Capabilities Overview for Water and Large International Projects

AEM Introduction

aem

Mar 2018

Union Park Capital (PE) Forms AEM and acquires OneRain and High Sierra Electronics

- Based in Longmont, CO and Grass Valley, CA
- Provides real-time precipitation, weather, and flood warning instruments and software

Jul 2018

Acquisition of Vieux & Associates

- Based in Norman, OK
- Provides software for advanced rainfall, runoff and flood monitoring and analysis

Jan 2019

Acquisition of Forest Technology Solutions

- Based in Victoria, BC Canada
- Provides remote environmental monitoring systems and instrumentation for hydrology, fire weather, and meteorology

Mar 2019

Acquisition of Lambrecht

- Based in Göttingen, Germany
- Provides high-precision meteorological sensors for weather and climate measurement

Aug 2019

Acquisition of Davis Instruments

- Based in Hayward, CA
- Provides economical hardware (i.e. weather stations) and software solutions for weather and climate monitoring

Dec 2019

Acquisition of Earth Networks

- Based in Germantown, MD
- Provides real-time environmental intelligence to support operational decisions

Aug 2024

Acquisition of WeatherWorks

- Based in Northeast U.S.
- Weather and Winter Weather Forecasting

2024 ?

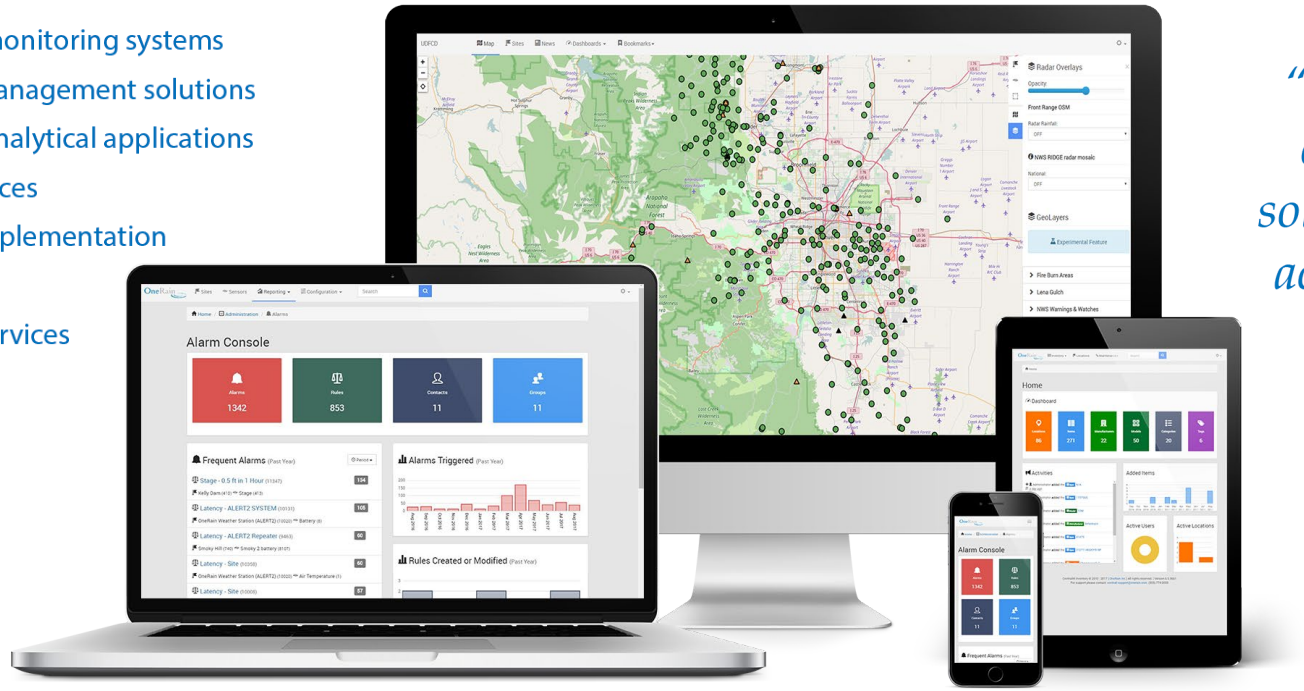
- A Family of Established Innovators
- Strong brands with long legacies from 26 to 160 years!
- Nearly 400 highly experienced industry specialists

We support our customers' critical missions in…

How we do it…

Experts in measuring and understanding water

- End-to-end real-time hydrometeorological monitoring systems
- Contrail® 24/7-reliable data collection and management solutions
- StormData™ radar rainfall for real-time and analytical applications
- StormLink® telemetry systems and data services
- Complete hydrologic network design and implementation
- OneRainTech™ Field Services
- Best practices consulting and professional services



"We partner with our customers to deliver solutions that help them achieve their goals and mission success."

Complete Network Design and Implementation

SENSING
Hydromet Network Evaluation
Network Design and Integration
Gauge Maintenance / Installation

SENDING
ALERT / ALERT2™ Telemetry
StormLink® Telemetry Systems
StormLink® A/A2 Concentrator
IP, Satellite, Cellular...

RECEIVING
Base Station Software
Contrail® Enterprise Suite
Data Collection and Management
Receiving Hardware and Integration

DATA CONTENT
Real-time Data
Professional Historical Data
Gauge Adjusted Radar Rainfall
Historical Data Loading

DECISION SUPPORT & ALERTING
Contrail® Processing and Analysis
Reporting and Visualization Tools
Actionable Datasets
Informed Decision-making

Flood Early Warning & Emergency Management

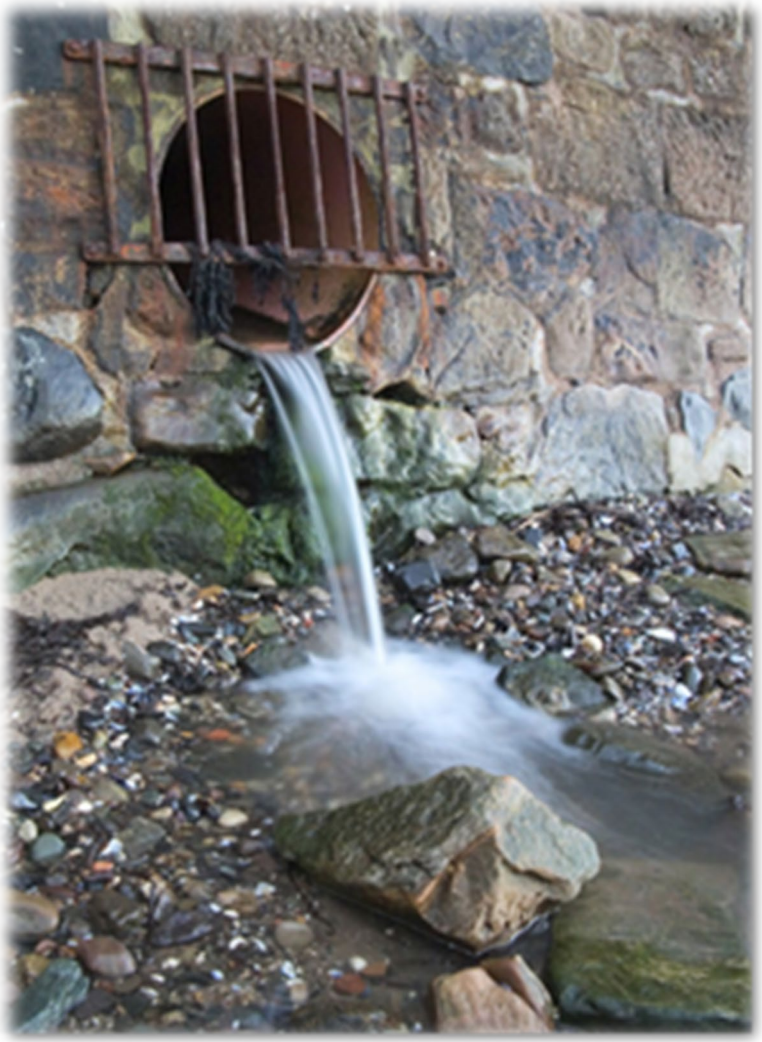
Dam Safety and Operations

GateOps™ for Reservoir Operations

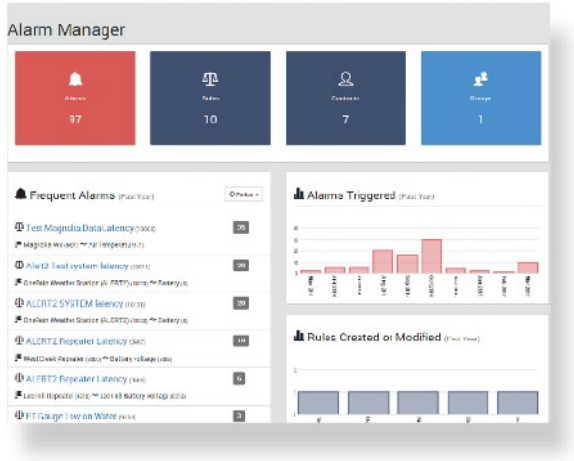
- Decision support for Dam and Reservoir water inflow/outflow operations.

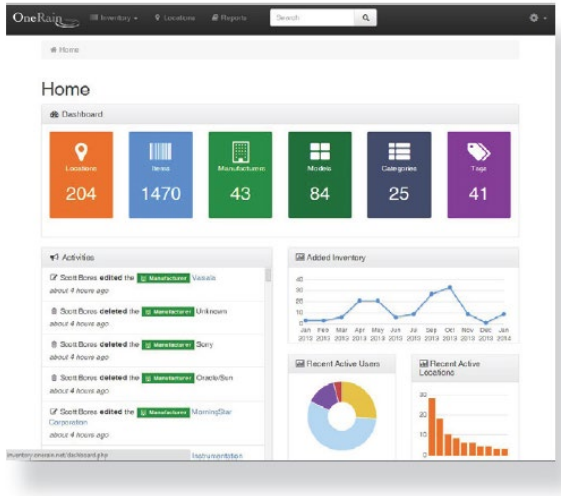
Urban and Flash Flooding

Stormwater & Wastewater Management



Elements 360®

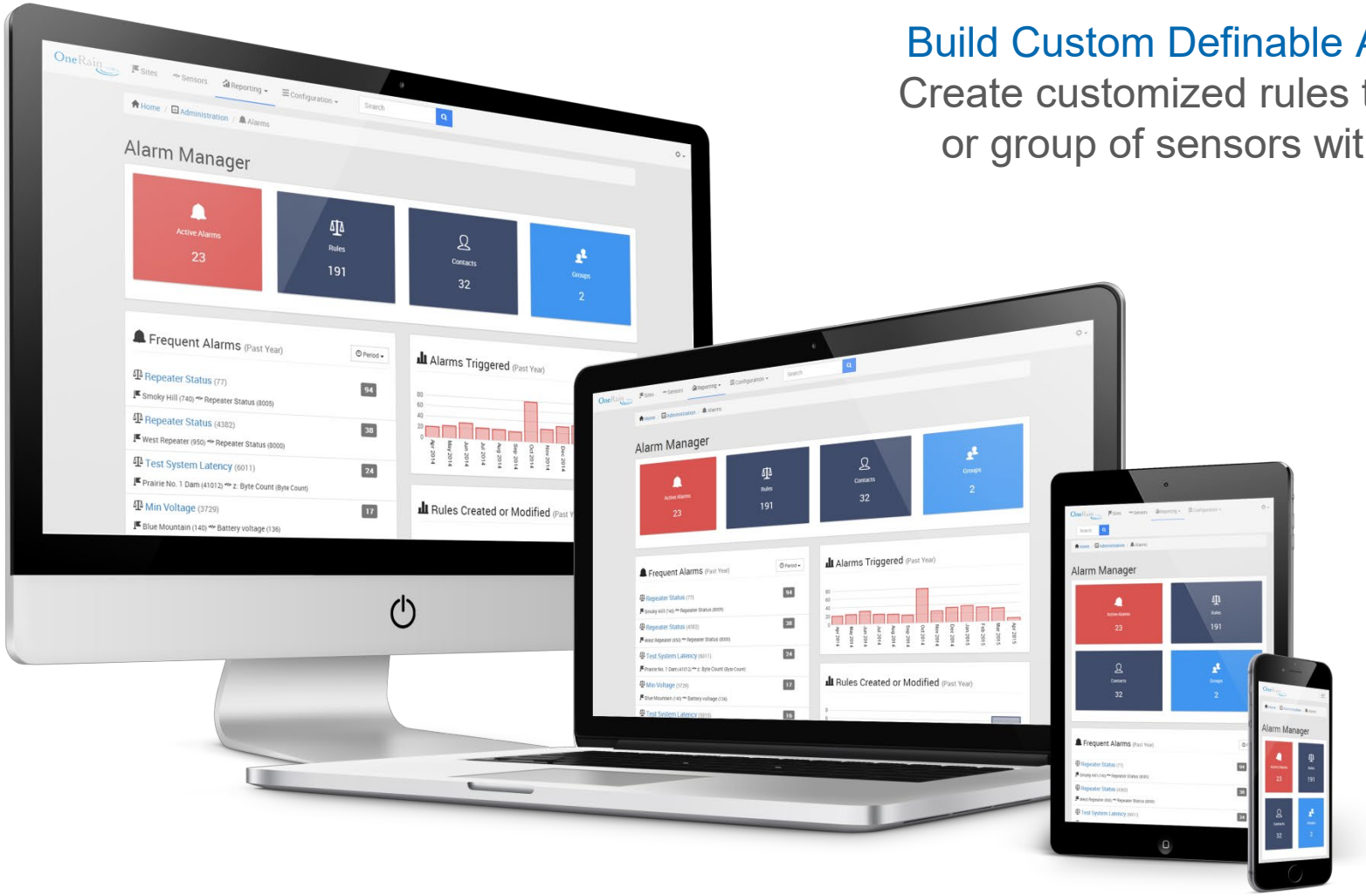




Total Control of Your Hydrometeorological Network Data and Information Distribution

Contrail Base Station is the visualization tool of choice when managing and controlling access to your hydrologic data is critical. Contrail supports the real-time data collection, processing, archiving and dissemination of your hydrometeorological and water resources data in one place.

Alarm Management



Build Custom Definable Alarms and Delivery Notifications

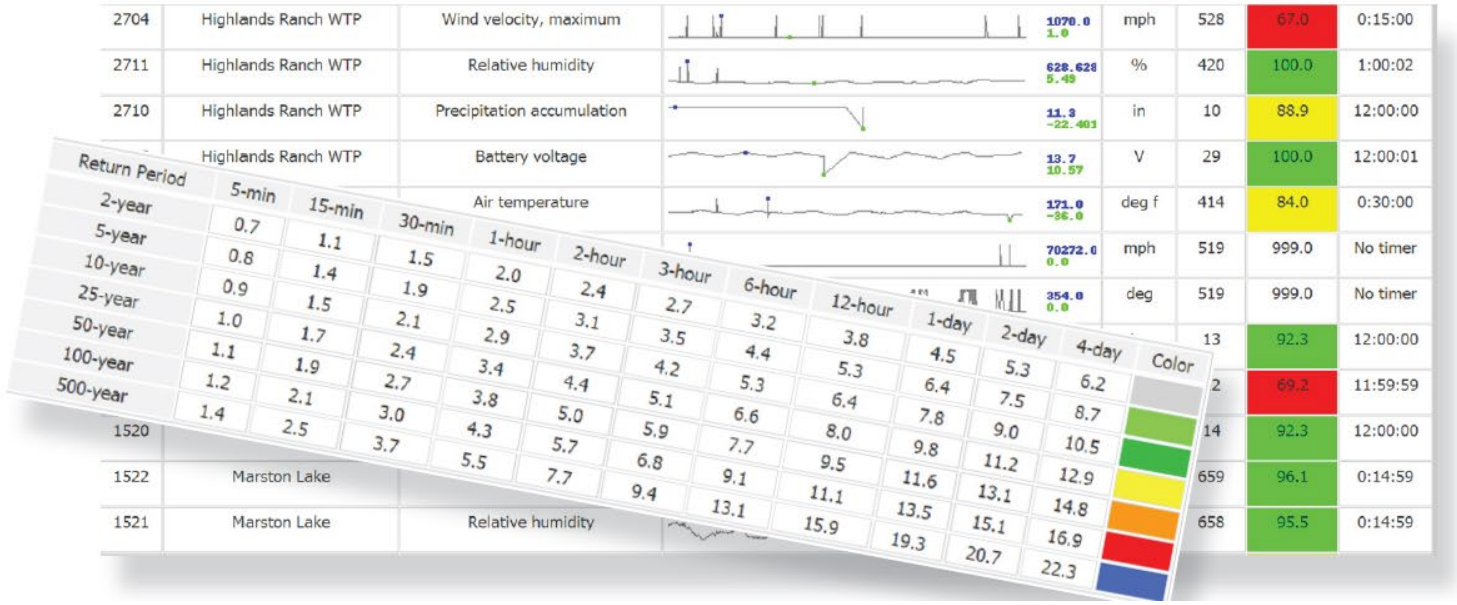
Create customized rules to trigger an alarm for any sensor or group of sensors within your software's data reach.

Rule ✔ On

Rule Id	20
Site	L-52 (25005)
Sensor	Rain Increment (Inc)
Auto Acknowledge	On
Published	OneRain 4 months ago
Equation	`(last_value(1499,10) > 1)`
Processor	Primary (1)

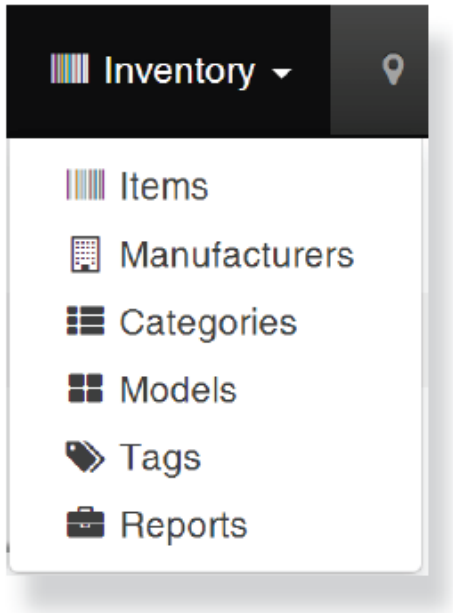
Elements 360 ® Analytics

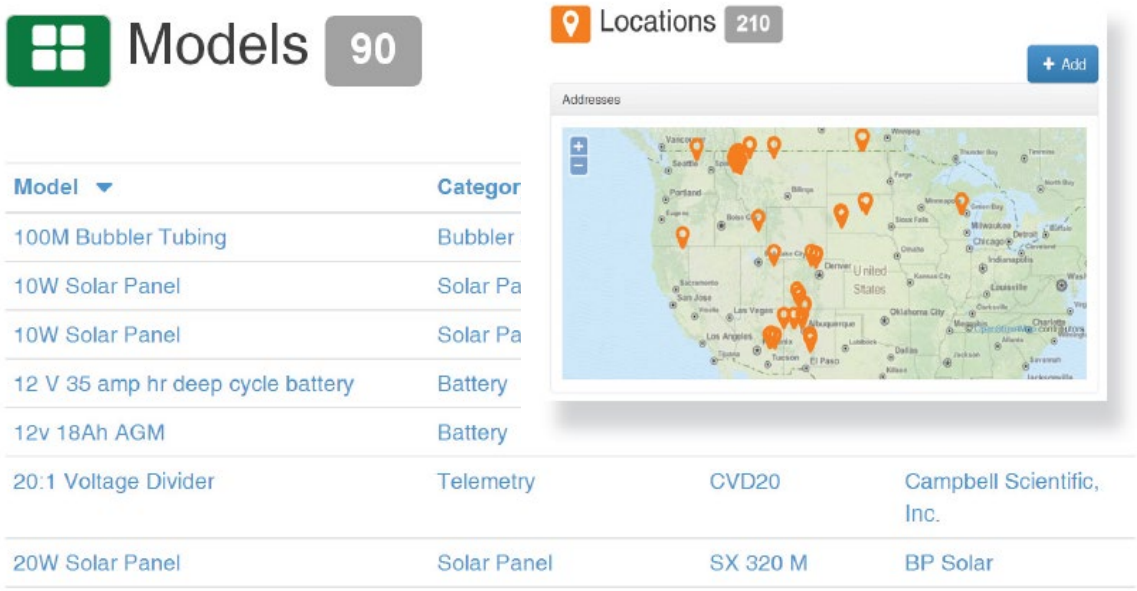
Site	Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	2-day	4-day
Houston Transtar	1000	0.2	0.3	0.4	0.6	1.0	1.2	1.5	1.7	1.9	1.9	2.7
D109 Harris Gully @ South McGregor Way	400	0.8	1.5	2.4	4.0	7.0	7.7	8.8	10.5	10.5	12.3	19.3
D100 Brays Bayou @ Lawndale Street	410	0.7	1.3	2.2	3.7	6.3	7.0	8.9	13.1	13.1	14.1	21.3
D100 Brays Bayou @ South Main Street	420	0.6	1.5	2.4	4.0	6.7	8.5	9.5	12.0	12.1	13.3	18.0
D100 Brays Bayou @ Stella Link Road	430	0.6	1.5	2.3	4.0	6.5	7.8	9.6	11.3	11.4	13.1	19.7



- Suite of flexible integrated data-analysis tools that extends the power of Contrail.

Elements 360® Inventory plus





- Centralized Web-based asset tracking and maintenance management tool for real-time monitoring networks.

StormData™ Radar Rainfall and StormProperties™ Analysis

Real-time, future and historical radar data services.

Example: Radar Water Level Sensor Installations

Bridge Installation

Side of River Installation

Example: Rain Gauge and Weather Station

Rain Gauge

Weather Station

Example: Loggers

StormLink® Satellite Communications

- Reliable, robust, and stable
- Redundant data paths
- Secure global network
- 24 x 7 Web accessible
- Suitable for remote applications

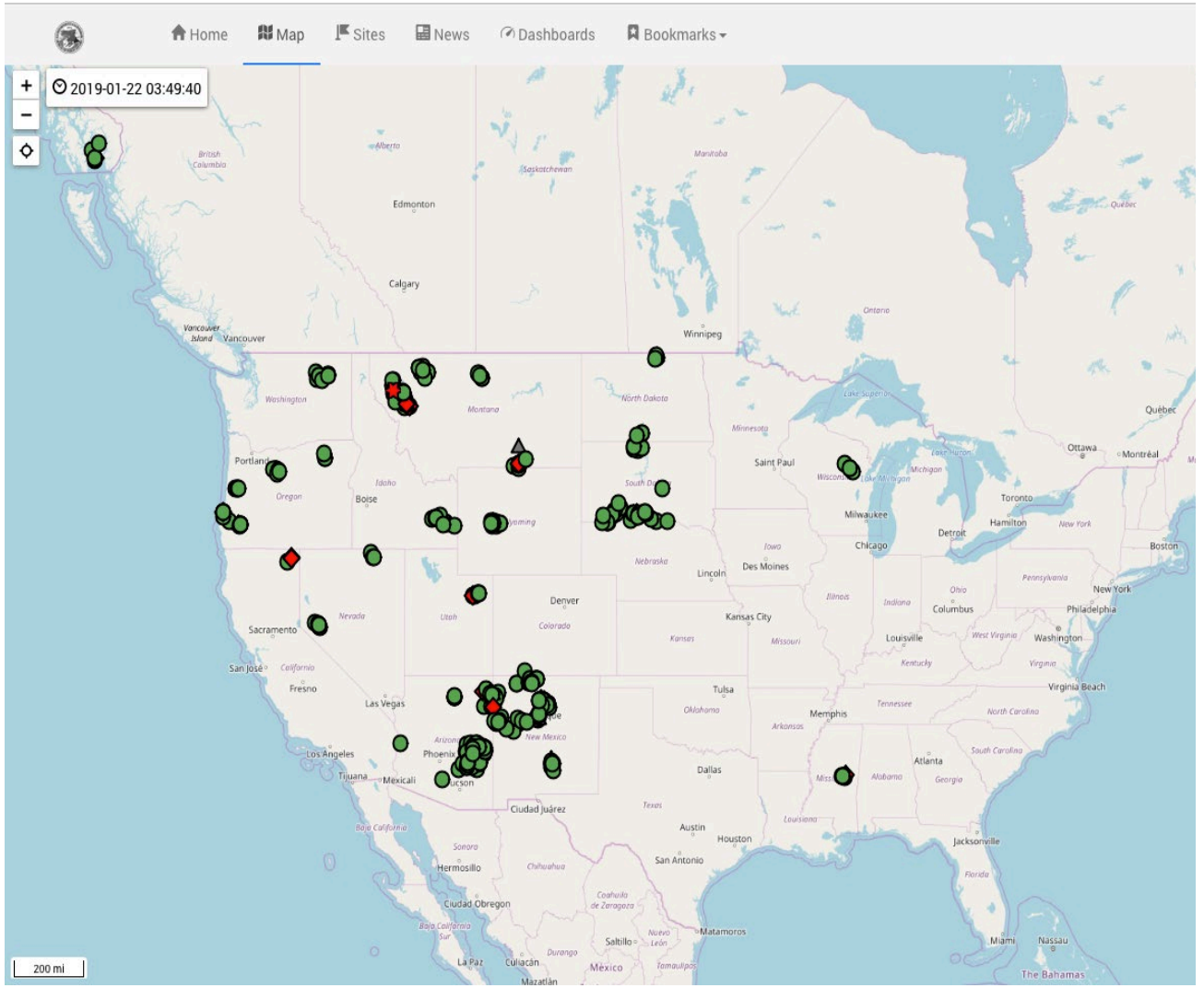
Gauge Network Installation & Maintenance

Maintenance services for real-time hydrologic data collection networks.

BIA Dam Safety Program

Department of the Interior

- SCOPE
- 40 Sovereign Tribal Lands
- 137 High Hazard Dams
- Budget $25M per year
- Instrumentation/telemetry
  - Real-time (20-second latency) Satellite
  - Rainfall Events
  - Structural Integrity
- Software
  - Data collection/monitoring
  - Alarming
  - National and tribal specific
- National Monitoring Center
  - 7/24 Operations
  - Most dams do not have staff on site
  - Initiate Emergency Action Plans
- Tribal local response



BIA Dam Safety Program

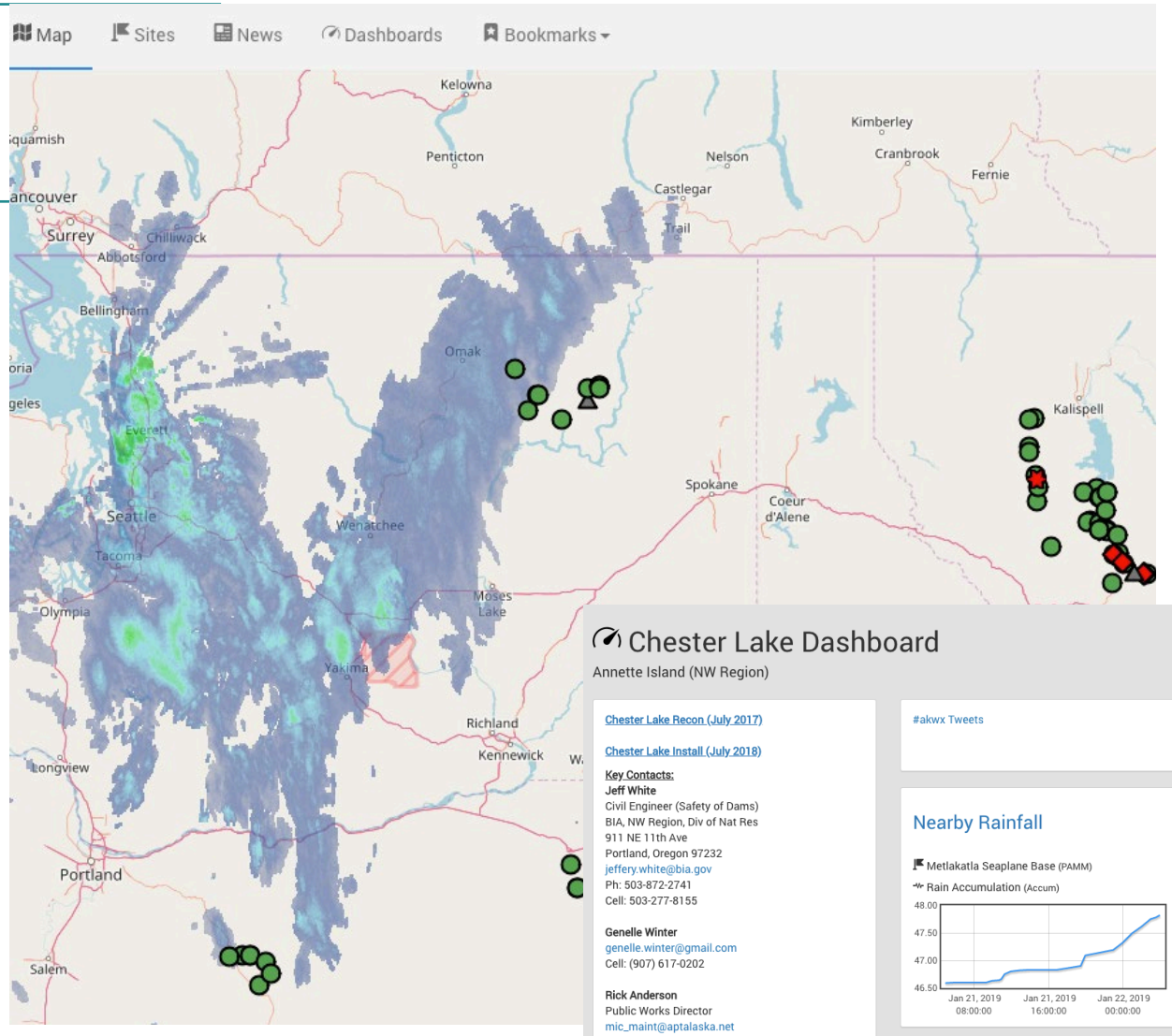
Instrumentation and Telemetry

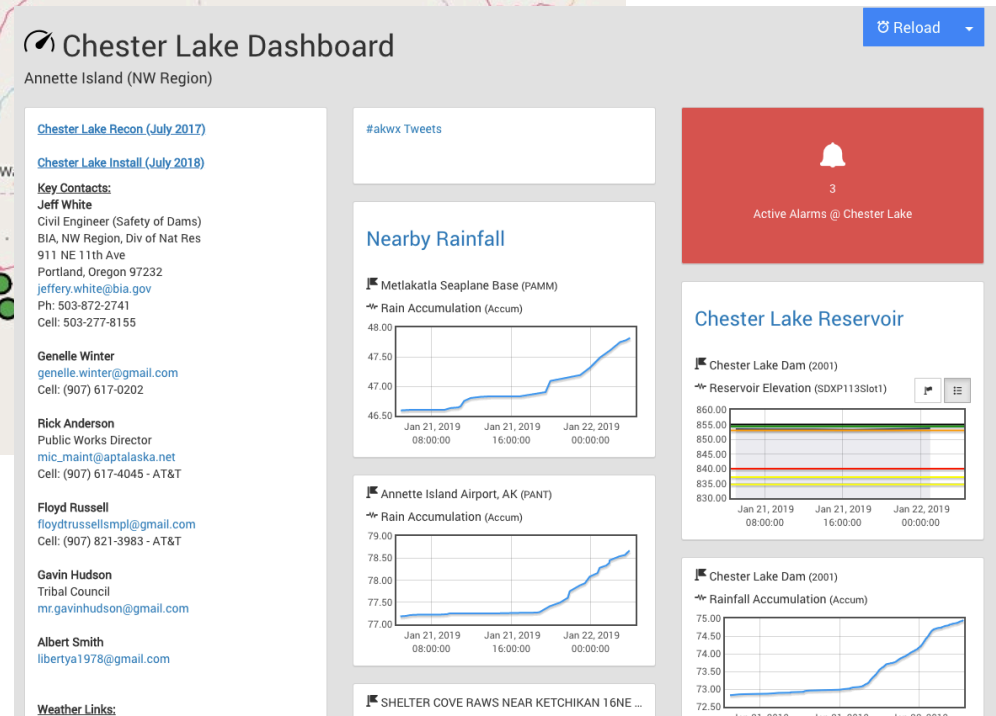
- Types of Dam Instrumentation
  - Reservoir Level
  - Inflow
  - Gate Positions
  - Outflow
  - Structural and seismic
  - Piezometers
- Types of Telemetry
  - GOES (Meteosat)
    - Up to 1-hour latency
  - StormLink® (Inmarsat: L-band, real-time)
    - 20-second latency
  - ALERT/ALERT2™*
    - Real-time VHF-UHF radio

BIA Dam Safety Program

Contrail® Software

- **National View**
  - Alarm Status
  - Weather Radar
  - GIS
- **Tribal View**
  - Each tribe views their own dams
  - GIS and Operational Dashboards
- **Cloud Hosted**
  - Geographically redundant servers
  - Responsive for desktop PC and mobile devices.





AEM Strengths

- Solution Design (Software, Hardware, Telemetry Network)
- Software
  - Decision Support Software
  - Data Collection and Data Management Software
  - Hydrologic Modeling Software
- Hardware Manufacturer
  - Sensors, Loggers and Telemetry
- Integration of Software and Hardware (ours and third party)

- We are Experts in Water

Thank you

QUESTIONS OR COMMENTS?

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