



## Appendix C - Photographic Log

<b>Army National Guard, Preliminary Assessment for PFAS</b>	<b>Grand Ledge AASF and Armory</b>	<b>Grand Ledge, MI</b>
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<b>Photograph No. 05</b>	
<b>Date</b> 11/4/2019 <b>Time</b> 15:43	
<b>Description:</b> Grand Ledge AASF and Armory SI - Mobilization 2  Surface soil sample markouts at AOI 1-16 through AOI 1-20	
<b>Orientation:</b> Northwest	

<b>Photograph No. 06</b>	
<b>Date</b> 11/6/2019 <b>Time</b> 12:47	
<b>Description:</b> Grand Ledge AASF and Armory SI - Mobilization 2  AOI 1-16, surface soil sampling with hand auger	
<b>Orientation:</b> Not available	


## Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Grand Ledge AASF and Armory	Grand Ledge, MI
<p><b>Photograph No. 07</b></p> <p><b>Date</b> 11/11/2019  <b>Time</b> 16:12</p> <p><b>Description:</b>            Grand Ledge AASF and Armory SI - Mobilization 2</p> <p>Heavy snowfall conditions created technical difficulties for the drill rig equipment, pictured near AOI 1-10.</p> <p><b>Orientation:</b>            Not available</p>		
<p><b>Photograph No. 08</b></p> <p><b>Date</b> 11/11/2019  <b>Time</b> 15:45</p> <p><b>Description:</b>            Grand Ledge AASF and Armory SI - Mobilization 2</p> <p>AOI 1-10, pre-drilling conditions</p> <p><b>Orientation:</b>            South</p>		

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Army National Guard, Preliminary Assessment for PFAS	Grand Ledge AASF and Armory	Grand Ledge, MI
<p><b>Photograph No. 09</b></p> <p><b>Date</b> 11/14/2019  <b>Time</b> 9:23</p> <p><b>Description:</b>            Grand Ledge AASF and Armory SI - Mobilization 2</p> <p>AOI 1-23, location at stormwater retention basin</p> <p><b>Orientation:</b>            Not available</p>		
<p><b>Photograph No. 10</b></p> <p><b>Date</b> 11/21/2019  <b>Time</b> 14:26</p> <p><b>Description:</b>            Grand Ledge AASF and Armory SI - Mobilization 2</p> <p>AOI 1-24, location at stormwater retention basin with foaming observed during a qualifying rain event</p> <p><b>Orientation:</b>            Northwest</p>		

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Army National Guard, Preliminary Assessment for PFAS	Grand Ledge AASF and Armory	Grand Ledge, MI
<p><b>Photograph No. 11</b></p> <p><b>Date</b> 11/21/2019  <b>Time</b> 15:09</p> <p><b>Description:</b>            Grand Ledge AASF and Armory SI - Mobilization 2</p> <p>AOI 1-22, location at stormwater retention basin during a qualifying rain event</p> <p><b>Orientation:</b>            West</p>		
<p><b>Photograph No. 12</b></p> <p><b>Date</b> 12/4/2019  <b>Time</b> 15:04</p> <p><b>Description:</b>            Grand Ledge AASF and Armory SI - Mobilization 2</p> <p>AOI 2-4, post-drilling conditions prior to well completion</p> <p><b>Orientation:</b>            Southwest</p>		

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Army National Guard, Preliminary  
 Assessment for PFAS

Grand Ledge AASF and Armory

Grand Ledge, MI

**Photograph No. 13**

**Date** 12/6/2019

**Time** 14:48

**Description:**

Grand Ledge AASF and  
 Armory SI - Mobilization 2

AOI 1-13, well completion  
 with pad and manhole



**Orientation:**

Northwest

**Photograph No. 14**

**Date** 12/6/2019

**Time** 10:10

**Description:**

Grand Ledge AASF and  
 Armory SI - Mobilization 2

AOI 1-10, well completion  
 with pad and manhole



**Orientation:**

Southeast

## Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Grand Ledge AASF and Armory	Grand Ledge, MI
<p><b>Photograph No. 15</b></p> <p><b>Date</b> 12/4/2019  <b>Time</b> 15:02</p> <p><b>Description:</b>            Grand Ledge AASF and Armory SI - Mobilization 2</p> <p>AOI 1-14, post-drilling conditions prior to well completion</p> <p><b>Orientation:</b>            Not available</p>		
<p><b>Photograph No. 16</b></p> <p><b>Date</b> 12/6/2019  <b>Time</b> 10:16</p> <p><b>Description:</b>            Grand Ledge AASF and Armory SI - Mobilization 2</p> <p>AOI 1-15, well completion with pad and manhole</p> <p><b>Orientation:</b>            Southeast</p>		

## Appendix C - Photographic Log

Army National Guard, Preliminary  
Assessment for PFAS

Grand Ledge AASF and Armory

Grand Ledge, MI

**Photograph No. 17**

**Date** 12/6/2019

**Time** 15:00

**Description:**

Grand Ledge AASF and  
Armory SI - Mobilization 2

AOI 1-12, well completion  
with pad and manhole



**Orientation:**

Southeast

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## **Appendix D**

### **TPP Meeting Minutes**

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**Meeting Minutes**  
**Grand Ledge Army Aviation Support Facility (AASF) – Site Inspection (SI)**  
**Technical Project Planning (TPP) – Meeting 1 and 2**  
**Preliminary Assessments and Site Inspections (PA/SIs) for Perfluorooctanesulfonic Acid**  
**(PFOS) and Perfluorooctanoic Acid (PFOA) Impacted Sites**  
**Contract No.W912DR-12-D-0014, DO W912DR17F0192**  
**Wednesday, 12 December 2018**  
**1400 to 1600 hrs**

<b>Participants</b>			
<b>Name</b>	<b>Affiliation**</b>	<b>Phone</b>	<b>E-Mail</b>
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Jennifer Li*	AECOM (ARNG)	301-820-3476	<a href="mailto:jennifer.j.li@aecom.com">jennifer.j.li@aecom.com</a>

-- Telephone number not available.

\* Participated by teleconference

\*\*ARNG-Army National Guard; DHD-(Michigan) District Health Department; MDEQ-Michigan Department of Environmental Quality; MDHHS-Michigan Department of Health and Human Services; MIARNG-Michigan Army National Guard; MPART- Michigan PFAS Action Response Team; USACE- U.S. Army Corps of Engineers

Claire Mitchell, SI Task Manager for AECOM, welcomed participants and reviewed the goals and agenda of the meeting; a roundtable of introductions was given. The sign-in sheet is included as **Attachment A** to these meeting minutes. The meeting was a combination of TPP1 and TPP2 with the purpose of discussing the ARNG PA/SI program and proposed SI approach for potential perfluoroalkyl and polyfluoroalkyl substances (PFAS) releases at Grand Ledge AASF.

Presentation in-brief slides were provided to participants at the meeting and are included in **Attachment B**. Key points that supplement the presentation are provided below.

A safety reminder was given to the participants by stating that the SI will follow the safety procedures of USACE Engineering Manual (EM) 385-1-1. The SI Work Plan will include the Accident Prevention Plan and Site Specific Health and Safety Plan prepared in accordance with EM 385-1-1.

**Programmatic Discussion (Slides 5–8):**

- The program follows the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) process. The PA is under review for finalization and the current stage of activity is the SI, so there is some overlap between the PA and SI in order to streamline the process. However, an interim removal action or a No Further Action status may occur at any time.
- The primary goal of the SI is to determine the presence or absence of PFAS at the source areas and at the facility boundary; nature and extent would be determined during a Remedial Investigation (the next phase in the CERCLA process).
- Participants for TPP1 and TPP2 include ARNG, USACE, MDEQ, and MDHHS; participants for the future TPP3 meeting will include the addition of other local stakeholders. Strong communication was encouraged between all parties involved.
- Dr. Bonnie Packer (ARNG) provided input that a Restoration Advisory Board (RAB), which is typically solicited at the Remedial Investigation/Feasibility Study Phase, will not be solicited until the presence/absence of contamination can be confirmed after the SI phase.
- State ARNG and regulatory roles in the PA/SI process were overviewed. Bonnie noted that the ARNG PFAS program has ranked ARNG sites in order of most likely to least likely contaminated with State ARNG input.

**Grand Ledge PA Findings (Slides 9-17):**

- PA data was collected through in-person interviews and visual inspections via a one-day site visit on 5 December 2017 and two follow-on interviews on 26 April 2018 and 7 June 2018. The PA findings for Grand Ledge were presented. Three major investigation areas were discussed: Annex Building, AASF Hangar, and Armory.
- At the AASF Hangar, a 700-gallon fire suppression system was present but ARNG staff could not recall any instance of an unintentional or intentional release of the system, although they believed a release to be possible.
- The Armory was the former location of the AASF and had fire trucks stationed in the building. There has been no known release in area, but there is potential for release given that the fire trucks were equipped with aqueous film forming foam (AFFF) and had the potential to leak.
- At the Annex Building, AFFF was stored in the building, but little was known about the historical use and activities.
- The Michigan National Guardsman article shows fire training exercises with AFFF conducted by AASF firefighters with the Grand Ledge Fire Department, but does not include information about where the exercises took place.
- The AASF is located south of Abrams Municipal Airport. The use or storage of AFFF at the Abrams Municipal Airport is unknown.
- Uncertainty is a common factor in the potential source areas. ARNG has determined there was enough uncertainty regarding the potential source areas that the investigation has been progressed to the SI phase.

**Grand Ledge SI Overview (Slides 18-21):**

- Data quality objectives (DQOs) were presented for the SI. The primary DQOs were to confirm the presence/absence of a release at a potential source area and then gather data to refine the conceptual site model (CSM).
- The preliminary CSM figures presented showed the surface water flowing towards a stormwater detention pond, which then discharges into Reed Drain. Groundwater was inferred to flow in the southwesterly direction.
- CSMs were briefly presented for each AOI. The key takeaway was that there are possible pathways between the potential source areas and human drinking water receptors.

## **FINAL**

- Bonnie suggested conducting a site reconnaissance at the stormwater detention pond to confirm surface water flow in order to determine the placement of surface water/sediment samples.

### **Grand Ledge SI Approach (Slides 22-27):**

- The scope of work for the SI was presented. Soil borings would be installed at locations downgradient of potential source areas and at the facility boundary. The soil borings would be converted to temporary wells, and both soil and groundwater samples will be collected. Surface water and sediment samples will be collected in the stormwater detention pond.
- Claire presented proposed sampling locations for the SI (Slide 23) and stated that the shallow aquifer would be targeted in the SI.
- The 18 PFAS analyte list was presented and all data would undergo Level IV data review. MDEQ stated that EPA discourages the usage of EPA Method 537 being called “Modified”. Claire provided explanation that all samples analyzed via EPA Method 537 Modified will be compliant with DoD QSM Table B15. All samples will be analyzed by Gulf Coast Analytical Laboratories, LLC (GCAL), and the data validation will be conducted by AECOM and reviewed by USACE. Total PFAS will be analyzed as opposed to linear and/or branched analysis.
- Stakeholder involvement was encouraged through the TPP meetings and open communication.
- A general outline of the schedule was presented. The UFP-QAPP would be released for review in January 2019. Following the finalization of the UFP-QAPP, field execution would occur approximately in the Spring/Summer of 2019. TPP3 would include discussion of the field results with all stakeholders.
- A site reconnaissance was proposed following the presentation in order to review the proposed sampling locations, particularly in the stormwater detention pond. Based on this reconnaissance, refinements made to the locations would be made with ARNG, MIARNG, and MDEQ concurrence.

### **Open Discussion:**

- Kim Sakowski (MDEQ) stated that during a health and safety training she had taken, the instructor showed a photo of a hangar filled with foam and stated this photo was at Grand Ledge AASF. This information was not reported by those interviewed during the PA process. Additional research must be conducted to determine source of photo and whether or not it was at Grand Ledge.
- Jonathan Edgerly (MIARNG) mentioned that the Annex building had a drinking water well that was tested and did not have any exceedances of PFAS.
- Steve Gragert (USACE) asked whether the two public supply wells in the southwest boundary were community wells or Type II. DHD provided explanation that the wells were non-community wells, so they are classified as Type II. In addition, DHD has completed their municipal water supply sampling of Type I and II wells and all results were non-detect for PFAS.
- Clarification was provided that a “release” was defined as any release of PFAS regardless of concentration or volume.
- Liz Braddock (DHD) asked about the presence of any historical data or groundwater sampling on the property for PFAS. Claire stated that none was available other than from the drinking water well in the Annex building.
- Jennifer Li (AECOM) stated that she would share Integrated Contingency Plans, which show drain lines in connection to the stormwater detention pond to aid in the site reconnaissance activity.
- Regina Young (DHD) asked about pre-existing wells on the facility before ARNG held property rights. Robert MacLeod (MIARNG) responded that the Armory was built on a few groundwater wells, but he personally oversaw the abandonment of the wells, since they were damaged by lawnmowers and infested with bugs. The Armory building was then connected to the municipal water system.
- Jennifer provided input that before 1960, the majority of the property was open field and the existing nearby homes were present even back then.

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- Amy Peterson (MDEQ) asked about expectations for MDEQ regarding effort and review time for the SI UFP-QAPP and if AECOM and ARNG had interacted with anybody else from MDEQ in the process. It was stated that Kim Sakowski from MDEQ was the current lead. Claire responded that the review time is expected to occur within 30 days of receipt. The review would include providing comments for the UFP-QAPP plan and reaching finalization. A format for comments (typically a spreadsheet) is provided along with the report submittal. Dennis stated that he would prefer a meeting to discuss comments rather than exchanging letters/emails. Bonnie stated that this could be arranged so long as there is a written statement confirming report finalization for documentation purposes.
- Bonnie clarified that with regards to ARNG community involvement, ARNG typically informs residents when there are PFAS detections at the facility boundary and possible impact to a residential well. At that point, a Right of Entry (ROE) process and residential well sampling would be conducted; however, ARNG does not conduct press releases.

The presentation ended at 1445. A site reconnaissance was conducted shortly after to review the proposed sampling locations. Following the site reconnaissance, a short meeting was conducted to review and provide a summary of changes. All parties expressed agreement about the proposed changes. The summary meeting commenced at 1600.

### **Site Reconnaissance:**

- Sergeant Schueller (MIARNG) led the participants around the AASF property. Due to active helicopter training exercises, participants were given ear plugs to wear during the tour and safety procedures were reviewed.
- Sgt. Schueller stated there was a combustibles storage room in the Armory, but now it was a stateworkers room. A potential release of foam in the combustibles storage room was mentioned; however, after speaking with other staff, it was determined that the releases originated from powder contained in a pressurized canister. The combustibles storage room contained a powder fire suppression system before it was decommissioned. The combustibles storage room was toured but there was no evidence of AFFF storage or floor drains.
- Three drainage features were observed going into the detention pond. The detention pond discharges at a single northern collection point into Abrams Municipal Airport, which then connects to the county Reed Drain. Surface water/sediment samples were proposed to be collected at each outfall.
- Robert stated that all surface water runoff from the facility is collected in the detention pond. However, it was hypothesized that runoff from the Abrams Municipal Airport runway might additionally be collected in the detention pond due to the steep differences in ground surface elevation.
- Claire proposed moving soil boring AOI I-5 closer to the municipal airport to collect any potential contamination coming from the airport.

### **Action Items:**

- Kasey Swanson (DHD) stated that she had historical well records that were not available on Wellogic (Michigan's public well record site). She suggested AECOM to submit a Freedom of Information Act (FOIA) request in order to obtain these additional well records.
- AECOM will conduct additional data gathering to understand the source of photo seen by MDEQ of a foam release that was stated to have been at Grand Ledge.
- AECOM to incorporate comments from MDEQ as well as the new information learned through follow on interviews into the PA and SI QAPP.
- AECOM to release the SI QAPP for Grand Ledge by January 2019.
- MDEQ to review SI QAPP for Grand Ledge and provide comments.
- AECOM is tentatively scheduled to perform the SI field work in April 2019.

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**Attachment A- TPP 1&2 Sign-In Sheet**

**SIGN-IN SHEET**  
**Grand Ledge Site Inspection**  
**Technical Project Planning Meeting 1 & 2**  
**Grand Ledge, Michigan**  
**Wednesday, 12 December 2018**

Name	Organization/Role	Phone	Email
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* Tim Peek	USACE - Bathinook		
* Jennifer Li	AECOM	361 272 4948	jennifer.j.li@aecom.com
* Madeline Brown	MDEQ		
* Steve Sliver	MDEQ	517-290-2943	slivers@michigan.gov
Claire Mitchell	AECOM	703-682-9098	claire.mitchell@aecom.com



\* Carol Isaacs. MPART

\* Amy Peterson MDEQ

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**Attachment B- TPP 1&2 Briefing Slides**