June 5, 2018

Dear Ms. Foss and Mr. Schmoller:

As you know, the March 27, 2018 "Draft Report FY16 Phase I Regional Site Inspections for Perfluorinated Compounds" at the Truax Air National Guard base found perfluorinated compounds (PFCs) at significant levels (well over the EPA's health advisory levels) in shallow soils and groundwater at the site.

This is a serious environmental and public health issue. According to EPA, PFCs "can cause reproductive and developmental, liver and kidney, and immunological effects in laboratory animals, and "both chemicals have caused tumors in animal studies." In human epidemiological studies, PFC exposures have been associated with increased cholesterol levels, low infant birth weights, effects on the immune system, thyroid hormone disruption, and cancer.

All of the stormwater at the Truax Air National Guard base drains to Starkweather Creek, the largest watershed flowing into Lake Monona (about two miles south of the base). Both Starkweather Creek and Lake Monona are on the EPA/DNR 303(d) listed impaired waterways list due to phosphorus, suspended solids, chloride, PCBs, metals and/or other impairments.

Anglers catch fish along Starkweather Creek, especially in the lower reaches as it flows into Lake Monona—and many subsistence anglers eat the fish they catch. A growing number of studies show that PFCs released from contaminated sites build up in fish and in the people who eat the fish. A recent study published in DNR's *Fisheries Management Administrative Report* on PFCs and fish highlights the importance of assessing this route of exposure, especially in areas of known contamination or use (Williams & Schrank, 2016)

Starkweather Creek outfalls should be tested for PFCs

We commend the DNR for asking the Air National Guard's consultants in its March 7, 2018 letter to do more testing of PFCs in soils and groundwater at the base.

The DNR letter includes several good recommendations, but notably does not ask the ANG consultant to test surface water and/or sediments near the base's stormwater outfalls into Starkweather Creek, which flows around three sides of the base. All stormwater runoff from the base is routed to the creek through a system of ditches and drains (see attached maps).[1]

This omission is significant and puzzling. Wisconsin law NR 716 says that responsible parties should assess "The known or potential impacts of the contamination on any of the resources listed in s. NR 716.07(8) that were identified during the scoping process as having the potential to be affected by the contamination."

[1] The Air National Guard is a tenant of Dane County and co-permittee on the Dane County Regional Airport's WPDES stormwater permit. The DCRA/ANG's permit, and required Stormwater Pollution Prevention Plan (SWPPP, last version is 2016), do not mention perfluorinated compounds or require testing for them in stormwater.

NR 716 also says that investigative work plans for contaminated sites should include evaluation of "Potential hazardous substance migration pathways" and "[t]he impacts of the contamination upon receptors." In this case, Starkweather Creek and Lake Monona, fish and wildlife and other biota in them--and people who eat fish from these waters--are "receptors" that will be, and likely already are, impacted by PFC contamination at Truax Field.

As DNR noted in the letter to Air National Guard's consultants, Wisconsin "Spill law" (Section 292.11 (3) Wisconsin Statutes) states that "A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall take the actions necessary to restore the environment to the extent practicable and minimize the harmful effects from the discharge to the air, lands or waters of this state."

If PFC contamination in Starkweather Creek from the Truax base is not assessed at all, or not assessed appropriately, "actions necessary to restore the environment" and "minimize the harmful effects" cannot be taken.

Air National Guard consultants recommended testing of Starkweather Creek in past reports
Supporting the above arguments, the Air National Guard's own consultants explicitly recommended testing outfalls to the creek. The Air National Guard's 2015 Perfluorinated Compounds Preliminary Assessment stated: "Further investigation is recommended at the Base to monitor and characterize any groundwater, soil, sediment, and/or surface water PFC contamination onsite. Sampling of soil and groundwater within the Base and *at the outfalls of Starkweather Creek is recommended at a minimum to evaluate the potential of migration of PFCs*." (highlights added)

On February 14, 2017, the Air National Guard met for the "PFOS/PFOA Site Investigation Truax Field ANG Base Kickoff Meeting." The powerpoint from the "Kickoff" meeting said they planned to "Conduct Site Investigation (SI) Activities to determine the presence or absence of PFOS/PFOA in all potential media (soil, groundwater, surface water and sediment)." It also said that "Stormwater outfalls, wet wells, drainage basins and ditches will be sampled at the last available downgradient location on ANG property."

Further, the August 2017 Final Work Plan stated that "Surface water at the Base is limited to the man-made surface drainage and storm sewer system... Precipitation is generally collected by the stormwater sewer system and discharged to Starkweather Creek, which runs north, west, and south of the Base" and "[b]ased on historical practices, COCs (contaminants of concern) could be present in sediment in locations that have received drainage from the Base storm sewer system. In general, surface releases at the Base would enter series of man-made ditches and culverts and ultimately discharge to Starkweather Creek."

Despite saying the above, the 2017 Final Work Plan *did not recommend any stormwater outfall or Starkweather sampling*—and therefore the PFC data released on March 7 does not include any data from stormwater ditches or drains, Starkweather sediments or water.

It is clear that stormwater runoff from the site would carry soil and/or shallow groundwater contamination to the creek. PFC contamination would also likely be high in sediments. In 2016, scientists from the Air Force Civil Engineer Center published a study on the fate and transport of PFCs downstream of military sites that used these compounds, and *found very high levels of PFCs in*

sediments of waterways that received stormwater discharges from the sites (2016, Anderson et al, 2016). Other studies have found PFCs in surface waters, as well as in fish and wildlife, far downstream of sites. One study found evidence that PFC contaminated shallow groundwater emerged to the surface and caused contamination in surface water downstream of a PFC site (Bhavsar et al, 2016).

The above research supports our recommendation that (at the least), **sediments and surface water at outfalls to Starkweather Creek—and also in the creek immediately downstream of the site—be tested so that steps can be taken to assess the level of contamination going to the creek, remediate it to the extent possible, and prevent future contamination from entering the creek.**

Accurate Starkweather Creek and stormwater drainage maps are essential
The maps in the investigative reports on the Truax Air National Guard base are misleading. They depict the creek, and streams that drain into it, as being much further from the base than they actually are—see MAP 1 below, as compared to MAP 2-4.

The March 7 DNR letter asked the Air National Guard to prepare a conceptual site model for the PFC contamination at the Truax site—which is necessary to thoroughly assess the actual or potential impacts of the PFCs on the environment and public health. A thorough conceptual site model requires accurate maps of the site and nearby surface waters, including Starkweather Creek, that are likely to be significant "receptors" of the site's contamination.

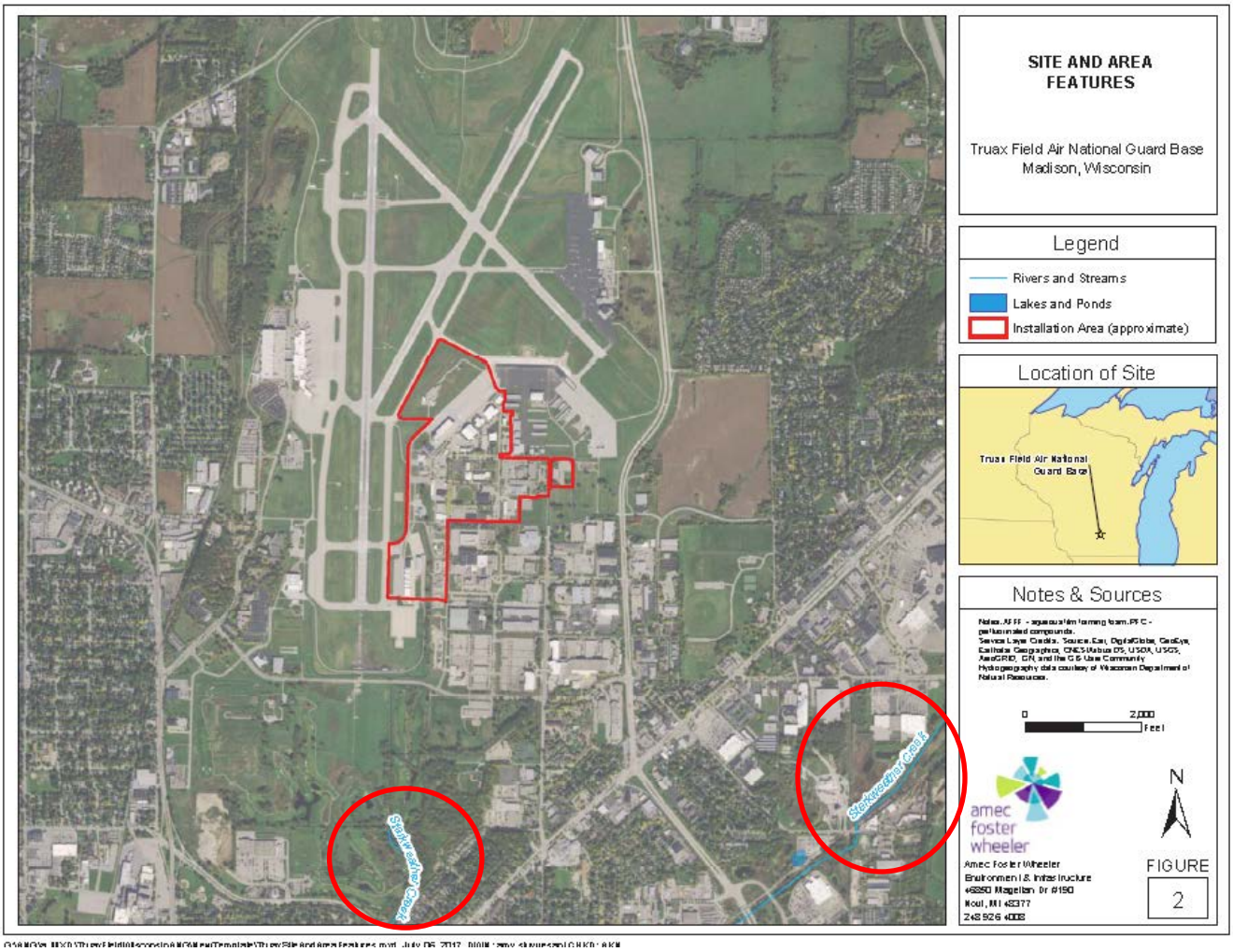
In summary, we ask that the DNR ask the Air National Guard to:
1. Test water and sediments near Truax ANG base outfalls to Starkweather Creek for PFCs.
2. Test water, sediments, and fish in Starkweather Creek downstream of the Truax ANG base for PFCs.
3. Include maps accurately depicting Starkweather Creek in relation to Truax ANG base in reports.

Finally, we ask that you contact your Department's stormwater program, inform them of the soil and groundwater PFC contamination at the Truax ANG site, and work with the ANG and Dane County to include appropriate management and ongoing stormwater testing for PFCs in the DCRA/ANG WPDES permit and Stormwater Pollution Prevention Plan (SWPPP).

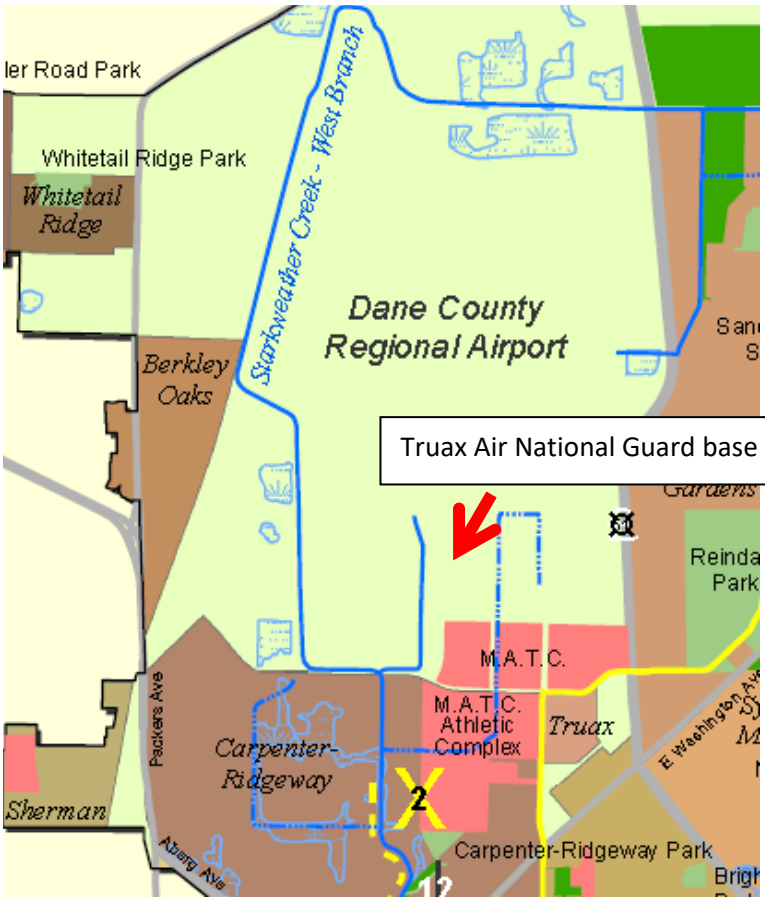
Sincerely yours,

s/ Maria Powell, PhD

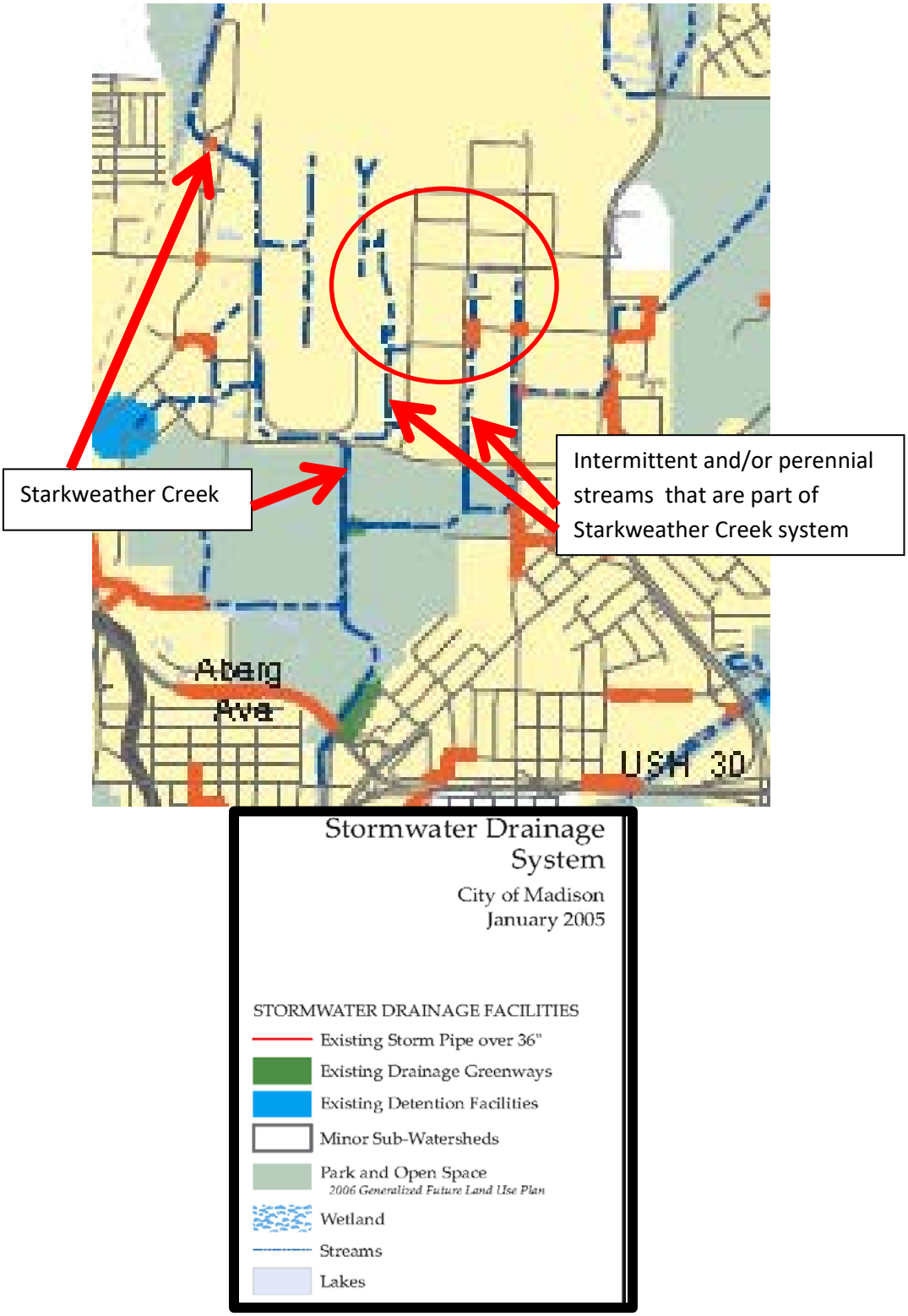
MAP 1: Site map from March 27, 2018 "Draft Report FY16 Phase I Regional Site Inspections for Perfluorinated Compounds"



Map 2: 2006 University of Wisconsin Starkweather Creek report



MAP 2: 2005 City of Madison map of storm drainage system (depicts Starkweather & tributaries)



MAP 3—from the 1988 PRELIMINARY ASSESSMENT, 128th Tactical Fighter Wing, Wisconsin Air National Guard, Truax Field, Madison, Wisconsin

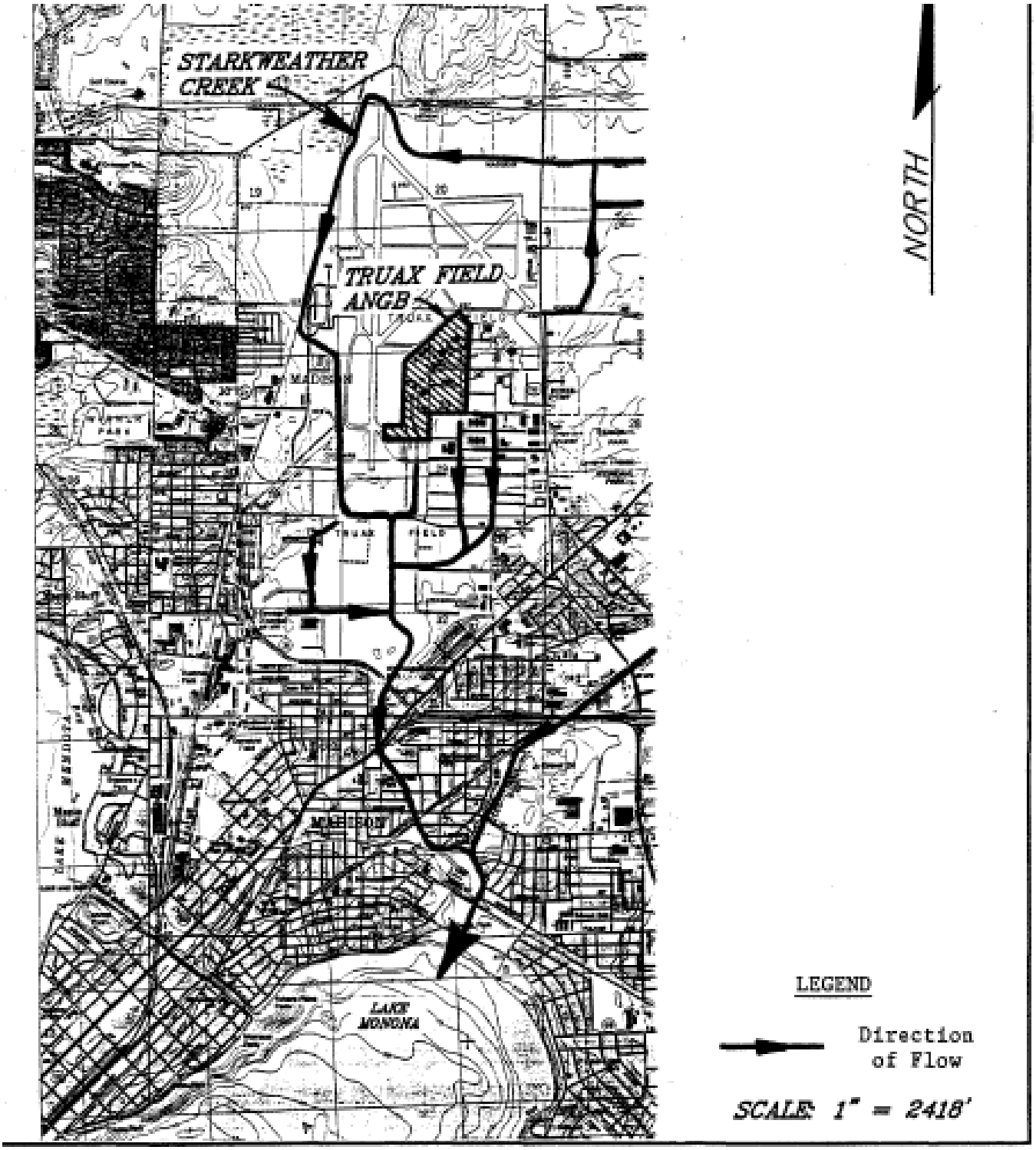


FIGURE IIIE. SURFACE DRAINAGE SYSTEM,
128th TFW, WISCONSIN ANG, TRUAX FIELD, MADISON WISCONSIN
(Source: USGS 7.5 Minute Topographic Maps; DeForest and Madison East, 1983)
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