Volume 31, No. 4 | Winter 2022

PIPELINE

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

CLOVERDALE DRAIN

2022 Innovation & Excellence Project

WINTER CONFERENCE PREVIEW

METHODS FOR BOND SALES

CONTENTS

PIPELINE is published four times a year. It is funded by the Michigan Association of County Drain Commissioners, and with advertising revenues. The Michigan Association of County Drain Commissioners is a nonprofit, statewide association.

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PRESIDENT'S MESSAGE

BRIAN WENDLING
Saginaw County Public Works Commissioner

Greetings Fellow MACDC Members,

Well, here we are, closing in on yet another year. Leading us to again ask the infamous, unanswered question: Where does the time go? I know we've all heard it and said it many times, but where does the time really go? Since the last Pipeline was circulated, Halloween and Thanksgiving have come and gone – nothing more than a blip on the calendar for me. Now we have Christmas and New Years in our sights, and I have no doubt that I'll be frantically running around those last couple of days getting everything in order.

The experts say that as an NFL quarterback matures and gains experience, the game begins to slow down and get easier for them. They are quicker at reading the defense and knowing whether there is a blitz coming at them. They almost instinctively change the play (call an audible) in an attempt to stay one step ahead.

Using this analogy, one would think, that as we mature and become wiser, that life in general would also slow down. We'd know what the next issue was going to be and what was coming at us. We could "call an audible" to avoid an issue and keep everyone happy. Sounds rather simple, doesn't it?

As we all know, life isn't on the same track as an NFL quarterback when it comes to time. There is always another project. There are always new advancements and technologies. There are always new laws and regulations. There are always the holidays, birthdays, graduations, and myriad other family events. It goes on and on. Don't misunderstand, this isn't meant to be negative. I'm simply stating that the items everyone deals with on a day-to-day basis seem to cause the hands on the clock to spin faster and faster every year.

By now, everyone who is still reading is on the edge of their seat waiting for me to get to the part where I tell them how to slow life down. Well, it's pretty simple actually.... You become an NFL quarterback!! Kidding! Or better yet, we face the reality and acknowledge that life isn't going to slow down any time soon. As hard as we may try, it's important to acknowledge that we can't slow down life itself. We can, however, position ourselves to be more adaptable to the speed of life around us while still being productive.

A good way to help with this is to give yourself some "me" time. It can be as simple as a short 15-minute break, or as extensive as a week-long vacation – only you know what you need to be on your "A" game and to keep things moving as slowly as possible around you.

What better time to consider this than as we enter the Holiday Season? I realize that it can be a busy and stressful time, but it shouldn't be. This is the perfect time to slow down, spend some quality time getting yourself re-charged, and get ready for the next item coming your way.

Wishing all of you a relaxed, stress free, Very Merry Christmas and a Happy New Year!

~Brian

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122ND WINTER CONFERENCE

FEBRUARY 9-11, 2022

SCHEDULE AT A GLANCE

Wednesday, February 15

8:00 AM–2:00 PM	**Exhibitor Set-up**
10:00 AM	**Registration Opens**
9:00–11:30 AM	**BS&A Training**
12:00 PM	**Lunch on your own**
1:10 PM	**Call to Order and Welcome**
1:15–3:00 PM	**Educational Sessions**
3:00–3:30 PM	**Break/View Exhibits**
3:30–5:00 PM	**Educational Sessions**
6:00–7:00 PM	**Reception/View Exhibits**
7:00–8:30 PM	**Strolling Dinner/View Exhibits**
8:30 PM	**After Dinner Activities**

Thursday, February 16

7:30–9:00 AM	**Breakfast**
8:30 AM	**Exhibit Area Open**
9:15–10:30 AM	**Educational Sessions**
10:30–11:00 AM	**Break/View Exhibits**
11:00–12:15 PM	**Educational Session**
12:15–2:15 PM	**Lunch/2022 Awards Program**
2:15–3:15 PM	**Educational Sessions**
3:15–3:45 PM	**Break/View Exhibits**
3:45 PM	**Exhibitor Tear-down**
3:45–4:45 PM	**Educational Sessions**
4:45 PM	**Associate Member Meeting**
6:00–7:00 PM	**Reception**
7:00 PM	**Dinner**
8:30 PM	**After Dinner Activities**

Friday, February 17

7:30–9:30 AM	**Breakfast**
9:30 AM	**MACDC District Meetings**
10:00 AM	**Business Meeting/ Committee Reports**
11:00 AM	**Adjourn**

CONFERENCE SESSIONS

Wednesday, February 15

BONUS SESSION

9:00–11:30 AM

Drain Assessment Software User Group

Brad Russman, Tax Team Software Specialist, BS&A Software

This session is intended to be similar to our annual User Group meeting. General question and answer session, and we will cover some commonly requested topics such as year end processes and parcel splits.

1:15–2:00 PM

Engineering for Changing Rainfall

Dan Christian, Senior Project Manager, Tetra Tech

Climate models project the Great Lakes region to experience a greater increase in total precipitation than most other regions of North America. The amount of precipitation falling in the most intense 1 percent of precipitation events has increased significantly in the Midwest (42%) from 1958 to 2016. These numbers are projected to increase by another 40% or more by late century (2070-2099), relative to 1986-2015 amounts (GLISA). This session will explore changing rainfall including methods to estimate the future rainfall quantities and ideas and approaches to plan for and accommodate future rainfall amounts.

2:00–2:30 PM

Coordinating with MDOT

James Davis, Michigan Department of Transportation

A quick overview of the Michigan Department of Transportation offices and hierarchy as well as useful tips and reasons to coordinate with MDOT when planning and/or completing Drain Projects.

2:30–3:00 PM

EGLE's Dam Safety Program - Overview and Updates

Luke Trumble, Supervisor, Dam Safety Unit, EGLE

A brief overview of EGLE's current dam safety standards and requirements. Updates on dam safety program staffing and goals along with regulatory reforms that may be on the horizon.

3:30–4:15 PM

Drain Code Trivia

John Brennan, Attorney, Fahey Schultz Burzych Rhodes

Alexis Vlahakis Cole, Attorney, Vlahakis Cole Law Firm

Lauren Burton, Attorney, Clark Hill

Come and test your knowledge on various drain related trivia. Hosted by drain attorneys, these questions will cover basic drain law principles and common issues that your offices encounter.

4:15–5:00 PM

Legislative Update

Deena Bosworth, Michigan Association of Counties

MACDC lobbyist Deena Bosworth will give an update on the newly elected lawmakers, new legislative session, and discuss the bills that affect the work of county drain offices.

Thursday, February 16

9:15–9:45 AM

Emergency Response - Bloomfield Drain Sinkhole

Gary Nigro, P.E., Chief Engineer, OCWRC

Zachary Carr, P.E., Vice President, FK Engineering

Session provides an overview of a circa-1928 sewer failure that caused a large sinkhole in a residential backyard and the rapid team response to facilitate the repair. Facets of the project included community engagement, emergency easement acquisition, geotechincal investigation & instrumentation, bypass pumping, in sewer repairs, open-cut construction, EGLE permitting, and CIPP lining the 60-inch ID sewer. The sinkhole occurred as the 4th of July weekend approached and the coordination, design, permitting, & repair was completed within 8 weeks!

CONFERENCE SESSIONS

Thursday, February 16 cont.

9:45–10:30 AM

Appeals and How They May Impact Your Project

Stacy Hissong and Ross Bower, Fahey Schultz Burzych Rhodes

Learn about and how to defend the various appeals that may impact your project's timing, financing, or ability to even move forward.

11:00–11:30 AM

MS4/EGLE

EGLE Staff

Update on MS4 initiatives.

11:30 AM–12:15 PM

The New Superior - A Better Way to Be the One in Charge

John M. Collins, Executive Leadership Coach, Critical Victories

Research has confirmed that 90% of us do not have the natural talent to be highly effective leaders. But by adopting the right mindset and following a few valuable strategies, you can establish a natural style of influence that dramatically increases your ability to earn the trust and loyalty of a team.

2:15–2:45 PM

Don't Cry Over Spilled Drains

William Becker, Project Manager, Spicer Group, Inc.

When there is an emergency, accident, or incident in your County Drain, what do you do? We will go through all the steps from response, to clean-up, to insurance claims. We'll also cover what you should and shouldn't do as we go through plenty of example spills that we've responded to.

2:45–3:15 PM

Environmental Impacts of Transmission Lines

Neal Bishop/Sr. Area Manager, ITC Michigan

This session will discuss environmental impacts of electric transmission infrastructure along with planning, approval, and community outreach processes.

3:45–4:15 PM

Endangered Species/Federal Government

Gib King, Fish and Wildlife Biologist, U.S. Fish & Wildlife Service/Partners for Fish and Wildlife Program

Finding the win-win regarding drainage, flood storage and wetlands for wildlife. This session will discuss past and present FWS/DC wetland restoration and drain projects partnerships and briefly touch on some other programs that may provide similar opportunities.

4:15–4:45 PM

The YPC Show

Young Professionals Committee

Come and enjoy another Young Professionals Committee session to cap off the winter conference. Watch your colleagues' knowledge be tested as they compete against one another on popular drain related topics.

Cloverdale Drain

The Cloverdale Drain was established as a buried tile drain in 1904. A drain petition was received in the early-1970's, however no action by the Drain Commissioner was ever taken and no Board of Determination ever convened. The Cloverdale Drain was constructed to begin at the north end of Cloverdale Lake, run across Guernsey Lake Road to the south and outlet to Long Lake. This was the same infrastructure that existed when the next action of the Cloverdale Drain would commence more than 25 years later.

On March 20, 2018, the Barry County Drain Commissioner's office received a petition from the Barry County Road Commission for maintenance and improvement to the Cloverdale Drain. This petition was the result of increased water levels on Cloverdale Lake during 2017 and the early spring of 2018. The increased water levels resulted in the flooding of multiple homes on the lake, as well as Hope Township's Cloverdale Park, and portions of county roads. Further, a segment of State Highway M-43 near the lake was closed due to flooding over the roadway from adjacent wetlands. On May 30, 2018, a Board of Determination found that the maintenance and improvement of the Cloverdale Drain was necessary and conducive to the public health, convenience, or welfare. During the late summer of 2018, flooding on Cloverdale Lake subsided but, during the spring of 2019, extreme flooding returned after several months of above average precipitation. Water levels in the four lakes comprising the Cloverdale Chain-of-Lakes (Cloverdale Lake, Wilkinson Lake, Jones Lake and Mud Lake) increased by over 24", exceeding the 2018 flood levels and MDOT was again forced to close M-43, this time for more than three months.

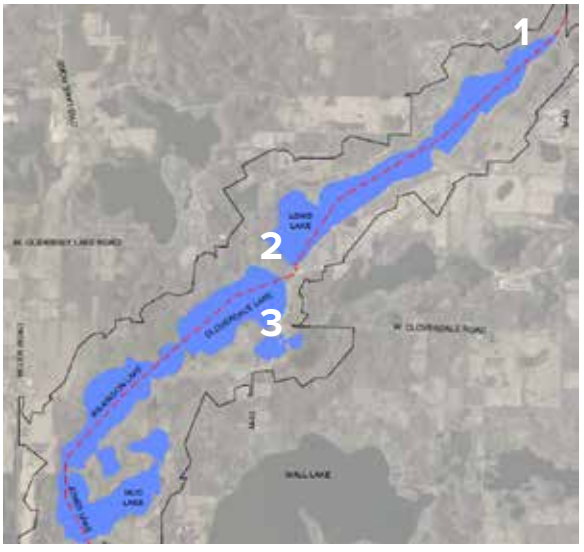
Engineers began to work on a solution to alleviate flooding of M-43. MDOT was legally 'hand-cuffed' from simply pumping the floodwater into Cloverdale Lake. However, engineers would work out a strategic solution to this issue for MDOT using little-used provisions of the Michigan Drain Code. Engineers also began working on the planned improvements for the Cloverdale Drain system. A new branch drain to service the flooded area of M-43 would

Resolving a Regional, Century Old Problem of Uncontrolled High Lake Levels in Barry County

By: Brian Cenci, P.E., GEI Consultants, Inc.

be one item to address, as would be replacing the now partially collapsed 10" plastic pipe that had nearly a foot of backfall. That 10" pipe was the only outlet for approximately 800-acres of upstream watershed area, and it also controlled the lake levels for the four upstream lakes that were nearly 450 acres combined with close to 200 riparian landowners along those four lakes. Downstream of Cloverdale Lake was Long Lake which was more developed, with roughly 225 riparian property owners surrounding the 260 acre lake. Long Lake had no legal lake level and the controlling feature for the water level within the Lake was a private crossing under North Shore Drive at the far northeast end of the lake. This crossing consisted of dual 18" culverts that were nearly entirely under water needing constant maintenance to keep them clear and free of debris.

Before getting too far along with any of that work, it soon became clear that another nearby lake, and its petition for improvements on the Watson Drain, would need to utilize the improvements from the Cloverdale Drain project. Upper Crooked Lake (UCL) was just over one mile from the south end of the Cloverdale Chain-of-Lakes in proximity. UCL was close to 900 acres in size and over the period from 2018 to 2019, water levels in that Lake had risen to over seven feet above its court ordered legal lake level. UCL was a 'kettle' lake, with no natural outlet. Making matters even more complex, UCL was the northern dividing line for the entire Kalamazoo River Watershed, with the south end of the Cloverdale Chain-of-Lakes being the southern dividing line for the entire Grand River Watershed. Even though UCL and the contiguous Lower Crooked Lake (LCL), comprising 1,900 acres together, were over 65 feet higher in surface water elevation than waterbodies just over one mile to the south, attempts to garner support and easements to facilitate either a gravity or pumped outlet for UCL or LCL had hit a road block. After several office and on-site meetings with close to a dozen various EGLE WRD staff, and after a large scope meeting in June 2019 that was attended by nearly 200 residents, Barry County Drain Commissioner decided that the two separate drains would move forward on the same path



The map above shows the locations of the five lakes impacted by the Cloverdale Drain. The Cloverdale Drain prior to this project connected Cloverdale Lake to Long Lake.

1. *3'x 4' box culvert under North Shore Dr.*
2. *24" storm sewer replacing ex. 10" pipe*
3. *New 15" relief drain for M-43 flooding*

for permitting, design, easements, construction, and their necessary improvements. Because the Cloverdale Drain would be receiving the Watson Drain's stormwater, and because the lakes in the Cloverdale Drainage District were at flooded levels already, it would be necessary for the Cloverdale Drain improvements to be constructed prior to the Watson Drain improvements. The improvements to the Cloverdale Drain system would lower the water elevations of the flooded lakes and relieve the flooded adjacent lands first and then pumped water from UCL & LCL could begin to travel north through the Fall Creek drainage system, ultimately outletting into the Thornapple River in downtown Hastings, some 10 miles to the northeast.

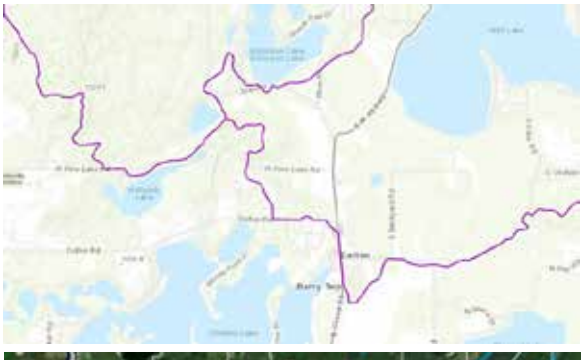
The two projects moved forward under one extremely large and complex Part 301 & 303 EGLE Permit that was conditionally issued approximately 14 months after first being submitted. Several challenges, new materials, and techniques came about from elements of the collaborative permitting process with EGLE over that 14-month period. The Cloverdale Drain project was let for bids in February 2021. Mead Bros. out of Springport, Michigan submitted the lowest responsible bid, at just over $1 million in construction costs. That cost was further reduced through several value-engineering based decisions related to COVID-19 supply issues of certain materials. The BCDC directly procured several of the larger cost items that would be installed by the Contractor to help save on overall costs as well. The Day of Review of Apportionments & Review of Drainage District Boundaries was held in April 2021 where a $2.2-million overall project was presented to the public. No appeals were filed for either Day of Review. Since the Watson Drain would be pumping floodwater from UCL into the Cloverdale Drain system, the Cloverdale Drain's district boundary was expanded to include all of the Watson Drain Drainage District. There were 1,804 properties assessed, along with four different Townships, Barry County, and MDOT all at-large. The properties comprised about 57% of the overall assessed costs and the at-large entities the remaining 43%. That 43% from at-large entities did not account for approximately $425,000 in supplemental benefit that MDOT paid directly for costs associated with attenuation pumping of the flooded section of M-43, and for costs to construct the branch drain to service that stretch of M-43 in the future. The assessments were primarily based upon whether a property was a riparian landowner on a lake within the nearly 9,600-acre drainage district, and not on the size of a property. Acreage of a particular property accounted for less than 2% of the overall assessment cost determination, therefore many of the large 50+ acre sized agricultural properties paid less than a ½-acre property on Long Lake for example. The average assessment for each property was a total of around $675 per parcel.

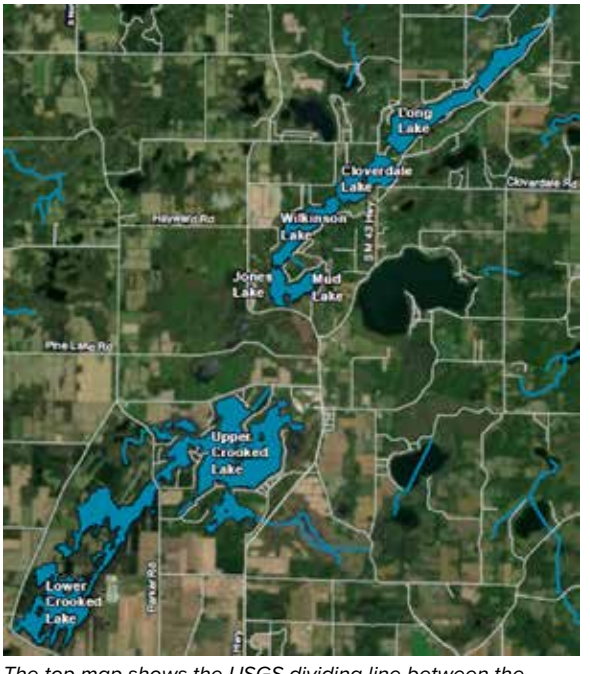
A FOX 17 televised news story in 2019 highlights one of the properties on Cloverdale Lake with no working sewer because of the high lake level.

PUBLIC INVOLVEMENT: PUBLIC SCOPE MEETING, PUBLIC COMMENT FORMS & WEBSITE

Upon completion of the preliminary design phase of the project, BCDC sent out correspondence to every landowner in the overall Drainage District inviting them to a public scope meeting in June of 2019. Approximately 200 residents filled the local high school gymnasium on a Saturday morning to hear about the Drain projects. The Drain Commissioner and engineers discussed the proposed Drain work for both the Watson & Cloverdale Drains and received back valuable public input.

The most beneficial item from the scope meeting was a questionnaire that had been included in the meeting notice. This questionnaire was then sent back to the BCDC where all the questions





The top map shows the USGS dividing line between the Grand River and Kalamazoo River watersheds. The bottom map shows the lakes associated with the Cloverdale Drain and Watson Drain projects.

were compiled prior to the meeting and the answers to them read aloud for everyone to hear. This was extremely beneficial to understanding what were the public's biggest concerns and what items they needed further explanation on.

Two of the 50+ homes on Upper Crooked Lake that were completely flooded out prior to the Watson Drain & Cloverdale Drain projects.

The project team created a website, www.barrycountydrainprojects.com, which would be initially devoted to the Watson Drain and Cloverdale Drain petition projects. Residents visiting this website could read the monthly updates, download all project materials, and keep informed on the status of the many EGLE Part 301 and Part 303 permits that were obtained for critical emergency pumping in the first 18-months of both projects.

PUBLIC INVOLVEMENT: LAKE LEVEL MARKERS AND FEEDBACK QUESTIONAIRRES

Concurrently with the Drain petition work, the County Board of Commissioners petitioned to establish legal lake levels on five of the impacted lakes associated with the Cloverdale Drain project. In order to get public feedback from the residents regarding what lake levels would be preferred, in 2020 and 2021, engineers installed lake level markers in several locations around each of these lakes. Following installation, questionnaires were mailed to all the residents on the effected lakes. There was around a 50% response rate to the questionnaires and this feedback was critical in determining what elevations should be used for the court ordered legal lake levels on each of these lakes.

WATER QUALITY BENEFITS & USE OF NEW MATERIALS: WATER FILTRATION & AIS SCREENING

Even though a hydraulic connection existed between Cloverdale and Long Lakes for well over a century, there was a concern that allowing a significantly larger amount of water into Long Lake from the downstream waterbodies would degrade the lake's water quality and negatively impact their robust invasive species and weed control efforts. Due to these concerns, filtration of the Cloverdale Chain-of-Lakes water would need to take place before discharging downstream to Long Lake. Since the connection between the two lakes is a gravity system, and not a pumped system, using the same 20-micron filtration system that was to be used on the Watson Drain project was not an option. However, once the Watson Drain project is completed and pumped lake water from Upper Crooked Lake begins to take place, that discharged water to Cloverdale and Long Lakes will already have filtered out any aquatic invasive species. Filtration of the water is critical in terms of the Watson Drain discharge water because both Lower and Upper Crooked Lakes have a high concentration of Zebra mussels in their waters. Zebra mussels can be one of the most devastating invasive species because they interrupt the natural food chain and

One of the copper alloy screens installed for preventing the transfer of AIS at the control structure for the Cloverdale Chain-of-Lakes on the upstream end of the Cloverdale Drain.

essentially filter out (i.e. eat) all the zooplankton and phytoplankton that other smaller fish species depend on to survive. Because Zebra mussels are filter feeders, they also significantly change the water clarity of the lake over time, causing it to go from extreme clarity to being choked with weeds just a few years later. This is because by increasing the water clarity, more sunlight can get further into the bottom of the lake, thus causing more and more weed growth. Regulatory staff at EGLE was adamant that a filtration system for Zebra mussels was a must for water discharged through the series of connected lakes and the Watson Drain project purchased that filter system for their discharge water.

The proposed additional filtration and screening system for the Cloverdale Drain consists of three cylindrical wedge wire screens with ¼-mm (0.00985 inches) diameter screen openings. The screens and wire are made out of a copper blended metal alloy, which will greatly reduce vegetative growth or algae from growing on the outside and clogging the screens. Because these screens are under water, are very heavy, and need to stand up to potentially intense wave action within Cloverdale Lake, each screen is attached to a 24" ductile iron pipe with components that would normally be used for installing a drinking water watermain system. This ductile iron pipe goes from the screen intake area into the control structure for the lake level in Cloverdale Lake. This control structure is a simple weir system, where a 6-inch plate can be added or removed to adjust the water height up or down in the four lakes comprising the Cloverdale Chain-of-Lakes. Approval of the weir plates and the elevations of those within the control structure are not part of the Drain project. Those items are being installed once courts set a legal lake level based off the engineers' report recommendation.

WATER QUALITY BENEFITS: INCREASE DISSOLVED OXYGEN OF DISCHARGED STORMWATER

The control structure design for the Cloverdale Drain is a deep-water draw from Cloverdale Lake. This was done in order to extract colder water from the bottom of the lake which has higher dissolved oxygen (DO) levels due to less sunlight. Since there is almost 16 feet in elevation difference between the water levels of Cloverdale and Long Lake, engineers were able

Photo showing the Drain's outfall aeration channel as it outlets into the wetland system on the south end of Long Lake.

to design an aeration riprap outfall channel at a 7% grade to create faster moving water at the outlet prior to Long Lake. This discharged water gets mixed around the limestone riprap along the bottom and sides of the rock lined channel. The more mixing and creation of 'whitewater' in this rock channel introduces more oxygen into the discharge water the higher the DO becomes and thus the better the water quality will be that enters Long Lake. The outfall area was also

designed to discharge a few hundred feet away from Long Lake so that after the water mixes around in the stone aeration channel, it then sheet flows into a high-quality wetland on the south side of Long Lake. The discharged water then travels through that adjacent wetland of Long Lake and the majority of that water never reaches the Lake directly, getting filtered and infiltrated through the vegetation and soil.

USE OF NEW TECHNOLOGIES & METHODS: USING 'EMERGENCY' PROVISIONS IN SEC. 196 OF THE DRAIN CODE TO QUICKLY RESOLVE SIGNIFICANT FLOODING ISSUES & TO ALLOW MDOT WORK TO OCCUR

All through the summer of 2019, motorists traveling through the south-half of Barry County were plagued with a practically unavoidable several mile-long detour because M-43 was completely closed due to flooding. A stretch of M-43, just south of Cloverdale Road, had flooded from rising water levels in adjacent 'pocket' wetlands on either side of this State trunkline. This flooded section of M-43 was only a few hundred feet away from Cloverdale Lake and the amount of water necessary to pump down for the road to be safely passable again was not overly significant: approximately 15 acre-ft. in volume. As the road closure and flooding continued, residents and the public became angry, and discord toward MDOT, Barry County, and other public officials grew with each passing day. Discharing the flood water into nearby Cloverdale Lake was not an option because Cloverdale Lake was significantly flooded as well. Cloverdale Lake was between 18" to 24" higher than it had been the prior year and was almost four feet higher than 'normal'.

The BCDC declared an emergency due to the endangerment of public health associated with both the flooding of M-43 and the flood-level water elevations throughout the Cloverdale Chain-of-Lakes. This allowed engineers to work with EGLE's Transportation Unit staff to quickly obtain a permit so that MDOT could pump down the water over M-43. To obtain this permit, a GEI environmental professional performed an assessment of the two regulated wetlands on either side of M-43. This delineation was extremely difficult to do when the wetlands were experiencing abnormally high-water levels. They used adjacent trees and woody vegetation along the wetland boundaries to determine the regulated wetland areas and then engineers surveyed this line throughout to develop what the 'normal' water elevation should be in each of wetlands that would maintain that wetland boundary. This was critical because just above that wetland perimeter elevation an overflow structure would be installed on each side of M-43. These two overflow structures would control the maximum water elevation of the wetlands going forward eliminating future flooding of M-43.

USE OF NEW TECHNOLOGIES & METHODS: LEGALLY BASED DESIGN ENGINEERING – AVOIDING ALMOST CERTAIN LEGAL ACTION

During the same time-period of the M-43 flooding and subsequent closure, a group of residents on the nearby Upper Crooked Lake had joined together to file a lawsuit against the Watson Drain Drainage District, alleging inverse condemnation of their property. They claimed that the BCDC had flooded their lakeshore properties along Upper Crooked Lake because of maintenance work done on upstream drains the previous year which ultimately outlet to Upper Crooked Lake. The suit claimed that those actions had caused the taking of their property by the Watson Drain Drainage District. Riparian residents in the Cloverdale Chain-of-Lakes threatened similar legal action toward any entity should Cloverdale Lake flooding become worse. Before pumping or emergency construction on M-43 could begin, this issue of not adding additional flow to Cloverdale Lake still had to be resolved.

This was accomplished using a legally based design engineering principal. The existing 10" pipe that was the Cloverdale Drain had significantly restricted flow from a 'belly' in the pipe near a section of the Drain under Guernsey Lake Road and a blockage at this belly. Engineers had been monitoring the outfall of the 10" line for over a year and despite significant efforts to clean out the blockage, the downstream outflow of the 10" pipe never exceeded more than a quarter of the overall full-flow capacity that a 10" pipe at that grade should have. Temporarily replacing the pipe would require digging up the road and was not seen as cost-effective due to eventual design requiring a larger drain. Another complication was that the 1992 work did not follow the historical drain easement – the residents had only granted temporary construction easements to install the 10" pipe. Because of this, the BCDC was not able to get a new easement to do work from the adjacent landowner to remove the entire pipe belly and blockage.

Story continues on page 28

MEET THE 102ND MICHIGAN LEGISLATURE

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Matt Hall, Dist 42 (R)
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Christine Morse, Dist 40 (D)
Mike Mueller, Dist 72 (R)
Cynthia Neeley, Dist 70 (D)
Jerry Neyer, Dist 92 (R)
Amos O'Neal, Dist 94 (D)
Pat Outman, Dist 91 (R)
Veronica Paiz, Dist 11 (D)
Brad Paquette, Dist 37 (R)
Laurie Pohutsky, Dist 17 (D)
Bryan Posthumus, Dist 90 (R)
David Prestin, Dist 108 (R)
Natalie Price, Dist 5 (D)
Ranjeev Puri, Dist 24 (D)
Carrie Rheingans, Dist 47 (D)
Angela Rigas, Dist 79 (R)
Julie Rogers, Dist 41 (D)
John Roth, Dist 104 (R)
Jasper Ryan Martus, Dist 69 (D)
Kathy Schmaltz, Dist 46 (R)
Josh Schriver, Dist 66 (R)
Bill Schuette, Dist 95 (R)
Helena Scott, Dist 7 (D)
Nate Shannon, Dist 58 (D)
Phil Skaggs, Dist 80 (D)
Bradley Slagh, Dist 85 (R)
Rachelle Smit, Dist 43 (R)
Will Snyder, Dist 87 (D)
Alicia St. Germaine, Dist 62 (R)
Samantha Steckloff, Dist 19 (D)
Donni Steele, Dist 54 (R)
Lori Stone, Dist 13 (D)
Joe Tate, Dist 10 (D)
Jamie Thompson, Dist 28 (R)
Mark Tisdel, Dist 55 (R)
Penelope Tsernoglon, Dist 75 (D)
Curt VanderWall, Dist 102 (R)
Greg VanWoerkom, Dist 88 (R)
Dylan Wegela, Dist 26 (D)
Regina Weiss, Dist 6 (D)
Pauline Wendzel, Dist 39 (R)
Karen Whitsett, Dist 4 (D)
Jimmie Wilson, Dist 32 (D)
Angela Witwer, Dist 76 (D)
Doug Wozniak, Dist 59 (R)
Stephanie Young, Dist 16 (D)
Dale Zorn, Dist 34 (R)

MICHIGAN SENATE

Thomas Albert, Dist 18 (R)
Sarah Anthony, Dist 21 (D)
Rosemary Bayer, Dist 13 (D)
Joseph Bellino, Dist 16 (R)
Winnie Brinks, Dist 29 (D)
Jon Bumstead, Dist 32 (R)
Darrin Camilleri, Dist 4 (D)
Mary Cavanagh, Dist 6 (D)
Stephanie Chang, Dist 3 (D)
John Cherry, Dist 27 (D)
Kevin Daley, Dist 26 (R)
John Damoose, Dist 37 (R)
Erika Geiss, Dist 1 (D)
Roger Hauck, Dist 34 (R)
Kevin Hertel, Dist 12 (D)
Michele Hoitenga, Dist 36 (R)
Daylen Howard, Dist 28 (D)
Mark Huizenga, Dist 30 (R)
Jeff Irwin, Dist 15 (D)
Ruth Johnson, Dist 24 (R)
Veronica Klinefelt, Dist 11 (D)
Dan Lauwers, Dist 25 (R)
Jonathan Lindsey, Dist 17 (R)
Ed McBroom, Dist 38 (R)
Kristin McDonald Rivet, Dist 35 (D)
Mallory McMorrow, Dist 8 (D)
Tamara Mitchell, Dist 19 (D)
Jeremy Moss, Dist 7 (D)
Aric Nesbitt, Dist 20 (R)
Rick Outman, Dist 33 (R)
Dayna Polehanki, Dist 5 (D)
Jim Runestad, Dist 23 (R)
Sylvia Santana, Dist 2 (D)
Sue Shink, Dist 14 (D)
Lana Theis, Dist 22 (R)
Roger Victory, Dist 31 (R)
Michael Webber, Dist 9 (R)
Paul Wojno, Dist 10 (D)

BOND SALE METHODS
Which is Best for You?

By: Dale Deis, PFM Financial Advisors LLC

When issuing municipal bonds or notes for a drain project, one of the key decisions a drain commissioner will need to make is what method of sale will be utilized to successfully market their bonds or notes. Several factors need to be considered when making such a decision with the assistance of your municipal advisor.

Following are attributes and considerations for each of the three bond sale methods (competitive sale, negotiated sale and private placement).

COMPETITIVE SALE

Under this sale method, an issuer, typically through its municipal advisor, would set a date and time for their bond or note sale. A notice of the sale would be required to be published, typically in an industry newspaper (the Bond Buyer) at least 7 days prior to the sale. At the date and time specified, the bids are opened, read, and verified mathematically and for compliance with the legal bidding requirements. The majority of bids are received through an internet platform, although the notice of sale may specify other bid delivery options such as faxed or physical bids at specified locations. The bonds or notes would be awarded to the compliant bidder who submits the lowest true interest cost.

The main advantages of this sale method include: the method is politically impartial to any one firm, and competition provides incentive to all firms to provide the lowest interest rates possible. The main disadvantages of this type of sale include: the lack of flexibility on the timing of the sale, the difficulty in adjusting the structure of the bond or note repayment schedule on the day of sale, the inability of the issuer to have control over the specific buying group and less ability to "pre-market" the bond issue to potential buyers which could impact the interest rates.

NEGOTIATED SALE

Under the negotiated sale method the issuer, typically with assistance of a municipal advisor, would select an underwriting firm or syndicate that will sell the bonds or notes to investors. In doing so, the underwriter and municipal advisor negotiates the purchase price and interest rates with the goal of driving the lowest of cost of fund with sufficient investor participation. Typically, on the day of pricing, the underwriter will provide the issuer with a "proposed" interest rate scale, and with further input from your municipal advisor, the underwriter will then go into the market and take orders at the agreed upon interest rates and prices. Once the order period is over, the underwriter may re-price some or all of the interest rates on the bonds/notes lower or higher based on the investor feedback and prevailing market conditions during the order period.

The main advantages of a negotiated sale include: flexibility in the timing of the sale and in the structuring of the repayment terms, a greater ability to pre-market the offering to specific buyers including prioritizing individual local investors participation in the offering (often referred to as "retail marketing"). The main disadvantages of a negotiated note sale include: the view that the process may not be politically impartial, and the elimination of the "competition" from multiple underwriting firms, which in some cases may impact the ultimate interest cost.

PRIVATE PLACEMENT

Private placements are typically best suited for smaller sized issuances with short repayment terms, typically 15 years or less with a stronger preference for 10 years or less. This sale method is what is widely used for most drain notes issues. Under this method of sale, the bonds or notes are placed with a bank or financial institution without the intent to having the bonds

BOND SALE CONT.

or notes reoffered to investors. The method of choosing the financial institution varies based on preference of the issuer and could include working directly with a bank of their choice. However, often a request for proposal (RFP) is sent to several banks and the bank responding with the lowest interest rate is selected. Careful consideration must be given to reading and understanding all the covenants and conditions in any agreement with the financial institution.

The main advantages of a private placement sale include: issuance costs savings by not having to request a credit rating, official statement or pay an underwriter fee to sell the bonds. Additionally, this approach generally requires less time and effort to complete. The main disadvantage of a private placement sale is that the issuer may not receive as low of interest rates and overall cost as with a public sale, even after considering the lower issuance costs. The competitiveness of bank rates varies based on market factors as well as the banks appetite to purchase the issue.

The table on the next page summarizes certain benefits and considerations of all three sale methods.

The choice of how to sell municipal bonds or notes should be based on careful consideration of several factors, such as the attributes of the issuer, the structure of the bond or note issue, and the financial markets. The overall objective of an issuer embarking on the sale of a bond or note issue is to weigh all factors while trying to achieve the lowest possible cost of capital and issuance costs. However, there is no one-size-fits-all optimal sale method. A competitive sale tends to be most fitting when the issuer is well known and/or highly rated, a strong demand for the bonds or notes is anticipated, and the market is stable. A negotiated sale may be more fitting when the issuer is less recognized, a weaker credit, the transaction is complex and less familiar to bidders, and/or the market is volatile.

Investment bankers and underwriters seeking to be hired as underwriter for a negotiated sale should not be consulted on the method of sale decision due to their inherent conflict of interest. As such, the municipal advisor should be consulted before any decision is made as to what method of sale will be used.

	Negotiated Sale	Competitive Sale	Private Placement
Description	• Public offering of bonds through an underwriter-managed pricing process	• Public offering of bonds through a competitive bidding process	• Issues offered directly or through an RFP process to financial institutions or individual investors, usually without an offering document or rating
Benefits	• Maximum flexibility in timing and structuring • Marketing process assists in generating investor demand • Repricing ability to lower rates • Ability to provide priority access to local residents/ taxpayers	• Maximizes competition among firms • Provides utmost pricing transparency • Politically impartial to any one firm	• Typically, lower cost of issuance • Less time-consuming process • Typically less ongoing requirements
Considerations	• Less transparency than competitive sales • May be viewed as politically partial to a particular firm	• Lack of underwriting support in volatile markets • Less structuring and timing flexibility than negotiated sales • No formal marketing period	• Interest rates and overall cost may be higher than other sale options • Not well suited for larger, long-term issuances

Your municipal advisor will review the particular elements of a bond or note transaction to assist in determining the optimal sale method. As a general note, your independent municipal advisor should not have a particular bias towards a method of sale and should assist in analyzing each financing based on the needs of the drain office and market conditions at that time. Remember, there is not a one size fits all sale method, so discussing your issues particular attributes and market conditions with the municipal advisor should help get you to the best sale method for your particular circumstances.

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CLOVERDALE CONT. FROM PAGE 21

Working with EGLE and the BCDC attorney, engineers devised that a 10" pipe full-flow capacity (of specific type and grade that existed for the Cloverdale Drain) would be considered the maximum allowable discharge to Long Lake that could take place from the Drain. That 10" full-flow capacity would be considered the 'existing' or 'pre-development' condition and the quarter restricted-flow condition would be considered the 'after' or 'post-development' condition. Under Michigan's common law for private drainage, landowners are not allowed to make changes to their properties' runoff that may negatively impact any downstream properties from that increased or changed runoff coming from the upstream properties. This same drainage principal was applied to this particular situation for any potential impacted properties in Long Lake, or other downstream waterbodies from Long Lake, except in this particular situation, the 'existing' condition flow was higher than the 'after' condition flow.

The BCDC was allowed to use the emergency provisions in the Drain Code to attenuate pump from Cloverdale Lake to Long Lake an additional 1.5 cfs, which is about 675 gallons per minute (gpm). Once the additional attenuation pumping of 675 gpm from Cloverdale Lake downstream started, MDOT was allowed to begin pumping at a maximum rate of 500 gpm into Cloverdale Lake. This left an additional 175 gpm that would be pumped downstream, even with the addition of 500 gpm from MDOT. That additional discharge is what negated any legal claims towards MDOT from residents on Cloverdale Lake who might have assumed that pumping into the Lake was exacerbating their flooding situation since they were getting an additional 175 gpm of downstream pumping relief. This principal of making changes to upstream drainage while not impacting downstream properties allowed both the BCDC and MDOT to resolve flooding issues through the District without adding more legal liability from their actions.

USE OF NEW METHODS: CONCURRENTLY ESTABLISH LEGAL LAKE LEVELS FOR ALL IMPACTED LAKES

In the first couple of meetings with EGLE's Water Resources Division (WRD) staff in early Fall of 2019, it was strongly suggested that we seek to establish Circuit Court ordered Legal Lake Levels on any lakes that may be impacted. There were significant savings in doing the Drain petition items and Part 307 work concurrently because many of the necessary permitting items associated with Part 301 and Part 303 EGLE Permits were also necessary when obtaining a Part 307Permit through the DNR. Both regulatory agencies were able to work collaboratively with GEI through their respective permitting processes to ensure the best possible end product for the County, BCDC, and nearly 500 impacted property owners on those five lakes.

Ultimately five lakes would be impacted during the improvements to the outlet pipe from Cloverdale Lake and from Long Lake. The BCDC worked with the County Board of Commissioners and in February of 2020 the Board passed resolutions to establish Circuit Court ordered legal lake levels under Part 307 of Michigan's Natural Resources and Environmental Protection Act (NREPA) for Long Lake, Cloverdale Lake, Wilkinson Lake, Jones Lake, and Mud Lake.

In order to perform the requested improvements to the Cloverdale Drain, it was necessary to also improve the outlet of Long Lake, which was undersized (dual 15" pipes) and subject to frequent clogging. The improvements performed as part of the Cloverdale Drain project will help alleviate flooding on Cloverdale Lake and Long Lake during periods of increased rainfall. While the function of the Drain Code is primarily related to managing flood control, Part 307 allows for the establishment of a normal level that "provides the most benefit to the public." Thus, in conjunction with the Drain project, the five lakes (Long Lake, Cloverdale Lake, Wilkinson Lake, Jones Lake, and Mud Lake) will have both an efficient means of flood control and, an established lake level to provide for stabilized water levels protecting property values and the lake environment, maximizing recreational benefits, and providing protection from ice action in the winter months.

USE OF NEW METHODS: DEVELOPING A "REAL-TIME" MODEL OF THE RELATIONSHIP BETWEEN RAINFALL EVENTS AND THE RISE IN VARIOUS LAKE LEVELS/WATERBODIES

The airburst system gives a high-pressure burst of air through the microscopic intake screen to keep it clean from debris and vegetation.

Two years of data gathering went into developing a hydraulic model that limited downstream impacts and provided EGLE comfort in the proposed pumping work associated with significantly increasing the outfall from Cloverdale Lake to Long Lake and the box culvert changes to the outlet of Long Lake. All significant lake and sewer facilities were surveyed on the affected lakes to understand impacts of the various proposed water elevations after pumping work and flood alleviation took place. A water budget was put together to help model post construction conditions in order to receive an EGLE permit.

USE OF NEW METHODS: DETERMINING THE PAST "NORMAL" LAKE HEIGHT UNDER HIGH WATER CONDITIONS

The method for determining the 'normal' lake level for all the lakes, since they were in flood stages and/or in a flood condition, was unique. This was done by surveying all critical lake elements like seawalls, docks, septic system and all impacted existing structures. Wetland systems were also surveyed on impacted waterbodies to determine what water elevation would create

such habitat and wetland ecosystem types. This was done on the seven impacted lakes for the Cloverdale and Watson Drain projects and this data was used in the EGLE permit application. One of the benefits of obtaining this information and using it in the Permit Application was that all of this information and data could also be used in the Part 307 Lake Level approval process.

INNOVATION: PERMITTING FOR THE AIR BURST SYSTEM FOR MAINTENANCE OF AIS FILTER SCREEN

Improving connectivity of our lakes and rivers has been a major topic for DNR and EGLE over the last 30 years. While there are many positives for this, one of the negatives is that there are many more opportunities for aquatic invasive species (AIS) to transfer into new waterbodies. Because of this, AIS screening for drains that control lake levels or connect waterbodies is going to be the new 'normal' in Michigan in the years to come. One of the biggest problems on other projects One of the biggest problems on projects where fine mesh screens have been installed in the past is the maintenance and cleaning of those screens. The smaller the mesh screen opening, the more maintenance and cleaning of those screens that is needed. Since the screen filter for the Cloverdale Drain project was going to be underwater at all times, constant manual cleaning and maintenance would be necessary. Engineers researched and worked to develop a system that would automatically clean and maintain the ¼-mm sized openings. They came up with using an Elgin airburst cleaning system constructed in a small building near Guernsey Lake Rd. These systems have typically been used on raw-water intake lines for systems out in very large lakes, like Lake Michigan or Huron. This system will allow for more timely maintenance as screen cleaning can be performed automatically at a preset interval or various times of the day. This limits debris accumulation on the screen and prevents entrance flow velocities from increasing. The air burst system sends a blast of high-pressure air through one intake screen at a time to remove debris at whatever maintenance

interval that is necessary to keep the wire mesh openings clean. The air blast is delivered from the airburst receiver to the screen through a small hose (approx. 4") that runs alongside the proposed storm sewer.

OVERALL COMPLEXITY OF THE PROJECT

The BCDC and GEI consider this project, with the second phase work being done as the Watson Drain, to be the most complex either has completed to date. The EGLE permitting requirements alone were daunting over an 18-month process. EGLE staff commented that this was one of the most complex issues to permit since new "connections" were being made to waterbodies that were not natural.

COMPLEXITY: ALTERING WATERSHEDS

As discussed in the beginning narrative, the Cloverdale Drain project was at the southern end of the Grand River watershed, abutting up to the Kalamazoo River watershed. This was a difficult issue to overcome in the permitting phase of the project and engineers and stream ecologists at GEI had to show that this changing of watersheds by way of pumping for flood relief would have no negative impacts on either watershed.

COST EFFECTIVE: $675 AVG. PARCEL ASSESSMENT & $1,200 HIGHEST PARCEL ASSESSMENT

As discussed above, the BCDC and engineers were able to keep costs down so that the average parcel assessment was $675 and $1,200 was the most on any one assessment for the 1,804 properties assessed as part of this project. A unique 'base bid' system put the majority of costs on property owners of the various impacted and benefited lakes.

PROJECT TEAM

ENGINEER – GEI Consultants

CONTRACTOR – Mead Bros. Excavating Inc.

ADDITIONAL CONTRIBUTORS

- Clark Hill PLC
- Eng., Inc. (original engineer)
- Stu Kogge – GEI Consultants
- Jackson Dirt Works
- Progressive AE
- MDOT Hydraulic Unit
- EGLE WRD – Lansing & Grand Rapids staff
- DNR
- Highpoint Community Bank

SIGNIFICANT MATERIAL SUPPLIERS:

Elgin, Northern Concrete Pipe, ADS, ETNA

ADDITIONAL COMPANIES INVOLVED:

American Hydrogeology Corp, SME, Intertek PSI, David Mifsud – HRM, Drummond Carpenter, Dewind Dewatering, United Rentals

SPECIAL THANKS TO:

Nick DeSimpelare, Tammy Hayes, Long Lake Assoc., Upper Crooked Lake Assoc., Barry Co. Road Commission

MACDC EVENT CALENDAR

FEBRUARY 15-17, 2023
MACDC Annual Winter Conference
Grand Traverse Resort, Acme

JULY 25-28, 2023
MACDC Annual Summer Conference
Crystal Mountain Resort, Thompsonville

FEBRUARY 14-16, 2024
MACDC Annual Winter Conference
Radisson Plaza Hotel, Kalamazoo

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