

Cascade Twp. Residential Drinking Water PFAS Investigation Update

August 22, 2019





MICHIGAN PFAS ACTION RESPONSE TEAM (MPART)

www.Michigan.gov/PfasResponse

EGLE

MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY



MPART

Michigan PFAS Action Response Team (MPART)

Governor Whitmer signed Executive Order 2019-3 on February 4, 2019:



- The Order establishes MPART as an enduring body
- MPART is an advisory body within the DEQ (e.g. DEQ lead)
- Unique multi-agency approach
- Leads coordination and cooperation among all levels of government
- Directs implementation of state's action strategy

MPART

Michigan PFAS Action Response Team

Michigan.gov

FAQS

NEWS AND EDUCATION

CONTACT MPART

SEARCH

PFAS RESPONSE

TAKING ACTION, PROTECTING MICHIGAN

HEALTH

TESTING AND TREATMENT

MICHIGAN PFAS SITES

FISH AND WILDLIFE

FIREFIGHTING FOAM

ABOUT MPART

VIEW THE DOCUMENTS FROM THE APRIL 4, 2019 MPART MEMBERS MEETING
GOV. WHITMER DIRECTS MDEQ TO ESTABLISH DRINKING WATER STANDARDS

TAKING ACTION TO PROTECT THE PUBLIC'S WATER

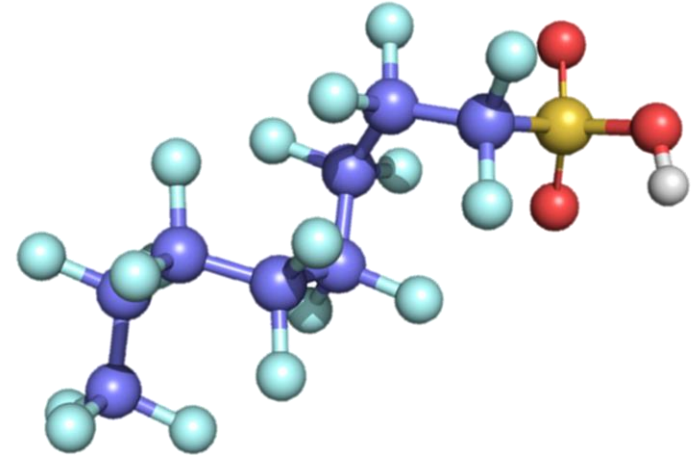
Per- and polyfluoroalkyl substances (PFAS) are a large group of man-made chemicals that include perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). PFAS have been used globally during the past century in manufacturing, firefighting and thousands of common household and other consumer products. These chemicals are persistent in the environment and in the human body – meaning they don't break down and they can accumulate over time. In recent years, experts have become increasingly concerned by the potential effects of high concentrations of PFAS on human health.

Although there is still more to learn about PFAS and human health, the State of Michigan takes this issue seriously and is one of the first states in the nation to establish a clean-up standard for PFAS in groundwater used for drinking water.

The Michigan PFAS Action Response Team (MPART) builds on previous work to research, identify, recommend, and implement PFAS response actions throughout the state. Agencies representing health, environment, natural resources, and other



MPART Response



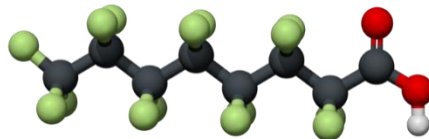
- Focus:
 - Protecting public health
 - Investigating areas and reducing exposure
 - Assisting responsible parties in remediation efforts
 - Working with communities and other agencies
 - Implementing proactive efforts

What are PFAS?

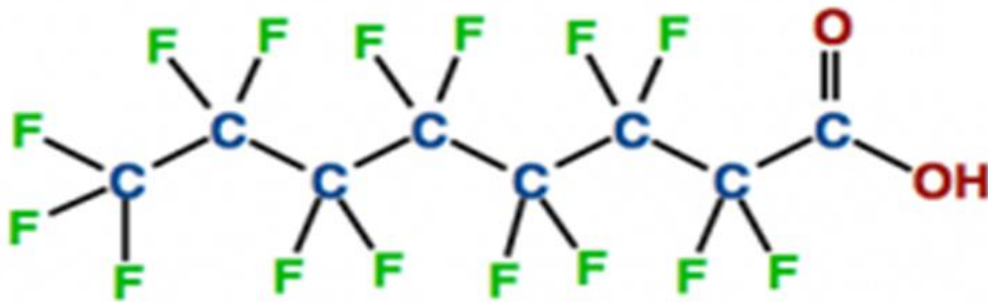
Per and Poly-fluoroalkyl substances

- Generic family of chemicals = over 5000
- Man-made and do not occur naturally
- Developed in 1940's
- Used to make products that resist heat, oils, grease, stains and water

Most Prevalent and researched : PFOS & PFOA



Per-and polyfluoroalkyl substances (PFAS)



PFOA - perfluorooctanoic acid

- Strong carbon-fluorine bonds
- Surfactants
- Hydrophobic (repels water) and oleophobic (repels oil, fat, grease)
- 5,000+ compounds

PFAS Uses



Aerospace



Apparel



**Building and
Construction**



**Chemicals and
Pharmaceuticals**



Electronics



Oil & Gas



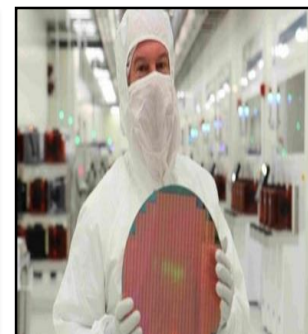
Energy



**Healthcare and
Hospitals**



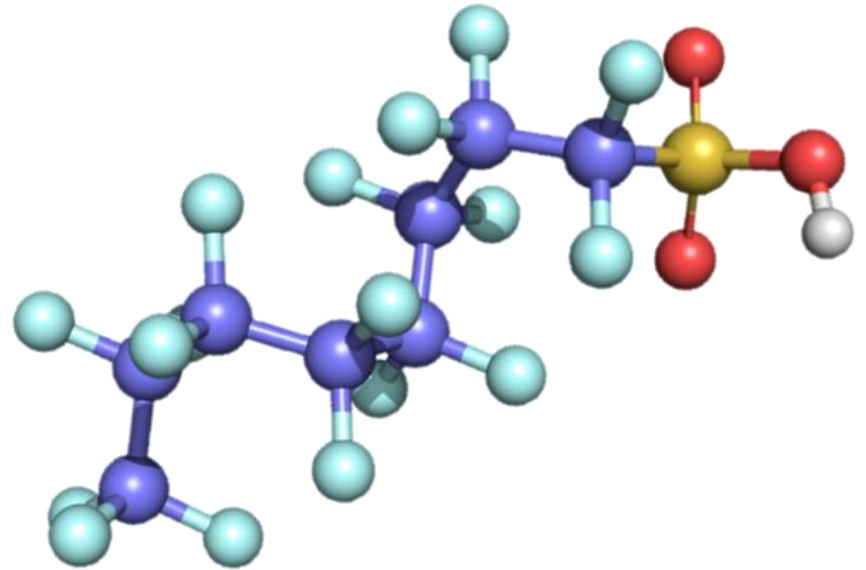
**Aqueous Film
Forming Foam**



Semiconductors

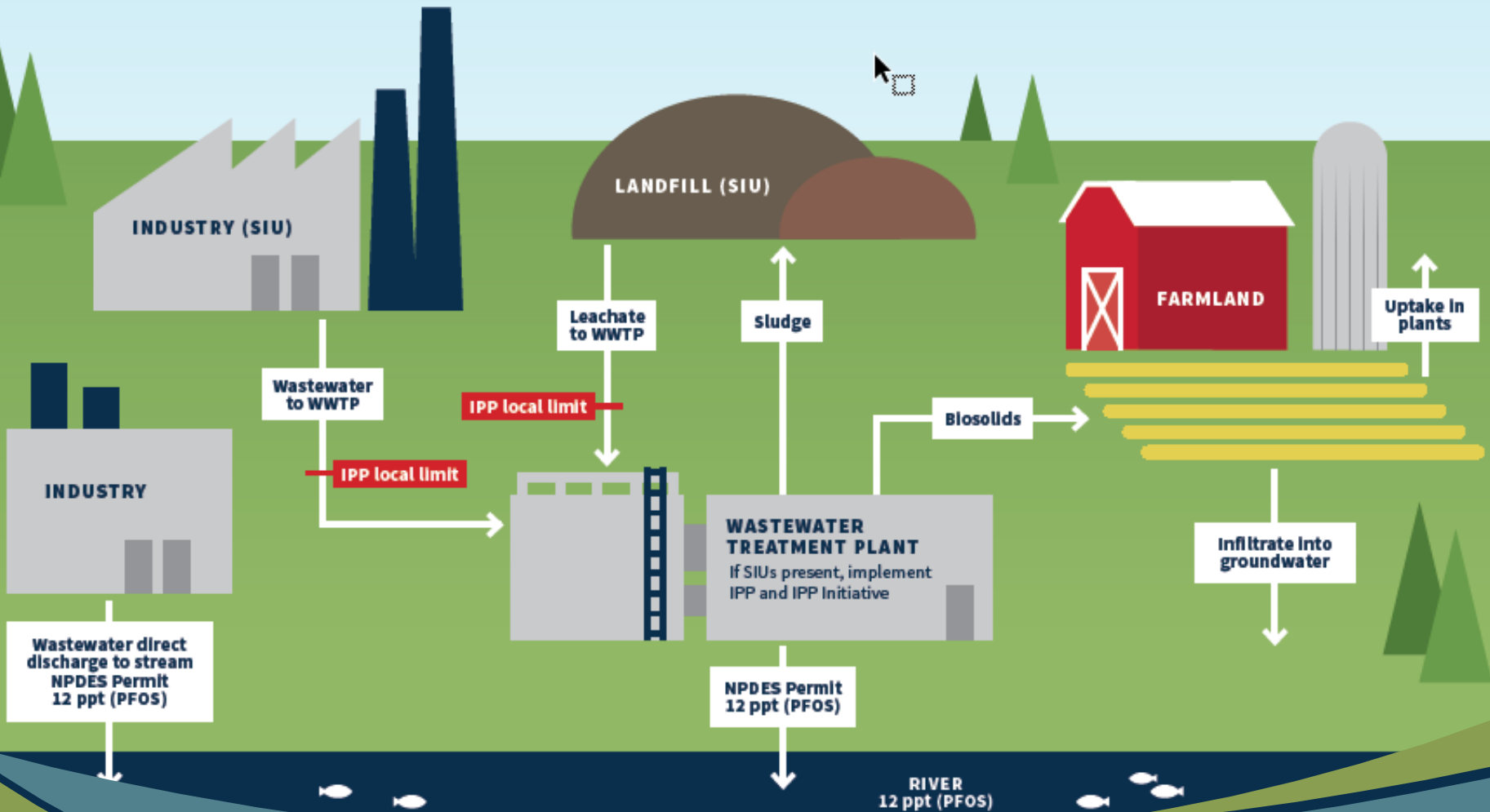
Why the Concern?

- Pervasive
- Persistent
- Bioaccumulative
- Associated with adverse health effects
- Scarcity of information in scientific literature
- Lack of sufficient standards



PFAS Water Cycle

IPP = Industrial Pretreatment Program
SIU = Significant Industrial User
NPDES = National Pollutant Discharge Elimination System
PPT = Parts Per Trillion
WWTP = Wastewater Treatment Plant





MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Cascade Twp. Residential Drinking Water Well PFAS Investigation Update

Aaron Assmann

Environmental Quality Analyst

Remediation and Redevelopment Division

Grand Rapids District Office

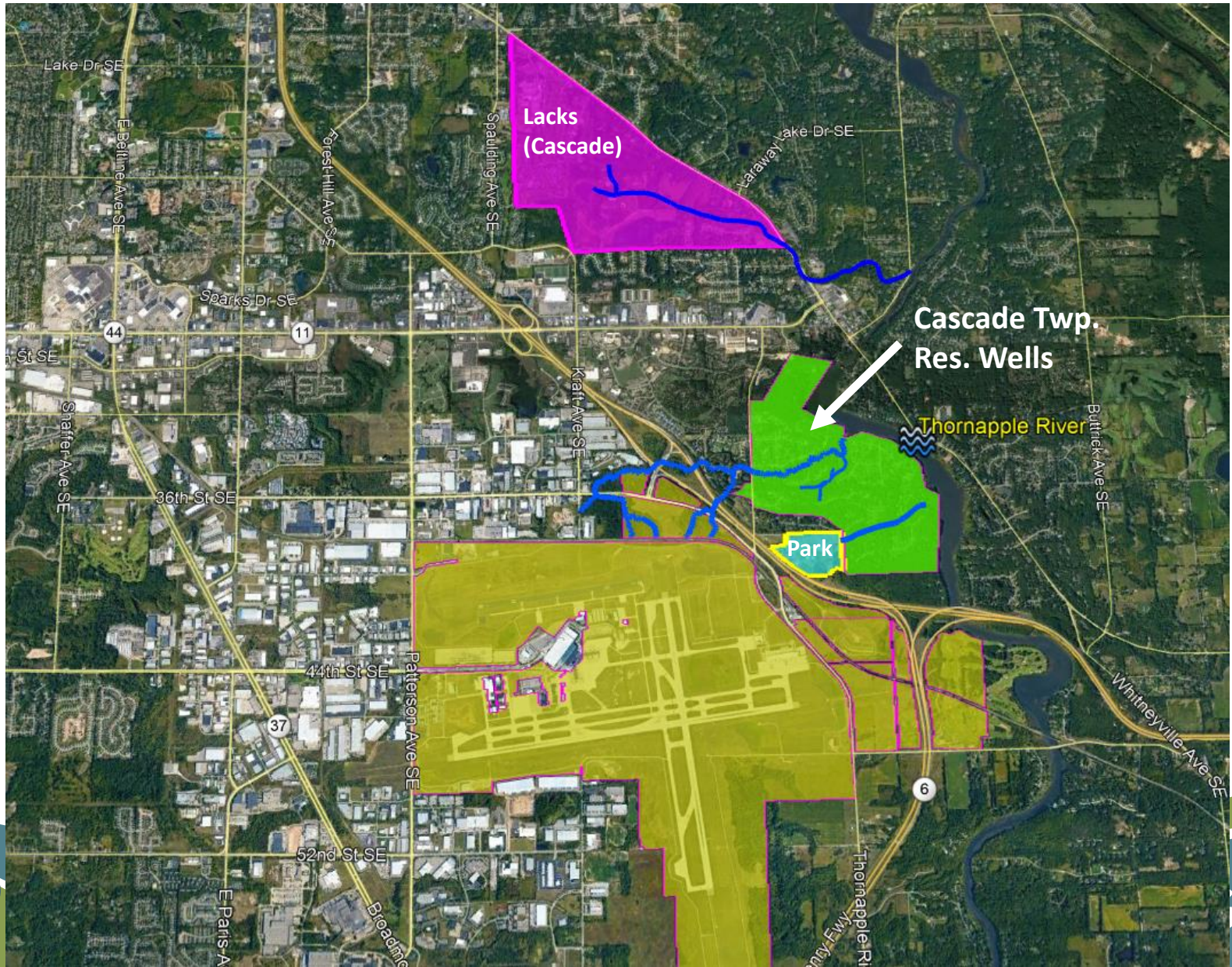
616-430-5275 | AssmannA@Michigan.gov

Background

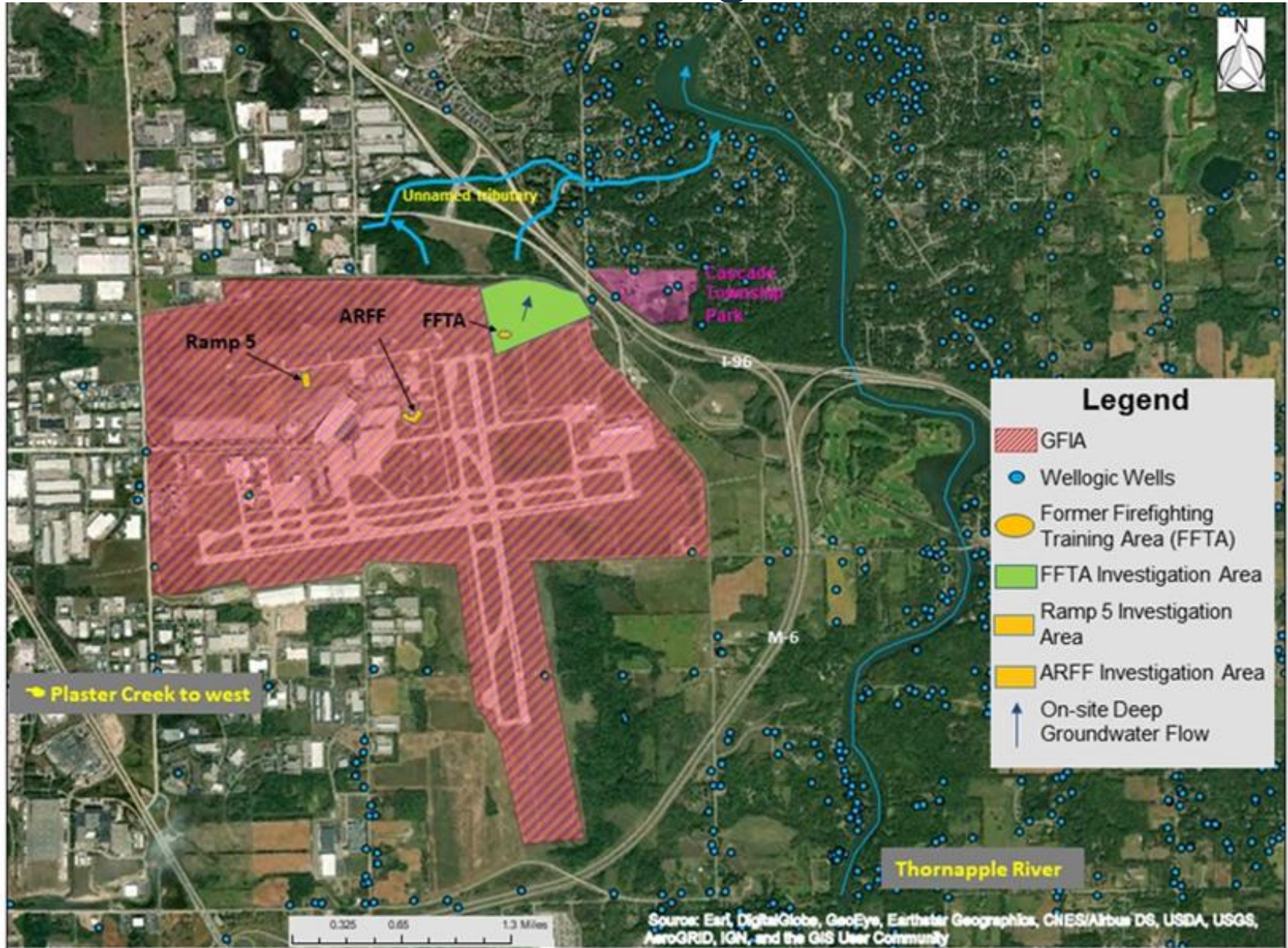
- Initial sample area was selected due to:
 - Proximity to known and potential PFAS sources
 - Aqueous Film Forming Foam (AFFF) use at GFIA
 - Industrial Pre-treatment Program (IPP)
 - Local geologic features and their complexity
 - Drinking water wells vs. groundwater monitoring wells
 - Independent test results
- EGLE undertook Cascade Township Residential Well sampling to assess potential risk to public health.

Cascade Township Residential Well Sampling

Sampling not associated with the Lack's Industries (Cascade) project



Gerald R. Ford International Airport (GFIA) – PFAS Investigation

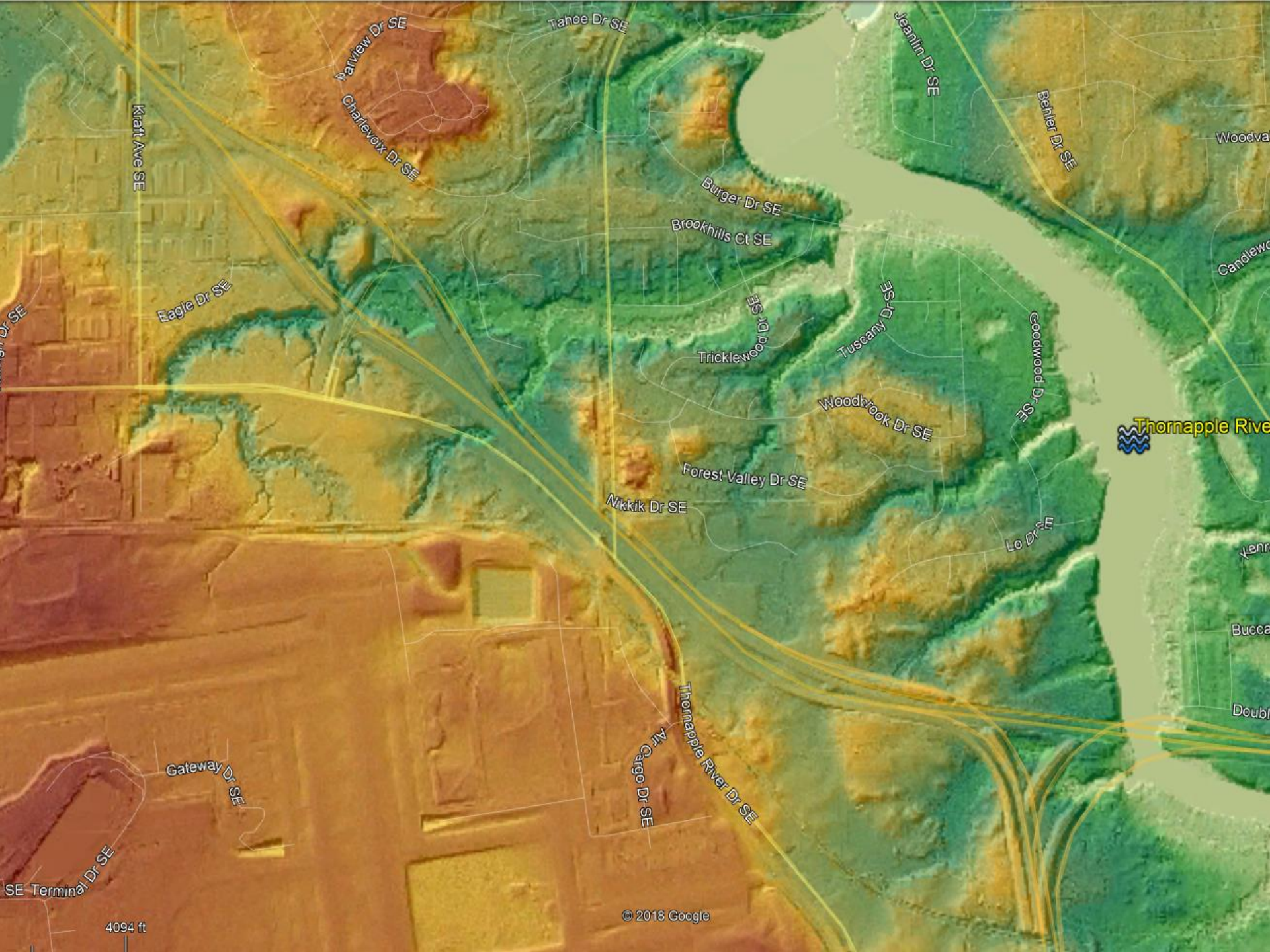


GFIA – Confirmed PFAS site

- 28 off-site residential well samples below 70 ppt PFOA+PFOS
 - 27 non-detect. One = 12 ppt Total PFAS
- PFAS detected in surficial soil and shallow groundwater above EGLE standard
- PFAS detected in deep groundwater below EGLE standard

Collective Sampling Results – To Date

Type of Sample	# of Samples	# of Results Received	# of Non-detects	# Between Non-detect and standard*	# \geq Standard
Deep Groundwater	22	22	2	20	0
Shallow Groundwater	9	9	0	8	1
Residential wells	28	28	27	1	0
Independent Res. Wells	22	22	11	11	0
Surface Water	5	5	0	5	0
Soil	68	68	22	46	31
Cumulative	154	154	62	91	32



Kraft Ave SE

Eagle Dr SE

Gateway Dr SE

SE Terminal Dr SE

4094 ft

Parview Dr SE

Charlevoix Dr SE

Tahoe Dr SE

Burger Dr SE

Brookhills Ct SE

Tricklewood Dr SE

Woodbrook Dr SE

Forest Valley Dr SE

Mikkik Dr SE

Air Cargo Dr SE

Thornapple River Dr SE

Tuscany Dr SE

Goodwood Dr SE

Lo Dr SE

Jeanin Dr SE

Behler Dr SE

Thornapple River

Woodva

Candlew

kenr

Bucca

Doubt

Plaster Creek



Watershed Partnership: Plaster Creek Stewards:
<http://www.calvin.edu/admin/provost/pcw/>
Square Miles: 57
Acres: 36448
Hydrologic Unit Code: 04050006-0505 & -0506

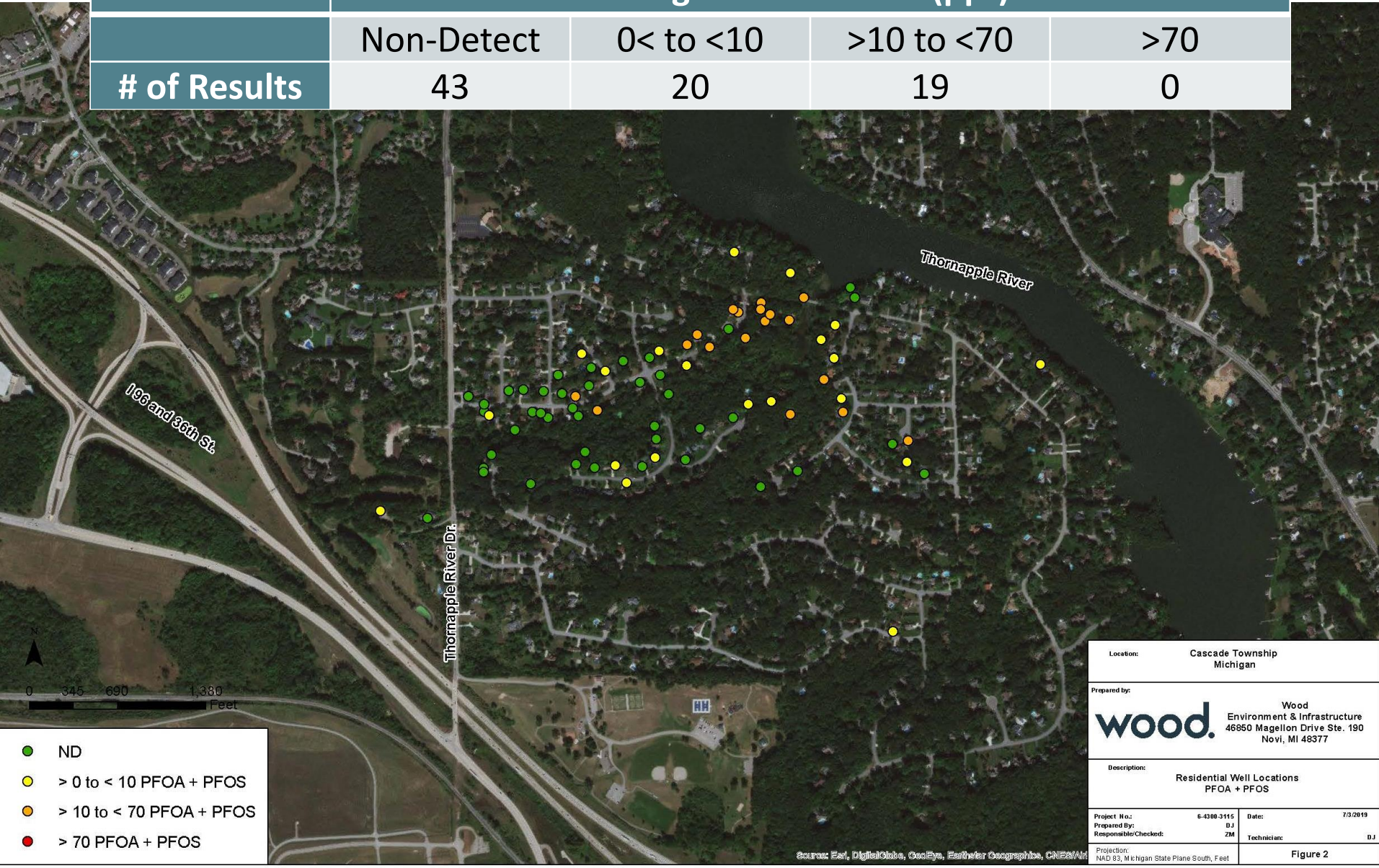



Cascade Township Residential Well Sampling

- In March thru May, EGLE requested to sample ~100 drinking water wells for PFAS analysis.
- 82 samples were collected.
- Results returned and provided to residents
 - w/detection of PFAS, KCHD offering POU filters
- Listserv communication for Phase 1 and 2 results
 - Sign up for future updates: bit.ly/31Czm4k

Sampling Results: PFOA + PFOS

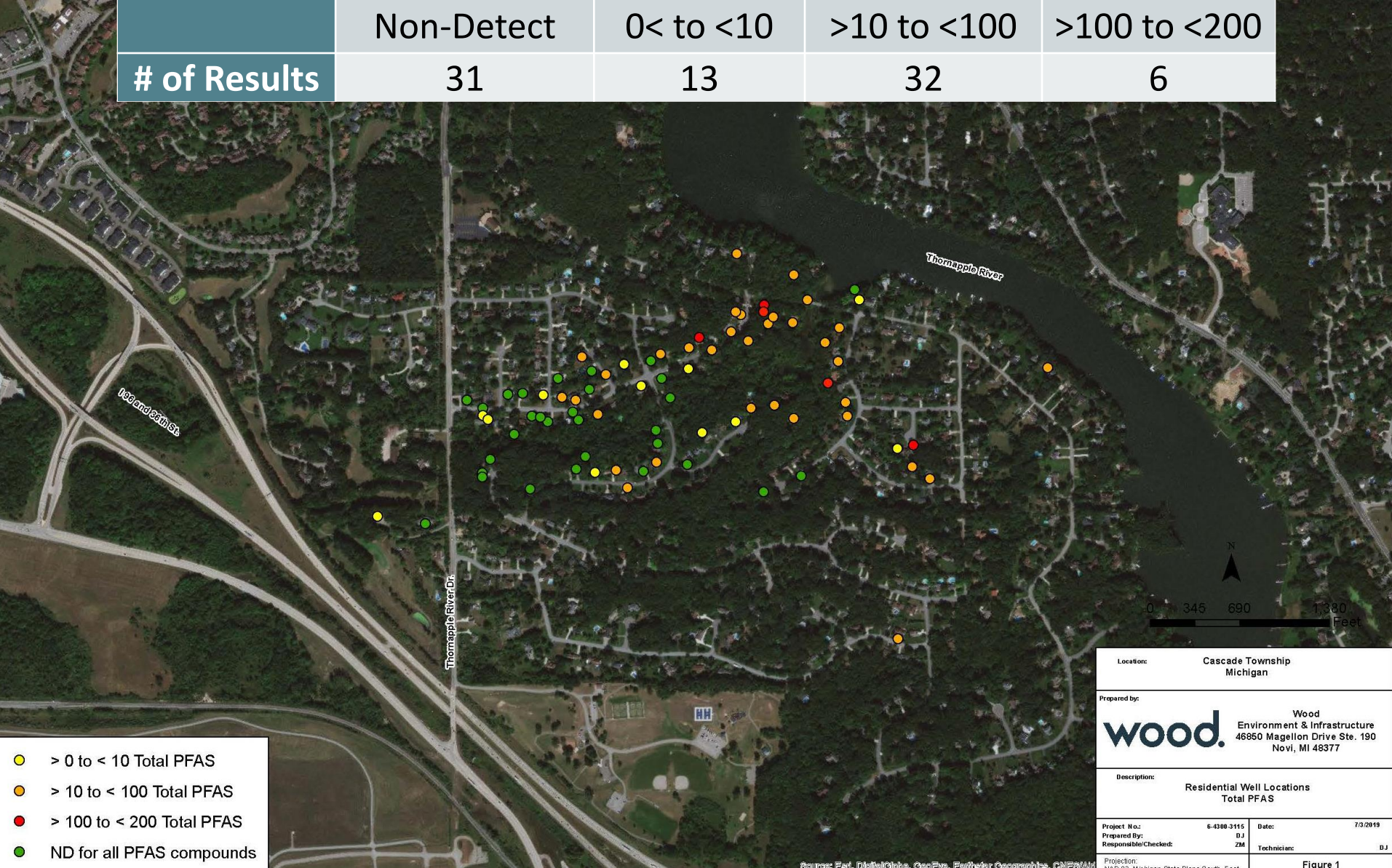
	Range PFOA + PFOS (ppt)			
	Non-Detect	0< to <10	>10 to <70	>70
# of Results	43	20	19	0



Location:	Cascade Township Michigan		
Prepared by:	 Wood Environment & Infrastructure 46850 Magellan Drive Ste. 190 Novi, MI 48377		
Description:	Residential Well Locations PFOA + PFOS		
Project No.:	6-4388-3115	Date:	7/3/2019
Prepared By:	D.J.	Responsible/Checked:	ZM
		Technician:	D.J.
Projection:	NAD 83, Michigan State Plane South, Feet		
	Figure 2		

Sampling Results: Total PFAS

	Range Total PFAS (ppt)			
	Non-Detect	0< to <10	>10 to <100	>100 to <200
# of Results	31	13	32	6



- > 0 to < 10 Total PFAS
- > 10 to < 100 Total PFAS
- > 100 to < 200 Total PFAS
- ND for all PFAS compounds

Location: Cascade Township Michigan	
Prepared by: wood. Wood Environment & Infrastructure 46850 Magellan Drive Ste. 190 Novi, MI 48377	
Description: Residential Well Locations Total PFAS	
Project No.: 6-4380-3115	Date: 7/3/2019
Prepared By: DJ	Responsible/Checked: ZM
Technician:	
Projection: NAD 83, Michigan State Plane South, East	

Next Steps (EGLE)

- Expand sampling area to a 3rd phase
 - Around areas of highest PFAS results
- EGLE requested to sample 96 drinking water wells
 - Includes all wells not sampled in phase two
 - 74 locations agreed to sampling.
- Evaluate results to determine additional next steps.
- Continue to evaluate known & potential PFAS sources in the area



Per and Polyfluorinated Alkyl Substances (PFAS)

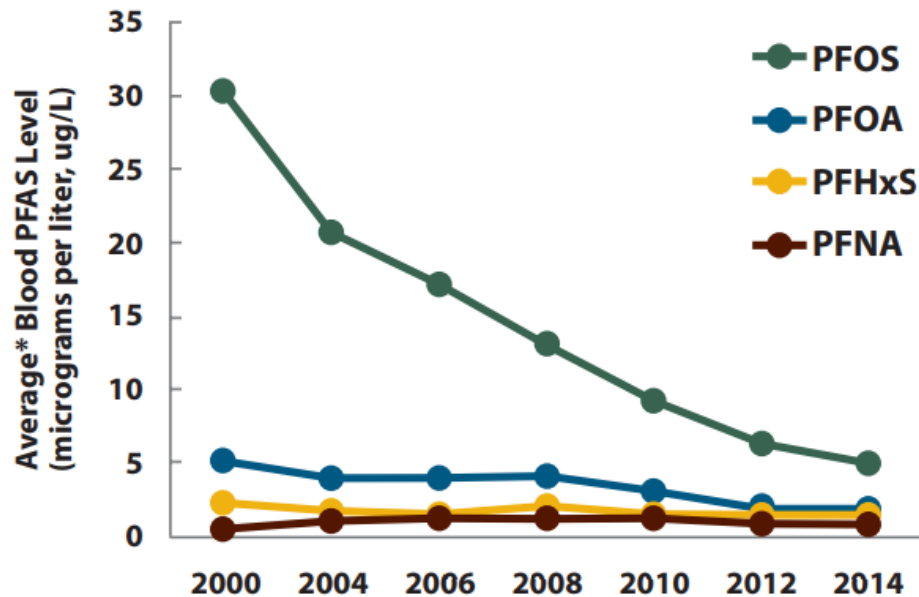
Bill Farrell

Michigan Department of Health and Human Services

August 22, 2019

The Role of MDHHS/KCHD

- Provide Public Health information and advice
 - Support KCHD and other agencies
 - Respond to Public's questions and concerns
- Be proactive/respond immediately to protect health of people
- Understand the chemicals
 - How they move, how they could impact health, what can be done to prevent harm
- Evaluate residential well results and provide recommendations/public health response actions
- Maintain scientific knowledge
 - Science is constantly changing
 - Provide Expert
- Outreach to residents, healthcare providers, others



* 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.

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

EXPOSURE TO PFAS CHEMICALS

Health problems are
not immediate



If you drink high levels
of PFAS chemicals
over time you could
be more likely than
the average person to
develop some health
problems in the future

Potential Associated Health Outcomes – PFOA and/or PFOS

Humans

- Lowering a woman's chance of getting pregnant
- Increasing the chance of high blood pressure in pregnant women
- Increasing the chance of thyroid disease*
- Increasing cholesterol levels
- Changing immune response
- Increasing chance of cancer, especially kidney and testicular cancers

Animals

- Developmental effects
- Reproductive effects
- Liver effects
- Endocrine effects (thyroid)
- Immune effects
- Tumors (liver, testicular*, pancreatic)

* PFOA only

USEPA's "Lifetime Health Advisory"

- Based on Reference Dose (RfD) derived from developmental toxicity study in rats
- Lifetime Health Advisory for Drinking Water
 - PFOA + PFOS = 70 ppt
 - Short-term (during pregnancy) and long-term (lifetime) exposure
- Protective of unborn baby against developmental effects
- Protective of all against non-cancer and cancer effects

What are PFAS public health drinking water screening levels?

- PFAS public health drinking water screening levels
 - Health-based
 - Protective of fetus and breastfed infant
 - Also protective of formula fed infant and other ages
 - Used to determine if further evaluation of PFAS is needed
 - Used to determine if public health actions are needed
 - Non-regulatory

MDHHS Public Health Screening Levels

PFAS	MDHHS Public Health Drinking Water Screening Level
PFOA	9 ng/L (parts per trillion [ppt])
PFOS	8 ng/L (ppt)
PFNA	9 ng/L (ppt)
PFHxS	84 ng/L (ppt)
PFBS	1000 ng/L (ppt)

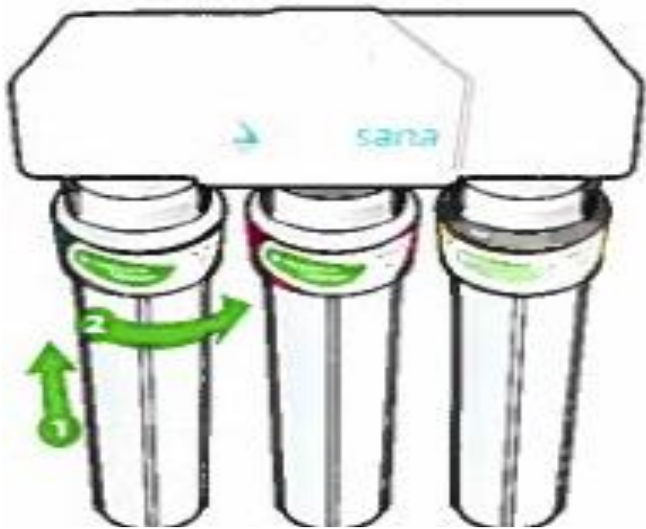
Multiple Lines of Consideration for Determining Public Health Response Actions

- USEPA Lifetime Health Advisory
- MDHHS Public Health Screening Levels
- Residential Well Results (individually and collectively)
- Site –specific information (e.g., known source, geology, etc.)

MDHHS/KCHD Public Health Response Actions

- No Public Health Actions Necessary
- Education – Provide Information on PFAS in Drinking Water
- Recommend Filter or Use of Alternative Water for drinking/cooking
 - Purpose of alternative water/filters?
 - ❖ Need time to conduct investigation
 - ❖ Provides residents with protection from potential fluctuations in PFAS levels, if any, while investigation is going

Point-of-Use Filter



- NSF P473 Certification
- Certified to remove up to 96% of PFOA and PFOS
- Certified only for water containing PFOA + PFOS concentrations less than 1,500 ppt



Full system certified to NSF/ANSI Standards 42, 53, 401 and conforms to NSF protocol P473.

What You Can Do

Reduce your exposure to PFAS from other sources:

- Use a filter if it is recommended
 - Point-of-Use (POU) – NSF Certified
 - Point-of-Entry (POET)
- Follow MI's Eat Safe Fish guidelines
- Read consumer product labels and avoid using those with PFAS

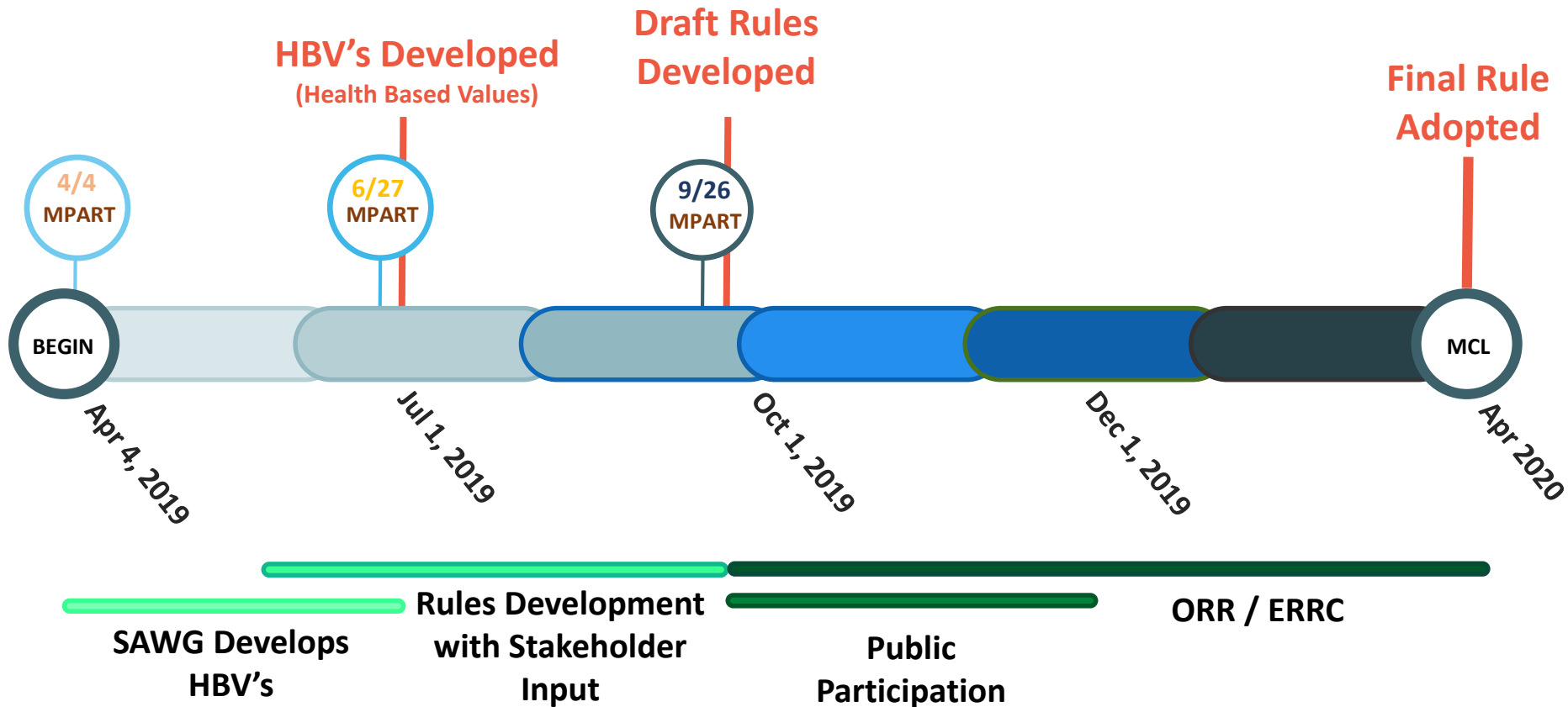
- outdoor clothing
- carpets
- cleaning products
- cosmetics
- leather goods
- ski waxes

“perfluoro...” “polyfluoro...”
“polyperfluoro...”

Stay Informed

- Be informed
 - MPART website – Michigan.com/pfasresponse
- Stay connected w/local health & officials
- Attentive to:
 - Listserv communications
 - Future public meetings
- Citizen's Advisory Workgroup: bit.ly/citizenworkgroup
- MCL public participation (Oct. – Dec. 15)

Overview of MCL Process



Questions?



MDHHS/KDHD/EGLE Contacts

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