

Letter Health Consultation

Evaluation of Wild Game near

WURTSMITH AIR FORCE BASE

OSCODA, IOSCO COUNTY, MICHIGAN

Prepared by
Michigan Department of Community Health

SEPTEMBER 24, 2015

Prepared under a Cooperative Agreement with the
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Community Health Investigations
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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STATE OF MICHIGAN
DEPARTMENT OF HEALTH AND HUMAN SERVICES
LANSING

RICK SNYDER
GOVERNOR

NICK LYON
DIRECTOR

September 24, 2015

Robert Delaney
Michigan Department of Environmental Quality
Remediation and Redevelopment Division
P.O. Box 30426
Lansing, MI 48909

Dear Mr. Delaney:

This letter is in response to your September 25, 2014 email in which you expressed concern that the public may be exposed to perfluorinated chemicals (PFCs) released at the former Wurtsmith Air Force Base (WAFB) in Oscoda (Michigan; Figure 1) by eating wild game harvested from the area.

At this time, I cannot determine whether eating wild game harvested near WAFB may harm people's health. A study on swallows nesting near WAFB showed elevated levels of PFCs in the birds' plasma, eggs, and crop contents, suggesting the likelihood that other wildlife in the area would have PFCs in their bodies. Consumption of wild game by local residents and visiting hunters may occur, but MDHHS is not aware of any PFC analytical data for wild game taken from the area. **Therefore, I recommend that local wild game species be sampled for PFCs.**

Discussion

PFC contamination at WAFB has impacted on-site soils, groundwater, surface water, and some area fish (MDHHS 2012a,b). The fish contamination issue is being discussed in a separate document (currently being reviewed by federal, state, and local agencies).

On September 16, 2014, you shared laboratory results (data not shown) with me from a 2014 U.S. Geological Survey (USGS) study on swallows¹ nesting near Clark's Marsh, which is adjacent to and south of WAFB (Figure 2). Ponds in Clark's Marsh have been heavily impacted by PFCs leaching from the fire-training area of WAFB. The study investigated levels of PFCs in swallow plasma (n=10), eggs (n=10), and crop (stomach) contents (n=2). Analyses were conducted for 13 PFCs, with perfluorooctane sulfonate (PFOS) having the highest PFC concentration in all the samples.

¹ According to USGS, swallows feed primarily on benthic aquatic insects and they feed within about one kilometer of their nest box, so contamination in their tissues is closely tied to local sediment contamination (http://www.umesc.usgs.gov/wildlife_toxicology/why_swallows.html).

In 2010 and 2011, the USGS conducted plasma sampling in tree swallows in several areas around the Great Lakes basin.² Figures 3 and 4 show, respectively, PFOS and total PFC geometric means from those studies. The geometric means of the Clark's Marsh swallow plasma data for PFOS and total PFCs were 1,323 and 1,644 ng/g, respectively. A comparison to other Great Lakes locations' geometric means (T. Custer, USGS, personal communication, 2015) shows that the swallows sampled from Clark's Marsh had plasma concentrations of PFOS and total PFCs up to 80 times greater. These are the highest PFC levels that the USGS has reported in swallows.

Two diet samples (pooled stomach contents of 12-day-old nestlings) from Clark's Marsh had 159-186 ng/g PFOS and 165-220 ng/g total PFCs, wet weight (T. Custer, USGS, personal communication, 2015). There were no comparable diet data from other Great Lakes locations, however, similar research at known PFC-contaminated sites in Minnesota reported the geometric mean of total PFCs in the diet to be as high as 67.8 ng/g, wet weight (Custer et al. 2014). Reference locations reported a geometric mean of up to 11.5 ng/g, wet weight. The difference between the contaminated and reference sites' diets was not statistically significant, likely due to the limited number of diet samples available for analysis and greater variation in individual diet concentrations (Custer et al 2014). Nonetheless, the data suggest a correlation between dietary and plasma levels in tree swallows.

State and national forests near Oscoda offer many hunting and trapping opportunities, including such commonly-consumed game species as white-tailed deer, black bear, turkey, squirrels, waterfowl, and turtles. Depending on their home ranges and their dispersal movements, the animals may forage in PFC-impacted areas. The swallow data suggest that other terrestrial animals may accumulate PFCs. The water and sediment in PFC-impacted ponds likely would be the primary sources. Also, PFC-contaminated fish from waterbodies near WAFB may be a source of PFCs to piscivorous wildlife using the area. The U.S. Environmental Protection Agency (EPA) reports that, in general, the highest concentrations of PFCs in wildlife have been found in the livers of fish-eating animals (EPA 2009). While not all game species eat fish regularly, omnivorous species frequently scavenge fish carcasses opportunistically.

No systematic surveys of consumption rates of game harvested in the vicinity of WAFB have been conducted to date. However, anecdotal evidence from the Michigan Department of Natural Resources indicates that hunters harvesting game near WAFB commonly serve harvested game meat to their families. Also, the local health department recently forwarded concerns from a citizen whose family eats game (primarily venison) harvested near Clark's Marsh. Any contamination in the edible portion of animals taken in the area presumably would expose persons eating those animals.

To my knowledge, there are no data regarding PFC levels in wild game harvested near WAFB. Detecting PFCs in wild animals is common world-wide, so some level of PFCs in locally caught

² See http://www.umesc.usgs.gov/wildlife_toxicology/glri_project80_results_organic_contaminants.html

wild game is to be expected. Comparing the PFC congener profile between Clark's Marsh-area game and a referent population may help determine if any impact is due to the contamination at the former Wurtsmith Air Force Base. Wild game PFC data is necessary to determine if people who eat wild game from this area are being exposed to potentially harmful levels of PFCs. I recommend sampling various species of commonly-consumed wild game and that the meat and liver be analyzed for PFCs. MDHHS will evaluate the data and determine, similar to the fish contamination issue, what consumption advice may be necessary.

Please contact me if you have any questions.

Sincerely,



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Agency for Toxic Substances and Disease Registry
Michigan Department of Natural Resources
U.S. Forest Service, Huron National Forest

References:

Custer CM, Custer TW, Dummer PM, Etterson MA, Thogmartin WE, Wu Q, Kannan K, Trowbridge A, McKann PC. 2014. Exposure and effects of perfluoroalkyl substances in tree swallows nesting in Minnesota and Wisconsin, USA. *Arch Environ Contam Toxicol* 66:120-138.

Michigan Department of Health and Human Services (MDHHS). Amended letter health consultation concerning evaluation of fish tissue data, Wurtsmith Air Force Base, Oscoda, Iosco County, Michigan. Atlanta: US Department of Health and Human Services; 2012a.
http://www.michigan.gov/documents/mdch/Wurtsmith_LHC_errata_405007_7.pdf

Michigan Department of Health and Human Services (MDHHS). Letter health consultation concerning evaluation of fish tissue data, Wurtsmith Air Force Base, Oscoda, Iosco County, Michigan. Atlanta: US Department of Health and Human Services, 2012b.
http://www.michigan.gov/documents/mdch/Wurtsmith_AFB_LHC_08-31-2012_396984_7.pdf

U.S. Environmental Protection Agency (EPA). Long-Chain Perfluorinated Chemicals (PFCs) Action Plan. December 30, 2009.
http://www.epa.gov/opptintr/existingchemicals/pubs/pfcs_action_plan1230_09.pdf

Figure 1: Former Wurtsmith Air Force Base and Vicinity, Oscoda (Iosco County), Michigan.

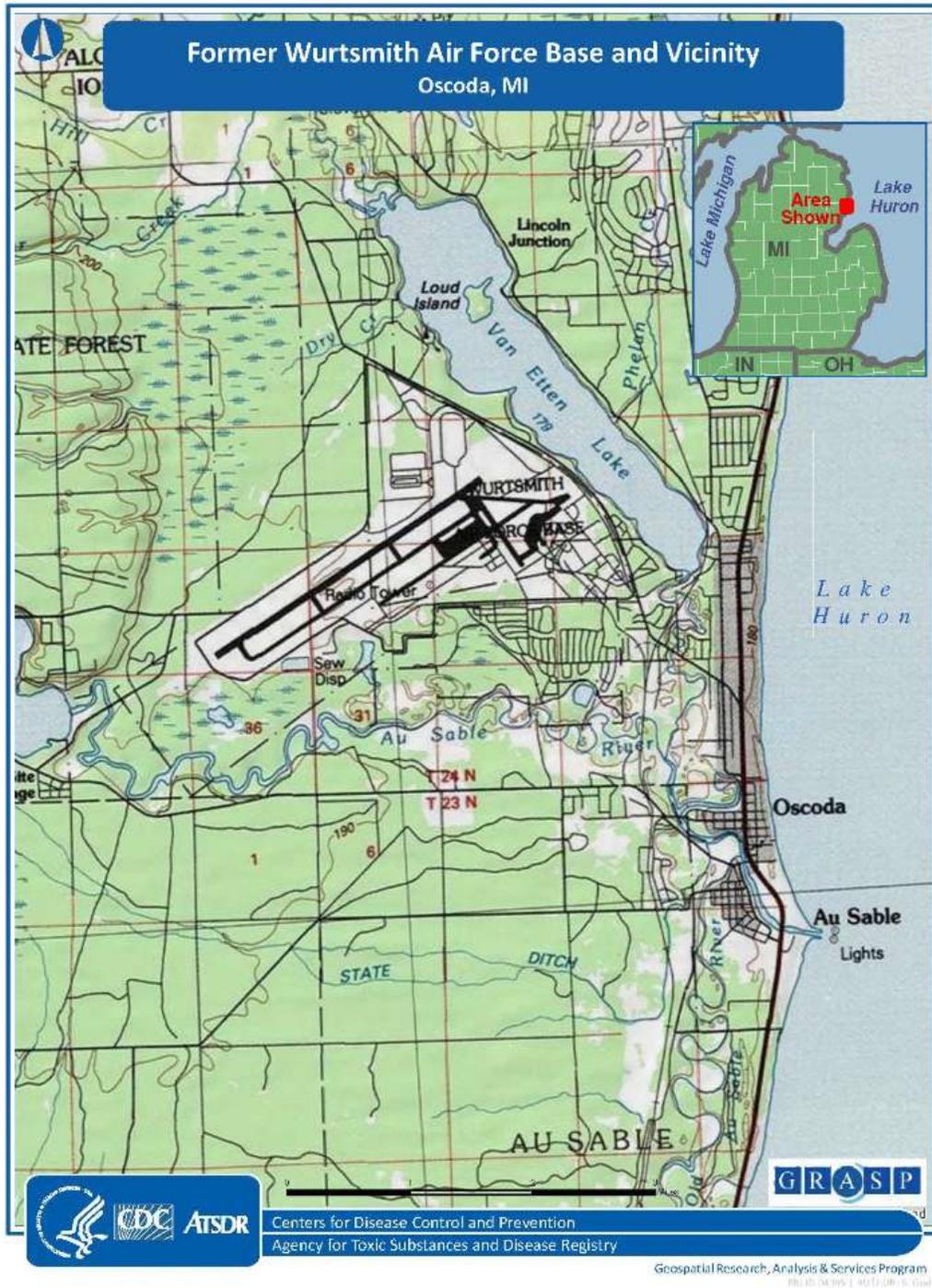


Figure 2. Area at and near the former Wurtsmith Air Force Base in Oscoda (Iosco County), Michigan, affected by perfluorinated chemical contamination from the FT-02 fire-training area.

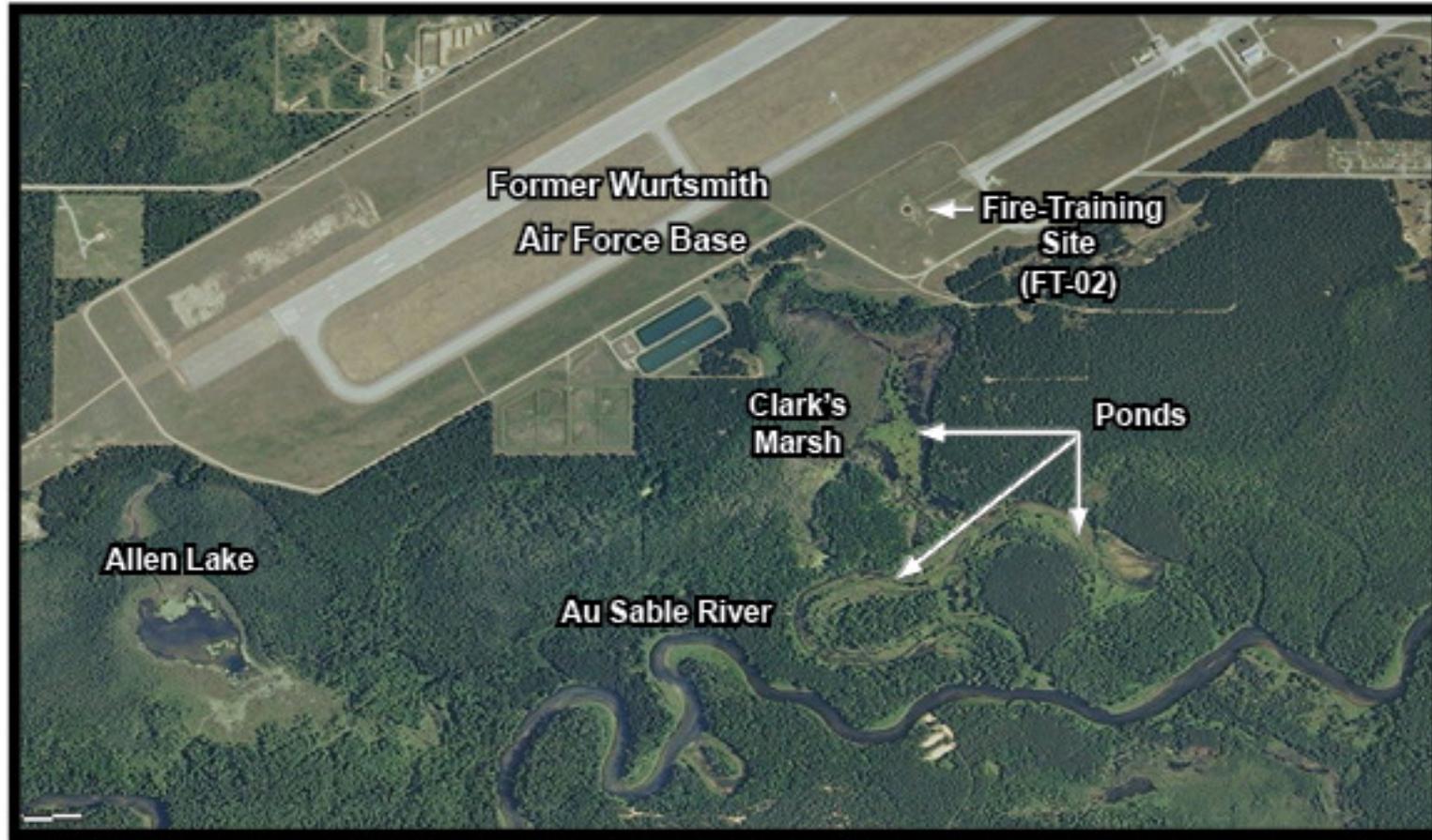


Figure 3. Perfluorooctane sulfonate (PFOS) levels in Great Lakes tree swallow plasma, sampled by U.S. Geological Survey in 2010 and 2011.

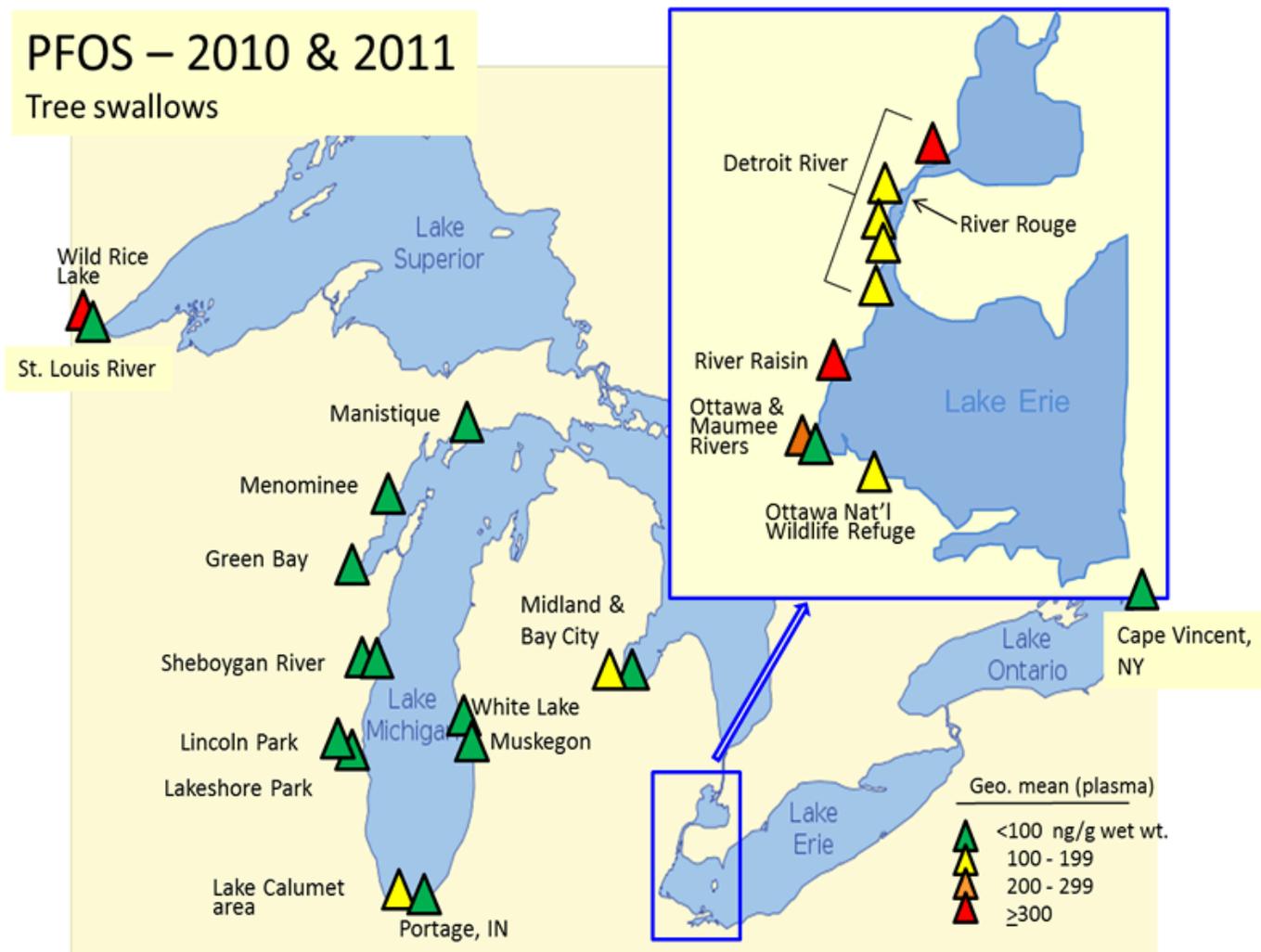
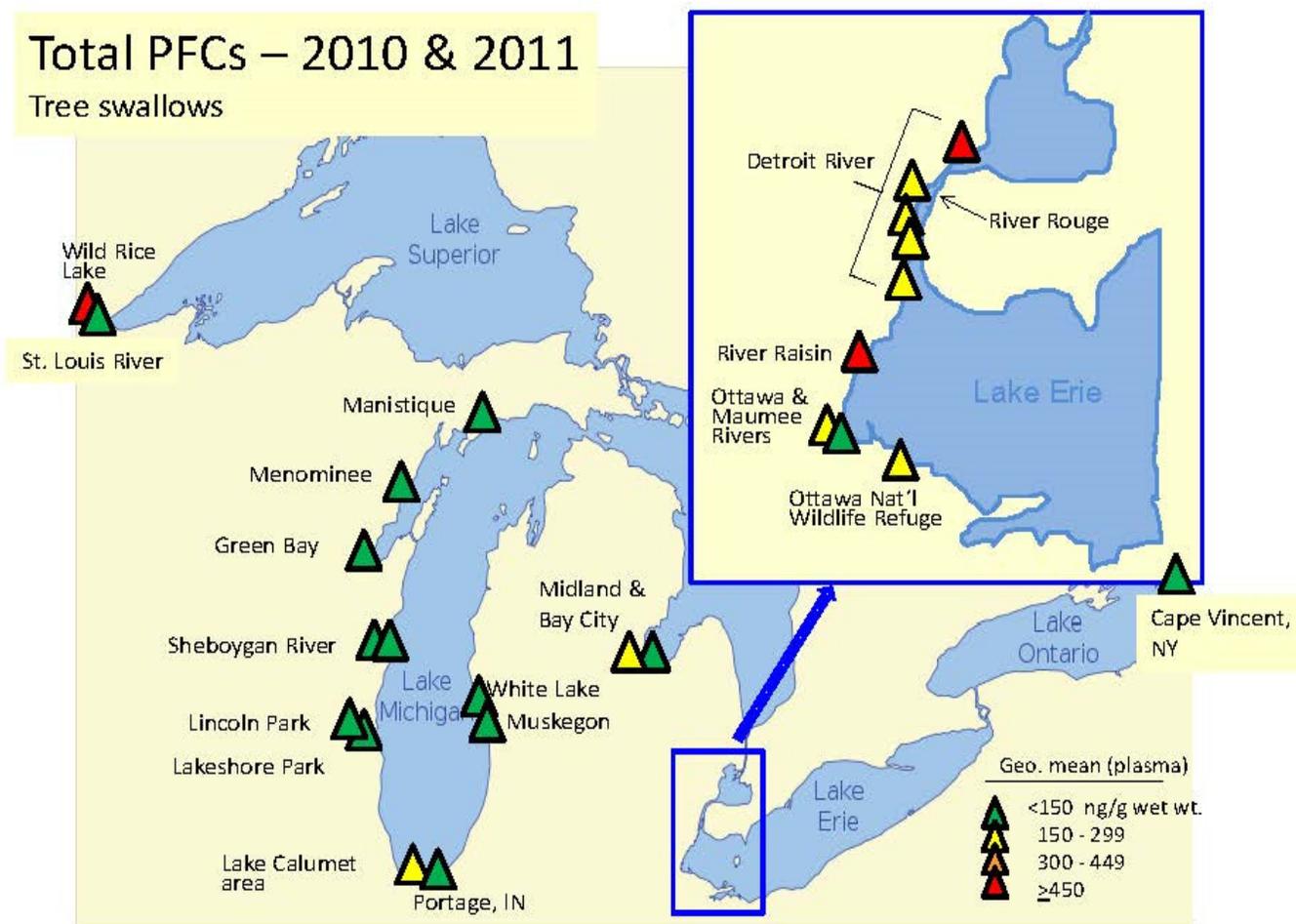


Figure 4. Total perfluorinated chemicals (PFCs) in Great Lakes tree swallow plasma, sampled by U.S. Geological Survey in 2010 and 2011.



Greetings,

You are receiving a document from the Agency for Toxic Substances and Disease Registry (ATSDR). We are very interested in your opinions about the document you received. We ask that you please take a moment now to complete the following ten question survey. You can access the survey by clicking on the link below.

Completing the survey should take less than 5 minutes of your time. If possible, please provide your responses within the next two weeks. All information that you provide will remain confidential.

The responses to the survey will help ATSDR determine if we are providing useful and meaningful information to you. ATSDR greatly appreciates your assistance as it is vital to our ability to provide optimal public health information.

<https://www.surveymonkey.com/r/ATSDRDocumentSatisfaction>

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