

Northeast Gravel/Boulder Creek Community Meeting

December 5, 2019



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Meeting Agenda



History of Area



Current PFAS Investigation



PFAS & Human Health



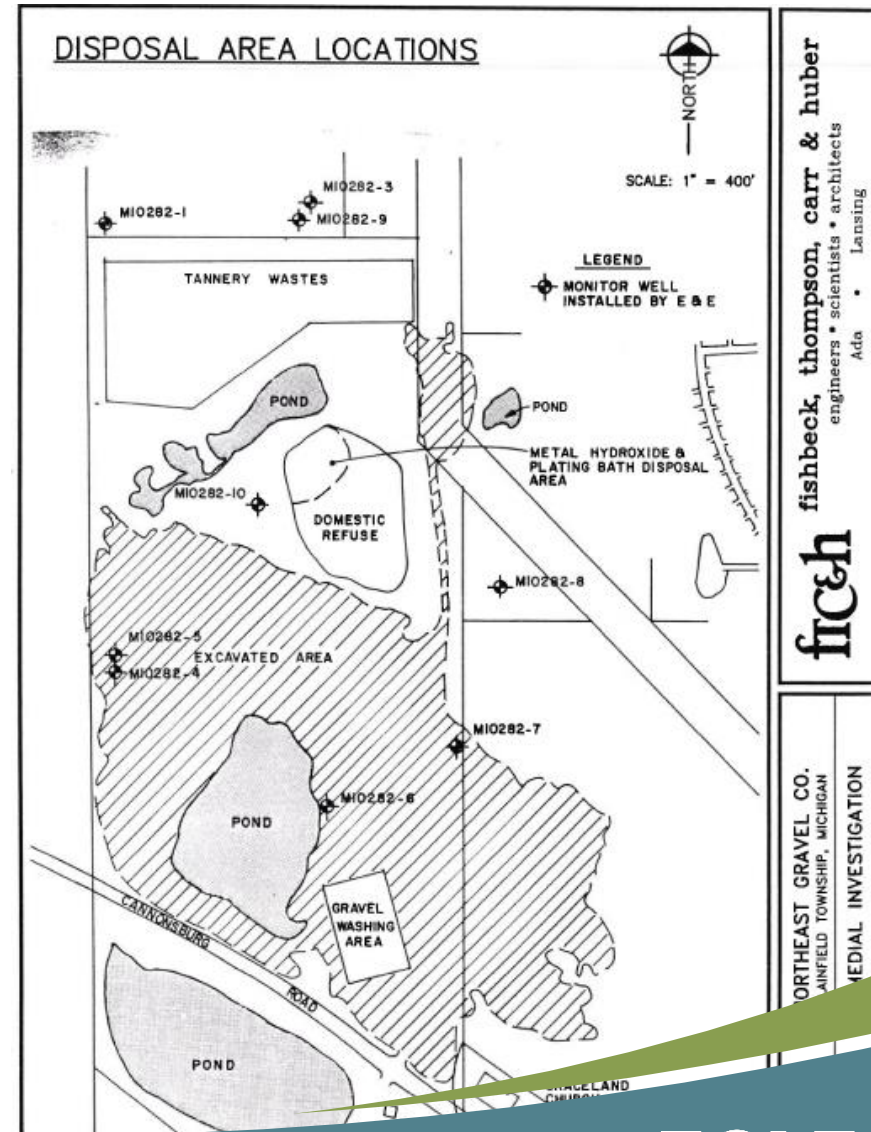
Resources



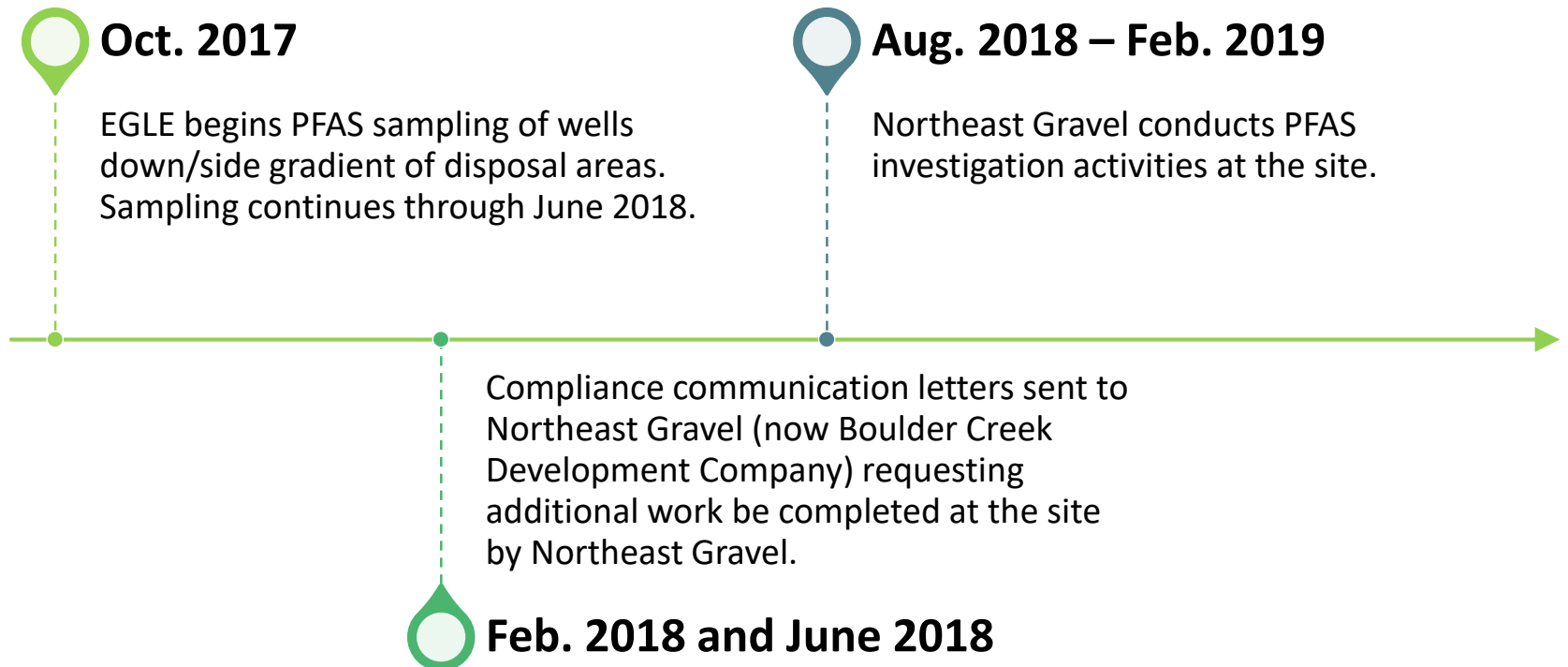
Questions and Answers

Northeast Gravel Site History

- Site is approximately 20 acres in size.
- Formerly a licensed landfill that operated from 1966 – 1979.
- 3 Disposal Areas:
 - Wolverine Tannery Waste;
 - Plating Waste Area;
 - Domestic Refuse Area.
- During the 1990's – Various environmental investigations completed
- 1998 - Limited Residential Based Remedy to address environmental contamination; golf course construction begins.



Northeast Gravel – PFAS Testing





Legend

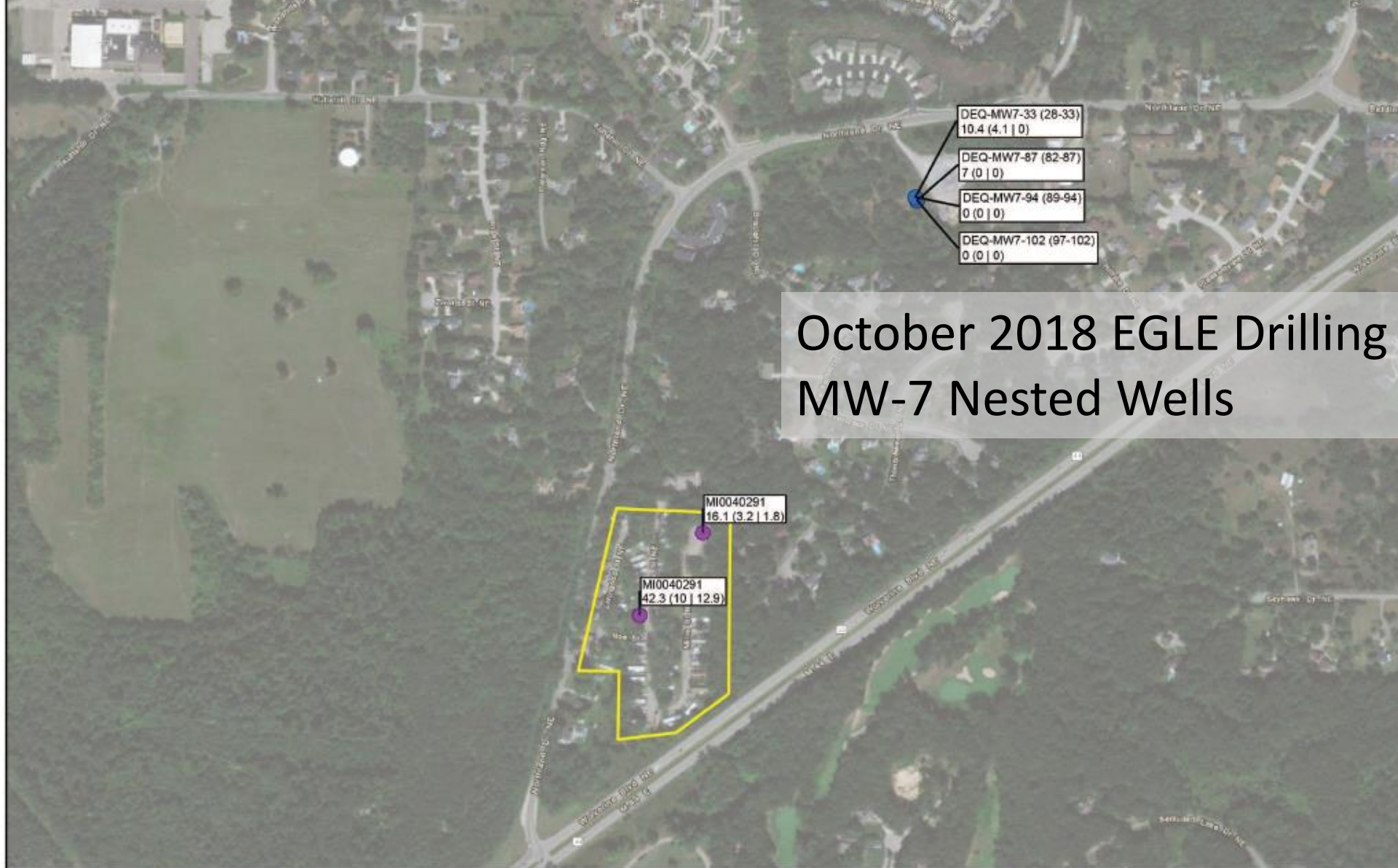
- Irrigation Well
- Non-Potable Well
- Residential Well
- ⊕ Monitoring Well
- ▲ Test Pit
- Soil Boring
- ▲ Surface Water Sample Location
- Stream Flow - Creek Gauging Location
- ⊕ Piezometer
- ▲ Proposed Surface Water Sample Location
- Approximate Boundary of Domestic Refuse Disposal Area
- Approximate Boundary of Plating Waste Disposal Area
- Approximate Boundary of Tannery Waste Disposal Area

*Approximate locations provided by FTC&H



PFAS SAMPLING LOCATIONS

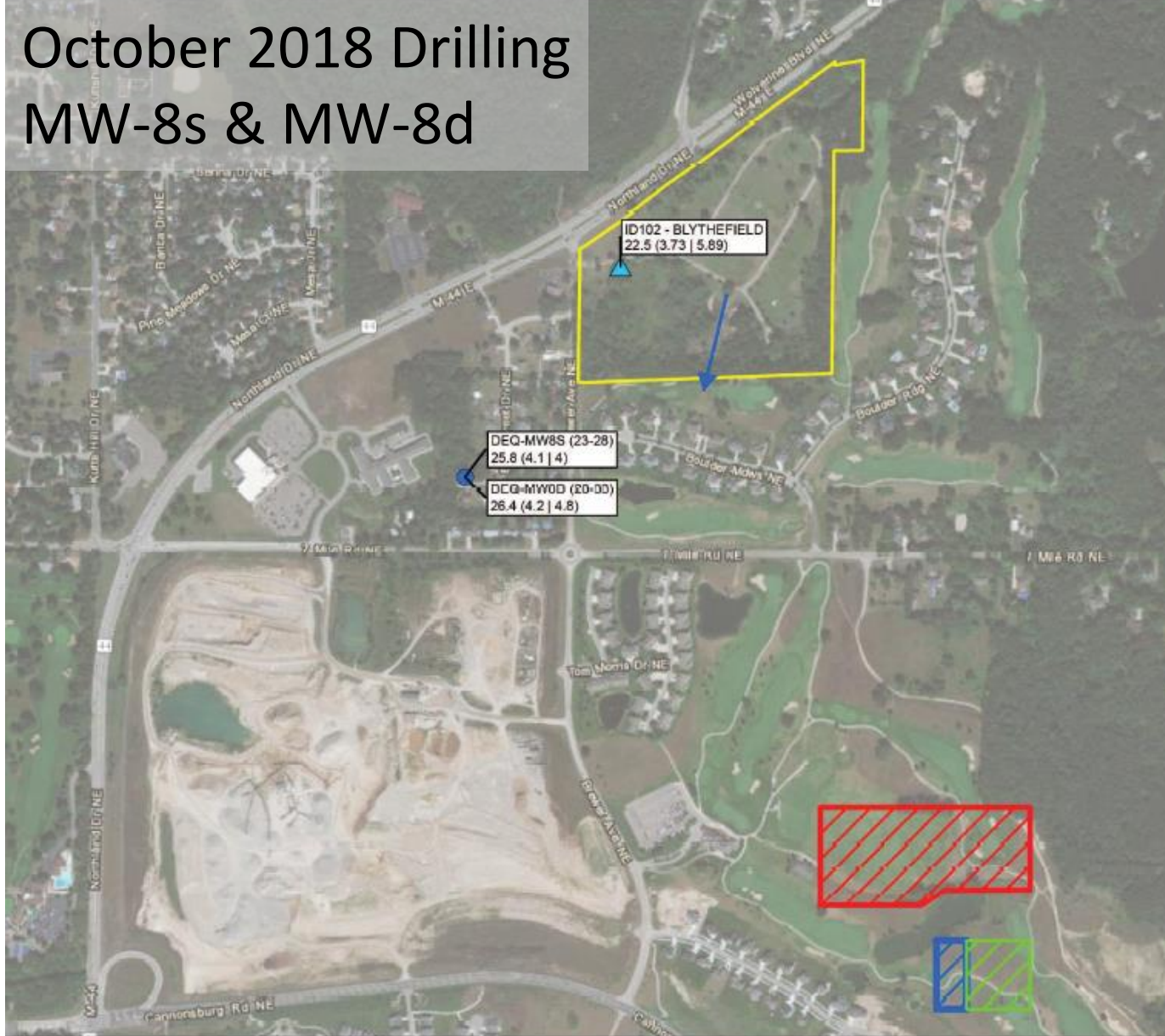
**NORTHEAST GRAVEL COMPANY
KENT COUNTY, MI**



October 2018 EGLE Drilling MW-7 Nested Wells

	Map Location	Legend <ul style="list-style-type: none"> ● Monitoring Wells - Sampled Nov. 2018 ● Municipal Wells - Sampled April 2018 □ Spring Valley Mobile Home Park Study Area 															
Prepared: 3/26/2019	<table border="1"> <thead> <tr> <th>Location (Sampling Interval, feet)</th> <th>Total PFAS (PFOA PFOS), ppt</th> </tr> </thead> <tbody> <tr> <td>DEQ-MW7-33 (28-33)</td> <td>10.4 (4.1 0)</td> </tr> <tr> <td>DEQ-MW7-87 (82-87)</td> <td>7 (0 0)</td> </tr> <tr> <td>DEQ-MW7-94 (89-94)</td> <td>0 (0 0)</td> </tr> <tr> <td>DEQ-MW7-102 (97-102)</td> <td>0 (0 0)</td> </tr> <tr> <td>MI0040291 (16.1)</td> <td>3.2 1.8</td> </tr> <tr> <td>MI0040291 (42.3)</td> <td>10 12.9</td> </tr> </tbody> </table>		Location (Sampling Interval, feet)	Total PFAS (PFOA PFOS), ppt	DEQ-MW7-33 (28-33)	10.4 (4.1 0)	DEQ-MW7-87 (82-87)	7 (0 0)	DEQ-MW7-94 (89-94)	0 (0 0)	DEQ-MW7-102 (97-102)	0 (0 0)	MI0040291 (16.1)	3.2 1.8	MI0040291 (42.3)	10 12.9	
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October 2018 Drilling MW-8s & MW-8d



Legend

- Monitoring Wells - Sampled Nov. 2018
- ▲ Surface Water Sample Location - Sampled 1/23/2018
- Bittersweet Drive Study Area
- Location (Sampling Interval, feet)
Total PFAS (PFOA | PFOS), ppt

- Approximate Boundary of Domestic Refuse Disposal Area
- Approximate Boundary of Plating Waste Disposal Area
- Approximate Boundary of Turnery Waste Disposal Area

→ Approximate regional groundwater flow direction

* Groundwater flow direction determined using Kent County water table contour data from the MI Geographic Data Library at <https://www.mcgi.state.mi.us/mgdl/?railcontext&action=Kent>



PFAS Investigation Continues

- **May 23, 2019:** Northeast Gravel provides EGLE with the results of this investigation in a summary report. Based on report, site became its own investigation area on MPART website.
- **June 2019:** EGLE & Kent County Health Department meeting with Northeast Gravel to discuss findings.
- **July 2019:** EGLE compiles a “Geologic Review” of findings, for areas north of 7 Mile Road. Requests more work be completed.

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HEALTH DRINKING WATER INVESTIGATIONS TESTING FISH AND WILDLIFE PFAS FOAM MPART

PFAS RESPONSE / INVESTIGATIONS / PFAS SITES

Northeast Gravel, Belmont, Kent County

Updated: November 13, 2019


Background

This site is located at 3769 Cannonsburg Road, NE and is approximately 20 acres in size. Currently a golf course, the site was formerly a licensed landfill that operated from 1966 - 1979. During that time, the site contained three disposal areas, including a Wolverine World Wide tannery waste area, a plating waste area, and a domestic refuse area. EGLE used state funding to sample nearby vulnerable drinking water wells starting in October 2017. These results were reported and tracked in EGLE's overall North Kent County PFAS Investigation. EGLE requested Northeast Gravel Company (now Boulder Creek Development Company, LLC (BCDC)) to conduct additional investigation and response actions; once EGLE was provided with the report summarizing these actions, it was determined this property should be reported as its own MPART site.



July 2019 – EGLE Geologic Review



 Possible Groundwater and Surface Water Flow Directions from Boulder Ridge Golf Greens Watered with PFAS Impacted Water

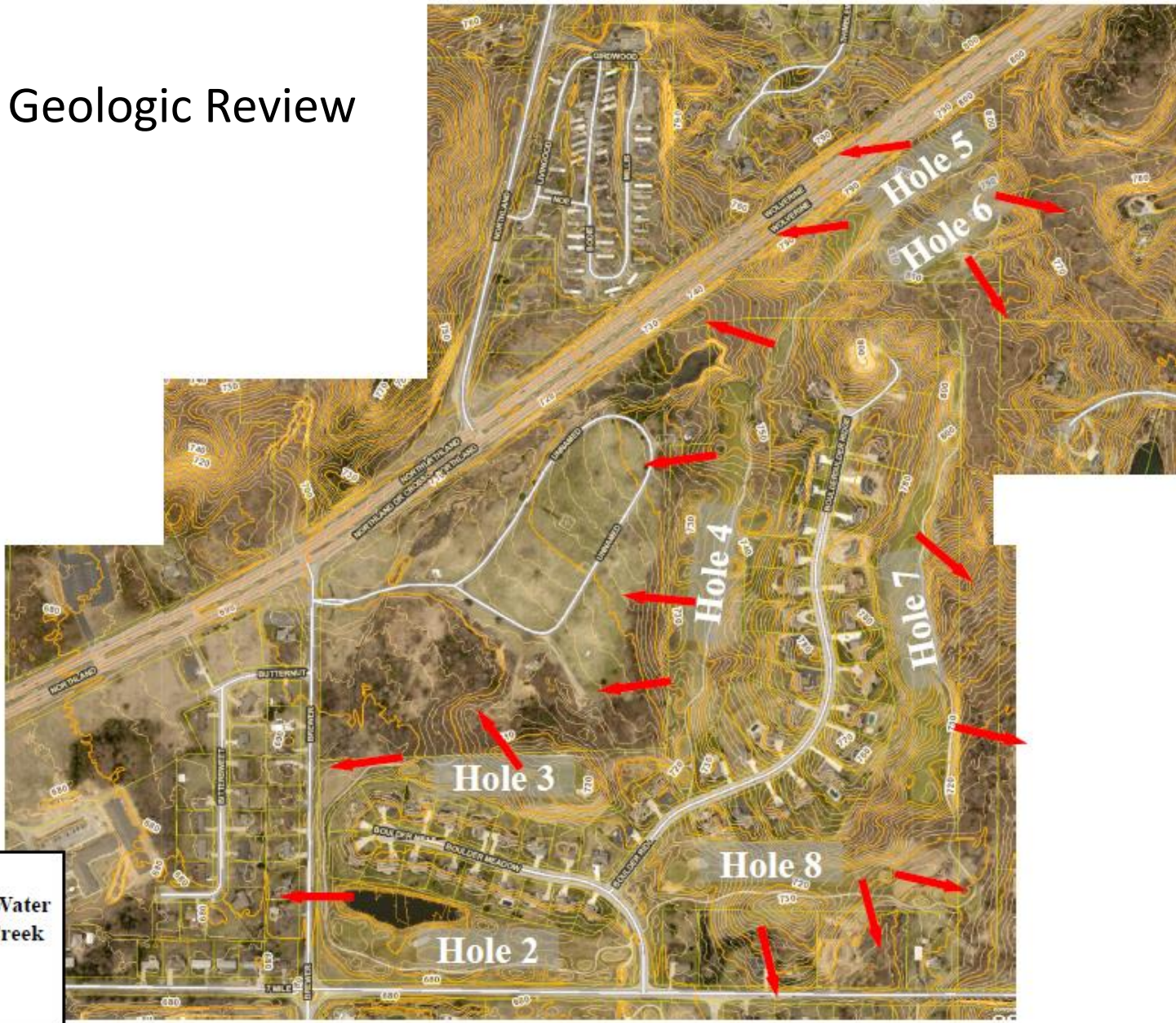


Figure 6
Possible Groundwater and Surface Water Flow Directions From the Boulder Creek Golf Club Greens
Plainfield Township MI

PARCEL IDENTIFICATION



0 300 600 FEET

- LEGEND**
- Soil Boring Location
 - ▲ Test Pit
 - ▲ Proposed Surface Water Sample Location
 - ▲ Surface Water Sample Location
 - ◆ Monitoring Well
 - Residential Well
 - Non-Potable Well
 - Irrigation Well
 - ▨ Approximate Boundary of Tannery Waste Disposal Area
 - ▨ Approximate Boundary of Domestic Refuse Disposal Area
 - ▨ Approximate Boundary of Plating Waste Disposal Area
 - ▭ Parcel Boundary
 - ▭ Sampling Area

- ▲ 1st Round Sampling: 27 Houses
- 2nd Round Sampling: 10 Houses
- ★ Filter Offers: 18 Houses
- Bedrock Wells: 5 Houses

Next Steps Proposed by Northeast Gravel

- Sample near-by drinking water wells (on-going) and assess PFAS data
- Installation of monitor wells based on the drinking water well data
- Sampling of near-by surface water bodies and installation of staff gauges
- Development of Conceptual Site Model based on above data
- Source of water for irrigation at the golf course will be changed from the PFAS impacted ponds located near the former disposal area to water from the active gravel mining activities (to be completed by May 2020)

Per and Polyfluorinated Alkyl Substances (PFAS)

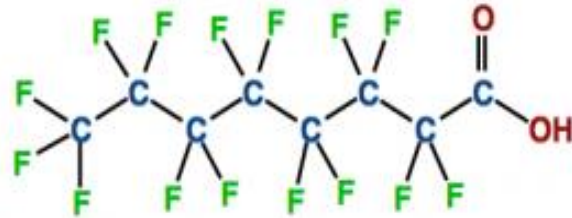
Bill Farrell

Michigan Department of Health and Human
Services

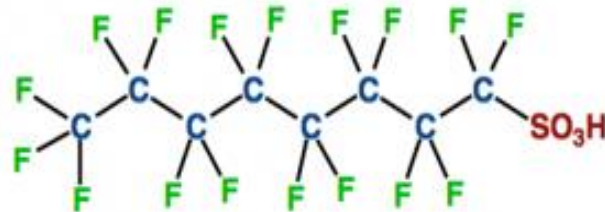
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PFAS

- About 5000 or more chemicals
- Human-made chemicals
 - heat-resistant
 - repel oil, stains, grease, and water
 - do not breakdown
 - bioaccumulate
- PFOA and PFOS are most studied



PFOA - perfluorooctanoic acid



PFOS - perfluorooctanesulfonic acid

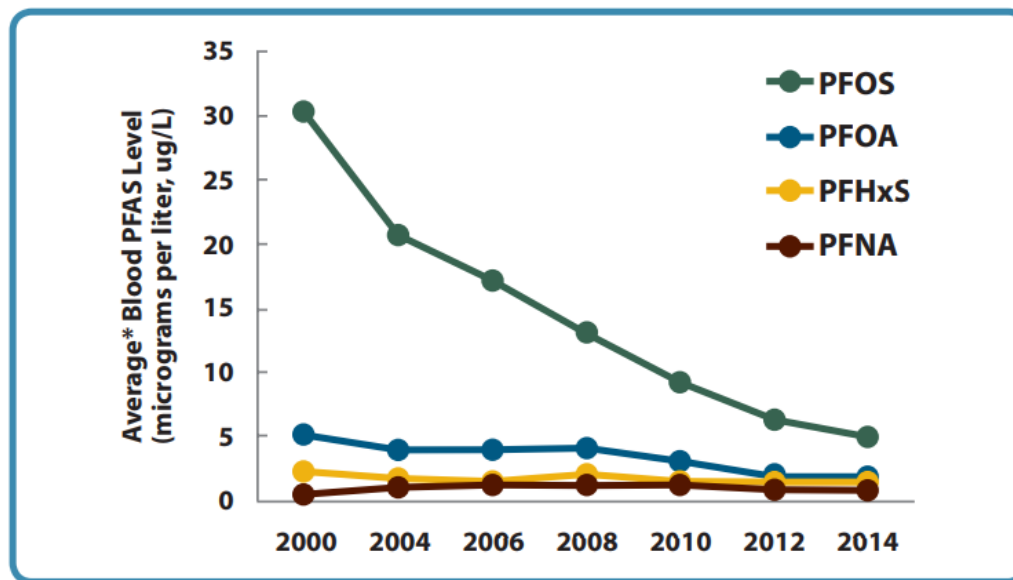
HUMAN EXPOSURE

- ▶ Not naturally occurring substances
- ▶ Local high strength sources vs background exposures
- ▶ Ingestion is main pathway
 - Contaminated drinking water
 - Contaminated foods
 - Locally harvested fish and wild game
 - Homegrown (gardens)
 - Purchased (grocery store)
 - Food packaging (e.g., popcorn bags, fast food containers, etc.)
 - Until recently- PFAS now largely phased out of food packaging
 - Incidental ingestion (i.e., dust, soil, direct contact)

PFAS Sources



Blood Levels of the Most Common PFAS in People in the United States from 2000-2014



* Average = geometric mean

Data Source: Centers for Disease Control and Prevention. Fourth Report on Human Exposure to Environmental Chemicals, Updated Tables, (January 2017). Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

Health Outcomes (PFOA and PFOS)

In People:

- ▶ Alter cholesterol
- ▶ Thyroid disease (PFOA)
- ▶ Ulcerative colitis (PFOA)
- ▶ Testicular and kidney cancer (PFOA)
- ▶ Alter immune system function

In Laboratory Animals:

- ▶ Developmental effects
 - ▶ Reduce ossification of the proximal phalanges
 - ▶ Decrease pup birth weight
 - ▶ Accelerated puberty in male pups
- ▶ Immune system dysfunction
- ▶ Alter liver and kidney weight

Multiple Lines of Consideration for Determining Public Health Response Actions

- ▶ EGLE Part 201 Residential Drinking Water Criterion (70 ppt PFOA + PFOS)
- ▶ MDHHS Public Health Screening Levels
- ▶ Residential Well Results (individually and collectively)
- ▶ Site-specific information (e.g., known source, geology, etc.)

PFAS Public Health Drinking Water Screening Levels

- ▶ Health-based
 - ▶ Protective of fetus and breastfed infants
 - ▶ Also protective of formula fed infants and other ages
- ▶ Used to determine if further evaluation for PFAS is necessary
- ▶ Used to determine if public health actions are needed
- ▶ Non-regulatory

MDHHS Public Health Drinking Water Screening Levels

Type of PFAS	MDHHS Public Health Drinking Water Screening Levels
PFOA	9 parts per trillion (ppt)
PFOS	8 ppt
PFNA	9 ppt
PFHxS	84 ppt
PFBS	1,000 ppt

Drinking Water Health-based Values

Type of PFAS	Health based Value (ppt)
PFOA	8 ppt
PFOS	16 ppt
PFNA	6 ppt
PFHxA	400,000 ppt
PFHxS	51 ppt
PFBS	420 ppt
GenX	370 ppt

MDHHS/KCHD Contacts

MDHHS:

Bill Farrell, Toxicologist

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KCHD:

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Andrew Salisbury, MPH

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Andrew.Salisbury@kentcountymi.gov

Resources

Michigan PFAS Action Response Team (MPART)

<https://www.michigan.gov/pfasresponse/>

Click on “investigations”“PFAS sites”.....then scroll down to **Northeast Gravel Site**.

The screenshot shows the Michigan PFAS Action Response Team website. At the top, the Michigan.gov logo is on the left, and navigation links for 'RECEIVE UPDATES', 'FAQS', 'CONTACT MPART', and 'SEARCH' are on the right. Below this is a green header with the text 'Department of Environment, Great Lakes, and Energy' and 'Michigan PFAS Action Response Team'. A navigation bar contains several menu items: 'HEALTH', 'DRINKING WATER', 'INVESTIGATIONS', 'TESTING', 'FISH AND WILDLIFE', 'PFAS FOAM', and 'MPART'. The 'INVESTIGATIONS' menu is circled in red, and a red arrow points from it to the 'PFAS SITES' link in the 'AREAS OF INTEREST' section below. The 'PFAS SITES' link is also circled in red. Below the navigation bar, there is a section titled 'PFAS sites are where one or more groundwater sample exceeds the Part 201 cleanup criteria for groundwater used as drinking water, which is 70 ppt PFOS + PFOA. New site summaries are routed through MPART so that all agencies are aware of the site and can contribute to the investigation as needed. Sites are added to the map at the right after being vetted through MPART.' To the right of this text is a section titled 'View the Michigan PFAS Sites Interactive Map' with an image of a computer monitor, a smartphone, and a tablet displaying the interactive map.

Department of Environment, Great Lakes, and Energy Michigan PFAS Action Response Team						
HEALTH	DRINKING WATER	INVESTIGATIONS	TESTING	FISH AND WILDLIFE	PFAS FOAM	MPART
Lansing, RACER Plants 2, 3, & 6	Pitsch Sanitary Landfill	Lacks Industries - Saranac	Oscoda Area			
Iosco County, Oscoda, Wurtsmith Air Force Base	Isabella County, Mount Pleasant, Isabella County Landfill	Isabella County, Mt. Pleasant, Mt. Pleasant City Landfill	Isabella County, Mt. Pleasant, Roosevelt Refinery			
Jackson County, Jackson, Michner Plating	Kalamazoo County, Kalamazoo, Nolichucky Industrial Corp.	Kalamazoo County, Parchment, Crown Vantage Property	<u>Kalamazoo County, Richland Township, North 34th Street</u>			
Kent County, Belmont, Northeast Gravel	Kent County, Grand Rapids, Cottage Grove and Marshall Area	Kent County, Grand Rapids, Gerald R. Ford International Airport (GFIA)	Kent County, Grand Rapids, Lacks Industries - Cascade			
Kent County, Grattan Township, Ashley Avenue Disposal Area	Kent County, Kentwood, Former Keeler Brass - 32nd Street	Kent County, Plainfield Township, State Disposal Superfund Site	Kent County, Rockford, Belmont House Street Disposal Area			

- Website updated monthly

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Recent Accomplishments

- On October 24, 2019, BCDC's environmental consultant mailed out 27 letters to homes who are included in the initial residential well sampling effort surrounding the golf course greens north of 7 Mile Road. Sampling of those houses will begin the week of November 11th. EGLE requested this sampling be completed after finding out that the golf course used PFAS impacted water to irrigate the golf course north of 7 Mile Road.
- On October 29, 2019, EGLE sent BCDC a letter in response to the "Response Activity Plan for PFAS". The letter served as EGLE's approval of the proposed work (minus Section 4.3 which was discussed in the September 19, 2019 letter).

Health Related Information:

Kent County Health Department - (Sara Simmonds; Andrew Salisbury)
Michigan Department of Health and Human Services -(Bill Farrell)

Environmental Investigation Oversight:

Michigan Department of Environment, Great Lakes, and Energy

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