



DISASTER MANAGEMENT

User

US Environmental Protection Agency (EPA), a federal organization responsible for protecting human health and the environment

Partner

Tetra Tech, an Esri partner that is a leading global provider of environmental consulting services

Challenge

In the face of a natural disaster, meet the needs of and facilitate communication among a diverse group of stakeholders to make informed mission-critical decisions

Solution

ArcGIS® Online, Collector for ArcGIS, Operations Dashboard for ArcGIS, Survey123 for ArcGIS, Workforce for ArcGIS, ArcGIS Pro, ArcGIS Enterprise

Result

A single location-enabled, dynamic common operating picture that brings together valuable data from the field and office for all stakeholders to view and interact with

EPA Integrates Emergency Response

The US Environmental Protection Agency has a mission to protect human health and the environment. The agency's purpose is to ensure that all Americans are protected from significant risks to human health and the environment where they live, learn, and work. The EPA Office of Emergency Management (OEM) works with other federal partners to prevent accidents and maintain well-tuned incident response capabilities at all levels. OEM uses experience gained from responding to thousands of smaller sites to scale up the office's response to events such as Hurricane Irma.

The Challenge

In the face of a natural disaster, the primary challenge is to meet the needs of and facilitate communication among a diverse group of stakeholders. Communication flow is critical. It reduces duplicated efforts and decreases response times to ultimately save lives and protect human health in the long term. In the geographically expansive wake of a hurricane, many sources of contamination require rapid identification, assessment, and appropriate mitigation. A range of stakeholders—from local, state, and federal agencies—work around the clock to reduce or eliminate the environmental impact of compromised facilities, orphaned containers, and sunken vessels. The EPA needed to be able to create and share a single common view for all stakeholders, showing response targets and cleanup needs.

The Partner

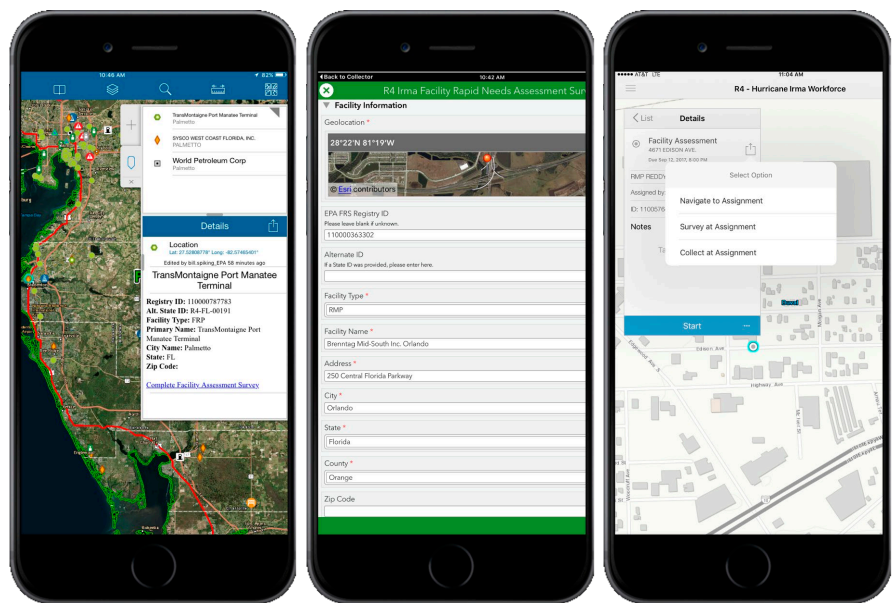
Tetra Tech, a longtime Esri partner, is a leading provider of consulting and engineering services. The company provides government and commercial clients with innovative solutions focused on water, environment, infrastructure, resource management, energy, and international development. Tetra Tech works with the EPA on multiple contracts across the country. For emergencies such as Hurricane Irma, one of Tetra Tech's primary tasks was to provide the EPA with mission-critical support for collecting, tracking, analyzing, and communicating the status of key response targets for the duration of the response. Given the EPA's need to integrate information from multiple sources and synthesize one common, dynamically updated view for all stakeholders, Tetra Tech rapidly configured a focused solution built around ArcGIS Online.

"Being able to have an accurate map of where things are and what is going on where there are many sensitive areas—and being able to marry this information with best management practices and knowledge from stakeholders—goes a long way to protecting the environment."

Matthew Huyser
EPA Region 4 Federal On-Scene
Coordinator

The Solution

The EPA and Tetra Tech have iteratively developed a robust emergency response solution over time by learning from individual site-specific cleanup activities that occur every day and scaling these activities during significant response events. The geographic information system (GIS) technology-based solution includes a common operating picture (COP) to serve all response partners and stakeholders. The COP is a collection of web maps and applications supported by ArcGIS Online on scalable cloud infrastructure.

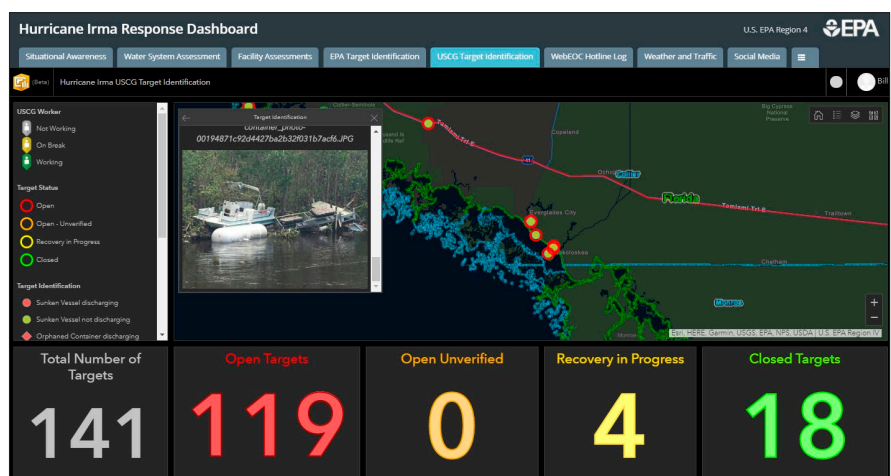
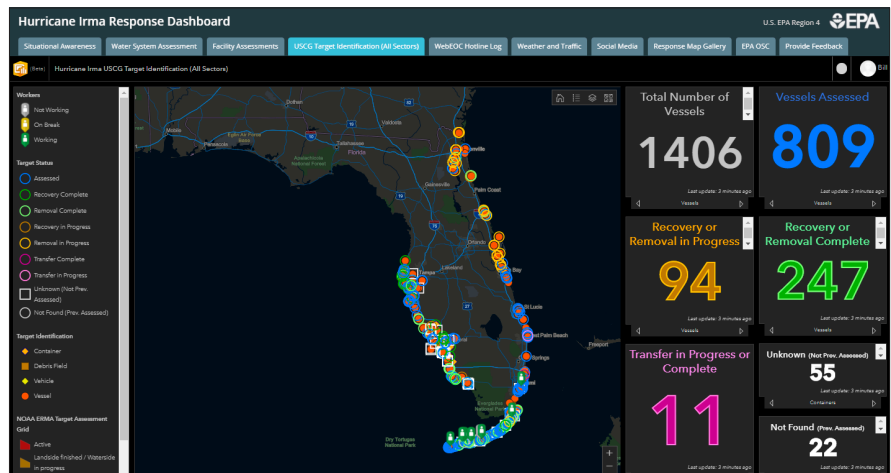


The EPA conducts data collection using many of Esri's apps for the field. The teams use Collector for ArcGIS to edit, update, and create features that represent response targets in the field. The app works whether responders are connected to or disconnected from the Internet. They use Survey123 for ArcGIS to capture rich, form-based information with validation to organize complex field notes and status changes and transmit them directly back to the Emergency Operations Center. Also, Workforce for ArcGIS allows the teams to assign, manage, and track the progress of tasks associated with the assessment, identification, and mitigation of response targets. Staff rely on ArcGIS API for Python and ArcGIS Pro to perform back-office data management and automation tasks that ensure that incoming data sources are integrated and operational data is synced to on-premises storage.

"Being able to rapidly deploy commercial off-the-shelf technology to support the response, coupled with the utility of ArcGIS Pro to easily integrate information into the COP, has meant that our team could focus more effort on supporting the response and less on data management and processing."

Bill Spiking

Tetra Tech GIS Analyst and
Project Manager



The Results

All response stakeholders can now use ArcGIS to access, edit, and contribute to operational information from the field or office, whether connected to the Internet or not. ArcGIS draws multiple technology components into one integrated system. This reduces duplication of effort by enabling direct access and feedback to the COP. The solution helps the EPA redirect mission-critical resources away from low-value activities such as data processing toward high-value activities such as analysis, interpretation, and data-driven decision-making. The solution also creates a heightened operational awareness by feeding real-time information into a COP that is easy for all stakeholders to view.