The NHWC Transmission

Summer 2020

CONTENTS

Click on hyperlinks located throughout this newsletter for more information.

NHWC 2019-21 Officers and Directors

Bruce Rindahl
President
Ventura County Watershed Protection District

Brad Heilwagen
Vice President
Wood, plc

Fritz Law
Secretary
OneRain Incorporated

Ben Pratt
Treasurer
Susquehanna River Basin Commission

Directors At-Large

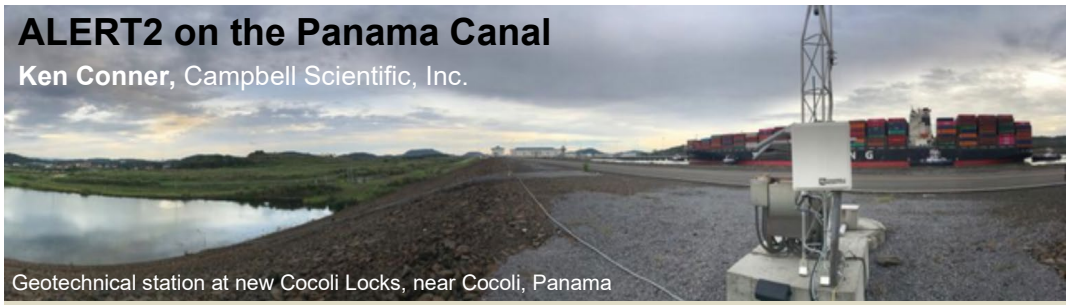
Jimmy Stuart
SunWater

Mark Moore
Distinctive AFWS Designs

June Wolfe
Texas A&M AgriLife Research

Rob Hartman
Robert K. Hartman Consulting Services

Kevin Stewart (Trustee)
Mile High Flood District

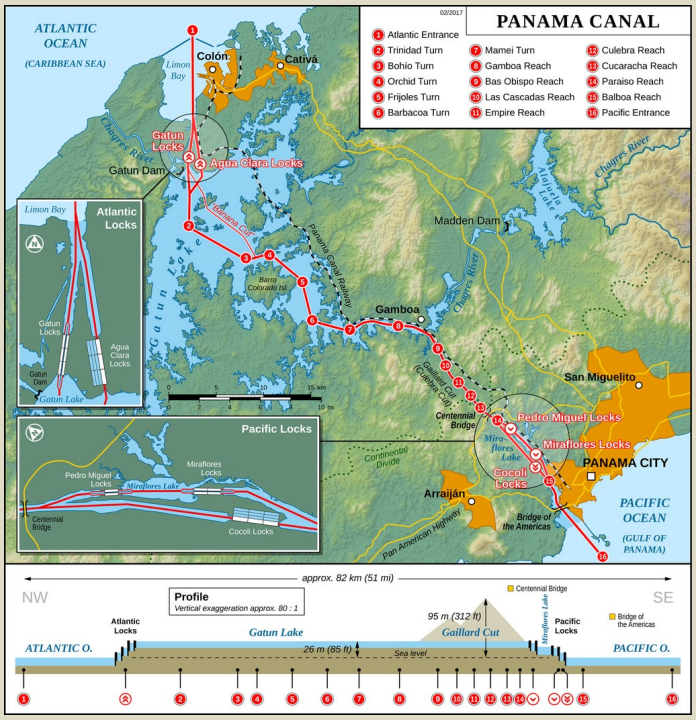


ALERT2 on the Panama Canal

Ken Conner, Campbell Scientific, Inc.

Geotechnical station at new Cocoli Locks, near Cocoli, Panama

The Panama Canal, a, lock-type canal, owned and administered by the Republic of Panama, connects the Atlantic and Pacific oceans through the narrow Isthmus of Panama. The length of the Panama Canal from shoreline to shoreline is about 40 miles (65 km) and from deep water in the Atlantic to deep water in the Pacific about 50 miles (82 km). The canal, completed in August 1914, is one of the two most strategic artificial waterways in the world, the other being the Suez Canal.



Ships making their way between the east and west coasts of the United States, which in the past had to round Cape Horn in South America, shorten their voyage by about 8,000 nautical miles (15,000 km) by using the canal. Savings of up to 3,500 nautical miles (6,500 km) are also made on voyages between one coast of North America and ports on the other side of South America. Ships sailing between Europe and East Asia or Australia can save as much as 2,000 nautical miles (3,700 km) by using the canal.

From 2009 to 2016 the Panama Canal Authorities, Spanish – Autoridad del Canal de Panamá (ACP), undertook an intensive construction program including development of the Cocoi and Agua Clara Locks, adding a third lane to the Panama Canal for the transit of Neopanamex vessels and upgraded outdated water-level system sensors with new ALERT2 data telemetry protocols. This enhanced system provides accurate, real time water-level forecasts for the Panama Canal to keep ships safe and

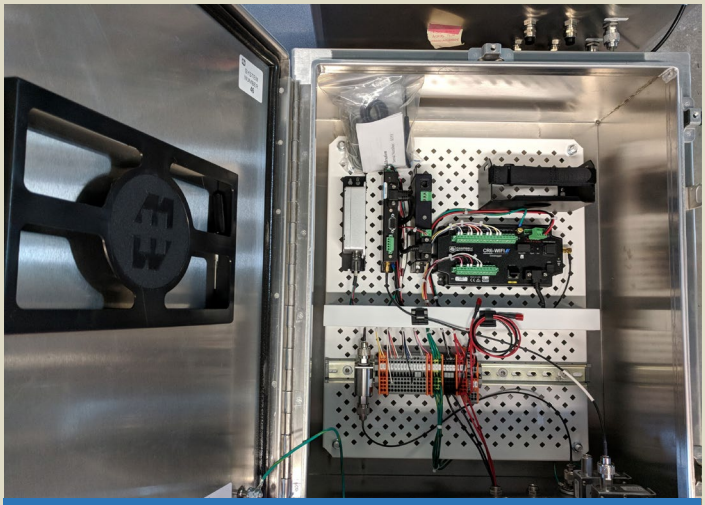
moving forward for years to come.

With over ten thousand ships passing through each year, the Panama Canal is truly an important bridge for the world. Therefore, it is imperative that reliable systems are in place to monitor flood flows and water levels in the innovative lock system. Precision real-time water-level data provide crucial information that influences decisions throughout the canals many systems. The same monitoring system (and communication features) that were installed in the late 1990s prior to recent improvements was still being relied upon. In addition, many of the water level sensors had become unreliable. With outmoded systems requiring thousands of dollars in yearly maintenance, the need was immediate for updated instrumentation for the Panama Canal.

ACP examined the ALERT2-based flood warning system operated by Harris County, Texas, and how it performed during Hurricane Harvey. This was enough to prove to ACP that the ALERT2 telemetry protocol delivers data reliably and accurately with almost no data loss. ACP selected Campbell Scientific to help design and implement approximately 60 ALERT2 stations for the Panama Canal Zone complex.

Ken Conner of Campbell Scientific leads equipment training with ACP staff.

During the first week of installation, only three systems were set up as they were far away from base and there was less time to work. The team also used this time to train ACP staff how to set up the systems. After this initial training, the time to setup a new ALERT2 station averaged approximately 1 day in the field. The ACP network base facility was connected to a broad array that consists of 45 remote radios, 12 remote LAN connections, two remote voice stations, three remote ALERT2 receivers, and three data collection servers. The remote stations monitor precipitation and water levels in addition to system information such as enclosure humidity, temperature, and battery voltage. The radio stations broadcast their data via the ALERT2 protocol with an AL200 modem and VHF radio. The broadcast is received at one or more of the remote ALERT2 receivers, which then send the data to the base station servers over a LAN connection.



Detail of ACP ALERT2 Equipment enclosure.

The remote LAN and voice stations push data directly to the servers over a TCP connection, and the voice stations are also equipped with a modem which allows users to call into the station and have current conditions read to them.

Data telemetry is both event- and interval-based, allowing for canal operations to receive timely and critical information. This system helps eliminate RF traffic and reduce errors. The radio stations, LAN stations, and voice stations are configured through a custom graphical user interface (GUI) that is hosted on each data logger and can be accessed with a mobile device via each data logger's integrated Wi-Fi access point. The same user interface can be accessed remotely on network-connected stations, allowing for remote configuration and historical data queries. All this is accomplished using a mobile Spanish language user interface.

The new ALERT2 system was designed and implemented to give years of reliable service on the Panama Canal. The upgrades are expected to help decrease the cost of ownership of the Panama Canal itself by increasing data reliability and accuracy.

NHWC Conference Update

Preparations for the 14th biennial NHWC Training Conference and Exposition are underway. We hope you can join us on June 21-24, 2021 at Beaver Run Resort in Breckenridge, Colorado. Sitting at 9,600 feet above sea level, Breckenridge is a premier destination for world-class skiing and snowboarding. Summer in Breckenridge is just as fun. Conference attendees can enjoy some of the best hiking, biking, whitewater rafting, fly fishing, live music, and dining in the State of Colorado. It is a great location for our training conference and exposition.

"*Gold Rush at the Great Divide"* is our 2021 theme, reflecting both the long history of gold mining in the region and its location at the headwaters of the largest river systems in the United States. Training workshops and concurrent session tracks will follow this central theme. Keep an eye on your email and future NHWC newsletters as more information becomes available. We are currently targeting September 1, 2020 to release the call for presentation abstracts, open registration for attendees, exhibitors, and sponsors, and unlock discounted hotel reservations.

Beaver Run Resort claims the largest conference center in Breckenridge, along with 9 hot tubs, 2 pools, a fitness center, on-site restaurants and bars, and an arcade and indoor miniature golf course. The Resort is a short walk from Main Street Breckenridge, which is filled with numerous restaurants, bars, and shops. The center of conference activity will be the Colorado Ballroom, with space for up to 25 exhibitors, and five surrounding meeting rooms. Whether you're taking a break in the exhibit hall, playing a round in the golf scramble, enjoying a cocktail in the NHWC hospitality suite, or having dinner conversation at our awards banquet in the Imperial Ballroom, the 2021 NHWC Conference will provide ample professional networking opportunities.

Our conference planning committee is working hard to pack the week with education, training, networking, and fun. I'd like to recognize our planning committee members, who are devoting their valuable time to make the week special:

- April Krieg – Conference Planning Consultant
- Ben Pratt – Susquehanna River Basin Commission
- Brittany Jenner – Xylem
- Bruce Rindahl – Ventura County Watershed Protection District
- Carey Johnson – Kentucky Division of Water
- Catherine Lane – Trilynx Systems
- Chris Lochra – City of Fort Collins
- Dave Curtis – WEST Consultants
- Fritz Law – OneRain
- Jimmy Stuart – SunWater
- June Wolfe – Texas A&M AgriLife Research
- Kevin Stewart – Mile High Flood Control District
- Lee vonGynz-Guethle – Pape Dawson Engineers
- Mark Moore – Distinctive AFWS Designs
- Markus Ritsch – Trilynx Systems
- Rob Hartman – Robert K. Hartman Consulting Services
- Ryan Spies – Lynker
- Sharliss Arnold – Wood Environment & Infrastructure Solutions

Considering the COVID-19 outbreak, the NHWC Board of Directors recognizes that there is uncertainty in both our ability to host a gathering of nearly 200 people as we always have and the ability of our membership to travel to Breckenridge and attend. As I sit here writing this update, Colorado remains under a "safer-at-home" order and is asking citizens to limit travel. We also recognize the economic impact of COVID-19 on the budgets of our members and their agencies. As we move closer to June 2021, the Board will keep abreast of the latest developments and make decisions regarding the status and form of the Conference with the health, safety, and best interests of our membership in mind.

That said, we sincerely hope to see you in Breckenridge in 2021.

Brad Heilwagen, NHWC Conference Chair, Wood Environment & Infrastructure Solutions

Conference Informational Update Due to COVID-19

28th Flood Warning Systems
Training Symposium and Preparedness Workshop

Expanding the Possibilities of Early Warning Systems

October 13th - 16th, 2020
Ventura Beach Marriott
Ventura, CA

As most may know, after careful consideration to the health and safety of all our attendees the ALERT Users Group (AUG) conference which was to be held in May had been rescheduled due to the concerns with the spread of the COVID-19 virus. The AUG conference is scheduled to be held in October in lieu of AUG's annual Fall meeting. The ALERT Users Group like many organizations has been monitoring the COVID-19 outbreak and the possible effects it may have on our conference. AUG's high priority remains the health and safety of our attendees during these uncertain times.

The ALERT Users Group really wants to thank all the members, vendors and sponsors that have not requested a refund in the hope that the conference will be able to be held as scheduled. The current information from the CDC, the Ventura County Health Organization along with the Ventura Beach Marriott currently says that a conference of our size cannot be held. This situation will be monitored closely over the next few weeks and a decision to hold the conference or not will be decided by the end of July.

The ALERT Users Group will keep you informed as things progress. Additional information may be found on AUG's web site at www.alertsystems.org and on Twitter at @ALERT_Users.

The ALERT Users Group appreciates and wants to thank you for your continued support and understanding during this complex situation. If you have any questions, please email me directly at ron.marotto@ventura.org.

Ron Marotto P.H. – President of the ALERT Users Group

NEW WEBSITE FORMAT

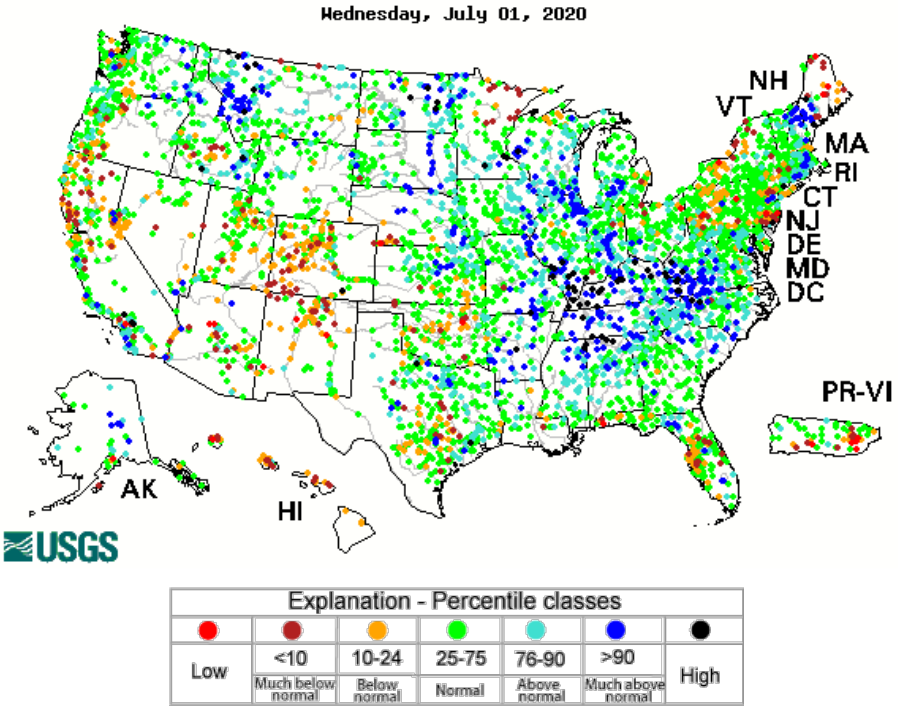
If you have not already noticed, NHWC recently updated its website.

Please take some time to log on and look around. In addition to a completely new format, there are several new things worth noting – including the Flood Warning Resources page and the Real-Time Hydrologic Data page. These have been compiled to provide site visitors with information and examples to help design, manage, or use flood warning systems.

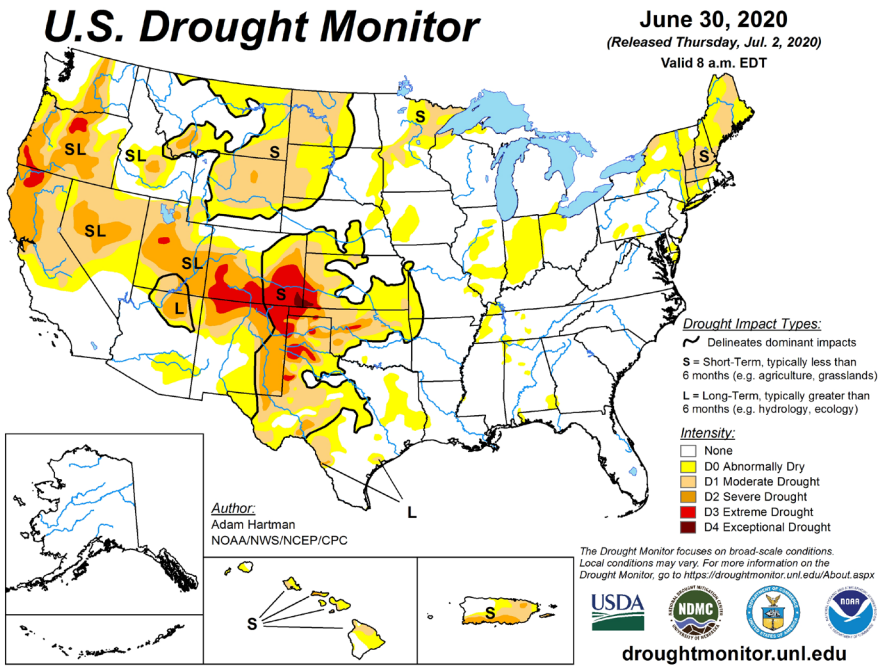
NHWC strives to provide the best, most comprehensive collection of such resources for flood professionals and we want to make it even better. We are looking for additional materials, resources, stories, photos, anything that would be appropriate for the site. If you have comments, suggestions, or materials that you would like to share please contact June Wolfe

jwolfe@brc.tamus.edu

Hydrologic Conditions in the United States
Through June 30, 2020



Latest stream flow conditions in the United States. (courtesy USGS)



Latest drought conditions in the United States. (courtesy National Drought Mitigation Center)

Call for Newsletter Articles:

The NHWC is requesting articles that focus on the following topics:

Data Collection
practices, technologies and tools used to gather and disseminate real-time hydro-meteorological data

Hazard Communication and Public Awareness
practices, technologies and tools used to get the right real-time data and information to the right people for the right response

Hydrology
new methods, research, or discoveries in hydrology or a recent significant hydrologic event that helps us understand the science behind the floods

Modeling & Analysis
practices, technologies and tools used to model, predict and analyze hydro-meteorological events and to support decision making for emergency response and floodplain management

Submit your article to:

editor@hydrologicwarning.org

August 15th is the deadline for inclusion in the Fall issue.

NHWC Calendar

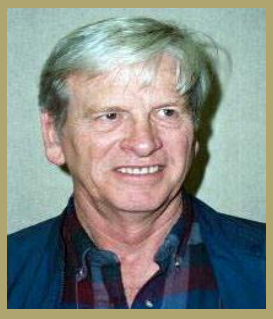
June 21-24, 2021 – NHWC 14th Biennial Training Conference & Exposition, Breckenridge, Colorado

General Interest Calendar

September 8-11, 2020 – Floodplain Management Association Annual Conference, Virtual

September 20-24, 2020 – ASDSO Dam Safety 2020, Virtual

In Memory of an ALERT Founder



Larry Ferral 1929-2020

Renaissance man? Sure, it is a cliché. But Larry Ferral was the real deal: National Weather Service forecaster and internationally recognized expert on flood forecasting, ACLU volunteer, lawyer (he passed the bar on his first try but never practiced), certified civil engineer, world traveler, perennial student and handyman par excellence. A quiet, unassuming man with a wry sense of humor and a wide circle of friends and acquaintances, he was also known for his generosity, never hesitating to assist friends with advice and help on home repair projects. Until the last few years, when he was sidelined with health issues, Larry did it all. He was 90 when he died April 20 in Sacramento.

Robert Larry Ferral was born May 26, 1929 in McCloud, one of four children of Robert Earl Ferral and the former Mabel Margaret Fenno. Both parents were lumber mill employees. While in elementary school, the family relocated to Anderson, in Shasta County, where he graduated from high school in 1947. A few months later he enrolled at UC Davis, graduating four years later with a bachelor's degree in agriculture. As an Army draftee he served in South Korea, shortly after the war ended. Following military service, he returned to UC Davis to begin graduate studies.

Larry later moved to Washington D.C. where he began his career with the National Weather Service in 1959. He returned to Sacramento in 1968 and worked at the California Nevada River Forecast Center where he served under Robert Burnash, the "Father of ALERT", and subsequently became the Hydrologist-In-Charge. During his years at the River Forecast Center he was involved in the early development of the ALERT hardware and software, the prototypes, and the initial operating systems in Monterey and San Diego Counties. ALERT systems developed by the California Nevada River Forecast Center subsequently became the backbone of flood warning systems across the United States and in numerous countries around the world. In 1988 he noted "ALERT has grown from a local flood warning system into a multi-purpose real-time mesoscale hydrometeorological data collection, analysis and forecasting system."

Larry at Donner Lake in Retirement

Larry was a long-time supporter of the ALERT Users Group, a frequent participant in its early conferences, and used his legal training to help establish the ALERT Users Group as a non-profit association. He was recognized by the organization with its Founders Award in 1993, one of only five people to receive this award.

Larry retired from government in 1989 but continued to welcome ALERT User Group members to enjoy skiing at the cabin he and his wife kept at Donner Lake. He is survived by Mae Yanagi Ferral. Larry asked that his ashes be spread on the slopes of Mt. Shasta near his birthplace.

National Hydrologic Warning Council

Providing Timely, Quality Hydrologic Information to Protect Lives, Property, and the Environment

http://www.hydrologicwarning.org