



Protecting water supplies in an era of growing wildfire dangers:

**Lessons learned from the Hermit's Peak/
Calf Canyon Fire, Las Vegas, N.M.**

By Jay Lazarus, Principal

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The Hermit's Peak/Calf Canyon Fire that burned 342,000 acres— or 534 square miles of land



Almost 2 years have passed since the most destructive wildfire in the history of New Mexico, the Hermit's Peak/Calf Canyon Fire that burned 342,000 acres—or 534 square miles— of land, destroyed more than 900 homes and structures, and forced more than 15,000 households to evacuate at its peak.

Among the many lasting impacts of the fire has been severe damage to the Gallinas River watershed, the primary source of drinking water for the city of Las Vegas, N.M. (population 13,157 as of 2021), including massive quantities of ash and debris that have contaminated water supplies and jeopardized the city's water treatment systems. The fire effectively "broke" the river and watershed.

While charred landscapes and fire-ravaged homes are usually the most visible impacts of forest fires, damage to municipal and irrigation water supplies is a major, long-lasting, and hard-to-resolve wildfire impact. Effects of wildfires can include both direct pollution of rivers, lakes, and reservoirs with ash and debris; and the negative effects on water quality caused by losing the beneficial natural water filtration and soil and water retention provided by a thriving forested watershed.

Today, Las Vegas is moving ahead with two ash and sediment removal projects, with a third to develop new drinking water supplies, including turning triple-treated wastewater into safe, potable "Agua Pura" through a combination of advanced water treatment and reservoir storage.



There is no way to remove ash and sediment by mechanical means, and it will take at least a decade or more for the forest to recover, but not to its pre-fire state. Developing new water supply treatment systems will take years. But as more and more communities throughout the U.S. face an era of ever-more-severe forest fires, exacerbated by the impacts of climate change, it's clear that the experience of Las Vegas provides several important and cautionary lessons. Five of the most important we have learned are:

4. Administrative and regulatory flexibility are crucial to enabling a prompt, effective response to the impacts of wildfire on water supplies. The experience of Las Vegas has revealed that policies, procedures, and funding streams shown to be effective for floods, hurricanes, and tornadoes can be more challenging to apply to the aftereffects of wildfires. Particularly for managing the impacts of wildfires on water supplies, emergency response contracts need to be flexible because, as we learned in Las Vegas, FEMA responses are not currently geared towards wildfires. With the frequency and intensity of climate-exacerbated disasters growing throughout the U.S., we've seen many elected officials advocate for proactive measures against fire emergencies that are growing all too predictable.



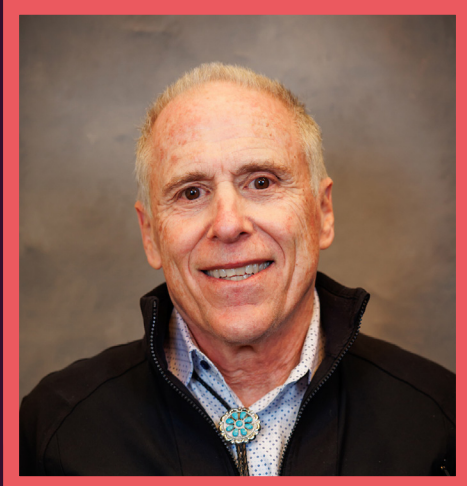
1. Conjunctive use of surface water supplies and groundwater—relying on a mix of both types of supplies improves overall water security.
2. Forest management by funding and deploying well-trained foresters to thin out the most overgrown areas as part of a comprehensive strategy is imperative. Throughout the Western U.S., examples abound of forest fires that turned catastrophic due to overgrown and poorly managed forests.
3. Building a detailed inventory of municipal water and infrastructure assets before fire strikes is critical to recovering from a natural or man-made fire. Knowing the locations of culverts, bridges, power-line poles, and other water supply infrastructure makes rebounding from a wildfire quicker.

5. While the Hermit's Peak/Calf Canyon Fire will rank as the greatest catastrophe in the lives of thousands of New Mexico residents, we've also seen how everybody has come together in the community to cooperate, make the best and most flexible use we can of the funding sources and agency expertise we have, and found solutions to ensure safe, reliable drinking water for residents for decades to come. No one affected by this wildfire would wish for anything other than to go back in time to ensure it never happened. But since the last of the fire burned out, we have seen residents, community leaders, and elected officials rise to the challenges and cooperate in recovering and rebuilding.

The Hermit's Peak/Calf Canyon Fire of 2022 holds several important lessons for communities and water supply managers throughout the United States.



Barring a fundamental change in our country's approach to, and investment in, managing forests and vegetation to prevent and mitigate wildfires, we face a constant and growing threat of forest fires that rising heat, more severe droughts, and other impacts of climate change will only accelerate. Damage to, and loss of, water supplies is one of the most significant, if often underappreciated, impacts of wildfires. The experience of Las Vegas, N.M., before, during, and after the Hermit's Peak/Calf Canyon Fire of 2022 holds several important lessons for how communities and water supply managers throughout the United States can become much better prepared for—and reduce and avoid—the impacts of wildfire on drinking water and irrigation water supplies.



About the author:

Jay Lazarus has served as President and Senior Geohydrologist of Glorietta Geoscience (now a Division of GZA GeoEnvironmental, Inc. and based in Santa Fe, N.M.) since 1979. Mr. Lazarus has authored or co-authored more than 25 peer-reviewed publications in the areas of geology, hydrology, water quality, basin-wide geochemical characterization, and Concentrated Animal Feeding Operation (CAFO) permitting and environmental topics. He and GZA are serving as advisors to the City of Las Vegas, N.M., overseeing contracts with consulting engineers to remove ash and sediment and develop new water supplies.

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