE AWARDS

GAGE DRAIN & PUMP STATION PROJECT

Saginaw County

The Gage Drain, built in 1879, is a crucial stormwater channel for Buena Vista Township and surrounding areas, including parts of Zilwaukee, Bridgeport, and Saginaw. It directs runoff from a mix of urban, agricultural, and industrial land (4,512 acres) to the Gage Drain Pump Station, serving thousands of parcels and various transportation routes.

Originally designed by Spicer Group founder Cliff Spicer, the Gage Drain Pump Station was constructed along M-13 next to the Saginaw River in 1947 and has effectively managed stormwater from the Gage Drain into the Saginaw River for over 76 years. The pump station is vital for the Gage Drain, with stormwater flowing down the drain and into the pump station, where it is pumped into the Saginaw River to mitigate flooding in upstream areas. However, aging equipment and maintenance challenges required comprehensive renovations to ensure the station's long-term functionality.

The project kicked off in 2016 when a petition was filed by Buena Vista Charter Township to the Saginaw County Public Works Commissioner for maintenance and improvement of the Gage Drain and the pump station. This required an engineering field review of the Drain to be completed shortly after.

The Saginaw County Public Works Commissioner contracted Spicer Group to continue providing professional services for the Gage Drain and Pump Station, which included replacing pumps with higher-capacity (35,000 GPM) axial-flow pumps, installing efficient motors, a self-cleaning trash rack, and modernizing the control system. These improvements enhance capacity, efficiency, and reliability for regional flood management.

After decades without major work, the Gage Drain received crucial upgrades: channel cleaning, erosion control, and culvert replacements. Replacing undersized culverts and installing a larger one (requiring a water main relocation) improved flow, reduced flooding, and enhanced ecosystem health.

The Gage Drain pump station is a prime example of how cutting-edge technology can revolutionize stormwater management. By incorporating automated systems, intelligent sensors, and real-time monitoring, the project pushes the boundaries of what is possible in pump station design. The result is a facility that not only improves operational efficiency and reduces labor but also enhances system resilience, making it better equipped to handle the demands of modern stormwater infrastructure.

PROJECT TEAM:

Brian Wendling, Saginaw County Public Works Commissioner

Engineer: Spicer Group, Inc.

Contractor: Fisher Contracting

IVES DRAIN MAINTENANCE & IMPROVEMENT PROJECT

Mecosta County

Since the 1950's, the City of Big Rapids has grown from a small agricultural municipality into a diverse community with a bustling downtown area. Ferris State University calls the city home and welcomes thousands of students to its campus every year. On the city's west side, a natural watercourse that empties into the Muskegon River existed, located between a residential neighborhood on Ives Avenue and the river. This area, and the natural watercourse, belongs to the Muskegon River Watershed, which covers more than 2,700 square miles in west-central Michigan.

Big Rapids' urbanization led to increased stormwater runoff and severe erosion along Ives Avenue, threatening homes, infrastructure, and the Muskegon River with sediment and nutrient pollution. Despite growing concerns since the 1980s and piecemeal city fixes, a lack of funding and a responsible entity hindered comprehensive solutions.

In 2016, the City of Big Rapids hired Spicer Group to conduct a preliminary study and maintenance inspection of the watercourse along Ives Avenue. In 2019, landowners petitioned the Mecosta County Drain Commissioner, and the Ives Drain was formally established under the Michigan Drain Code.

Due to urbanization, traditional stormwater storage was impossible. To address erosion in the Ives Drain, a 3,416-foot Rosgen Type B channel was designed to safely convey stormwater to the Muskegon River, working within the limited space and existing infrastructure. Additionally riffles and pools were included, along with 8,000 tons of rock and rip rap, to slow down the water and dissapate energy in the stream bed.

The creative, cost-effective solutions built into the project protected infrastructure and homes. A collaborative funding effort by the City of Big Rapids, Ferris State University, and MDOT covered 71% of the project cost, minimizing landowner expenses. The project was completed on time and within budget.

PROJECT TEAM:

Karla Miller, Mecosta County Drain Commissioner

Engineer: Spicer Group, Inc.

Contractor: Jackson Dirt Works, Inc.

Other Firms: StreamsideEco and Fahey Schultz Burzych Rhodes

HONORABLE MENTION

COMBINING AI AND DRONE FOR INSPECTIONS

Macomb County

The first-in-Michigan combination of artificial intelligence and drone technology by the Macomb County Public Works Office is vastly improving the inspections process of critical underground infrastructure and saving millions of dollars.

After the December 2016 collapse of a portion of the 11-foot-diameter Macomb Interceptor Drain and the resulting sinkhole on 15 Mile Road in Fraser that occurred one week before Candice Miller took office as the county's public works commissioner, she and her team launched a comprehensive inspection program of the largest enclosed drains that are under the jurisdiction of the Macomb County Public Works Office (MCPWO).

Prior to 2024, inspections were performed by contractors. Video was recorded with lesser-quality lighting and resolution than what is used today. Video was uploaded and painstakingly reviewed by consultants, and full results of their inspections sometimes took to complete and submit, followed by review conducted by Macomb County Public Works in-house engineers.

In late 2023, MCPWO staff began reviewing specialized drones manufactured for use in enclosed spaces. That work was followed by a study of artificial intelligence software and how AI could be integrated with a drone to improve the sewer inspection process by making it much more efficient and accurate while saving money. In early spring 2024, the MCPWO purchased a drone from drone manufacturer Flybotix and artificial intelligence software from SewerAI Corp. The total cost was $100,000.

The drone -- equipped with a 4K camera, high quality lighting, several sensors and a protective cage -- has a diameter of 16 inches. To fly the drone in a sewer, an antenna is lowered to the bottom of manhole, providing the signal it needs for the operator working topside and manning the hand-held controls. It can be flown up to 1,000 feet and has been used in pipes with diameters ranging from 54 inches to 12 feet.

The high-resolution video recorded by the drone is efficiently analyzed and scored by the software program from SewerAI. These results have benefited engineers in prioritizing where maintenance, rehabilitation or replacement of underground infrastructure is needed.

Macomb County had been spending about $1 million every three years for inspections which included a contractor collecting, analyzing and coding the data before reporting it to Public Works engineers. That expense is now eliminated, and staff time is freed up which increases productivity.

PROJECT TEAM:

Candice S. Miller, Macomb County Public Works Commissioner

Engineer: Macomb County Public Works Office in-house engineers

CLASS IS IN SESSION

New Drain School 2025

By: Kristen McCue, GCSI Association Services

Every four years, MACDC holds the New Drain Commissioner school for newly elected drain and water resource commissioners and their staff. The 2025 school, held in January, was a great success. In fact, only a handful of Michigan's 83 counties weren't represented. Additionally, 75 percent of attendees were new Drain Commissioners. All together 109 commissioners and staff attended.

That means new attendees can learn from each other while developing relationships that are beneficial to Drain Commissioners' successes.

Brandon McDougal , Deputy Drain Commissioner for Oceana County, said he wants to maximize his efficiency in serving both the drain districts and the public at large.

"I've learned the Drain Commissioner role is a public service dedicated to public health and safety," he said. "This is the single most important event because not only do you get inundated with helpful materials but there are also the support systems."

He said family has come up a lot and new Drain Commissioners meet the family. He added the event is the first event that really opens doors.

"The information they provide is beneficial to everybody. For old drain commissioners it's a refresher course."

– Dara Hood, Tuscola County Drain Commissioner

Dara Hood spent 16 years in the Drain Commissioner's office for Tuscola County. Now that she's a Drain Commissioner she looks at things from a whole different perspective.

"The information they provide is beneficial to everybody," Hood said. "For old Drain Commissioners, it's a refresher course."

At drain school Joe Bush, Ottawa County Water Resource Commissioner, called the Drain Commissioners a family and that's exactly what they are, Hood said.

Stacy Hissong, MACDC General Counsel, said the Education Committee, which coordinates the school, likes to invite all Drain Commissioners in the state and their staff.

"The Education Committee tries to make a flow of things and we try to get the big things on the first day and then unpack those things a little bit in the second day, Hissong said. "It's like a mini-conference."

NEW FACES

Meet Michigan's Newest Drain Commissioners

Editor's Note: With over 20 new drain and water resource commissioners elected or appointed for 2025, we have a lot of new faces. We will be featuring several commissoiners in each issue of Pipeline throughout 2025.

CHRIS MACHIELA
Allegan County Drain Commissioner

Machiela

How will your experience and background help you in your new role?

I think my experience in excavating, drain work and site development before becoming a Drain Commissioner will be very helpful. It provides a lot of insight to issues related to established drains. I want to be involved with the issues both in the field and the office.

What are you most looking forward to in this role?

Being able to help the people with improved and new technology. Being hands-on with their issues.

What inspired you to be a leader for improving drains and/or water resources?

I think it's that I always strive to improve in what I do whether its on the job or my personal life. [I] love to make things better for the next generation.

What challenges does your county face as it relates to functions of the Drain Commission?

I think the big one is communication with the public and showing them what we do.

LESLIE MEYERS
Antrim County Drain Commissioner

Meyers

How will your experience and background help you in your new role?

As a public servant for the past 40 years, I bring my experience as a municipal planner and as an active volunteer with respect to environmental advocacy.

What are you most looking forward to in this role?

Educating the county regarding the importance of our water resources.

What inspired you to be a leader for improving drains and/or water resources?

Antrim County's economy is dependent on tourism. The Elk River Chain of Lakes is the largest part of that draw. Protection of our water system is paramount.

What challenges does your county face as it relates to functions of the Drain Commission?

For the past several decades, the Drain Commissioner has had very limited duties. Fixing the deficiencies throughout the watershed in conjunction with our neighboring counties will be the biggest challenge. We have a 120+ year old high-risk dam and a 110-year-old small hydro-electric plant, both of which maintain water levels throughout the County. Further, as the 45th Parallel continues to draw many to the area, more attention to soil erosion, sedimentation and stormwater control will be necessary. You see, the "easy" land has been developed – the tough stuff is starting to look much more attractive.

ANDY WAGNER
Lapeer County Drain Commissioner

How will your experience and background help you in your new role?

I have been a subcontractor for the Lapeer County Drain Commission for approximately 20 years. Having that experience of working on, and maintaining the drains, gives me a leg up on understanding the needs of the drain office.

What are you most looking forward to in this role?

Helping the community by creating a maintenance program to keep the drains in good order, which will do two things: One is this will help keep costs down to residents if the drains are regularly maintained and second, I am looking forward to creating jobs in our community by bringing back a maintenance crew to the drain office.

What inspired you to be a leader for improving drains and/or water resources?

Working as a subcontractor, I could see the need for a regular maintenance program to be established so the drains were kept in working order and not just being serviced when an issue presented itself. The ability to develop and create that program is very exciting!

Wagner

What challenges does your county face as it relates to functions of the Drain Commission?

Lapeer County, like many others, faces funding issues and unpredictable weather patterns. Communication with our residents to relate knowledge and understanding of how, and what the drain office can do. Also finding capable, and caring contractors to complete the work timely and efficiently.

EDWIN G. SCHEFFLER
Lenawee County Drain Commissioner

How will your experience and background help you in your new role?

I've been with the Drain Commissioner's Office for 25 years, starting out as a field inspector in the engineering department, promoted to Drain Superintendent in 2008 leading our drain maintenance program and named Deputy in 2016. I feel that my experience in the field and office will help me be a successful Drain Commissioner.

What are you most looking forward to in this role?

I'm looking forward to bringing more technology into the department to make us run more efficiently. New technology for our maintenance equipment, software and GIS advancements to begin with. I also would like to make water quality a priority.

What inspired you to be a leader for improving drains and/or water resources?

Scheffler

I've been a farmer my whole life, serve on the board of directors of our local Farm Bureau. I realize how important drainage is for our community and want to make sure our drains are in good condition. I'm also passionate about the environment and want to lead our department in developing policies and procedures that protect and enhance our environment.

What inspired you to be a leader for improving drains and/or water resources?

Increased costs on virtually everything from equipment to supplies, recruiting retaining skilled staff are real challenges that we face currently.

DARA HOOD
Tuscola County Drain Commissioner

Hood

How will your experience and background help you in your new role?

I have been with the Drain Office for almost 16 years before becoming the Drain Commissioner. I have been able to learn the responsibilities first hand. I started off as the Account Clerk, moved up to doing the assessing, then became Deputy Drain Commissioner, to now Drain Commissioner. I've been able to learn each step along the way.

What are you most looking forward to in this role?

I look forward to working on drain projects. Especially when you do maintenance on a drain that hasn't been worked on in years and there's some flooding etc. and restoring it back to fully functional again. Helping property owners and townships with their drainage problems.

What inspired you to be a leader for improving drains and/or water resources?

Back when I started at the office in 2009, I told Bob Mantey, the Drain Commissioner at the time, that I could do his books but didn't know anything about a drain. I told Bob that I wanted to learn all I could because when he retired one day I would like to take over.

What challenges does your county face as it relates to functions of the Drain Commission?

Just like most, money is always an issue. Coming up with ways to do drain projects on a budget. We are always facing new challenges/changes. With the talk of solar farms coming into our area that is a big challenge for us. Our county is populated by agriculture.

STORMWATER AND LAKES

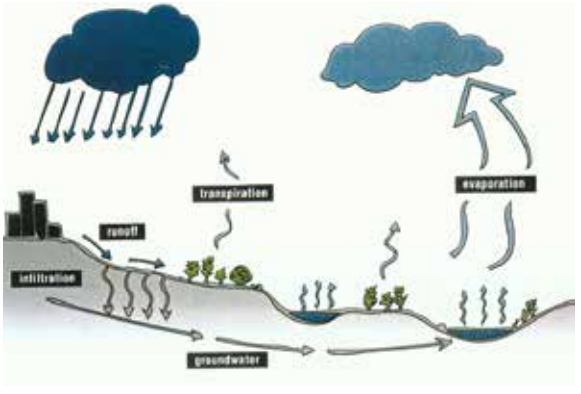
Managing the Runoff in a Changing Regional Climate

By: Carrie Rivette, P.E. and Paul Hausler, Progressive Companies

These days, most lakefront homeowners are aware that their actions can affect the water quality in their lakes. However, lakes connected to storm sewer discharges are facing additional issues that can't be resolved by lakefront homeowners' actions alone. Lakes in more urban areas are dealing with runoff from streets, parking lots, and yards carried by stormwater. Stormwater is typically one of the major sources of pollutants to lakes, second only to septic seepaqe which has already been addressed by many urban lakes by installing collection sewers which provide offsite treatment of wastewater. This article is intended to provide an update on sources of stormwater contaminants and their impacts on lakes, especially with rainfall frequency and intensity changing.

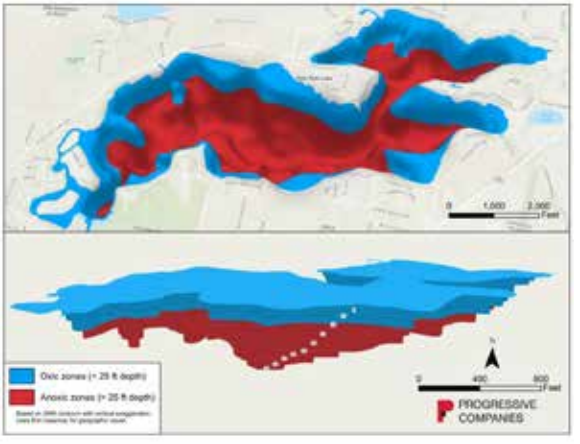
STORMWATER CONT.

Precipitation comes in many forms: rain, snow, sleet, freezing rain, or hail and is the primary source of atmospheric water that replenishes water bodies, groundwater, and soil. Infiltration is the process by which water on the unpaved ground soaks into the soil. The rate and extent of infiltration depend on factors like soil composition, vegetative cover, land slope, and existing soil moisture levels. For instance, coarse-textured soils with large, well-connected pore spaces tend to have higher infiltration rates than fine-textured soils. **Runoff** occurs when the rate of precipitation exceeds the soil's capacity to absorb water, leaving excess water to flow over the land surface. This surface runoff can travel over the ground and through channels and storm sewer pipes, eventually reaching streams, rivers, and lakes. Like infiltration, factors influencing runoff include soil saturation, land slope, and land use. Urban streams experience reduced infiltration and consequently, higher runoff, thanks to impervious surfaces like roads, sidewalks, parking lots, and buildings.



Hydrolic Cycke

Runoff can often pick up and deliver contaminants to a waterbody (either directly to the lake or transported via a stream, stormwater outfall pipe, or tributary that empties into the lake). As runoff increases, it can transport a higher percentage of contaminants into the lake, potentially causing degradation through loss of habitat, loss of biodiversity, and an increase in surface water temperatures. In addition, the excess nutrients typically found in runoff can fuel the growth of nuisance and harmful algal blooms. Contaminants typically found in runoff include fertilizers, pet and avian waste (often containing E. coli bacteria), pesticides, household chemicals, road salt, sediment, oil and grease, and various cleaners/ detergents.



Anoxia in Paw Paw Lake

Excessive nutrients and sediment in runoff can also lead to a decrease in oxygen in lakes due to an increased biological oxygen demand as bacteria consume oxygen while decomposing organic material in the lake. This depletion poses a threat to aquatic life that depends on sufficient dissolved oxygen levels for survival (USGS.gov). The diagram above illustrates the portion of Paw Paw Lake that experienced anoxia (the loss of oxygen in the deeper unmixed portions of a lake) in the summer of 2024. Anoxia, besides impacting organisms which require oxygen to live, can trigger chemical reactions that release nutrients, like phosphorus from sediments back into the water column, where it is available for algal growth. Additionally, anoxia can create a positive feedback loop, where the lack of oxygen leads to conditions that further deplete oxygen levels, exacerbating the problem over time.

Blue-Green Algae bloom

According to the 2023 update of Rainfall to Results: The Future of Stormwater by the Water Environmental Foundation, “Stormwater is the only growing source of water pollution in many watersheds throughout North America. More than half the world’s population lives in cities, and urbanization is increasing. The combination of urbanization and climate change exacerbates stormwater pollution…. To put this issue in the context of environmental effects, in 1970, 85% of water quality impairments were associated with point-source pollution. The remaining 15% came from nonpoint sources such as agricultural and urban stormwater. Today, after significant advancements in wastewater treatment, these values have flipped - 85% of impairments now stem from nonpoint and urban stormwater discharges (Brown, 2017).”

REGIONAL PRECIPITATION

According to a detailed report by the Great Lakes Integrated Sciences and Assessment Center (GLISA) entitled “Historical Climate and Climate Trends in the Midwestern USA,” overall mean temperatures have been gradually climbing since 1900 and the most recent period (1979 – 2010) has shown an accelerated rise of 0.26 degrees Celsius per decade from the previous measured period (1950 – 1978) where it was 0.12 degrees Celsius, based on data obtained from the CRUTEM3 data set (Brohan et al., 2006). Also from this report, overall annual precipitation in Michigan has remained the same since 1981 but has increased by 0.04 inches per year during this time frame in winter and 0.033 inches per year during spring. This data suggests that episodic events have become more intense, and the frequency of intense precipitation has increased during these time frames (winter/spring). Warming temperatures during winter have resulted in more runoff and a reduction in the annual coverage of Great Lakes’ ice. The increased precipitation during the winter months is likely correlated with the reduction in Great Lake’s ice cover, allowing for more frequent and intense “lake effect” precipitation events.

MITIGATING RUNOFF

Constructed Green Infrastructure, or Low Impact Development (LID) practices help to manage runoff where it lands by increasing infiltration and filtration properties in an area. They generally slow the runoff down and provide it an opportunity to infiltrate into the ground, thus recharging the groundwater, cooling the water and allowing it to reach surface water bodies more slowly, reducing the erosion of sediment into the surface water. Many pollutants are also filtered out through the soil.

In addition, many Green Infrastructure practices utilize native plants. Native plants have long root structures that require less water and uptake more water during and immediately following precipitation events. They also slow the water further and filtrate pollutants as the water flows through them.

Standard Green Infrastructure practices are listed below:

Rain gardens and bioswales

Rain gardens and bioswales are areas where depressions are created in the ground and feature high porosity soils to allow the water to infiltrate. Most rain gardens also use native plantings to increase filtration and increase water uptake.

Natural shorelines and filter strips

Natural shorelines typically consist of native plantings and do not utilize bard banks or seawalls. The plants assist in stabilizing the soil. In addition, if the plants are not mowed, they serve as a filter strip cleaning the runoff before it reaches the surface water. Finally, an unmowed vegetative filter strip will deter geese from occupying the area and reduce the potential for bacteria to enter the surface water from their feces.

Daylighting outfalls and buffer strips

Daylighting outfalls is the practice of opening up an enclosed storm sewer pipeline and creating a naturalized stream channel. Again, this slows the water down and allows it to infiltrate into the soils below. Like in rain gardens, native plantings are usually utilized to uptake additional water and filter/settle out pollutants. These daylighted streams are also beneficial to native wildlife and provide aesthetic appeal.

Permeable pavement

Permeable pavement can consist of asphalt, poured concrete or concrete block. All of these permeable pavement types feature either pore space or spaces between the blocks which allow water to drain through. They are laid over a gravel base and sand subbase that will infiltrate the water. This reduces runoff and filters out pollutants. In addition, permeable pavement can reduce both icing in the winter and puddles in the warmer months. The blocks can also provide aesthetic appeal.

Leaching catch basins

Leaching catch basins or storm drains appear like a regular storm drain on the surface. Below the surface, however, the structure has a gravel bottom and holes on the sides, surrounded by gravel. Again, in areas of porous soils, this will slow the water, filter pollutants, and allow for infiltration.

Mechanical filters

Mechanical filters are offered in a variety of styles. They are typically underground vaults that use baffles or a swirling effect to settle out sediment and keep floatables (petroleum or plastics) on top where they can be skimmed off or bypassed, improving water quality before it's discharged.

FUNDING SOURCES

In Michigan, several funding sources are available to address stormwater management, supporting projects aimed at improving water quality, reducing flooding, and implementing green infrastructure solutions. Here are some key funding sources:

State Revolving Fund (SRF) Programs

Clean Water State Revolving Fund (CWSRF): This fund provides low-interest loans to municipalities, counties, and other public entities for stormwater management and water quality improvement projects. The CWSRF is typically used for infrastructure projects related to water pollution control.

Drinking Water State Revolving Fund (DWSRF): While primarily for drinking water projects, this fund can sometimes be used for stormwater treatment systems that protect water supplies.

Stormwater Management Fund (under CWSRF): This fund is specifically targeted at stormwater infrastructure, helping communities address runoff, flooding, and water quality.

Michigan Department of Environmental Quality (MDEQ) Grants

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) offers various grants, such as the Nonpoint Source Program which funds stormwater management projects that address pollution runoff from nonpoint sources.

EGLE also administers competitive stormwater management grants through various programs, particularly those related to Great Lakes protection, reducing runoff, and enhancing water quality.

Great Lakes Restoration Initiative (GLRI)

Funded by the U.S. Environmental Protection Agency (EPA), the GLRI supports projects that improve water quality and protect the Great Lakes. It often funds projects aimed at controlling stormwater runoff and reducing pollution in the watershed areas of the Great Lakes.

Michigan Natural Resources Trust Fund (MNRTF)

This fund primarily supports land acquisition, recreation, and conservation projects but can be used for stormwater management efforts, particularly those that focus on green infrastructure, wetlands restoration, or watershed protection.

Michigan Coastal Management Program (MCMP)

Focused on projects along Michigan's coastal areas, MCMP supports stormwater management projects that reduce pollution runoff into lakes, rivers, and streams, particularly projects tied to coastal ecosystems.

Local Stormwater Utility Fees and Bonding

Several Michigan communities have implemented stormwater utility fees to fund local stormwater management systems. These fees can be used to by the utility to address infrastructure needs and are often complemented by bonding or other forms of local financing for larger projects. The utilities may also incentivize the use of green infrastructure through reduced fees and rebates. If you pay a stormwater fee, check to see if your local stormwater utility offers incentives for green infrastructure.

EPA and Other Federal Grants

In addition to the GLRI, the U.S. Environmental Protection Agency (EPA) offers various federal grants for stormwater and water quality management. Some are available to states, municipalities, or non-profit organizations working on stormwater solutions.

Regional and Local Sources

Regional Planning Commissions: Some Michigan regions offer funding or assisting in securing grants for stormwater projects.

Non-Profit Organizations: Organizations like The Nature Conservancy provide grants and other forms of support for projects that focus on stormwater management and water quality improvements.

Private Sector Funding

Local utilities or corporations may offer rebates, grants, or incentives for stormwater management practices, particularly for projects related to green infrastructure or water conservation.

By combining various state, federal, and local funding sources, municipalities and other entities in Michigan can leverage multiple opportunities to address stormwater challenges effectively. Engaging with a stormwater consultant can provide a strategic and guided plan utilizing available technology and green infrastructure concepts to best meet the specific needs, goals, and resources of a given lakeshore community.

Resources

1. Andresen, et al. 2012. Historical Climate and Climate Trends in the Midwestern USA. Great Lakes Integrated Sciences and Assessment Center. Michigan State University, East Lansing, Michigan.
2. Stormwater Institute. 2023. Rainfall to Results, the Future of Stormwater. Water Environment Foundation. Alexandria, Virginia.

MIKE GREGG RETIRES

By: Kristen McCue, GCSI Association Services

After 45 years, Mike Gregg, Intercounty Drains Program Manager for MDARD, has retired.

Gregg

Gregg's career highlights include his work on the Misteguay Creek Intercounty Drain, Oakland-Macomb Interceptor and making records electronic, said Peggy Snyder, Departmental Analyst Trainee.

He was also responsible for representing the director of the Michigan Department of Agriculture, supervising professional staff and administering broad discretionary duties as chairperson for the planning, construction and maintenance of over 1,100 intercounty drainage districts. Gregg maintained over 1,100 intercounty drainage districts. Facilities include an estimated 10,000 miles of channels, pipes, bridges, pumps, dams, dikes and appurtenant structures.

Gregg directed and managed the completion of over 200 water management projects involving public/private partnerships with county Drain Commissioners, soil conservation districts, state and federal agencies, professional consultants and private contractors. Projects ranged from $5,000 to $32 million.

He worked well with MACDC, often attending important meetings and working to support Drain Commissioners with resources.

"I enjoyed working for Mike," Snyder said. "We accomplished a lot but also had a lot of fun. Mike led with integrity, professionalism and dedication. He believed in his employees and trusted that we would do our jobs as best as possible."

"My goal both as a supervisor and representative of MDARD was to be a leader of solutions and facilitating informed decisions on the management of what I call Michigan's prerequisite infrastructure - improved drainage," Gregg said. "The evolution of today's sophisticated technologies, laws and ever-changing water management regulations motivated me to promote and lead my staff and intercounty drainage boards to go beyond just 'digging ditches.'"

At the 2025 MACDC Winter Conference, being presented with the custom quilt made by Peggy Snyder.

Mike presenting at one of his many drain conferences.

Mike, former MDARD Director Jamie Clover Adams, and Brady Harrington on-site at the Oakland-Macomb Interceptor Drainage Project.

MODERN DATA PRACTICES FOR LAKES & DRAINS

By: Brandon Wong, HyFi

For over 125 years, Michigan's Drain and Water Resource Commissioners have relied on data for lake level management and infrastructure planning. Historically, these data were limited to field surveys, handwritten records, and physical inspections—methods that, while effective, were time-consuming and unable to support swift decision making.

As data collection methods become more accessible and reliable, the focus shifts from overcoming technological barriers to leveraging data for legal lake levels and watershed-scale management.

HISTORICAL DATA PRACTICES

Though still true today, in the past, gathering field data relied heavily upon reading streamgages, aerial photography, and land and soil surveys, amongst others. When terms like the "100-year flood" were first introduced in the 1960s, those 100-year floods were defined based on meticulously collected field measurements like these.

It wouldn't be until 1995 when continuous USGS streamgage data would be readily available in real-time – thanks in large part to the internet. The introduction of equipment like tape recorders and digital loggers along with sensor technologies meant water levels could be recorded continuously, but may fail without notice or require frequent maintenance due to drift and biofouling, not to mention frequent battery changes. Unless there was a landline, radio, or satellite, it was often up to field staff to gather and relay information back to the office. Safely and accurately reporting readings in the middle of a storm event was an even greater challenge.

An old-style staff gage at Van Norman Dam in Oakland County

MODERN DATA COLLECTION METHODS

Over the past decade, data collection methods have evolved considerably:

- **Real-time Sensors:** Cellular, satellite, and Wi-Fi technologies enable continuous lake and stream monitoring, reducing the need for regular site visits.
- **LIDAR & Surveying:** High-resolution LIDAR and GPS equipment generate Digital Elevation Models (DEMs) to improve topographic and bathymetric data for water flow modeling.
- **Aerial & Satellite Imagery:** High-resolution imagery allows for shoreline analysis, vegetation tracking, and land use assessments.

While field visits remain essential, technological advancements ensure time in the field is used more safely and effectively.

APPLICATIONS IN LAKE LEVEL MANAGEMENT

For monitoring legal lake levels, non-contact sensors such as ultrasonic monitors minimize calibration needs and maximize sensor uptime. And as the cost and performance of cameras has improved, it is now possible to pair real-time sensor data with live imagery along with real-time weather data to enhance stakeholder engagement. Examples include:

- **Early Warnings:** Detecting issues like debris jams early prevents costly damages. Reliable monitoring ensures quick responses to failures.
- Regulatory Compliance: Continuous monitoring supports adherence to legally established lake levels, reporting accurate and defensible data 24/7.
- **Stakeholder Engagement:** Data visualizations improve communication and transparency, integrating with rainfall data, cameras, and email alerts.

Easier access to multiple sources of water data promises to help commissioners and field staff make informed decisions more readily while minimizing unnecessary site visits.

STEWARDSHIP

As the role of Michigan's Drain and Water Resource Commissioners continues to evolve, modern data tools offer real-time insights to help streamline operations and achieve regulatory compliance. By combining real-time monitoring with field expertise, commissioners can make more informed decisions, optimize resources, and establish new precedents for training,

Debris detection at Beyer Dam in Washtenaw County

A sensor on Long Lake in Branch County

SCALING UP: Applications for Watershed Management

Monitoring Interconnected Lakes and Watersheds

For large lakes or complex drainage systems, multiple monitors at inlets, outlets, and key locations improves hydrologic event tracking. These datasets affirm intuitive knowledge and enhance hydrologic modeling for long-term planning.

A Co-pilot for Field Operations

Field operations like adjusting gates or collecting grab samples require staff on site, but severe weather can make this difficult. Continuous monitoring enables emerging opportunities such as:

- **Assisted Water Quality Sampling:** Real-time sensors have been adapted to trigger autosamplers on the Huron River during dry and wet conditions, allowing sample collection after storms pass.
- **Assisted Outlet Regulation:** Sensors paired with actuators can dynamically adjust lake outlets based on upstream and downstream conditions. In space-limited areas, regulated basin outflows have shown nutrient retention comparable to basins 25% larger.

BACKFILLING YOUR POSITION

By: Frank Ervin, Livingston County Deputy Drain Commissioner
Michelle LaRose, GEI Consultants
Cheryl Nodarse, ACP, Vlahakis Cole Law Firm

In today's dynamic workforce, job transitions are inevitable. Employees change roles for various reasons, ranging from career advancements to unforeseen personal circumstances. Ensuring a smooth transition is vital for maintaining operational efficiency and team morale. This guide explores key aspects of succession planning, including employee retention, documentation, and the implementation of standard operating procedures (SOPs).

LOCAL GOVERNMENT EMPLOYEE RETENTION AND TURNOVER TRENDS

Employee retention plays a crucial role in succession planning. According to the U.S. Department of Labor, the median tenure for local government employees is approximately 6.9 years. Retention trends highlight the necessity of preparing for inevitable transitions. Organizations must proactively address these changes to prevent disruptions and maintain continuity.

THE CHALLENGE OF TRANSITION

All job transitions present both challenges and opportunities. The challenges are enhanced within Drain Commissioner offices, and those of the consultants that support the Commissioners, given the public health and safety priority. The choice to leave a position can be difficult, requiring employees to weigh personal growth against team stability, home life, health, and other factors. Effective teamwork is essential during this period to ensure knowledge transfer and minimize disruption. Drain Commissioners (and other employers) can mitigate the impact of transitions by fostering an environment where responsibilities are clearly documented and readily accessible.

DOCUMENTING RESPONSIBILITIES: The Foundation of a Smooth Transition

One of the most effective ways to facilitate succession is by maintaining comprehensive documentation of job responsibilities. A structured approach to documentation includes:

- **Prioritization:** Identify and document essential duties first.
- **Clarity:** Ensure instructions are easy to follow, avoiding ambiguity.
- **Expandability:** Develop documents that can be updated as needed.

ESTABLISHING STANDARD OPERATING PROCEDURES (SOPS)

SOPs serve as the backbone of operational consistency. They define the processes required for tasks, ensuring that knowledge is preserved even when employees leave. Specifically within drain offices, you may want to have SOPs for the essential roles in Figure 1 to the extent that they may apply.

The SOPs do not have to be lengthy, comprehensive documents and they do not need to answer every question or issue that may arise. They merely need to provide enough of the key details to assist with completing the particular job duty and/or provide a path for obtaining more information about it. Each SOP should include the following components, at a minimum:

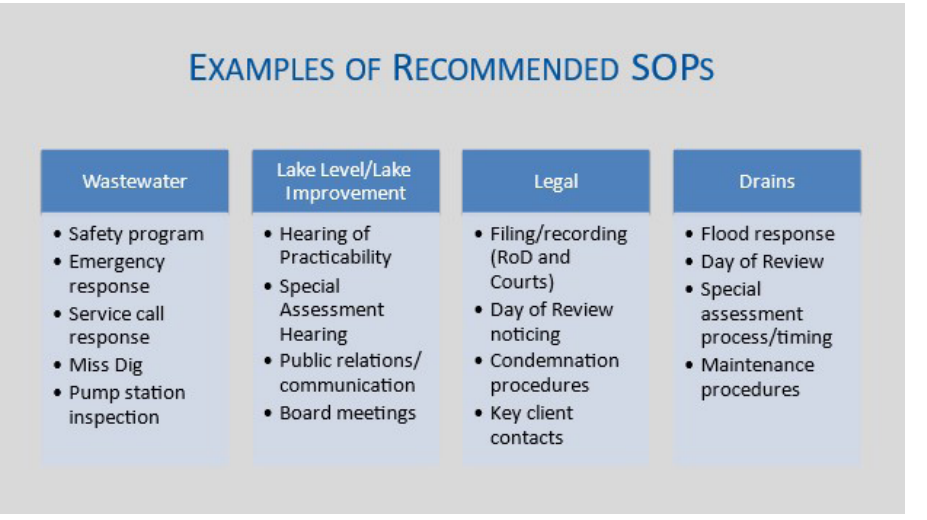


Figure 1

- **Purpose:** Define the objective of the SOP.
- **Legal Compliance:** Reference relevant legal standards and, if possible, include web link to the legal authority.
- **Operational Details:** Outline key steps, such as routine inspections and required documentation; and include key persons involved by name, position, and contact information.
- **Safety Measures (if applicable):** Integrate standards like MIOSHA regulations or job site safety protocols.

PATIENCE IS REQUIRED

Creation of SOPs is not an easy or quick process. They necessarily take time and are continual works in progress. However, your persistence will pay off, if you take the plunge and start on them, knowing they can be perfected as time goes on. The old adage applies here: Don't let perfect get in the way of good enough.

BEYOND SUCCESSION PLANNING: THE BROADER BENEFITS

Succession planning extends beyond replacing employees; it strengthens organizational resilience and aids in fiscal responsibility. Benefits include:

- **Accurate Job Descriptions:** Clear roles improve hiring and training processes.
- **Enhanced Employee Morale:** Employees feel valued when processes support career growth.
- **Emergency Preparedness:** Well-documented roles enable organizations to respond swiftly to unexpected events.
- **Improved Accountability:** Defined expectations streamline performance evaluations and ensure consistency.

- **Stronger Teamwork:** Reducing ambiguity minimizes errors and redundancies.
- **Fiscal responsibility:** Reduced costs in training by quickly getting incoming staff up to speed, as well as not "recreating" the wheel. But instead, improving upon what has been established.

LEARNING FROM EXPERIENCE: New Employee Stories

Every professional has a "newbie" story – a time when they struggled to navigate an unfamiliar role. These experiences highlight the value of structured onboarding and comprehensive documentation. Organizations should adopt a similar proactive approach to onboarding and knowledge retention.

RESOURCES FOR EFFECTIVE SUCCESSION PLANNING

Numerous resources are available to aid organizations in developing succession plans. Recommended materials include:

- **Metropolitan Water District of Southern California:** Succession Planning Workforce Excellence Guide - https://www.mwdh2o.com/media/20036/mwd_succession.pdf
- **South Placer Municipal Utility District:** Succession Planning Presentation - https://spmud.ca.gov/files/1d011dc86/Succession+Planning+Presentation.pdf
- **National Institutes of Health:** Step-by-Step Guide to Succession Planning - https://hr.nih.gov/sites/default/files/public/documents/202103/Succession_Planning_Step_by_Step_Guide.pdf
- **USGS:** Succession Planning Guidance - https://www.usgs.gov/human-capital/succession-planning
- **River Network:** Board Succession Planning Checklist - https://www.rivernetwork.org/resource/board-succession-plan-checklist-and-template/
- **Emergency Preparedness Partnerships:** Succession Planning for Emergency Preparedness - https://emergencypreparednesspartnerships.com/succession-planning-for-emergency-preparedness/

CONCLUSION

Backfilling a position is more than just hiring a replacement—it's about ensuring long-term organizational stability. By focusing on employee retention, documentation, and SOPs, organizations can effectively manage transitions. Succession planning is not a one-time task but an ongoing process that strengthens teams, enhances efficiency, and promotes resilience in the face of change. Organizations that prioritize these elements will be better equipped to handle workforce transitions smoothly and successfully.

YOUNG PROFESSIONALS COMMITTEE

The MACDC Young Professionals Committee (YPC) hosted Family Feud Season 2 at the 2025 Winter Conference in Kalamazoo.

As a follow-up to its first Family Feud competition in 2023, the YPC hosted a friendly competition to test the drain, lake, and other knowledge of the "Harrington Family" and the "Davis Family."

While the competition was tough, the Harrington Family ultimately prevailed and was awarded with a fictitious "big check."

The YPC is always accepting new members and assistance with conference events. If you are interested in joining, please see the YPC page of the MACDC website or contact Tanner Kragenbrink at (231) 360-7991 or tkragenbrink@wadetrim.com.

IN MEMORIAM

Robert C. Bendzinski

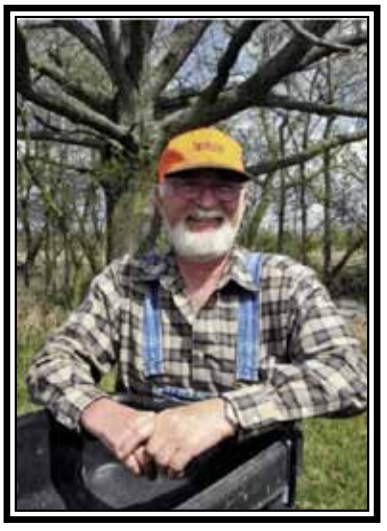
JULY 17, 1940 - FEBRUARY 23, 2025

Robert C. Bendzinski, (Bob, Sr.) was the Founder and Chairman of Bendzinski & Co. Municipal Finance Advisors, and an MACDC Life Member.

Robert C. Bendzinski, (Bob, Sr.) Founder and Chairman of Bendzinski & Co. Municipal Finance Advisors, passed away peacefully after a brief illness, on February 23, 2025. He established Bendzinski & Co. on July 1, 1976, to provide independent municipal advice to Michigan municipalities. He was an innovator and leader in Michigan municipal finance. Bob received the life membership awards from the Michigan Municipal Finance Advisors and the Michigan Association of County Drain Commissioners *(courtesy of Bendzinski & Co. Municipal Finance Advisors).*

Donald E. Cooper

AUGUST 27, 1945 - JANUARY 18, 2025



Donald E. Cooper was the former Montcalm County Drain Commissioner, MACDC past president (1993-94), and an MACDC Life Member.

Don began his career with the Michigan Department of Natural Resources at the Pinckney Recreation Area and later served as Montcalm County Drain Commissioner, a role he treasured for the connections he made and his dedication to preserving the county's waterways. Don retired in 2012, leaving a legacy of care for both people and the land.

MACDC EVENT CALENDAR

MAY 9, 2025
Southwest District Meeting
St. Joseph County

MAY 13, 2025
Southeast District Meeting

MAY 15, 2025
Northwest District Meeting

MAY 16, 2025
Northeast District Meeting
Saginaw County

JULY 16-18, 2025
MACDC Annual Summer Conference
Bellaire, MI

To place your event on this calendar, contact us at admin@macdc.us or 517.484.9761. For the most up to date details visit, macdc.us/calendar/.

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Lansing, MI 48933
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