The background of the slide features a light blue to white gradient. Scattered across the top and right sides are several realistic water droplets of various sizes, some with highlights and shadows, giving a sense of freshness and purity.

# **PFAS CASE STUDY: AFFF SPILL – SELFRIDGE ANGB**

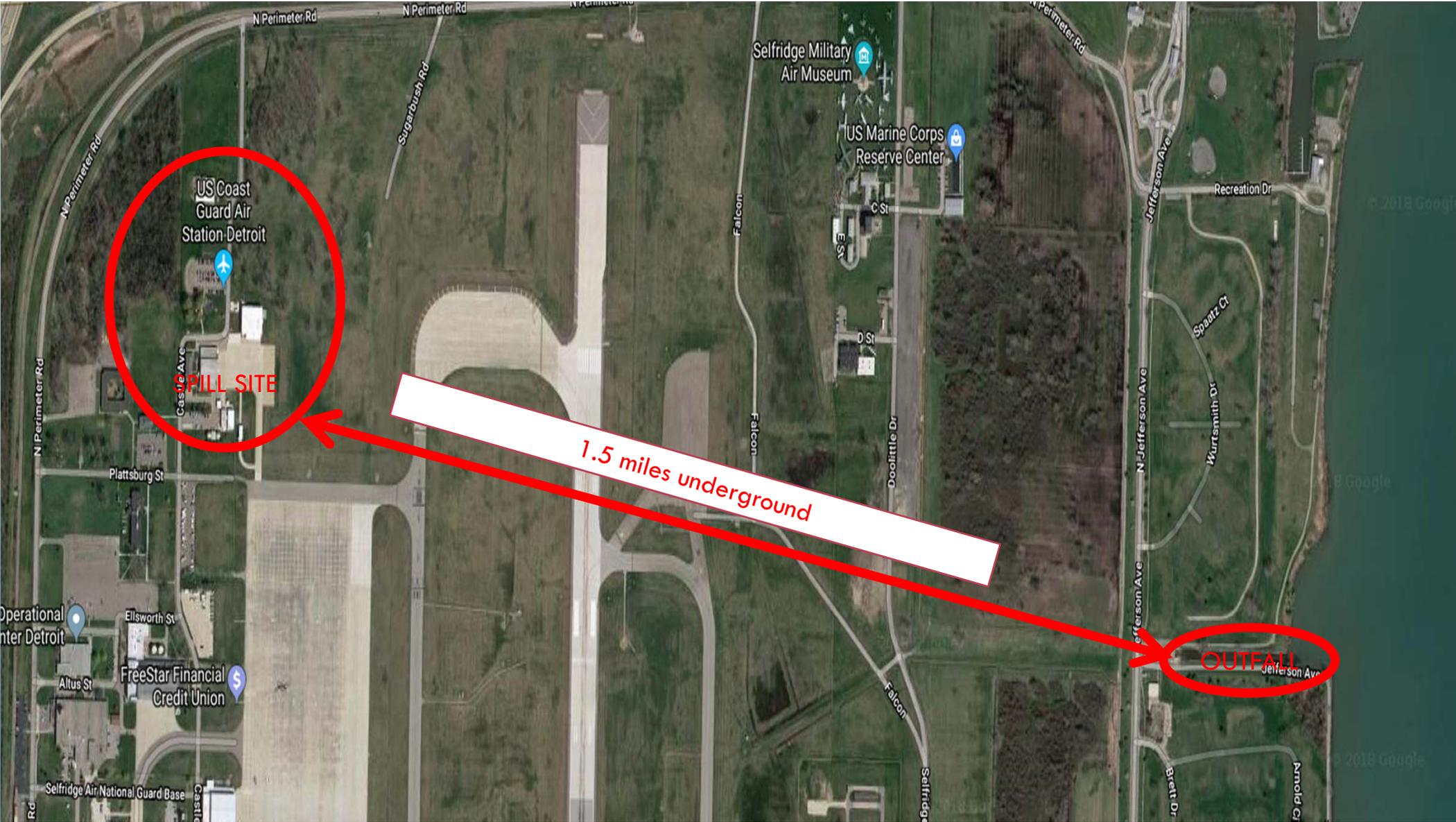
RRT 4/5 – COVINGTON, KY

18 OCT 2018

LTJG RAHNAL HARRIS – USCG SECTOR DETROIT

# OVERVIEW

- 07 JUN 2018 - AQUEOUS FILM FORMING FOAM (AFFF) APPEARED AT SELFRIDGE AIR NATIONAL GUARD BASE OUTFALL LEADING TO LAKE ST. CLAIR
- ENVIRONMENTAL CONCERNS – AFFF HAS BEEN KNOWN TO CONTAIN HAZARDOUS CHEMICALS PFOS/PFOA
- UNIFIED COMMAND WAS ESTABLISHED TO MITIGATE THE SPILL TO STATE AND FEDERAL SATISFACTION
- EMERGENCY RESPONSE LASTED 9 DAYS BEFORE TRANSITIONING TO REMEDIATION PROJECT
- 16 JUN 2018 - \$347K SPENT ON EMERGENCY RESPONSE – NOT AN OSLTF OR CERCLA FUNDED PROJECT



US Coast Guard Air Station Detroit

PILL SITE

1.5 miles underground

OUTFALL

Selfridge Military Air Museum

US Marine Corps Reserve Center

Operational Center Detroit

FreeStar Financial Credit Union

Selfridge Air National Guard Base

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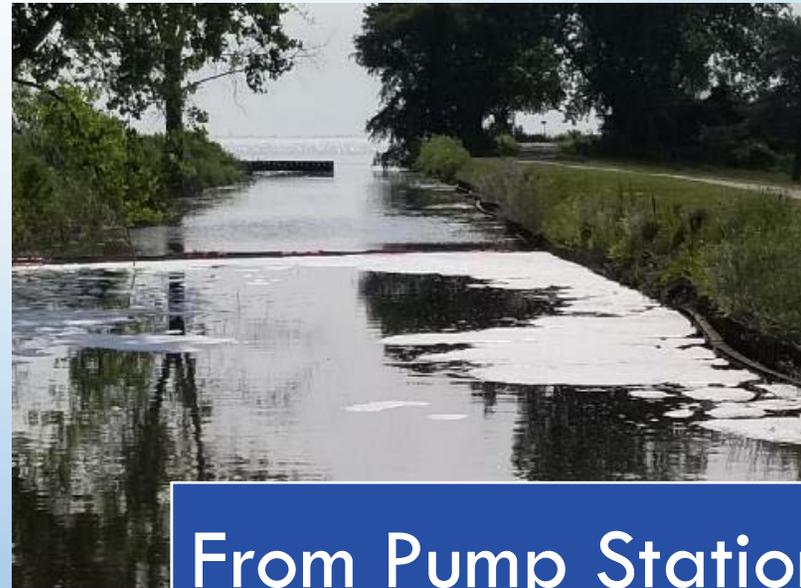
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# AGITATED AFFF AT OUTFALL TO LAKE ST. CLAIR



Canal Boom



From Pump Station

## PRODUCT: ESTIMATED 800 GALLONS OF AFFF



- AFFF IS POPULAR PRODUCT FOR FIRE FIGHTING ON SHIPS, SHIPYARDS, AIRCRAFT HANGARS AND AIR FIELDS/BASES.
- AFFF KNOWN TO CONTAIN UNMONITORED OR UNREGULATED HAZARDOUS CHEMICALS TYPICALLY FOUND IN MAN-MADE CHEMICAL PRODUCTS.
  - PFAS – ANY COMBINATION OF PER- AND POLYFLUOROALKYL SUBSTANCES
    - PFOS – STATE STANDARD <70 PPT FOR DRINKING WATER
    - PFOA - STATE STANDARD <70 PPT FOR DRINKING WATER

# RESPONSE: UNIFIED COMMAND

- USCG AIR STATION DETROIT – RESPONSIBLE PARTY
- USCG SECTOR DETROIT – FEDERAL ON SCENE COORDINATOR
- MICHIGAN DEQ – STATE ON SCENE COORDINATOR
- US EPA (REGION V) – COMMAND STAFF ENVIRONMENTAL LIAISON
- SELFRIDGE ANGB - ENVIRONMENTAL LIAISON

## RESPONSE: INITIAL ACTIONS

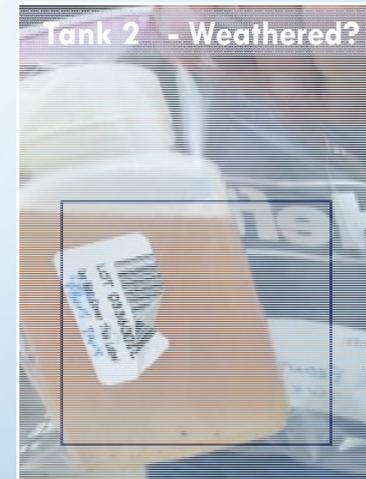
- BASE SECURED STORM DRAIN OUTFALL STATION TO PREVENT FURTHER PUMPING TO LAKE ST. CLAIR
- AIR STATION SECURED AFFF PUMP ROOM DECK DRAIN (ORIGINALLY THOUGHT TO BE SOURCE TO BASE STORM DRAIN)
- SECTOR DETROIT CONTRACTED T&T MARINE TO FLUSH AND REMOVE CONTAMINANTS FROM 1.5 MILES OF UNDERGROUND STORM DRAIN SYSTEM
- SECTOR DETROIT INVESTIGATED PATH OF DISCHARGE AFTER DETERMINING DECK DRAIN DID NOT STOP SOURCE AND DID NOT CONNECT TO STORM DRAIN.
- SECTOR DETROIT REQUESTED CIVIL ENGINEERING UNIT (CEU) CLEVELAND TO JOIN UNIFIED COMMAND IN INVESTIGATION

# RESPONSE ACTIONS – SOURCE SAMPLING

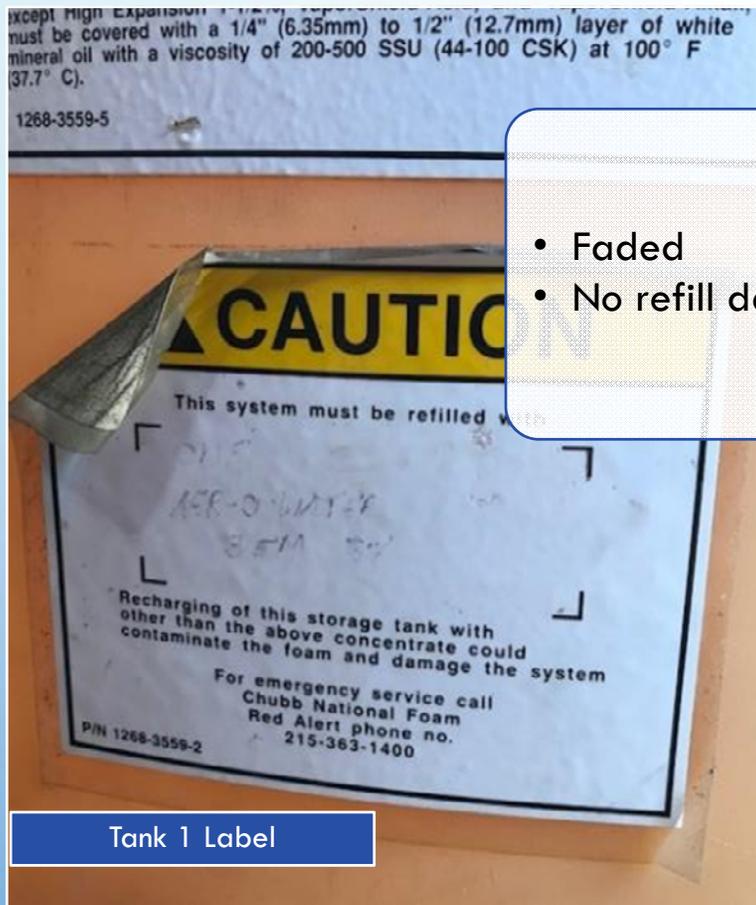
Great partnering! - EPA and DEQ oversaw sampling process and provided responder training on site



Tank 1 vs Tank 2



# INVESTIGATION: SOURCE SAMPLE FINDINGS



Tank 1 Label

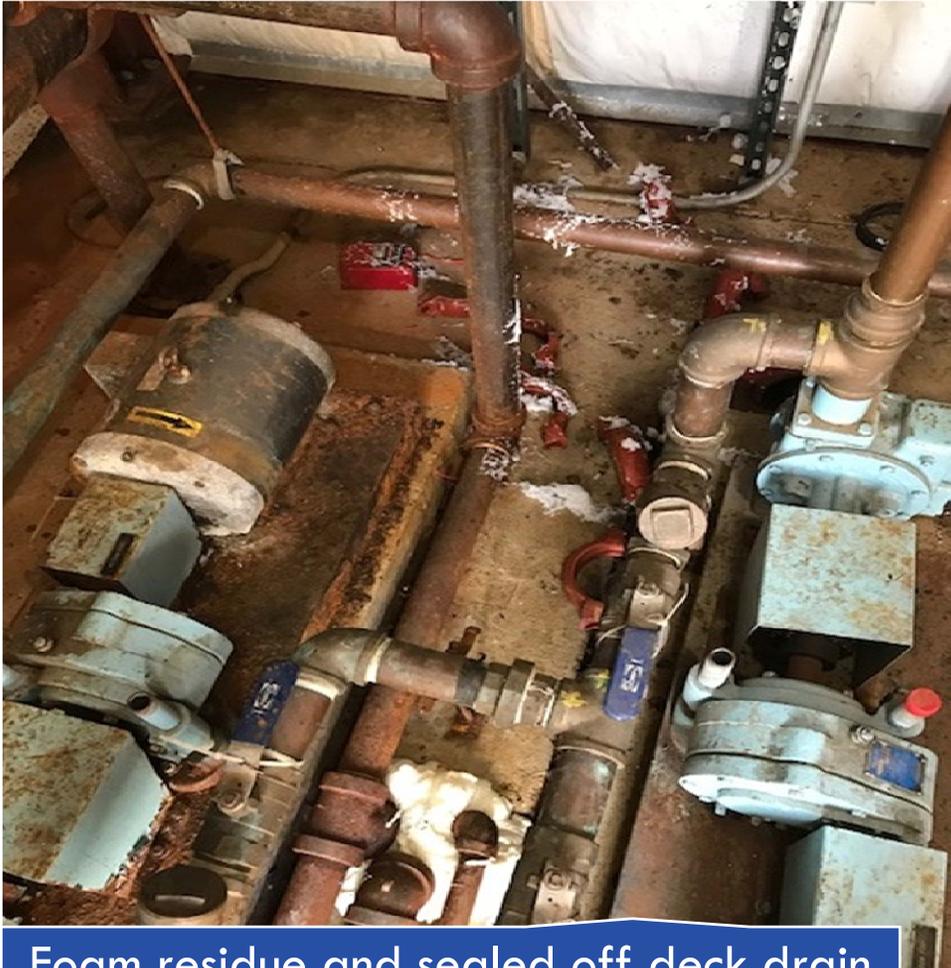
- Faded
- No refill date



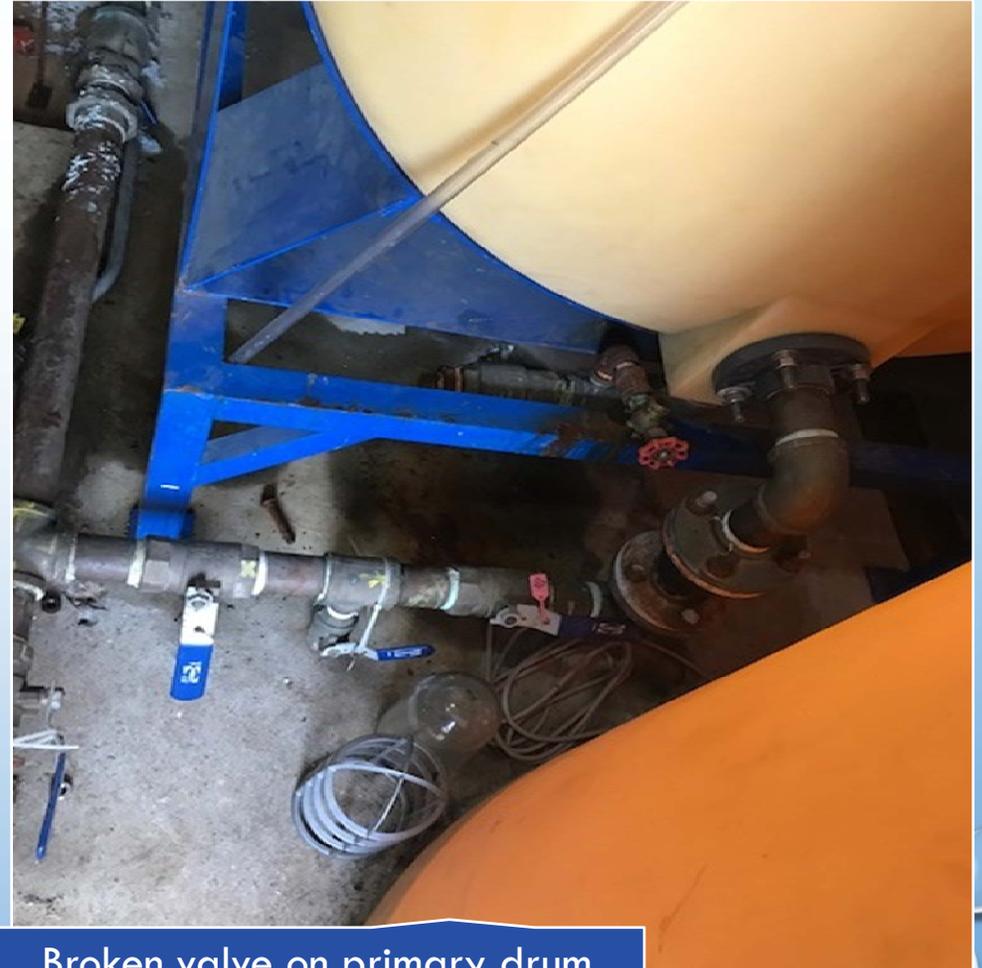
Tank 2 Label

- Clearly marked
- No refill date
- No product name

## INVESTIGATION: SOURCE SITE FINDINGS



Foam residue and sealed off deck drain



Broken valve on primary drum

## RESPONSE ACTIONS: SITE SAMPLING & RESULTS



- HIGH LEVELS OF PFAS AT WELL SITE – 2490 PPT
- CONCENTRATED LEVELS AT SOURCE – EXCESS OF 1 MILLION PPT
- HISTORICAL LEVELS OF PFAS WERE AT 490 PPT (AT THIS PARTICULAR LOCATION) AS OF FEBRUARY 2018
- STATE MINIMUM DRINKING WATER REQUIREMENT FOR ANY COMBINATION OF PFAS TO BE BELOW 70 PPT

## RESPONSE ACTIONS: SITE TREATMENT



- T&T MARINE SUBCONTRACTED A GRANULAR ACTIVATED CARBON (GAC) FILTRATION SYSTEM – RECOMMENDED BY US EPA BASED ON CURRENT TREATMENT PROJECTS OCCURRING ELSEWHERE IN THE STATE.
- DUAL STAGE GAC WAS IMPLEMENTED FOR REDUNDANCY TO PREVENT FILTRATION LOSS DUE TO HIGH QUANTITY OF WATER NEEDED TO BE PUMPED
- FRAC TANKS LINKED TO CREATE SEDIMENT REDUCTION SYSTEM PRIOR TO FILTRATION

## END OF EMERGENCY PHASE

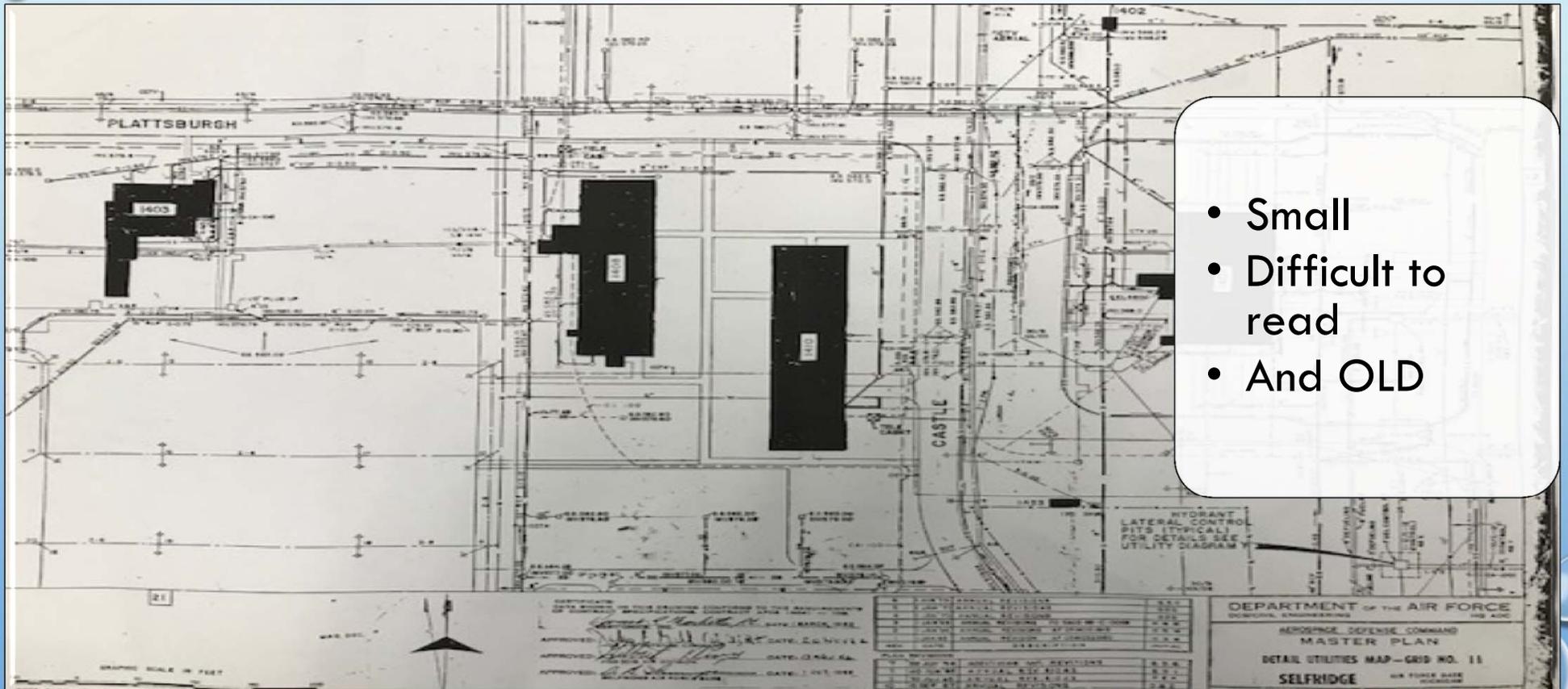
- WORKED WITH STATE OSC AND RESPONSIBLE PARTY TO TRANSITION TO REMEDIATION USING CLOSED LOOP FILTRATION PROCESS.
- SECTOR DETROIT CONCLUDED EMERGENCY RESPONSE AND TRANSITIONED ON-SITE RESPONSE EQUIPMENT TO CEU
- CEU CLEVELAND NEGOTIATED NEW CONTRACT WITH T&T MARINE FOR LONG TERM REMEDIATION DOWN TO PRE-EXISTING SELFRIDGE BASE LEVELS



# CHALLENGES

- PRE-EXISTING CONDITIONS OF PFAS TESTED IN FEB 2018
- UNDERSTANDING OF DEGRATED AFFF SOLUTIONS
- LARGE EQUIPMENT AND VARIOUS CONTRACTORS ARRIVING AT A SECURE BASE/FACILITY
- WORKSITE NEARLY CAUSED BASE TO FLOOD DUE TO SECURED STORM DISCHARGE
- SAMPLING:
  - HEIGHT OF DRAINS (10-20FT DEPTH FOR SOME SAMPLES)
  - METHOD OF SAMPLING
  - SPEED OF SAMPLING RESULTS
- BLUEPRINTS:
  - GROUNDWATER COMMUNICATION TO DRAINS
  - BASE SEWER SYSTEM BLUEPRINTS – 1962
  - CEU CLEVELAND BLUEPRINTS – 1982
  - 1.5 MILES OF UNDERGROUND DRAINS CROSSING STREETS AND AIR FIELDS REQUIRING SPECIAL ESCORT

# Blueprints - 1962



- Small
- Difficult to read
- And OLD

# Updated Blueprints – 1982



# BEST PRACTICES/LESSONS LEARNED

- CLOSE LOOP FILTRATION PROCESS – WORKED!
- GREAT PARTNERSHIPS – ALLOWED EXPEDITIOUS SETUP OF SAMPLING , UNDERSTANDING OF CONTAMINANT, AND TREATMENT SOLUTION
- SPECIAL SAMPLING – STATE APPROVED LABORATORY VICE USCG OR OTHER LOCAL LAB
- MILITARY BASE ACCESS REQUIREMENTS FOR CONTRACTORS NEED TO BE PRE-APPROVED AND VETTED TO PREVENT DELAYS
- MANNING FOR CONTRACTOR OVERSIGHT
- UTILIZING BASE RESOURCES AND PERSONNEL

# QUESTIONS?

