STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
REMEDIATION AND REDEVELOPMENT DIVISION

GRETCHEN WHITMER
GOVERNOR

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DIRECTOR

August 4, 2025

VIA EMAIL

Demian Wincele, Project Manager
Army National Guard
111 South George Mason Drive,
Arlington, Virginia 22204-1373

SUBJECT: Interim Remedial Action to Address Per- and Polyfluoroalkyl Substances (PFAS) Contamination in Lake Margrethe – Camp Grayling; Grayling, Crawford County, Michigan

Dear Demian Wincele:

Michigan Department of Environment Great Lakes, and Energy (EGLE) staff support and appreciate the implementation of two Time-Critical Removal Actions (TCRA) in the Grayling area to provide safe drinking water to wells contaminated by PFAS migrating off Camp Grayling, and one Non-Time Critical Removal Action (NTCRA) to address PFAS discharge into Lake Margrethe from the stormwater system at Cantonment. EGLE staff also applaud the effort being made by Army National Guard (ARNG) to expand the Cantonment Remedial Investigation (RI) to Lake Margrethe in Fall 2025.

Based on the available data collected by EGLE staff and ARNG, EGLE staff request ARNG to perform an Interim Remedial Action (IRA) at Cantonment to prevent PFAS on-base from continuing to migrate into Lake Margrethe and cause further harm to human health and the environment. This IRA is requested specifically to capture PFAS-contaminated groundwater from Areas of Interest (AOI) 14, 15, and 20, which are known to be discharging off Cantonment into Lake Margrethe. EGLE staff also request this IRA to explore various alternative technologies, such as installation of groundwater extraction systems or removal of soil source areas while the RI continues and a final remedy is developed.

Quarterly groundwater monitoring completed by EGLE staff at Borchers Way has consistently shown PFAS in exceedance of Department of Defense (DoD) Regional Screening Values (RSL), as well as Groundwater Cleanup, Residential Drinking Water, and Groundwater-Surface Water Interface (GSI) criteria pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, since 2018. Porewater samples collected by EGLE staff on the shores of Lake Margrethe in 2021 and 2022 show exceedances of Part 201

GSI criteria and Michigan Rule 57 Water Quality Values (WQV)[1] at known discharge points for AOI 14, 15, and 20.

In the 2022 Cantonment Uniform Federal Policy Quality Assurance Project Plan, ARNG states: "*impacts to Lake Margrethe appear to be the result of groundwater plumes and stormwater discharging to surface water*." Groundwater, porewater, and surface water sampling results collected by ARNG during the Site Inspection and RI confirm ARNG's above statement, with several exceedances of one or more of the respective criteria, including: DoD RSLs for groundwater and soil, Michigan Rule 57 WQVs, Part 201 Groundwater Cleanup criteria, and Part 201 GSI criteria. According to the most updated plume maps provided in the July 2025 Restoration Advisory Board (RAB) meeting, there are three known plumes in contact with Lake Margrethe, with source area concentrations up to 23,300 parts per trillion (ppt) Perfluorooctane Sulfonic acid (PFOS) and/or Perfluorooctanoic Acid (PFOA).

As noted in the July 2025 RAB meeting, performance monitoring results for the NTCRA to reduce PFAS discharge into Lake Margrethe through the stormwater system at Cantonment shows less PFAS removal than expected, with percent reductions of PFAS ranging from 1 to 66 percent. EGLE staff acknowledge the commitment from ARNG to continue refining the systems to increase PFAS removal. However, effluent concentrations remain above the discharge limits of the National Pollution Discharge Elimination System permit held by Michigan ARNG, and concentrations of PFAS continue to flow into Lake Margrethe from ARNG property.

Lake Margrethe is impacted by PFAS contamination discharging from Cantonment, as displayed by the frequent recurrence of large amounts of foam. In 2018, EGLE staff sampled foam on Lake Margrethe for PFAS, and there were concentrations of PFOS ranging from 719 – 26,800 ppt. Due to the frequent recurrence of foam showing high concentrations of PFAS, Michigan Department of Health and Human Services (MDHHS) staff, in conjunction with District Health Department #10 staff, maintain advisory signs along the lake shore at public access areas to warn recreators to avoid the foam.

PFAS contamination in Lake Margrethe is also impacting the ecology of the lake, as shown by the updated, more restrictive MDHHS 2025 Eat Safe Fish Guidelines[2]. In the 2025 Eat Safe Fish Guidelines, recommendations for bluegill and sunfish decreased from eight servings per month to two servings per month, largemouth and smallmouth bass decreased from two servings per month to one serving per month, rock bass was newly included at two servings per month, and yellow perch was newly included at four

[1] Michigan Rule 57 Water Quality Values; https://www.michigan.gov/egle/about/organization/water-resources/glwarm/rule-57-water-quality-values

[2] MDHHS Eat Safe Fish Guide, Northeast Michigan, 2025; https://www.michigan.gov/mdhhs/-/media/Project/Websites/mdhhs/DEH/Eat-Safe-Fish/Documents/NE_EAT_SAFE_FISH_GUIDE_-_NORTHEAST_MI_WEB.pdf?rev=727e3e01b0054d2088fb8352fef7c32b&hash=2D7952EE945F6346523E6F51985D4E58

servings per month. Further, ecological screening values[3] were updated under an Interagency Agreement between the United States Department of Energy, Argonne National Laboratory, and the Air Force Civil Engineer Center in October 2024 for use at DoD sites where PFAS contaminates have been detected to determine ecological risk. Surface water and sediment sampling at Lake Margrethe show exceedances of one or more ecological screening value in surface water and soils for one or more receptor population.

Lake Margrethe is a recreational waterbody used for swimming, boating, and fishing. It is available for recreation via public access areas and lakefront seasonal residences. According to the Agency for Toxic Substances and Disease Control, there are five elements which must be met for an exposure to be considered a complete exposure pathway: Contaminant Source, Environmental Fate and Transport, Exposure Points, Exposure Routes, and Potentially Exposed Population. A completed exposure pathway indicates exposure to humans and potential health effects in the future. At this time, based on available information, Lake Margrethe meets all five elements to be considered a completed exposure pathway:

1. **Contamination Source:** Cantonment AOI 14, 15, and 20;
2. **Environmental Fate and Transport:** Soil, groundwater, surface water, sediment, fish;
3. **Exposure Points:** Lake Margrethe surface water, sediments, soil, foam, fish;
4. **Exposure Routes:** Ingestion; and
5. **Potentially Exposed Populations:** Recreators, residents, workers

Per the United States Environmental Protection Agency (USEPA) PFAS National Primary Drinking Water Regulation Factsheet[4], the maximum contaminant level goals for PFOA and PFOS were set to zero ppt based on health data and potential impacts to the public, demonstrating that there is no amount of PFOA or PFOS safe for ingestion.

DoDI 4715.07(3)(a)[5] states: "*It is DoD policy to reduce risk to human health and the environment because of its activities.*" In the July 2023 Office of the Assistant Secretary of Defense (OSD) memorandum titled "*Memorandum for Taking Interim Actions to Address Per- and Polyfluoroalkyl Substances Migration from DoD Installations and National Guard Facilities*," OSD stated: *"The DoD Components are further directed to prioritize implementation of interim actions as expeditiously as possible to address PFAS under the Comprehensive Environmental Response, Compensation, and Liability Act, such as removal of soil or sediment "hot spots" and installation of groundwater extraction systems, where supported by site-specific information."*

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[3] Derivation of PFAS Ecological Screening Values, October 2024; https://www.denix.osd.mil/dodepa/denix-files/sites/85/2025/01/Derivation-of-PFAS-Ecological-Screening-Values-508.pdf

[4] United States Environmental Protection Agency; PFAS National Primary Drinking Water Regulation Fact Sheet; https://www.epa.gov/system/files/documents/2024-04/pfas-npdwr_fact-sheet_general_4.9.24v1.pdf

[5] Department of Defense Manual; NUMBER 4715.07; https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/471507p.pdf

Per the Defense Environmental Restoration Program document "*Comprehensive Environmental Response, Compensation, and Liability Act Process*,"[6] "*interim remedial actions and removal actions may occur at any time during the CERCLA process*." An IRA is preferred over a TCRA or NTCRA for this response action since "*removal actions typically do not provide the protection or permanence afforded by remedial actions*" (DoDM 4715.20(b)(4)(a)[7]). An IRA is an effective tool to implement a portion of the final remedial action in an expedited timeframe to address threats to human health and the environment. As USEPA's Memorandum "*Use of Early Actions at Superfund National Priority List Sites and Sites with Superfund Alternative Approach Agreements, August 23, 2019"* notes, such early actions are encouraged and can yield significant benefits to achieving long-term cleanup goals. Such actions would serve to limit contaminant migration and may serve to provide risk reduction.

EGLE staff request attention to these matters and request a written response within 30 days of the date on this letter.

If you need further information or assistance, please contact Mike Neller; Division Director, Remediation and Redevelopment Division (RRD), at 517-512-5859; NellerM@Michigan.gov; or any additional questions can be directed to Summer Cox; Project Manager, Superfund Section, RRD, at CoxS12@Michigan.gov; 517-275-2805; or you may contact either of them at EGLE, RRD, P.O. Box 30473, Lansing, Michigan 78909-7973.

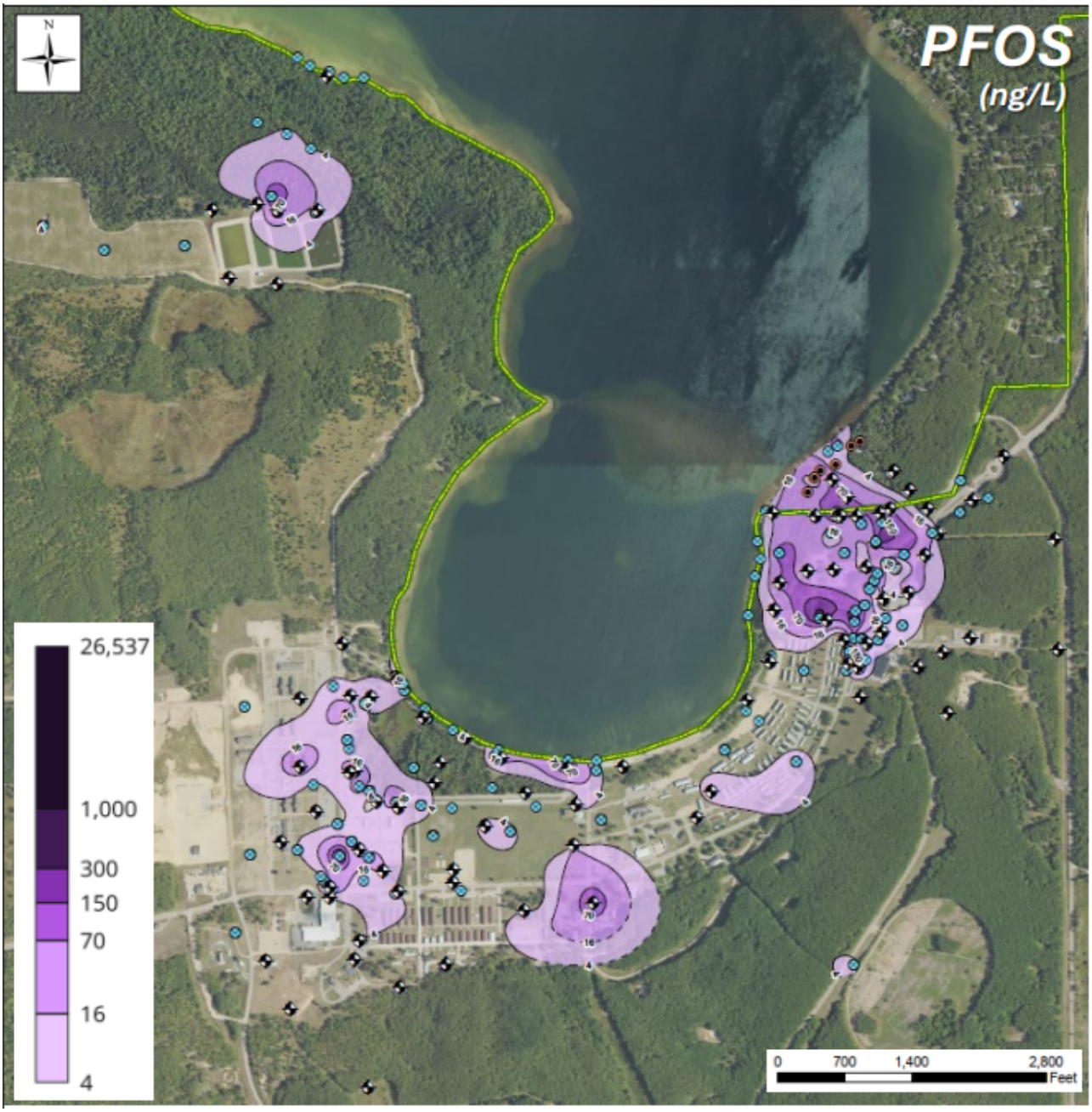
Sincerely,

Mike Neller, Director
Remediation and Redevelopment Division
517-512-5859

cc: Lt. Col Mosely, ARNG
Walter Gee, ARNG
Kalan Briggs, EGLE
John Bradley, EGLE
Beth Place, EGLE
Nicholas Shorkey, EGLE

[6] Comprehensive Environmental Response, Compensation, and Liability Act Process; https://www.denix.osd.mil/army-pfas/denix-files/sites/11/2022/03/Comprehensive-Environmental-Response-Compensation-and-Liability-Act-Process.pdf

[7] Department of Defense Manual; NUMBER 4715.20; March 9, 2012; Incorporating Change 1, August 31, 2018; https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/471520m.pdf



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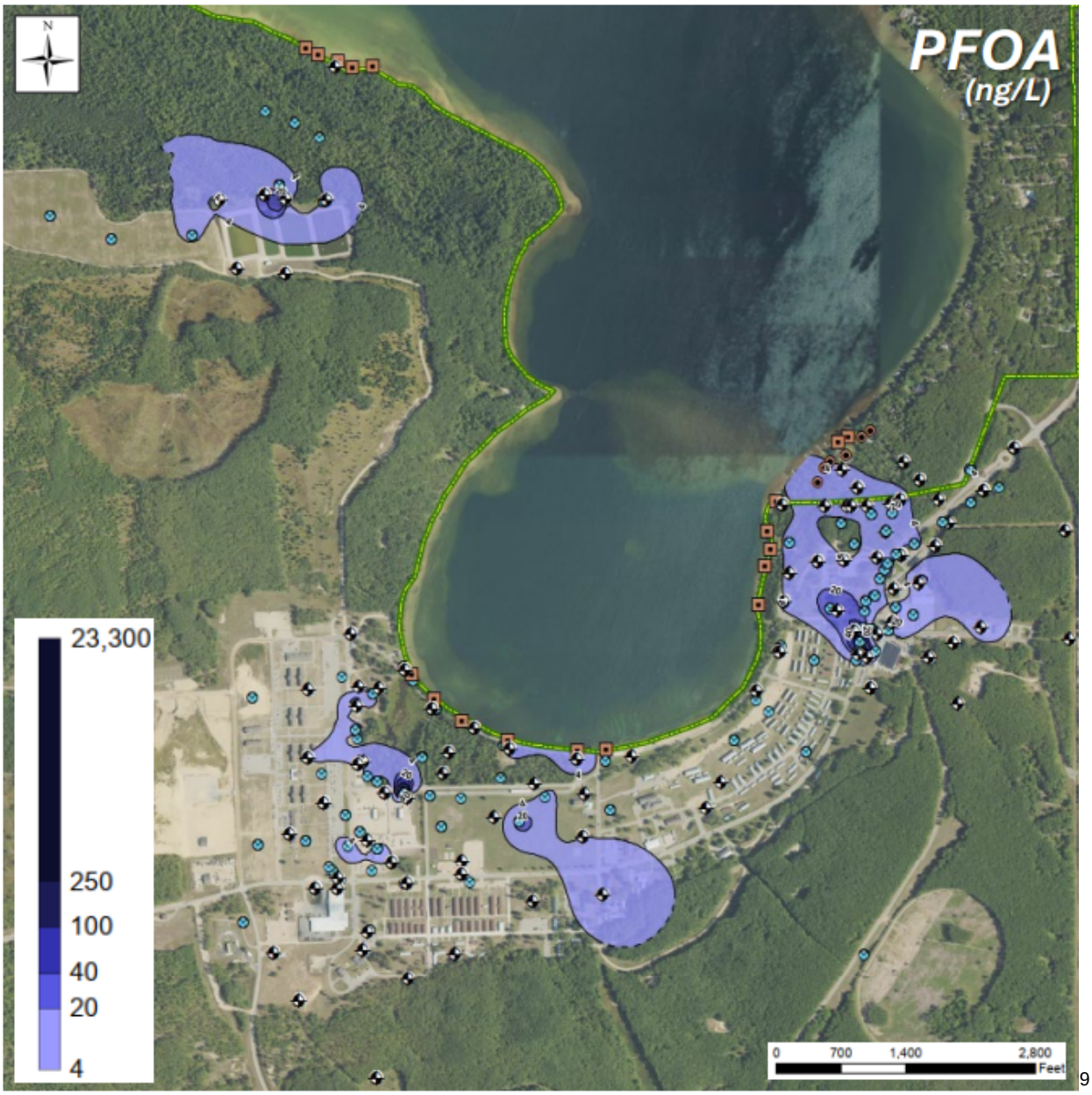
Facility Boundary
Monitoring Well
Temporary Monitoring Well
Drinking Water Locations
Porewater

[8] RAB Presentation Slides; May 2025; https://libguides.kirtland.edu/ld.php?content_id=81298139



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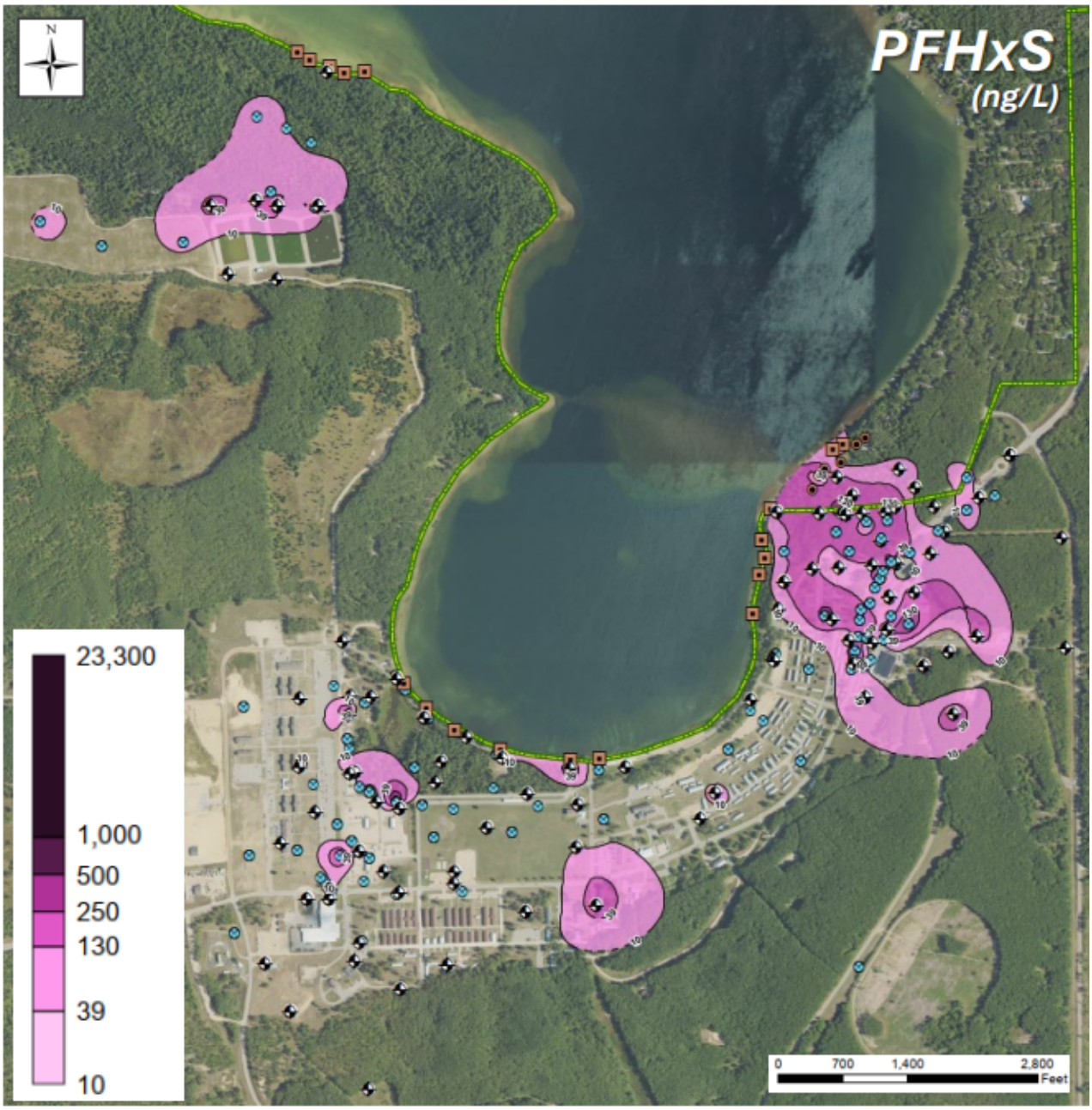

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