To:        Township Board Members
From: Derek N. Perry, Deputy Township Manager
         Director of Public Works & Engineering
Date: May 14, 2021
Re: Okemos Drain

In the fall of 2020, the Township approved proceeding with the development of a drain improvement plan with the Ingham County Drain Commissioner (ICDC) for the Grettenberger Drain and the Meijer Drain in conjunction with the Michigan Department of Transportation (MDOT) plan to reconstruct and improve Grand River Avenue in 2022. As part of this project, portions of Okemos Road north and south of Grand River Avenue would also be reconstructed in coordination with the Ingham County Road Department and the ICDC to eliminate the periodic flooding that occurs at the intersection.

As the hydraulic study and associated engineering analysis has been taking place, it has become evident that the Okemos Drain needs to be incorporated into the overall plan with the other two drains, as all three drains operate as a complete system in the study area and are dependent on one another to function.

Unfortunately, as separate drains, and created under different Chapters of the Michigan Drain Code, they all have their own unique bureaucracy and are required to be treated as distinct under the Drain Code regulations. As such, managing and making engineering changes as a system, can be cumbersome.

To overcome this obstacle, we are recommending that we consider combining the three drains into a single “Okemos Consolidated Drain” to effectively manage the system comprehensively.

On Tuesday night, the ICDC will present their updated findings of the drainage study, and provide additional justification and the required process for the consolidation of the three drains into one “Okemos Consolidated Drain” to service our core commercial development area in the Township.
MEMORANDUM

To: Derek Perry, Asst. Township Manager  
Meridian Charter Township

From: Alan Boyer, PE  
Consulting Engineer for the Grettenberger, Meijers and Okemos Drains

Date: May 10, 2021

Re: Okemos Drain

The Okemos Drain is the drainage outlet for a substantial portion of the Township’s commercial district. It receives runoff from county drains, including the Grettenberger and Meijers Drains, private storm drains, county road and MDOT storm drains and conveys it toward the Red Cedar River. The pending M-43 corridor improvements include drainage changes to reduce road flooding. Both LSG and MDOT have identified urgent concerns with the capacity and condition of the Okemos Drain and its tributary drainage system that must be addressed in coordination with the pending road improvements along the Grand River Avenue and Okemos Road corridors. These concerns are best addressed by taking a managed approach over a consolidated drainage system to avoid harmful downstream impacts from the anticipated drainage improvements along these road corridors. In other words, if the water

![Image of flooding at Grand River Avenue (M-43) & Okemos Road intersection, February 2018]
OKEMOS DRAIN
and its
TRIBUTARY DRAINS
Meridian Charter Township, MI

LEGEND
- OKEMOS DRAIN 00400-ROW-197110
- MUD LAKE OUTLET DRAIN 00400-EMT-19710209-0KEMOS ENTERPRISES
- RED CEDAR RIVER 00400-ROW-19940308
- MEIJERS DRAIN 00400-ROW-19940915
- OKEMOS DRAIN 00400-ROW-19940915
- OKEMOS DRAIN 00400-ROW-19940915
- ADDISON DRAIN 00400-ROW-19940915
- OTHER (MUD STORM DRAIN & RED STORM DRAIN)
that now floods Grand River Avenue and Okemos Roads in large storm events is no longer in the intersection because of drainage improvements to the Grettenberger and Meijers Drains, where has it gone? Does it flood somewhere else? The answers to those questions have to be carefully modeled, looking at the entire, consolidated Okemos Drain drainage system.

The upper reach of the drainage area, much of the Township’s commercial district (Meridian Mall, Meijers, Best Buy, etc.), is about 71% impervious, most of which is pavement and roof. Runoff generated by these impervious surfaces is tremendous. The lower reach of the drainage area is the Ottawa Hills residential neighborhood.

Most of upper reach was developed before the adoption of today’s standards and there were few stormwater controls for detention, runoff rate, volume, and water quality. Today, the stormwater runoff from the Grettenberger and Meijers Drains, developments, redevelopments and anticipated road projects all compete for the capacity of the Okemos Drain.

In 2019 the Township Board agreed to share costs for a preliminary hydraulic study of the Grettenberger Drain and the storm drainage in the area of the Grand River (M-43) and Okemos Road intersection. The need for the study was driven by recurrent flooding, the 2018 collapse of the Grettenberger Drain storm sewer beneath Okemos Road, and the Ingham County Road Department’s plans to replace the Okemos Road pavement south of Grand River Ave.
The study analyzed existing drainage systems including private drainage, county drains, and MDOT drainage. In early 2020, the study findings were presented to the Township, ICRD, ICDC and MDOT. Findings identified the following issues:

- Capacity concerns
- Age of infrastructure
  - Grettenberger Drain constructed in 1913
  - Meijers Drain constructed in 1974
- Flooding/floodplain concerns
- Maintenance concerns

Those findings, and the proposed MDOT improvements to Grand River Avenue (M-43) between Park Lake and Powell Road, led to the recent Township Board resolutions and drain petitions for improvements to the Grettenberger and Meijers Drains. Both drains pass under Grand River Avenue at the Okemos Road intersection as they flow north to their outlet in the Okemos Drain.

The capacity of the Okemos Drain outlet is a real concern. This has been confirmed by MDOT’s independent drainage analysis for the M-43/Grand River Avenue project.

Downstream along the Okemos Drain, the Ottawa Hill neighborhood lies directly in the path of the runoff from the commercial district. That runoff for a typical 10-year rainfall event is about 270 cubic feet per second (122,000 gallons per minute). Water flowing at this rate can fill the Haslett HS swimming pool in about 2 minutes; or, imagine water flowing 7-inches deep across all five lanes of Grand River Avenue.
Meanwhile, redevelopment and new development continues to be proposed and constructed in the Township commercial district without addressing the system-wide concerns to provide a proper level of service. That redevelopment and new development includes, for instance:

- former Benningan’s/Leo’s Lodge now shops including Aspen Dental/Chipotle
- former Payless Shoes now shops/offices
- former Mongolian BBQ now Panera Bread
- former Burger King proposed as Buddy’s Pizza
- Chick-Fil-A (Meijers outlot)
- Proposed Huntington Bank (Mall outlot)

The map of the Preliminary Service Area shown earlier outlines the approximate 140 acre service area for the existing Okemos Drain. The service area is a rough approximation of the watershed/drainage district that generates the runoff. The Preliminary Piping Map shows the extent of the drainage network that conveys runoff to and through the Okemos Drain.

A solution that simply moves stormwater runoff to another part of this network, without understanding whether it harms those downstream, does not properly address the evident concerns. To provide an appropriate level of service, including assuring no detriment or diminution of system-wide service, engineering due diligence requires that we look at a consolidated drainage system that includes the Grettenberger, Meijers and Okemos Drains.
Step 1
Meridian Charter Township
A. Township adopts Resolution requesting that the Okemos Drain Drainage Board relinquish the Okemos (Chapter 20) Drain to the Township. The Resolution also provides for approval of an interlocal agreement with ICDC to maintain the former Okemos (Chapter 20) Drain after relinquishment.
B. Township adopts a Resolution for Petition to Consolidate and Improve the Meijers and Grettenberger Drains.

Step 2
Meridian Charter Township
A. Township transmits the Resolution to Relinquish the Okemos (Chapter 20) Drain to the Okemos Drain Drainage Board.
B. Township transmits Resolution and Petition to Consolidate and Improve to the ICDC.

Step 3
Okemos Drain Drainage Board
Drainage Board meets to consider and take action on Township Resolution to relinquish the Okemos (Chapter 20) Drain to Meridian Charter Township including transfer all applicable easements.

Step 4
Ingham County Drain Commissioner and Meridian Charter Township
ICDC and Meridian Charter Township execute interlocal agreement to allow ICDC to operate and maintain the relinquished Okemos (Chapter 20) Drain and use the easements.

Step 3a
Ingham County Board of Commissioners
Ingham County BOC adopts Resolution consenting to the relinquishment of the Okemos (Chapter 20) Drain to the Township and transmits resolution to Drainage Board [MCL 280.478(5)].

Step 5
Ingham County Drain Commissioner
Convenes a “Board of Determination” to consider the Consolidation and Improvement of the Grettenberger and Meijers Drains to be known as the “Okemos Consolidated Drain”. The new Okemos Consolidated Drain will include and extend over and across the former Okemos (Chapter 20) Drain.

Step 5a
Meridian Charter Township
Adopts resolution assigning all easements from the former Okemos (Chapter 20) Drain to the new Okemos Consolidated Drain.

Step 6
Ingham County Drain Commissioner
Ingham County Drain Commissioner designs and implements improvements to Okemos Consolidated Drain and coordinates with MDOT and County Road Department regarding road corridor improvements along Grand River Avenue and Okemos Road.