

AWARE Flood

Streamlined IoT Flood Monitoring

Robert Levy

Vice President Business Development

Robert.levy@awaremonitoringsystems.com

775-781-2525

AWARETM
Monitoring Systems



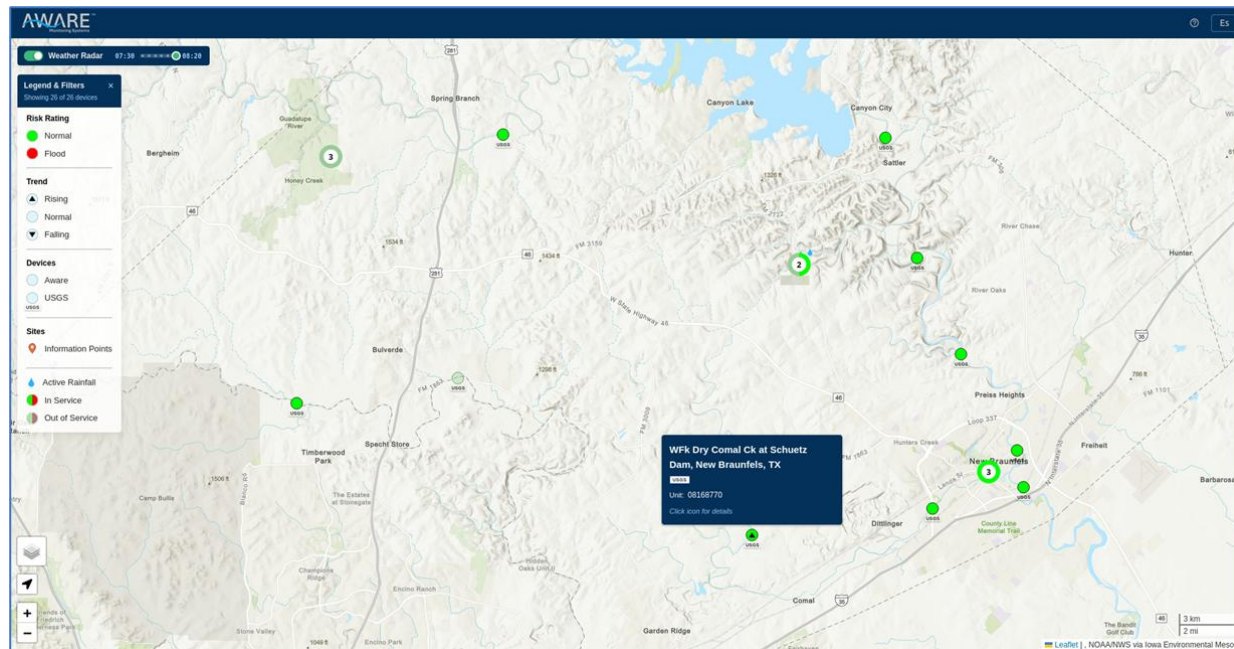
We will present our technology to in this order:

- AWARE Flood Node and Sensors
- AWARE Low Water Crossing Warning Solution
- AWARE Mass Notification Siren Solution
- AWARE Shield Software



AWARE Monitoring Systems creates innovative products that provide active sensing, monitoring, and control software in dynamic and challenging environments. We focus on providing solutions that enhance operational performance and safety yet simplify complexity so that our customers can focus on their bigger challenges.

IoT
Flood
Systems



AWARE SHIELD Public
Facing Dashboard

“We help our customers make sense of their world, simply and reliably.”

How We Are Different

All-In-One Military Grade Flood Sensing System

Self Powered

Web Based

Robust Software/Alerting

Low Maintenance Costs

One Person Installation

Low Entry Cost for Agencies



Capability Gap: DHS Finding

Limited Situational Weather/Climate Data from High Costs of Ownership



- Initial purchase price and installation costs too high
- Maintenance/Operations are largest expense
 - On-site visits (troubleshooting, configuring, upkeep)
 - Failures – not designed for military applications
- Different regions need different solutions
 - Accommodation usually means complex systems
 - Typically requires the use of many different system types



Summary



AWARE Flood system consists of a rugged, low-cost, IoT connected flood sensor to remotely monitor waterways and provide emergency notice to public and first responders to address the number one leading natural disaster in deaths and costs.



Proprietary, AWARE Monitoring Systems Inc.
6

AWARE stands for Advance Warning Equipment, which embodies the design's core capability as an early warning system for natural disasters and environmental monitoring.



Hardware:

Main Node – Military Grade Technology

Main Node

900 MHz Antenna
Connector (FUTURE)

4x High
Efficiency Solar
Cells

Reinforced
Security Loop for
Padlock and
Aircraft Cable

IoT Module
(Cellular or Iridium)

Base Module
(Power, Barometric
Pressure, & GPS)





Water Level Pressure (WLP)

- Measures pressure and converts to water level
- High accuracy
- Lowest maintenance pressure sensor on market
- Works well in normally wet and dry locations



Water Level Radar (WLR)

- Measures distance and converts to water level
- 5 times better accuracy
- Non-Contact (lower maintenance)
- Needs structure and additional power module

Extension cables up to 90m

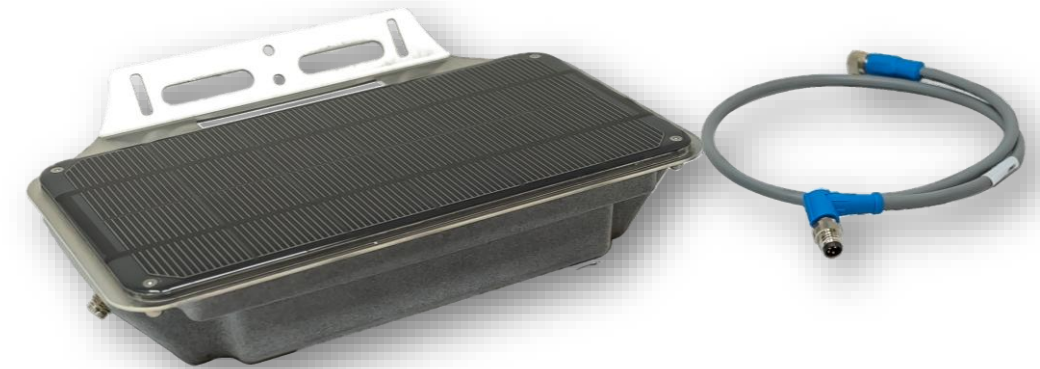




Camera



**Rain Gauge
(Tipping Bucket)
Compatibility**



**SDI-12 Expansion Port
And Power Adapter Module**

Ruggedization:

AWARE Node - Designed for Military Use



The AWARE Flood system has been rigorously tested and successfully pass to the most rigorous environmental standards (MIL-STD-810)

- Submersion
- Operational Temperature
- Humidity
- Blowing Rain
- Freeze/Thaw
- Chemical Resistance
- Salt Fog
- Blowing Sand

Additional standards successfully tested MIL-STD-464, EN61000, as well as FCC compliance.

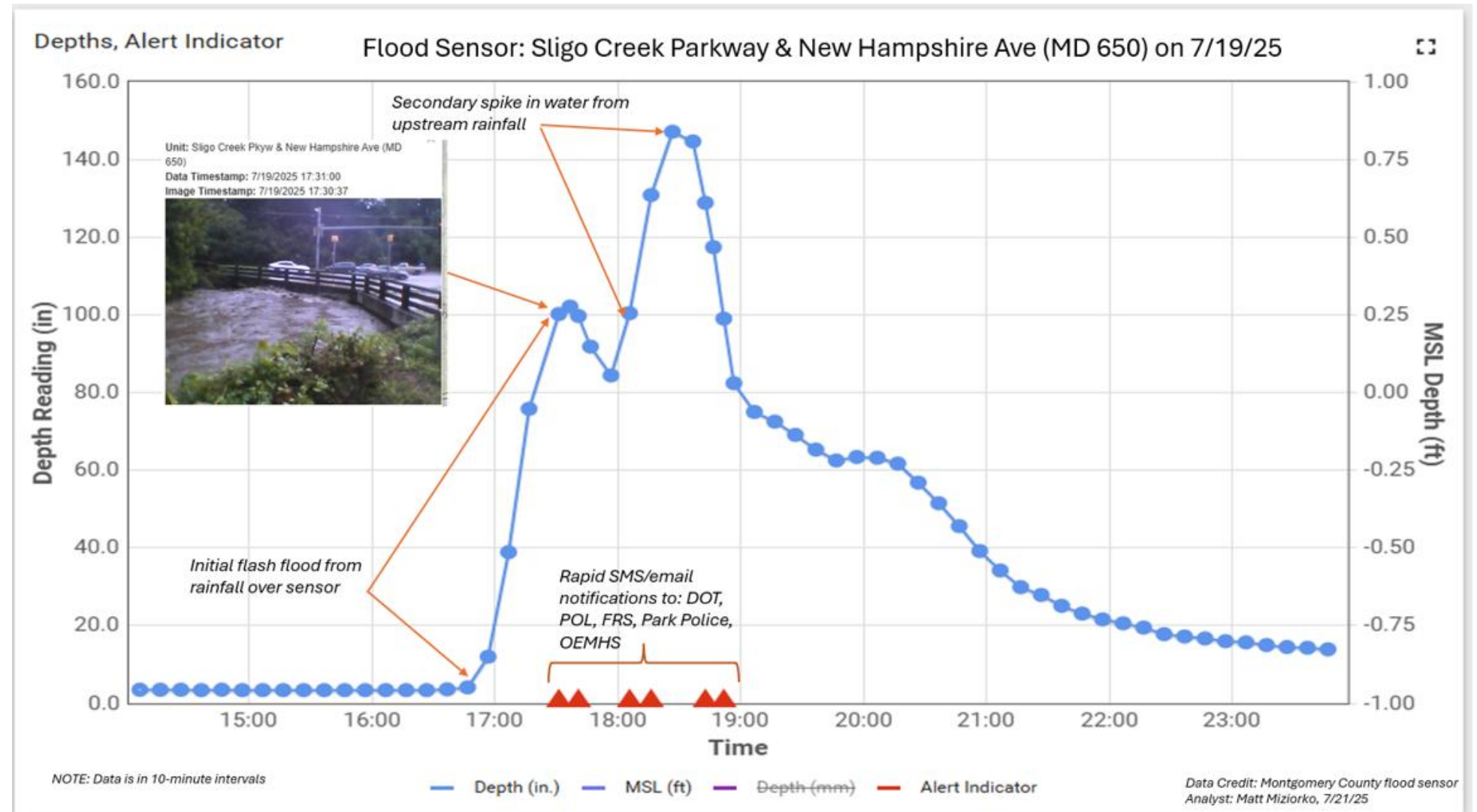
- ESD
- FCC Compliant



The Flash Flood: Fast and Furious



- Full flashflood depth in about 90 minutes.
- Wall of water scenario
- Strategically placed sensor made timely measurements
- Tragedy prevented
- Accuracy from .5" to 1.5"



Ruggedization:

Designed for Military Use



The AWARE Flood sensor at Rebecca Creek before being swept away during the Texas July 4th flooding.

- Surge and large debris flow scrubbed sensor off the bridge
- Sensor continued to report until fully submerged below surface
- Two days later sensor came back online and reported GPS location
- Sensor found 600 feet downstream from bridge lying in bedrock.
- Sensor powered on and took a photo of the sky
- Sensor retrieved with minimal exterior damage
- Sensor to be placed back in service once cleaned, inspected and tested

Can your sensor survive these kinds of conditions?



Dam Monitoring:

Gaithersburg, MD – Case Study



CASE STUDY:

- Gaithersburg is currently deploying AWARE units to monitor a series of Flood Control Dams.
- The locations are:
 - Lake Varona
 - Lake Helen
 - Lake Inspiration
 - Summit Hall Park
- AWARE units will monitor lake levels and boreholes
- Gaithersburg will be set up for Monitoring regionally with Montgomery Co MD.

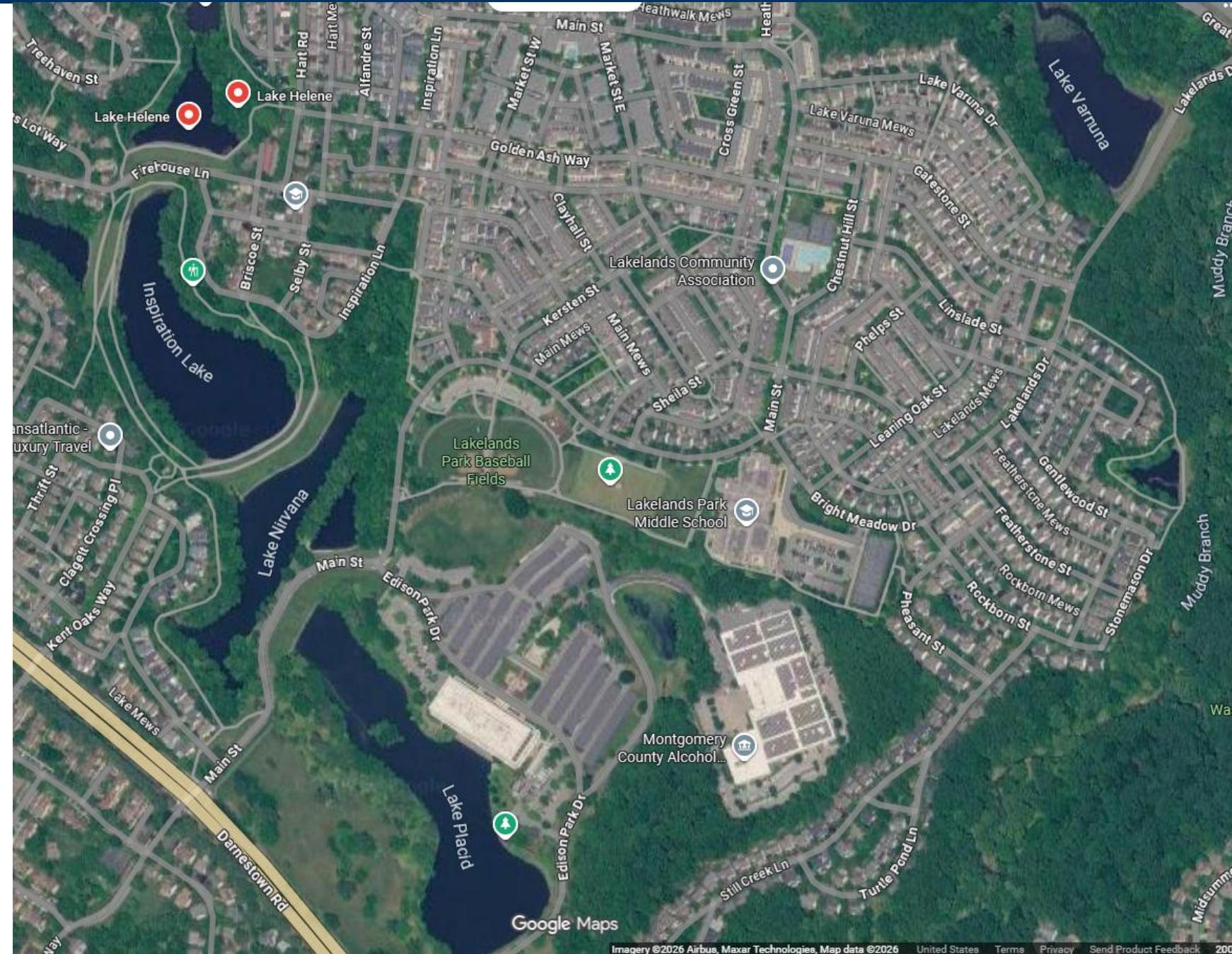


Dam Monitoring:

Gaithersburg, MD – Case Study



- Project is monitoring a series of daisy chained dams on common watershed
- Dam basins are surrounded by parks and recreation areas
- Area is a major flood risk for the City of Gaithersburg if dams are not continually managed and monitored.



AWARE Flood:

Low Water Crossing Equipment – Denial of Access



- IoT based cellular control
 - Verizon
 - FirstNet
 - Anterix
- With or without closing gate
- LED lights/signs to meet DOT standards
- Pelco breakaway poles
- Modular design for easy servicing
- Manual or automatic activation
- Populates on public facing dashboard
- Uptime statistical tracking
- Full professional turnkey installation



AWARE Flood:

Siren Equipment – Overtop/Emergency Spillway Mass Notification

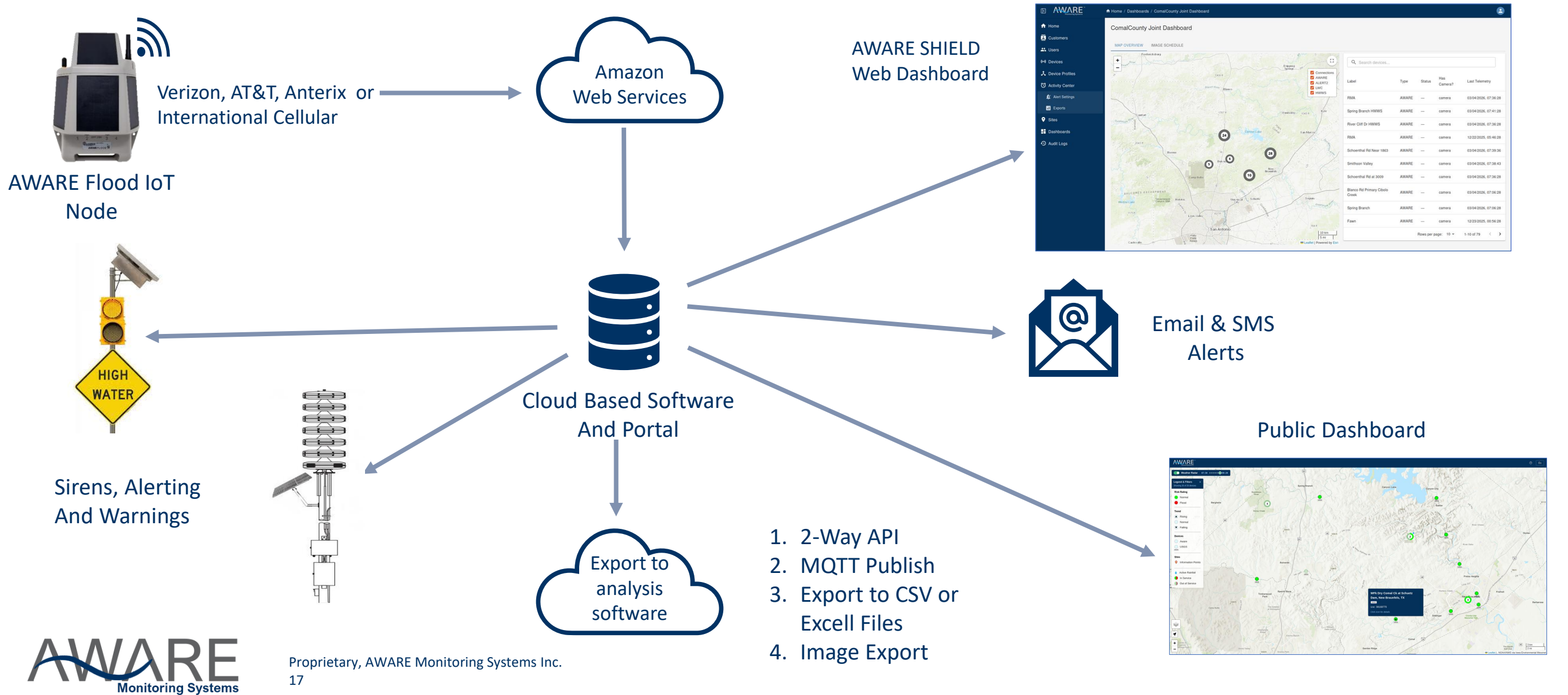


- SB 3 Compliant Systems
- IoT based cellular control
 - Verizon
 - FirstNet
 - Anterix
- Testing schedule
 - Daily silent
 - Weekly low volume
 - Monthly full power
- Available in multiple siren powers:
 - 3200, 2000, 1600 or 800 watt
- 40-foot heavy duty poles:
 - Wood, Metal or Concrete
- Modular design for easy servicing
- Manual or automatic activation
- Populates on public facing dashboard
- Full professional turnkey installation



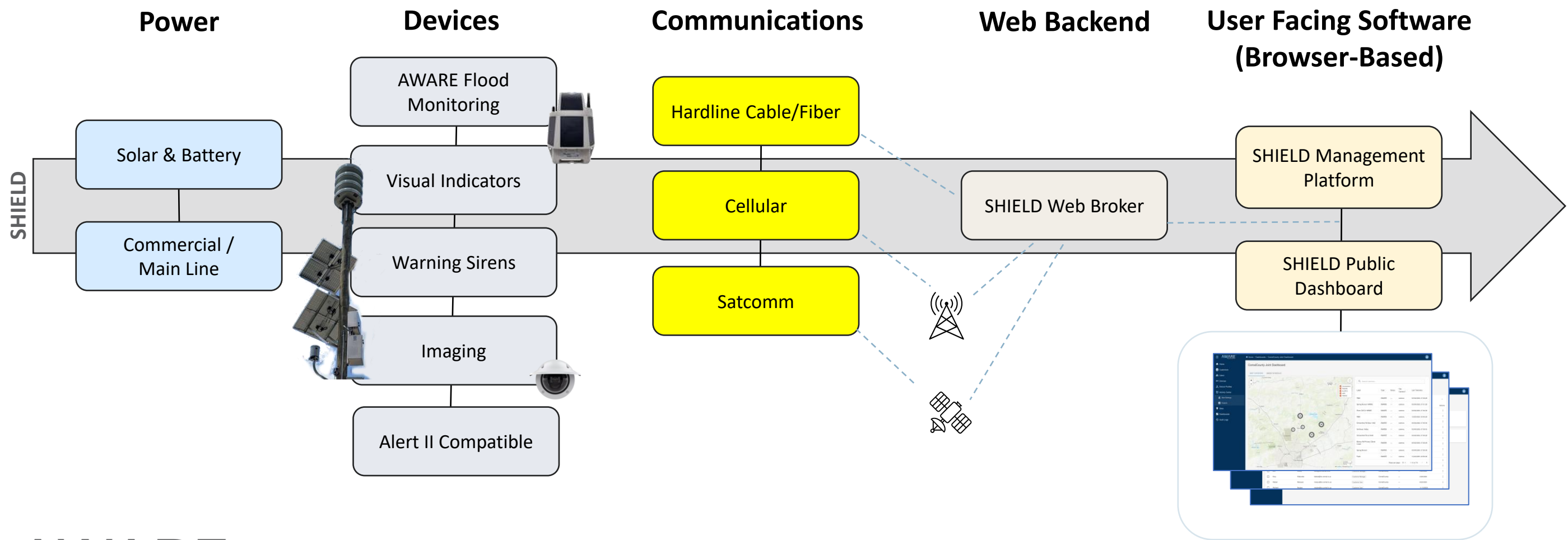
AWARE Ecosystem:

Data Paths, Device Control and SHIELD Software



AWARE SHIELD

System - Overview



AWARE SHIELD

Device Management Platform



AWARE SHIELD's device management platform is an all-in-one platform for managing your network.

- 1) Command: Configure and manage device settings.
- 2) Data: View real-time data and state of your sensors.
- 3) Alarms: Manage automated alarms. Set notification settings (email/SMS).

... and much more!

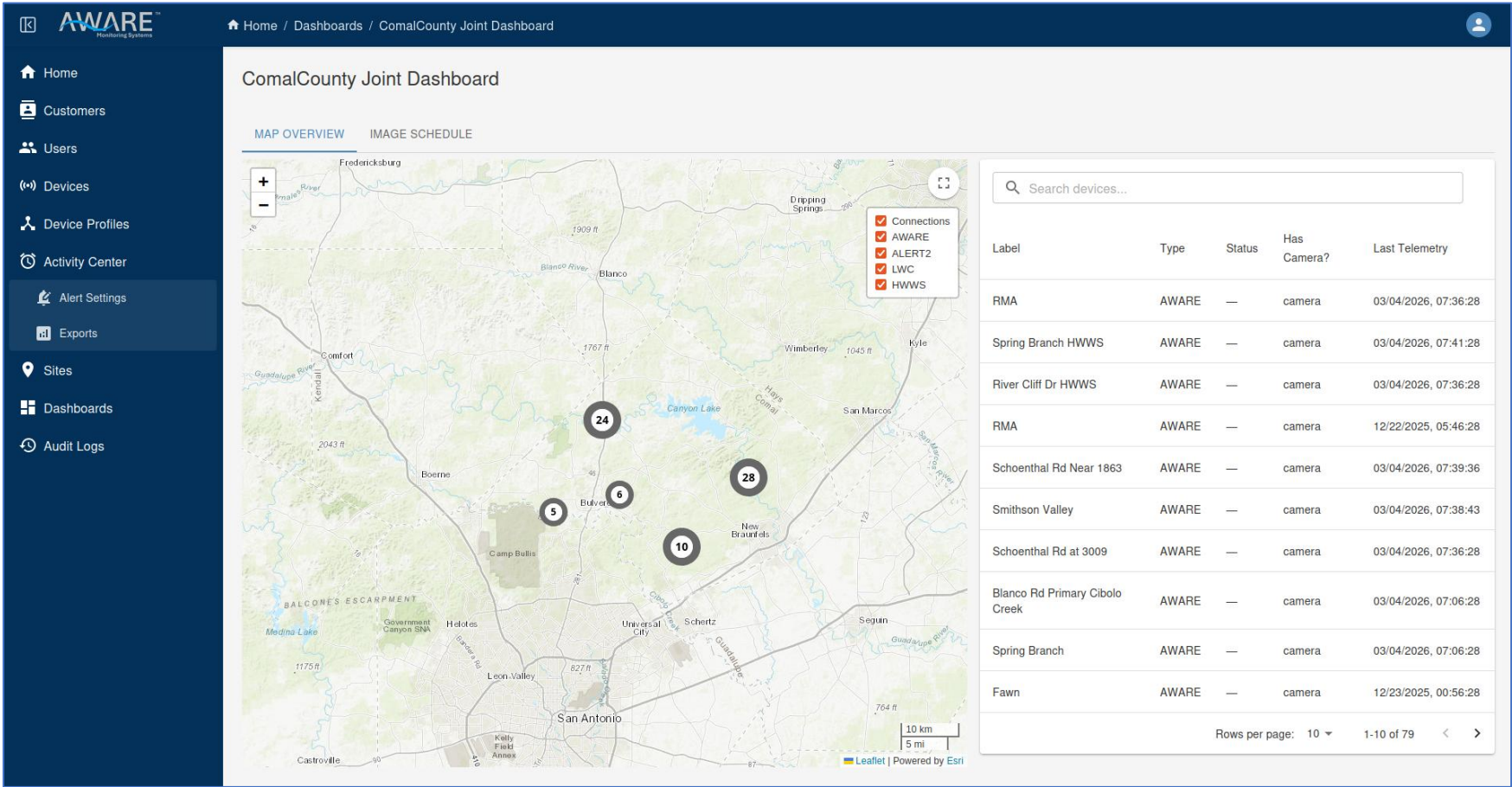


Figure. SHIELD device management. Devices deployed in Comal County TX.

AWARE SHIELD

Public Dashboard



AWARE SHIELD's public dashboard visualizes your network's flood warnings for public consumption.

- 1) Decide what sensors to publish (sensors are private by default).
- 2) Incorporates external data sources such as USGS.
- 3) Real time weather radar.
- 4) English & Spanish options.

... and much more!

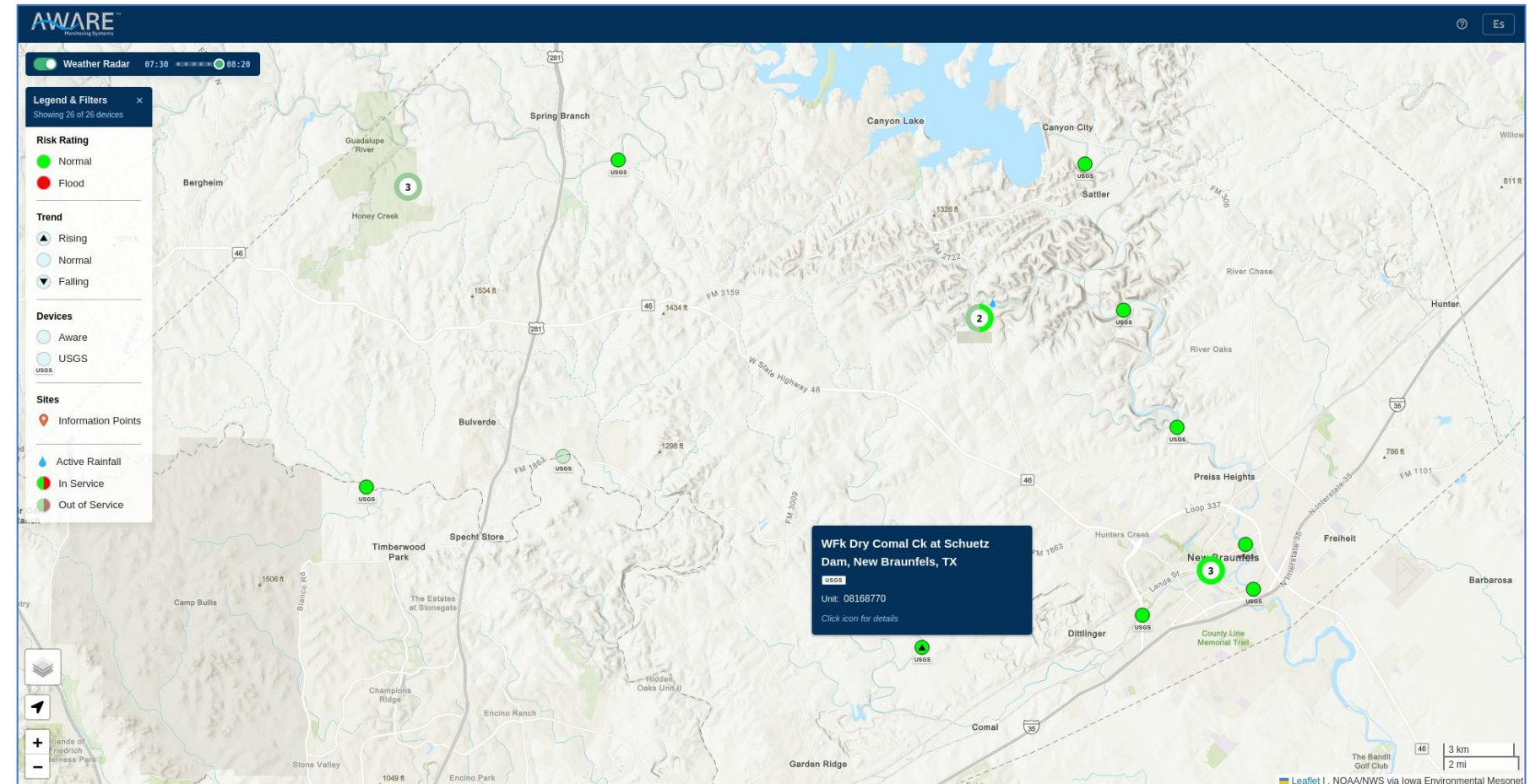


Figure. SHIELD public dashboard.



AWARE's engineering team has extensive experience building **mission-critical systems** for the U.S. military. We are leveraging our history to build both software and device hardware that are **SECURE, ROBUST, and EASY TO MAINTAIN.**

1

Monitoring

All devices are monitored in real-time.

Device data such as signal strength, local temperatures, etc. are stored.

2

Metrics

Data is auto processed to generate key network metrics such as device & network uptime.

Identify issues BEFORE they become major outages.

3

Diagnosis

When devices fail, we support a growing number of automated diagnoses so a maintenance team can be dispatched with confidence.

Comal County – A Case Study for IoT



Providing the County and residents with a robust, field-proven flood warning capability.

- 100% of Flood Warning System Offline at project start
- Needed complete turnkey deployment package
- 7 Sirens & 28 Flood Warning locations (siren or lights)
- 18 Months from start to finish
- Existing infrastructure (poles, lights and conduit used)
- Two new sites added
- Full IoT System with cell communications and fiber back up for Guadalupe River HWWS
- Zero deaths over two flood events in 2025

County provided:

- Bucket Truck
- Trenching for new sites/UG repairs
- County staff for traffic control
- County staff present for all phases
 - Hands on training
 - Observing construction for ability to duplicate in the future
 - Teamwork to accomplish the mission



Questions?

AWARETM
Monitoring Systems