Hurlbut Drain

BOARD OF DETERMINATION
OVERVIEW

• **Petition** filed by landowners in Drainage District for improvements

• **Michigan Drain Code** requires a Board of Determination meeting

• **Board** composed of 3 disinterested members from outside affected Townships

• Determine project **necessity** based on public health, convenience or welfare after hearing testimony
Hurlbut Drain

PRELIMINARY WORK PERFORMED:

1. Review drainage conditions in the Industrial Park ‘study area’ which resulted in a petition

2. Review drain conditions throughout the Drainage District
   - Provide an independent and unbiased assessment of the storm water conditions within the District

3. Prepare a preliminary design to alleviate drainage issues

4. Compile all analyses and report on these findings at a Board of Determination
Hurlbut Drain

HISTORY OF THE DRAIN:

• 1912 Established as a County Drain and Constructed

• 1968 Petitioned Maintenance and Improvements resulting in Open Drain Construction to increase capacity.

• 1975 Laketon Avenue culvert replaced concurrently with Laurene Taylor Drain petitioned work

Current Petition:

Dated June 1, 2017 for the maintenance and improvement of the Drain to alleviate drainage issues.
Hurlbut Drain

DISTRICT BOUNDARY OVERVIEW:

DISTRICT BOUNDARIES:

Proposed Drainage District Boundary

How Determined:

- County 1-foot Topographic Contours
- Muskegon Co. GIS
- Review adjacent District Boundaries
- Culvert Review
- Site Inspections

Drainage District Boundary Information:

- Proposed Drainage District Boundary = 965 Acres
  - Muskegon Township: 872 Acres
  - Egelston Township: 93 Acres
  - Approximately 480 properties within Drainage District Boundary
Hurlbut Drain

OVERALL SUMMARY OF DRAIN SYSTEM

- Laurene Taylor County Drain (improved in 2016) discharges to the Hurlbut County Drain which discharges to the Barnes Drain and eventually Mona Lake

- Marathon Oil doing separate relocation and mitigation project

Hurlbut Drain

DRAIN TERMINOLOGY:

CULVERT: A structure (typically pipe or bridge) placed in the drain (typically at a roadway or driveway) to allow continued stream flow

   Issues: Perched or undersized culverts resulting in loss of drain capacity

SEDIMENTATION: Accumulation of sand and dirt within the drain channel

   Issues: Loss of drain capacity

OBSTRUCTIONS: Trees, stumps, heavy vegetation and debris

   Issues: Loss of drain capacity

EROSION: Wearing away of material (typically on drain banks) due to stream flow and/or lack of stability

   Issues: Loss of land and drain capacity

All impact and lead to reduced capacity  Flooding
Hurlbut Drain

EXISTING DRAINAGE CONDITIONS OVERVIEW

• P. Don Aley Industrial Park Drainage
• Open Channel Conditions

Photo: 4/14/16 via Google Earth
EXISTING DRAINAGE CONDITIONS OVERVIEW

Study Area

1. Entire Industrial Park (net 13.25 acres) being restricted to an 8” diameter outlet
2. 8” outlet pipe is set approximately 2 feet above detention basin bottom
3. Orifice holes in structure are clogged and non-functional
4. High seasonal groundwater elevations impact flood storage capabilities
Hurlbut Drain

EXISTING DRAINAGE CONDITIONS OVERVIEW

Study Area

- Lack of an adequate outlet and high groundwater levels causing prolonged flooding within the Industrial Park
EXISTING DRAINAGE CONDITIONS OVERVIEW

Study Area

- Lack of vegetation to this line indicative of typical high water levels
- Detention storage located along the western and northern portions of the Park
Hurlbut Drain

EXISTING DRAINAGE CONDITIONS OVERVIEW

Open Channel Conditions

- Existing culverts in place at incorrect elevations
- Stagnant flow conditions
- Water must surcharge (rise) before it will release downstream

Existing 54” Laketon Avenue Culvert (Dry)

Existing 48” Dodson Drive Culvert (Standing Water)
Hurlbut Drain

EXISTING DRAINAGE CONDITIONS OVERVIEW

Open Channel Conditions

- Ex. Culverts at Improper Elevations

Ex. 54” Inv = 642.83
Prop. Inv = 640.80

Ex. 48” Inv = 642.23
EXISTING DRAINAGE CONDITIONS OVERVIEW

Open Channel Conditions

ATV crossing blocking drainage

36” private access crossing – 50% full of sediment and undersized
Hurlbut Drain

EXISTING DRAINAGE CONDITIONS OVERVIEW

Open Channel Conditions

Sedimentation and Vegetative Overgrowth
EXISTING DRAINAGE CONDITIONS OVERVIEW
Linking Industrial Park Drainage Issues to the Hurlbut Drain

- An adequate outlet for the Park is not available without rectifying the culvert and drain elevations
- Cleaning the main Drain to historical elevations will lower groundwater levels in the adjacent areas
- A deeper outlet for the Industrial Park provides additional storage volume in the detention system and improved hydraulics in the Drain
- Laurene Taylor Drain flow can be routed through system effectively
Hurlbut Drain

Next Steps

• Public testimony
• Board to determine necessity of petition
• If project found not necessary:
  ➢ Project ends
• If project found necessary:
  ➢ Evaluate scope of project and design alternatives
  ➢ Scope Meeting to discuss design with property owners and Municipalities
  ➢ Finalize design (obtain easements and permits, if necessary, and prepare bid plans for construction)