

# Former Cliffs-Dow Site

## Project Status Update

City of Marquette  
Commission Work Session  
January 9, 2023

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# Project Status Update Outline

Cliffs-Dow  
Operational History

Cliffs-Dow Post-  
Operations Property  
Activities

City's Acquisition of  
Cliffs-Dow Property

Agency Role in  
Oversight and  
Compliance

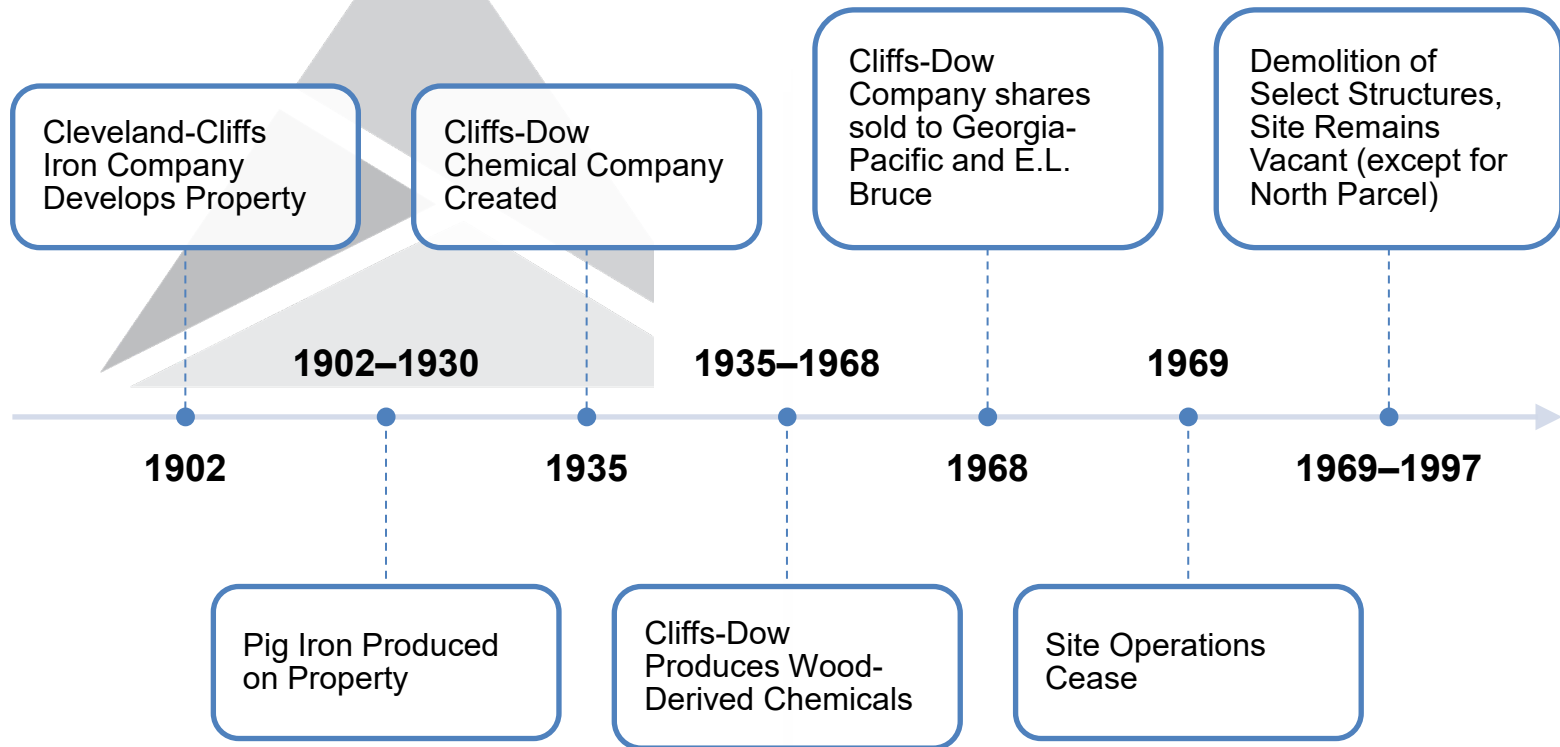
Environmental  
Response Activities  
and Data under  
Mixing Zone-Based  
Criteria

Site Redevelopment

Commission  
Discussion



# Cliffs-Dow Operational History



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# Cliffs-Dow Historical Aerial Photos circa 1950's



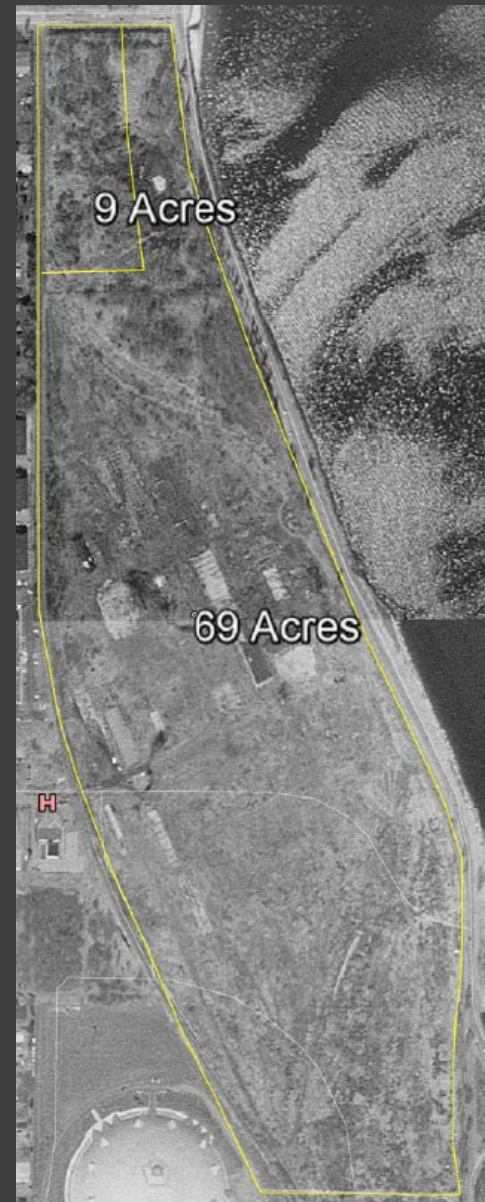
North 9-acre Parcel  
Discharge into Lake Superior



Central 46-acre Parcel  
Discharge into Lake Superior

# Post-Operations Property Ownership and Use

- 1969 - Property sold to C&W Corporation
- Ownership of property passed through several parties from 1969 to 1997
- Owners dismantled and removed most of the structures for scrap metal.
- Property sat idle until City's acquisition in 1997
- Photo circa 1993



# Post-Operational Site Aerial Photos



1981



1992

# City Acquisition of Property

- City of Marquette purchased ~77-acre property in October 1997 with the intent of securing control over redevelopment options for large undeveloped lakeshore property
- Historical Reports indicated limited soil and groundwater contamination at the site
- Deed Restriction placed on property limiting property to non-residential uses and prohibiting groundwater use
- A portion of the northern 9-acres (1998) and southern 23-acres (1999) were sold by the City
- In 1999, MDEQ requested interim response activities and outlined City's obligations as owner
- Approximately 46 acres remain





# Present Day (2020)

Post Lakeshore  
Boulevard Realignment  
project



# Regulatory Framework

- The Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), regulates facilities of environmental contamination in Michigan. This law includes many “Parts” related to protecting human health and managing contaminated sites. EGLE’s Remediation and Redevelopment Division (RRD) administers two of these parts, or programs:
  - Environmental Remediation – Part 201
  - Leaking Underground Storage Tanks – Part 213
- Under Part 201 an owner or operator of property where a hazardous substance is present above cleanup criteria for unrestricted residential use may be required to perform response activities
- Applicable cleanup criteria to site include: Drinking Water, Drinking Water Protection, Direct Contact, Groundwater-Surface Water Interface, and Inhalation (ambient and indoor)
- The Deed Restriction for the property currently eliminates drinking water, residential direct contact and inhalation exposure routes
- The driver for regulatory compliance is Groundwater-Surface Water Interface (GSI)

# Environmental Response Activities Performed

- In 2000, City initiated further assessment of the property as Responsible Party
- April 22, 2009, MDEQ requested City complete Interim Response Activities to address GSI Concerns
- August 2009 – September 2010 – Advanced 77 borings, Installed 49 monitoring wells
- October 2010 – Geophysical survey to identify potential source areas
- February 2011 – Test trenching completed to validate geophysical findings
- July 2011 - Limited source removal - 845 tons of tar in buried trenches and piping
- March 2012 – Remedial Alternatives Report submittal
- October 2009 thru November 2015 – Groundwater monitoring for GSI compliance
- April 2015 – Assessment work to support request for Mixing Zone (MZ)-based GSI Criteria
- October 2015 - Submitted preliminary request for MZ-based GSI Criteria to MDEQ
- February 2016 – Concluded MZ-based GSI Criteria may be applicable for site
- July 2016 – Submitted request to MDEQ RRD UP District Office for MZ-based GSI Criteria

# Environmental Response Activities Performed (cont.)

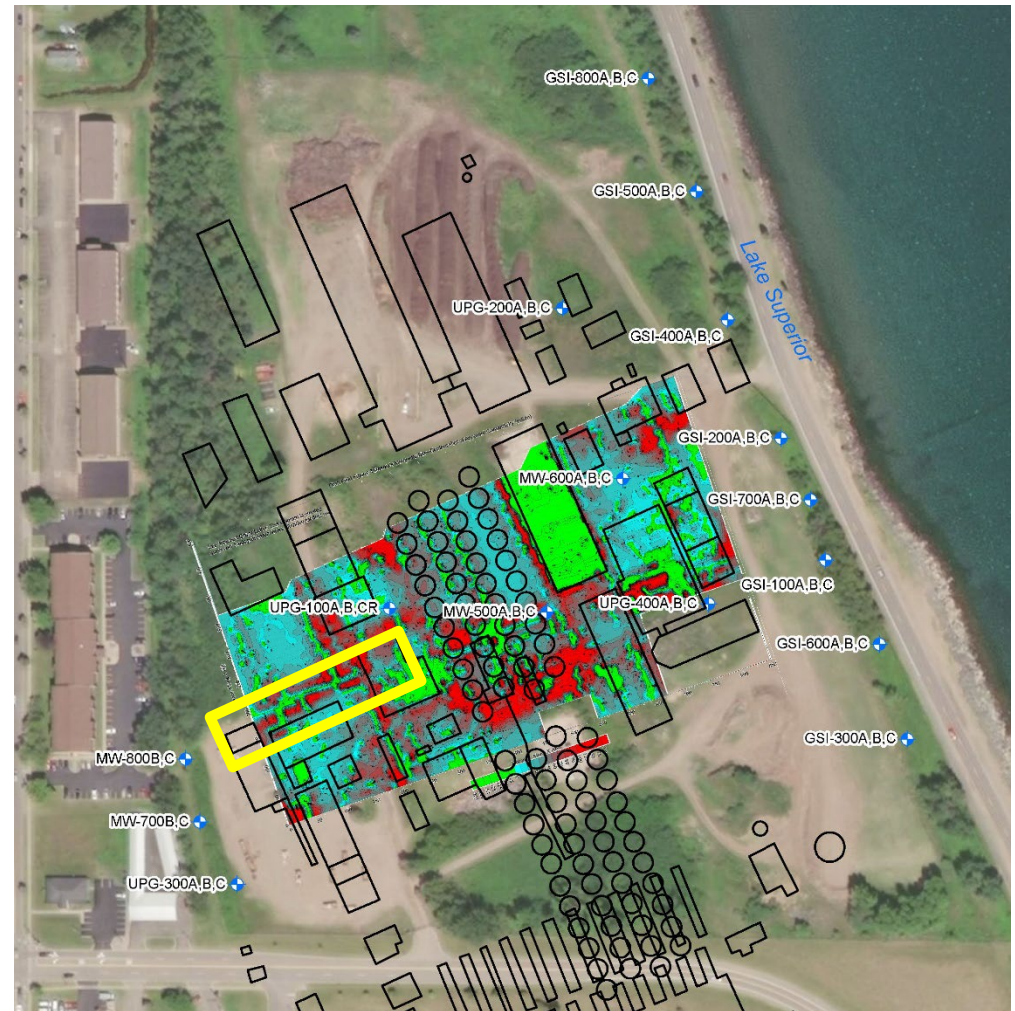
- September 2016 – MDEQ performs offshore geophysical, surface water, and sediment investigation
- September 2016 – MDEQ soil and groundwater assessment at former lagoon location (west of site)
- February 7, 2017 – MDEQ RRD UP District issues comments to request for MZ-based GSI Criteria
- September 2017 – MDEQ performs offshore sediment and pore water sampling
- November 7, 2017 – MDEQ RRD UP District issues calculated Mixing Zone-Based Groundwater-Surface Water Interface Criteria for Cliffs Dow Plant Site
- November 14, 2017 – Meeting with MDEQ RRD UP District Staff to review calculated mixing zone criteria and discuss development of a No Further Action(NFA) Report-Monitoring Only to allow DEQ to authorize the discharge
- April 2018 – Development of NFA report identifies constituents in groundwater at GSI compliance locations above Acute Mixing Zone-Based Criteria
- July 2018 - MDEQ performs additional offshore pore water and sediment sampling, ROV inspection of intake pipe extending into lake

# Environmental Response Activities Performed (cont.)

- April 2019 – Work Plan developed to further characterize groundwater by alternate GSI compliance monitoring points
- July 2019- Alternate monitoring point installation and groundwater monitoring performed
- September 2019 – Work Plan developed to further characterize groundwater by alternate GSI compliance monitoring points
- October 2019 – Approval by EGLE to perform additional monitoring point installation and monitoring
- November 2019 - Additional monitoring point installation completed, monthly monitoring of select wells initiated
- April 2020 – Reporting of monitoring data to EGLE
- May 2020 – Data Evaluation with input from EGLE regarding future response activities
- June 2020 – Lakeshore Relocation Project
- 2020-2022 – Groundwater monitoring and GSI assessment continues
- Ongoing – EGLE performed off-site soil vapor monitoring at former lagoon location (west of site)

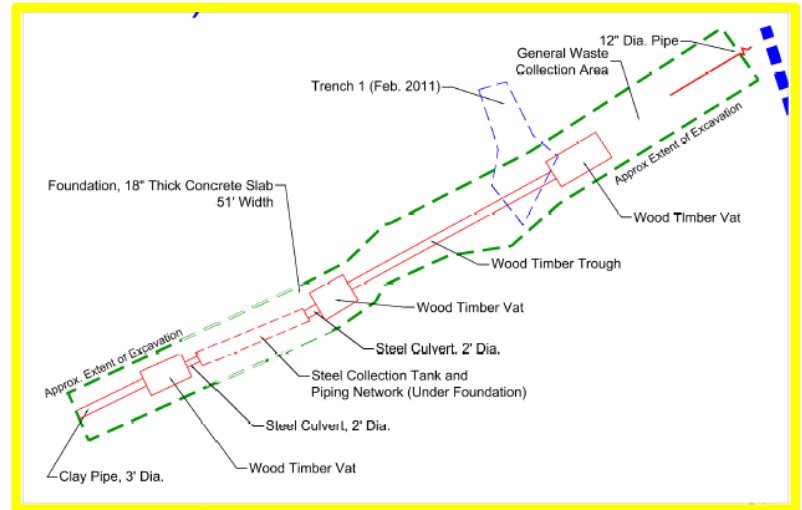
# Geophysical Survey Results in Comparison to Historical Site Features

- Survey identified a series of linear features upgradient of groundwater impacts
- East-west linear feature believed to represent source area and preferential pathway



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# Limited Source Area Removal 2011



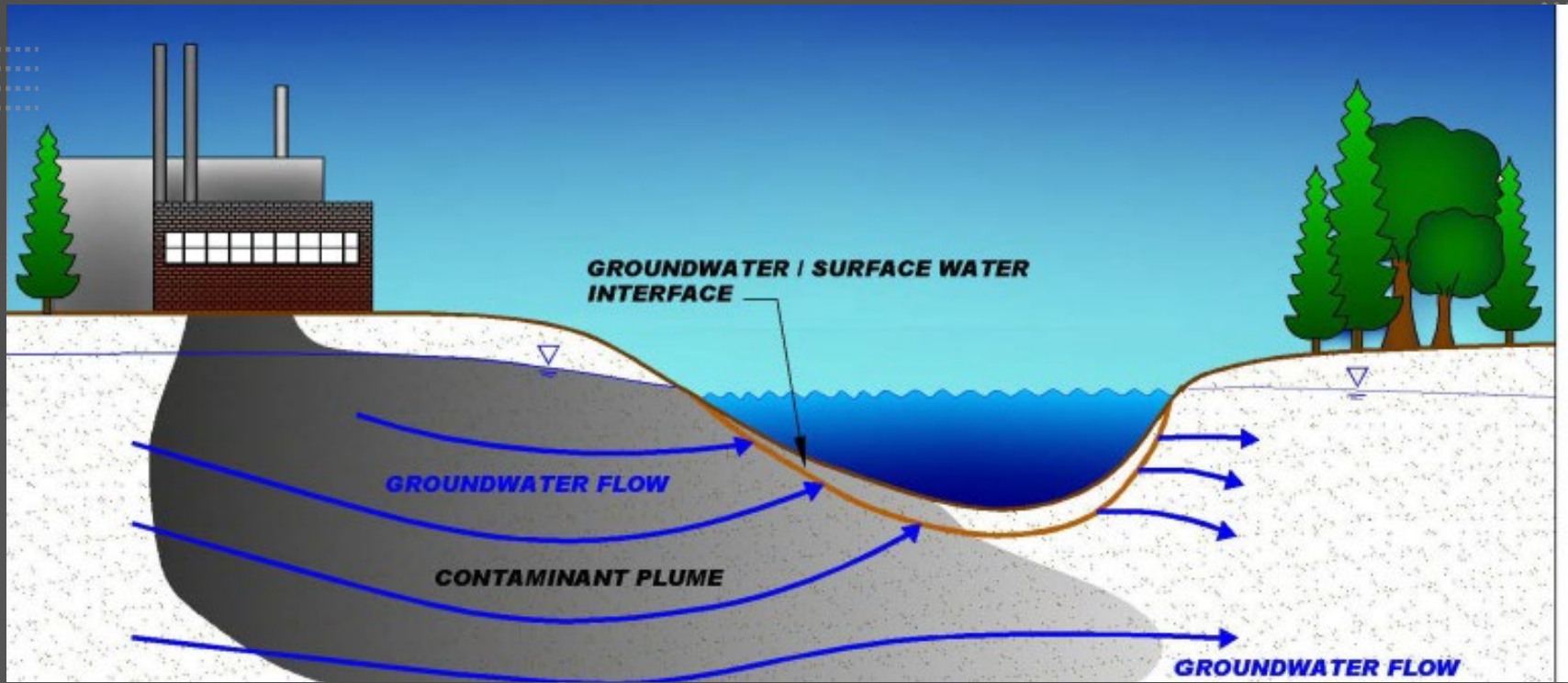
- During investigative trenching activities performed at the Site in February 2011, viscous tar deposits adjacent to buried wood timbers were discovered in the southwest portion of the Site
- The timbers and piping were found to originate off-site in the area of the former lagoon (now Presque Isle Place Apartments)
- 845 tons of tar conveyance materials (piping and wood structures), wood tar, and impacted soil were removed from the site for proper disposal



# Groundwater-Surface Water Interface Pathway

## GSI Pathway Remains a Concern

- What is Groundwater-Surface Water Interface or GSI?
  - GSI is defined as the location at which groundwater vents to a surface water body
  - The GSI pathway may be relevant if there is a hydraulic connection from the groundwater to the surface waters of the state
- What is a Mixing Zone?
  - A mixing zone is the portion of a surface water body in which venting groundwater is mixed with the receiving water.
- If generic GSI criteria are exceeded or reasonably expected to be exceeded at the GSI Interface, a person may request MDEQ approve a response activity that authorizes Mixing Zone-Based GSI Criteria pursuant to Section 3109a of NREPA. (R 299.5716(7) and (8))
- Allows discharge to be a regulated “permitted discharge” rather than an unregulated “unpermitted discharge”. A form of administrative closure based upon the contaminants migrating into a body of water not causing harm to human health or the environment



# GSI and Mixing Zone



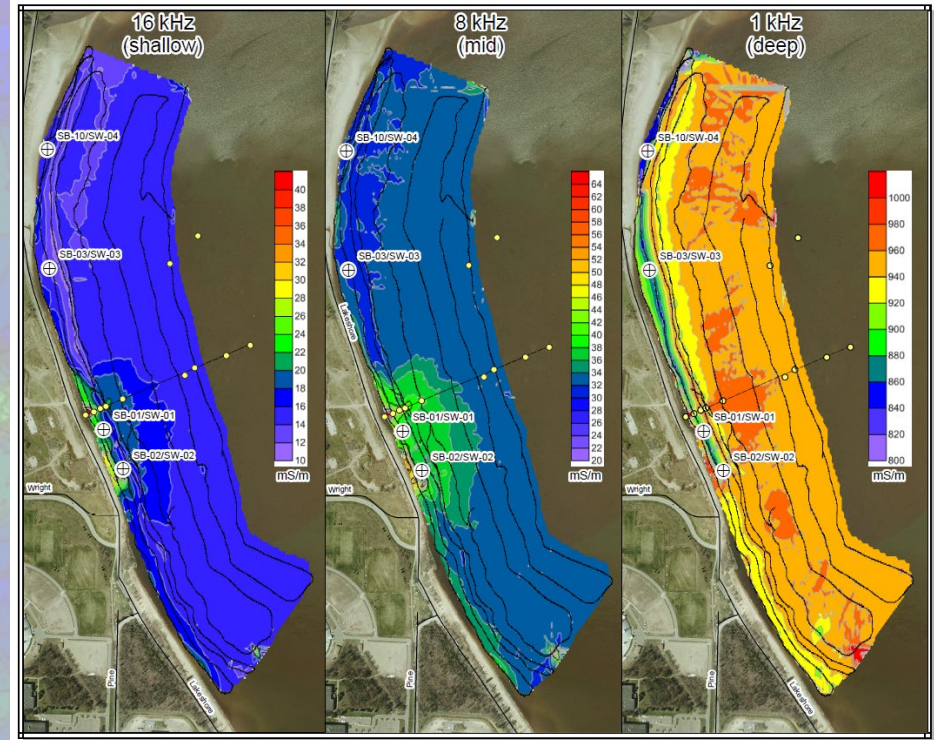
# Activities to Support MZ Determination

- April 2015 – Assessment work to support request for Mixing Zone (MZ)-based GSI Criteria
- October 2015 - Submitted preliminary request for MZ-based GSI Criteria to MDEQ
- February 2016 – Concluded MZ-based GSI Criteria may be applicable for site
- July 2016 – Submitted request to MDEQ RRD UP District Office for MZ-based GSI Criteria
- February 7, 2017 – MDEQ RRD UP District issues comments to request for MZ-based GSI Criteria
- March 3, 2017 – Meeting with MDEQ RRD UP District Staff to review comments
- Revised MZ Determination Request, April 2017
- November 7, 2017 – MDEQ RRD UP District issues calculated Mixing Zone-Based Groundwater-Surface Water Interface Criteria for Cliffs Dow Plant Site

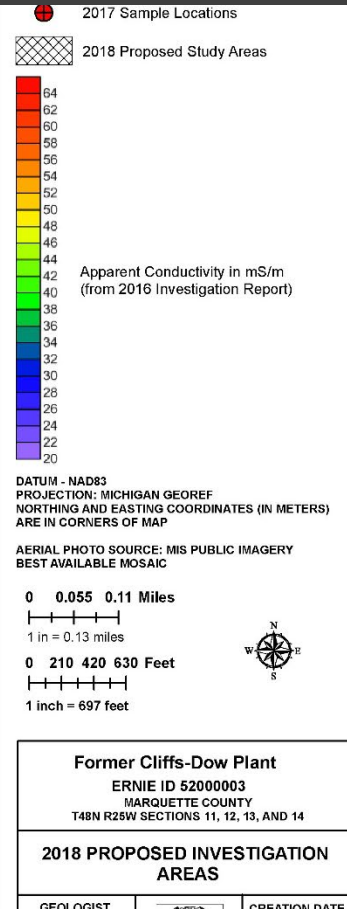
# MZ Determination Outcomes

- MZ-based GSI Criteria will be considered as compliance criteria
- Groundwater results must meet criteria (Acute vs. Chronic)
- Periodic monitoring will be required to demonstrate compliance with criteria
- If monitoring results meet MZ-based criteria, site will be in compliance with Part 201 Regulations
- If monitoring results do not meet MZ-based criteria, response actions may be necessary

- Bathymetric Survey
- Geophysical Survey
- Surface Water and Sediment Sampling
- Source: MDEQ/EGLE



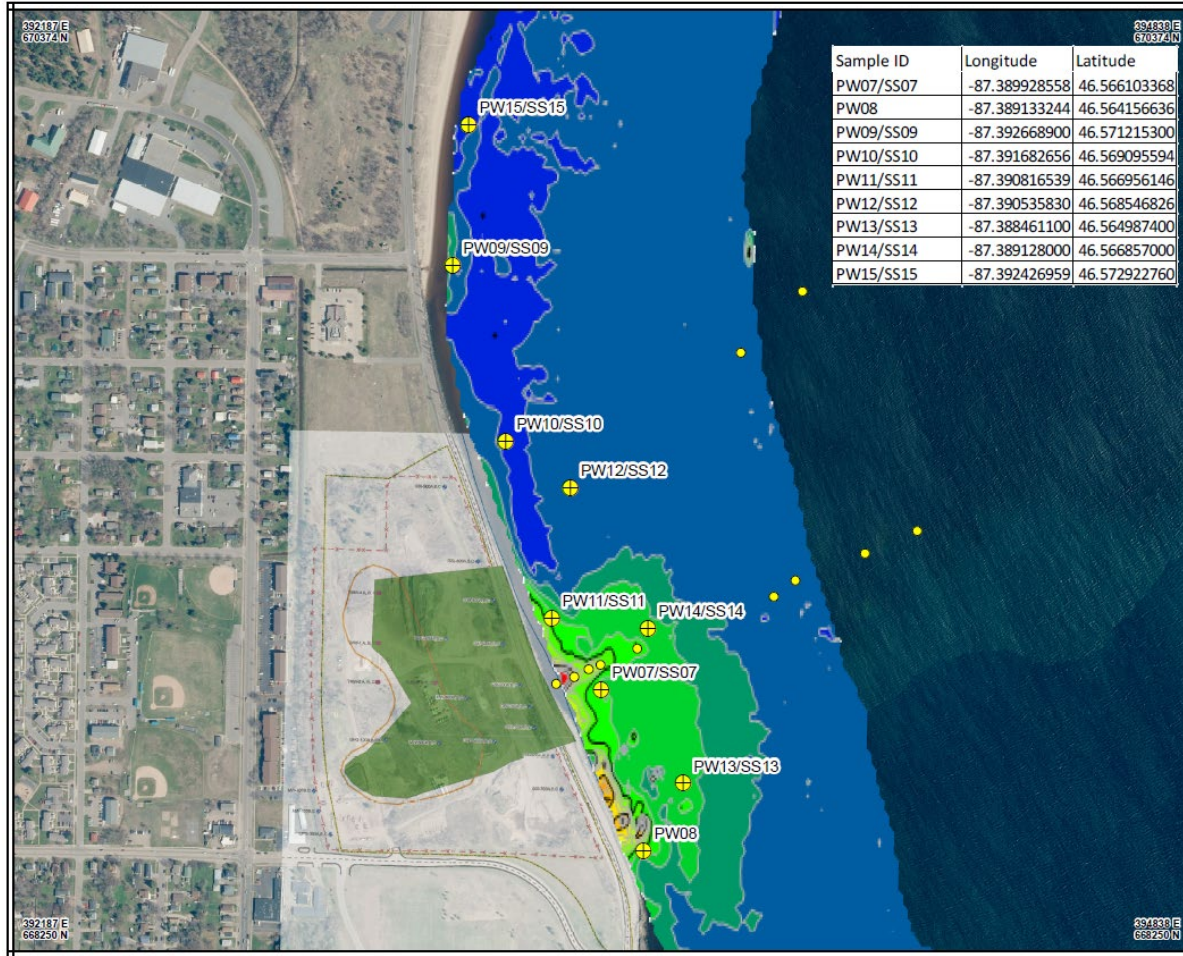
## MDEQ Offshore Assessment - 2016



## MDEQ Offshore Assessment – 2017

- Sediment and Pore Water Sampling
- Data and Results
- Source: MDEQ/EGLE
- Apparent Conductivity Can Provide Information Associated with Subsurface Conditions

# MDEQ Offshore Assessment – 2018



- Sediment and Pore Water Sampling
- Data and Results
- Source: MDEQ/EGLE

# EGLE Offshore Assessment – 2022

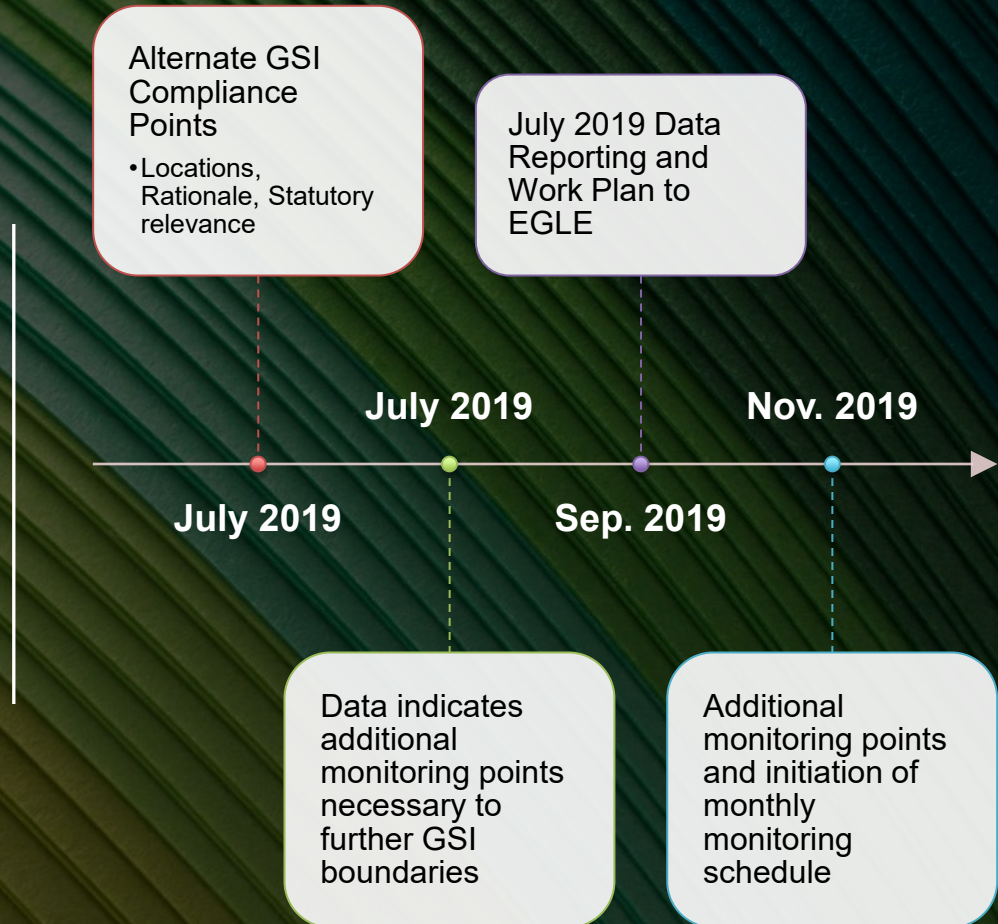


- Pore Water Sampling
- Data and Results
- Source: EGLE

# Site Groundwater Data and Mixing Zone- Based GSI Criteria

- Groundwater Monitoring identifies increase in select constituent concentrations at GSI Compliance Monitoring points in November 2017 and November 2018
- Increase in concentrations observed primarily in intermediate and deep interval locations (20 to 30 feet and 35 to 45 feet below the surface, respectively)
- Increased groundwater and lake elevations observed
- Precipitation and storm event frequency and intensity have increased

# Response Actions to Acute MZ- Based Criteria - Necessary to Further Define GSI Boundaries





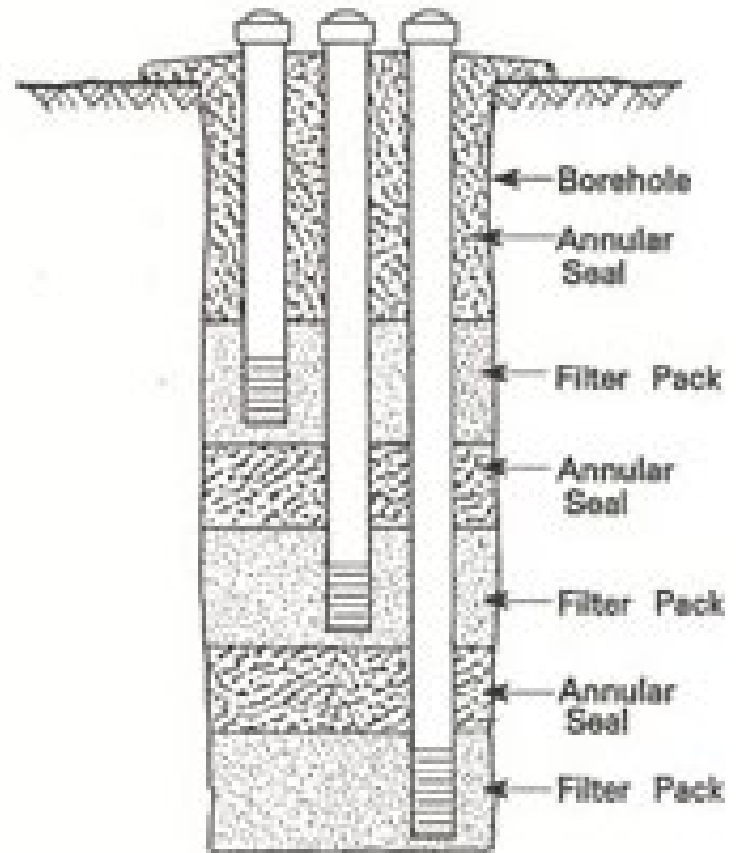


## Alternate/Additional Monitoring Points – 2019-2020

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# Nested Monitoring Well Configuration

- Nested well clusters corresponding to different depth intervals; these intervals are denoted as 'A', 'B', and 'C', to indicate shallow, intermediate, and deep intervals, respectively.
- 'A' wells – Screened approximately 5 to 10 feet below grade.
- 'B' wells - Screened approximately 20 to 25 feet below grade.
- 'C' wells - Screened approximately 35 to 45 feet below grade.





# Storm Events

- 10/24/2017 – Significant Damage to Picnic Rocks Park and Lakeshore Boulevard
- 11/27/2019 – Lakeshore Boulevard damaged from Wright Street to Hawley Street

# Site Redevelopment Lakeshore Boulevard Relocation and Shoreline Restoration



Lake Boulevard Relocation



Beach Restoration Concept Rendering

# Site Redevelopment

City of Marquette  
**Community Master Plan**



*A Superior Vision for Marquette*

- City Master Plan
  - Community Input
  - Property Re-use
  - Future Land Use Map Creation
- City Strategic Plan
  - Lakeshore Boulevard Relocation
  - Create Economic Development Opportunity



# Property Transfer

- A potential new owner or operator would be expected to conduct all appropriate inquiry (commonly referred to as: performing due diligence) to evaluate whether environmental contamination is potentially present on a piece of property.
- If contamination is present above one or more residential criteria, then the property is a 'Facility' as defined by Part 201.
- The new owner or operator can conduct a Baseline Environmental Assessment to obtain liability protection for existing contamination.
- The new owner or operator has "Due Care" obligations, which requires them to take measures to prevent unacceptable exposures to hazardous substances or create conditions that worsen the contamination.
- EGLE approval would be necessary for residential use.

# EGLE Involvement

- EGLE typically works with owners, operators, and purchasers of contaminated properties to facilitate safe redevelopment of property contaminated with hazardous substances.
- Michigan offers incentives for redeveloping contaminated, blighted, and functionally obsolete properties, including tax increment financing, brownfield site assessments, and grants and loans.



Circa 1950s



2015

# Brownfields

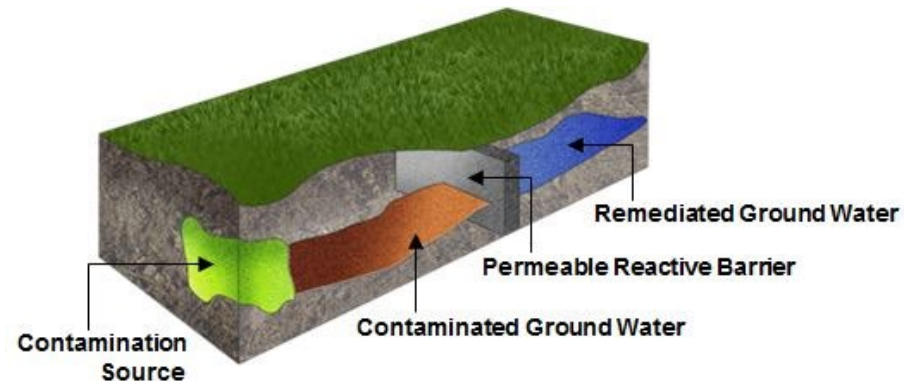
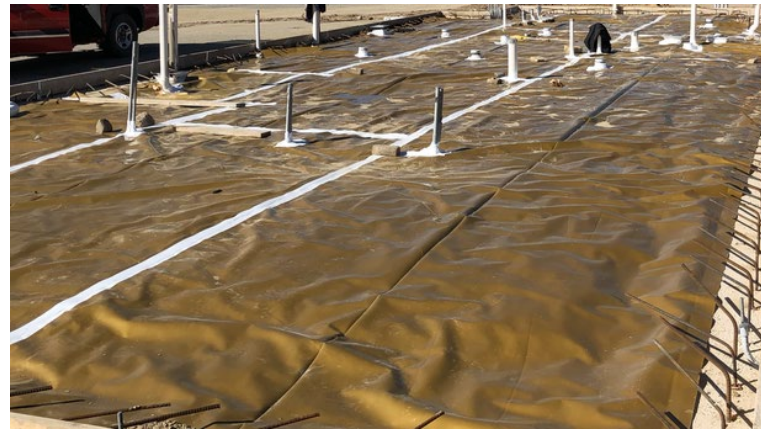
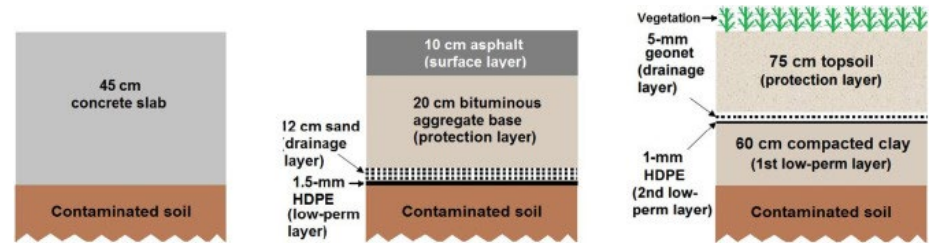
## ➤ Brownfield Opportunities

- Powerful tool used in the successful redevelopment of many contaminated properties across Michigan and the nation
- Through the Brownfield Redevelopment Financing Act, Brownfield tax increment financing (TIF) allows applicable taxing jurisdictions to receive property taxes on the property at the current level and capture the incremental increase in tax revenue resulting from a redevelopment project.
- TIF to reimburse brownfield related costs incurred while redeveloping contaminated, functionally obsolete, blighted or historic properties
- Has resulted in over \$30 million in redevelopment activities that are reimbursable expenses to the developer and the City Brownfield Redevelopment Authority



# Redevelopment

- Redevelopment activities must include measures to contain and/or prevent exposure to contamination
- These measure include the use Engineering and Institutional Controls
- Engineering Controls – physical mechanisms to prevent exposure
  - Capping contaminated soil
  - Vapor Mitigation Systems (active or passive)
  - Groundwater Migration Barriers
- Institutional Controls – legal and administrative mechanisms to prevent exposure
  - Land use controls
  - Groundwater use restriction – already in place, future development would use municipal water supply as required by ordinance



# Research and Evaluation of Approaches to Assess Potential GSI Venting Locations



Review of MDEQ/EGLE offshore bathymetric, geophysical, and surface water, sediment, pore water analytical data



Review and evaluation of feasible and cost-effective approaches to offshore condition assessment

# **Commission Discussion**

# Thank You



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