Case Study: Rochester, Minnesota Improves Flood Preparedness with DLAN

Better Preparedness = More Efficient Response

Buffalo Computer Graphics, Inc.
4185 Bayview Road
Blasdell, NY 14219
716-822-8668
DisasterLAN.com
info@bcgeng.com

Introduction

The day you find your first floor flooded is not the best day to look into flood insurance. And when the streets begin to flood is not the best time to begin planning your response. Unfortunately, too often both citizens and those in charge of keeping them safe are not as prepared as they should be for these events. Precious response time is too often lost to training and re-training activities. That is why the pre-planning stage of an incident is just as important as the response. And this is where DLAN comes in.

DLAN doesn't just provide a digital location for a static set of plans, but makes the plan easily actionable with custom workflows and automated decision making tools. DLAN also helps users visualize data, such as flood plains, to improve decision making. In addition, DLAN can be used to create a resource database and a list of pertinent contacts making it easy to get the right materials and right people during an emergency response.

The following case study focuses on best practices for emergency preparedness and response using DLAN. It showcases how the Rochester, Minnesota Emergency Management staff was able to incorporate the information they had available to them before their activation to improve response outcomes.

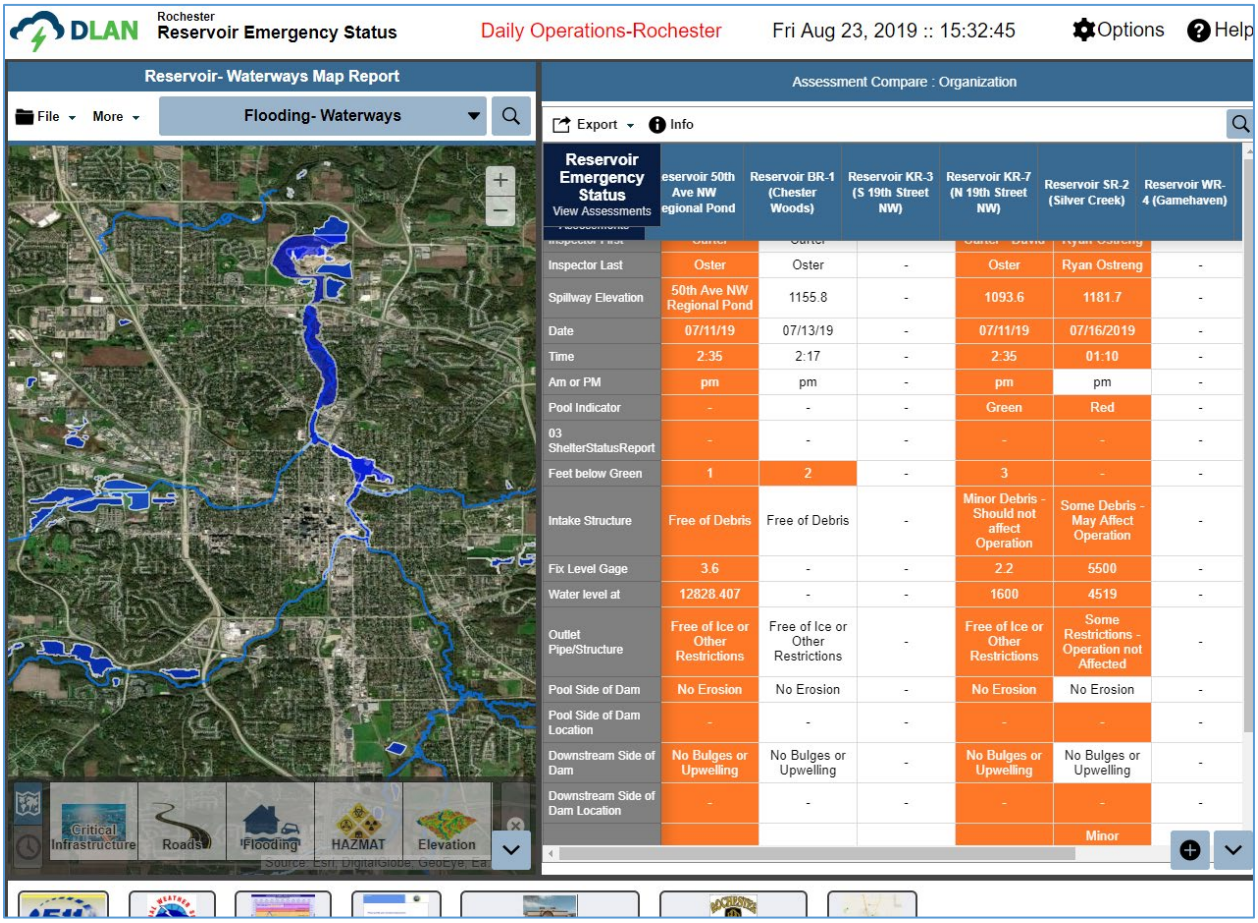

Figure 1 - Reservoir Flood Status

Rochester Minnesota Flooding Incident

The City

Rochester, Minnesota is the third-largest city in Minnesota and is home to over 119,000 residents that swells to a daytime population of 175,000. It is also the home of the Mayo Clinic. The City of Rochester Emergency Management provides coordinated disaster response to meet the immediate health and safety needs of citizens and protect the public from harmful effects of hazards.

Flooding is one of the major hazards the City faces. The worst flood the City ever faced occurred in July of 1978 when the South Fork Zumbro River crested at 23 feet, 11 feet above flood stage. The flooding killed 5 people and caused around $60 million in damages, which adjusting for inflation would be around $240 million today. It also led the City to take a proactive approach to flooding and to create the Flood Control Project in the 1980s and 1990s.

The Situation

Every year at the end of June the City hosts a weeklong event to celebrate the City. The event includes an assortment of family-friendly activities, local foods and vendors, and musical performances. And this year it featured a special guest: Rain. Lots of it. But would it be a minor inconvenience or a major catastrophe? With weather predictions rapidly changing, at first it was hard to tell, but with the right information at their fingertips, the Emergency Management team was able to make the right decisions quickly.

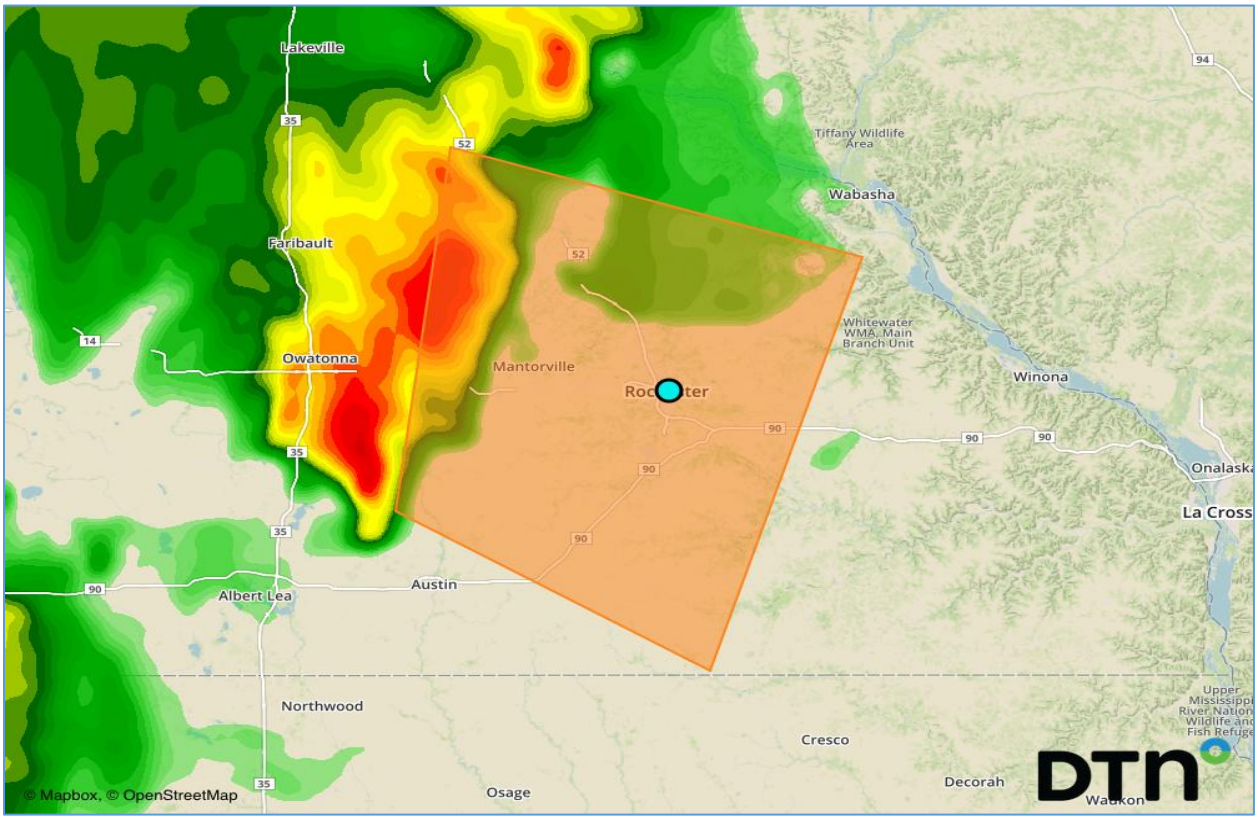

Figure 2 - Flood Warning

Months Before

Let's take the story back a few months and a few hundred miles away, back to March in Buffalo, NY. The Rochester Emergency Managers came to BCG's headquarters for a DLAN training to learn how to better utilize the system, particularly they focused on improving the GIS mapping functions.

The Rochester team took the information they learned from the skilled staff at BCG and put it into action when they returned home. They dusted off the flood information they had from a 2014 study and enter the data into DLAN as a layer on the GIS map. This transformed the information from being static on a bookshelf to being a dynamic part of their emergency response plans. Once in DLAN they could easily view this information alongside other pertinent emergency response data to improve decision making.

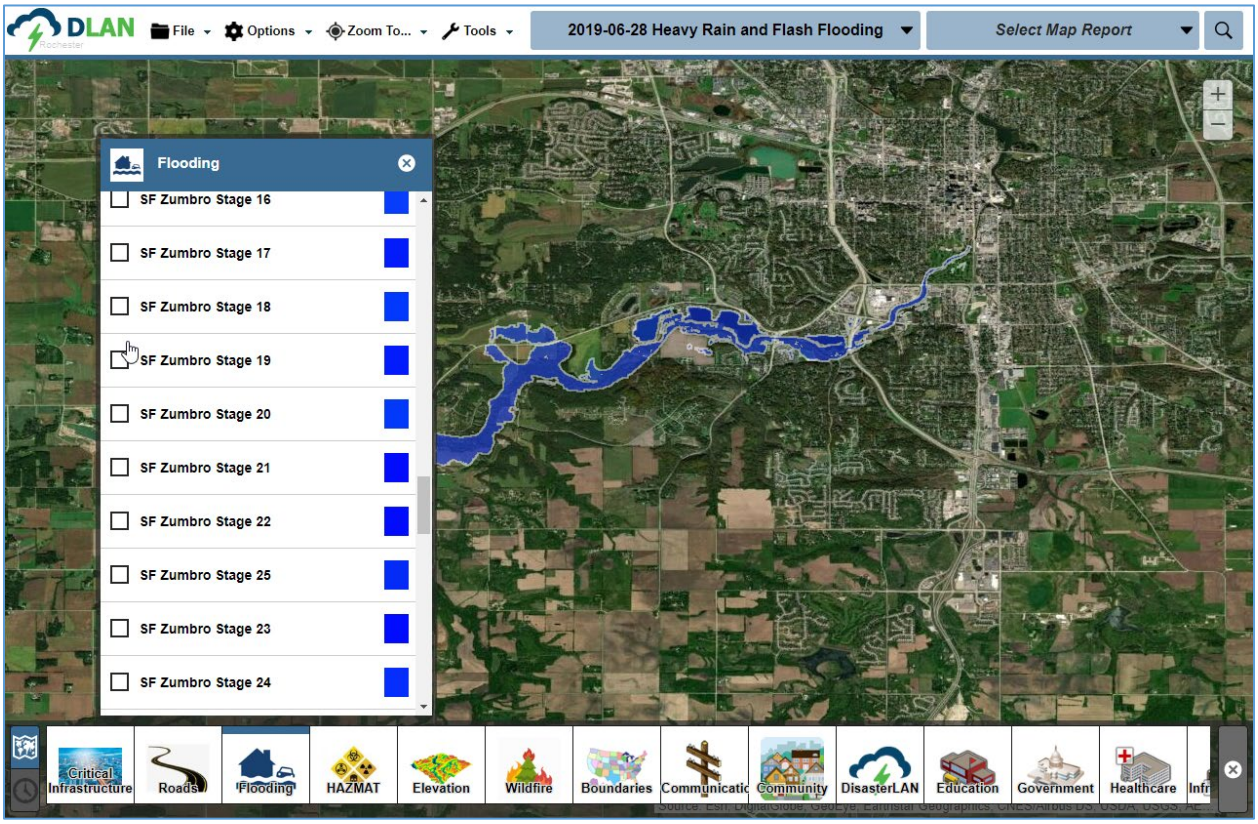

Figure 3 - South Fork River Levels

Response Effort

Flash forward to June 27th, it's the middle of a weeklong outdoor event and the NWS is predicting a major rain event. The EOC is activated as roads begin to flood. The call was made to cancel all activities that day, but event planners were hopeful that the rest of the event could go on as planned.

The main question became, "what will the impact on the rivers be?" The NWS initially predicted that South Fork Zumbro River would hit around 21 feet, well past the flood stage. However, knowing there would be floods and knowing where there would be floods is two different things. Thanks to the flood study data already easily accessible in DLAN, emergency managers could see exactly what 21 feet meant to the City. With a click of a button they were able to see on a map what would happen if the water hit 10 feet, 16 feet, 21 feet, etc. DLAN was able to take the NWS predictions and display it in a way that helped with decision making (see Figure 4).

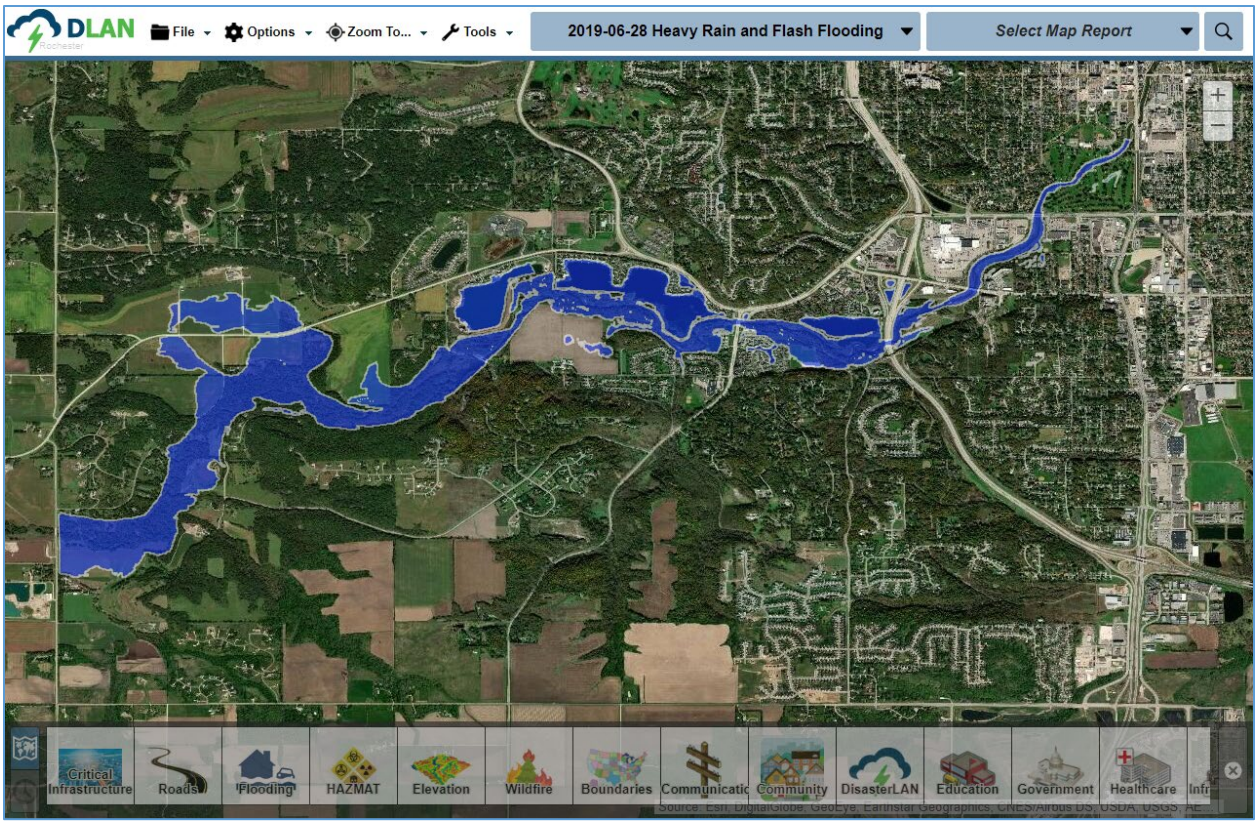

Figure 4 - Flood waters at 21 Feet

The Rochester team found that DLAN ran smoothly and quickly, making it easy to switch GIS layers on and off and see different scenarios. Without DLAN getting the information would have taken longer to gather and caused frustration and delays. DLAN not only quickly displayed the data, but helped keep the conversation flowing among stakeholders by giving them a central area for situational awareness information. Another benefit of DLAN was the ability to use links within the system to give everyone access to all the information they needed to stay informed.

In the end, the storm was bad, but not as bad as predicted. Approximately 5 inches of rain fell overnight causing flash flooding. The Rochester International Airport was closed for several hours due to standing water on the runway and major highways were also closed. At its peak the river hit 19.32 feet and quickly receded to pre-flood levels.

Days After

In the days after the storm, the team assessed their response efforts and were very pleased with how DLAN helped improve the efficiency of their response.

“DLAN made it easy to quickly view potential flood levels. Based on flood potential, we were able to make contingency plans and share information with key stakeholders.” – Ken Jones Emergency Management Director

They believe the ease of use of DLAN during this response will help get further buy in and expand the use of DLAN for future response efforts. For their next steps, Rochester Minnesota Emergency Management is expanding their use of DLAN’s task management tools, such as Assessment Compare Boards for viewing flood reservoirs. “Our flood reservoirs are considered high hazard dams. There are emergency actions required when water reaches high levels. Using the Reservoir Emergency Status compare board, our PIOs can view triggers for sending emergency messages to downstream residents. These DLAN GIS tools help our EOC teams work well together,” explains Ryan Ostreng, Rochester Deputy Emergency Manager.

Conclusion

Rochester Minnesota's commitment to preparedness paid off as they were able to easily visualize all likely scenarios and prepare accordingly. With proper planning and the right system, Rochester Minnesota was able to efficiently respond to a rapidly changing situation and keep their community safe.

Too often emergency managers end up wasting precious response time on tasks that could have been easily completed beforehand, such as entering resources into a database or gathering contact information from key players. DLAN creates a central repository for all pre-planning information, so your team can simply log in during a response to get to all the information they need. Not only does it store this information, it also makes the information easy to view and share in dashboards and maps, improving your team's ability to make decisions quickly.

About the Author

Buffalo Computer Graphics, Inc.

DLAN is engineered by Buffalo Computer Graphics, Inc. (BCG), a veteran owned small business that has over 35 years of experience in software, hardware, and systems engineering. BCG has four primary business areas - Incident Management Systems, Mass Notification Systems, Maritime Simulation Solutions, and Custom Hardware & Software Engineering.