EVALUATION REPORT

Review of the National Weather Service's Actions to Support Kerr County During the Catastrophic Flash Flood in Texas

REPORT NO. OIG-26-017-I

APRIL 9, 2026

U.S. Department of Commerce
Office of Inspector General
Office of Audit and Evaluation

UNITED STATES DEPARTMENT OF COMMERCE
Office of Inspector General
Office of Audit and Evaluation
Washington, DC 20230

April 9, 2026

MEMORANDUM FOR: Dr. Neil Jacobs
Under Secretary of Commerce for Oceans and Atmosphere, and NOAA Administrator
National Oceanic and Atmospheric Administration

Ken Graham
Director, NOAA's National Weather Service, and Assistant Administrator for Weather Services at NOAA
National Weather Service

FROM: Arthur L. Scott Jr.
Assistant Inspector General for Audit and Evaluation

SUBJECT: *Review of the National Weather Service's Actions to Support Kerr County During the Catastrophic Flash Flood in Texas*
Report No. OIG-26-017-I

Attached is the final report on our review of the actions taken by the National Weather Service prior to the catastrophic flash flood event in Texas. We will post the report on our website per the Inspector General Act of 1978, as amended (5 U.S.C. §§ 404, 420).

We appreciate your staff's cooperation and professionalism during this review.

Attachment

Review of the National Weather Service's Actions to Support Kerr County During the Catastrophic Flash Flood in Texas

Report No. OIG-26-017-I
April 9, 2026

What We Reviewed | We reviewed the actions taken by the National Weather Service (NWS) prior to and during the catastrophic flash flood that occurred in Kerr County, in central Texas, on July 4, 2025.

This review provides a snapshot of key NWS actions and responses during the flood. It focuses on NWS staffing, coordination, forecasting, and issuance of flood alerts, with an emphasis on NWS support provided to Kerr County, Texas.

Why This Matters | When severe weather strikes, NWS is relied on for timely weather information and alerts. NWS plays a key and statutorily mandated federal role in ensuring national preparedness related to weather events.

Given the catastrophic nature of the Texas flash flood event, plus ongoing concerns about staffing levels at NWS, members of Congress asked OIG to examine NWS's response and resources both in central Texas and nationwide. Separately, we have initiated a project on NWS staffing, to review staffing levels, hiring limitations, and operational practices at NWS field offices around the country.

What We Found | On July 4, 2025, flash flooding occurred in central Texas when water levels along the Guadalupe River rose rapidly, causing widespread and severe property damage, injury, and loss of life. Throughout the flash flood, NWS was responsible for coordinating with its core partners and issuing timely weather and emergency alerts.

The Austin/San Antonio Weather Forecast Office (WFO) coordinated and communicated with core partners and issued multiple flood alerts on July 3 and 4. Although staffing vacancies existed at the WFO, staff asserted that the vacancies did not affect their ability to forecast, issue flood alerts, and provide support to Kerr County officials and other core partners.

NWS has an established lead time performance goal for its flash flood warnings. Longer lead times allow the public more opportunity to take precautionary measures and prepare for a flash flood. This report includes NWS's lead time estimates for river gauge locations along the Guadalupe River and its tributaries.

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Introduction

When severe weather strikes, the public and its core partners (primarily government, emergency management, and media organizations) rely on the National Weather Service (NWS) for timely weather information and alerts.[1] NWS provides weather forecasts, warnings, and impact-based decision support services (IDSS)[2] to protect life and property. As part of the National Oceanic and Atmospheric Administration (NOAA), NWS plays a key and statutorily mandated federal role in ensuring national preparedness related to weather events.[3]

Flash Flooding in Central Texas Prompted Congressional Request for OIG Review

On July 4, 2025, flash flooding—sudden, fast-moving, and dangerous—occurred in central Texas, when water levels along the Guadalupe River rose rapidly, causing widespread and severe property damage, injury, and loss of life.[4] According to data from the U.S. Geological Survey (USGS), the river level in Hunt, Texas (about 5 miles downstream from where the summer camp called Camp Mystic[5] sits), began rising to 10 feet around 3 a.m. Central time[6] and crested at 37.52 feet at 5:10 a.m., which resulted in catastrophic flooding with reporting of at least 135 people killed (as of September 2025). Most deaths were reported to have occurred in the county where Hunt is located—Kerr County—where 117 people died (including 37 children) and 2 people remained missing as of September 2025. Throughout the flash flood event, NWS was responsible for coordinating with its core

[1] NWS core partners are government and nongovernment entities that are directly involved in the preparation, dissemination, and discussion of weather, water, or climate information to support their decision-making.

[2] Through IDSS, NWS provides weather, water, and climate information and interpretative services to core partners to enable public safety and national security decision-making. IDSS forecast advice may be in response to a single event or routine in nature.

[3] The Weather Research and Forecasting Innovation Act of 2017 (Pub. L. No. 115-25) codifies NWS's provision of IDSS. Under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, NOAA is required to support emergency management efforts at all levels of government—federal, state, tribal, territorial, and local. Similarly, Presidential Policy Directive 8 (PPD-8) mandated the National Preparedness System, which includes five mission areas—prevention, protection, mitigation, response, and recovery—each guided by a National Planning Framework.

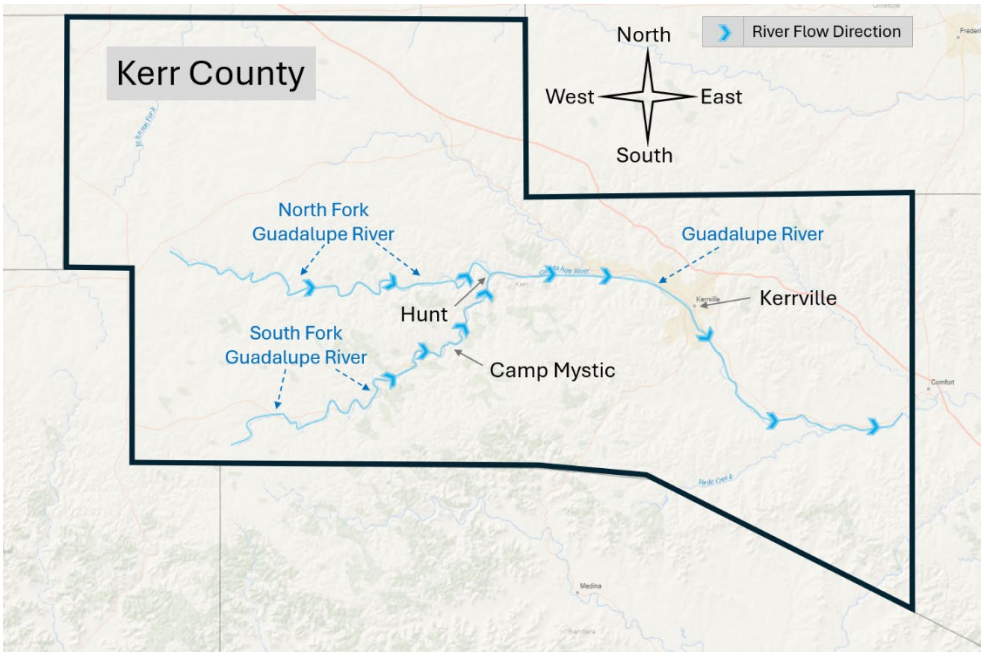
[4] A flash flood is a damaging and life-threatening rapid rise of water that can develop in minutes to hours and represents a considerable threat to public safety.

[5] Camp Mystic is a private summer camp for girls on the bank of the Guadalupe River (South Fork). The flood's catastrophic impacts on this camp received widespread media coverage.

[6] All times in this report are in Central Daylight Time.

partners and issuing timely weather alerts. Figure 1 shows the locations of Camp Mystic, Hunt, and Kerrville along the Guadalupe River in Kerr County.

Figure 1. Map of Relevant Kerr County Locations



Source: OIG analysis of relevant Kerr County locations

Given the catastrophic nature of the flash flood event in central Texas, and paired with ongoing concerns about staffing levels at NWS, members of Congress asked the Department of Commerce's Office of Inspector General (OIG) to examine NWS's response and resources both in central Texas and nationwide.[7] For this special review, we identified the actions NWS took prior to and during the July 4 flash flood event, with an emphasis on NWS support provided to Kerr County. In this report we also describe the staffing profiles of the relevant local NWS offices, specifically the Austin/San Antonio Weather Forecast Office and the West Gulf River Forecast Center.

➤ OIG Review Objective

The objective of this review was to determine actions taken by NWS prior to the catastrophic flash flood event in Texas. This review focuses on NWS staffing, coordination, forecasting, and issuance of flood alerts; it is not a comprehensive evaluation of all actions

[7] See this Senate letter (dated July 7, 2025) and OIG's response letter (dated July 17, 2025), and this House of Representatives, Committee on Oversight and Government Reform letter (dated July 11, 2025) and OIG's response letter (dated July 17, 2025).

and efforts by NWS for this flood event. This report provides a snapshot of key NWS actions and responses. Appendix 1 details our scope and methodology.

Separately, we have initiated a project on NWS staffing[8] to determine whether staffing levels, hiring limitations, and operational practices at NWS field offices have impacted the agency's ability to effectively respond to high-impact weather events through timely forecasts, warnings, and IDSS.

NWS Roles and Responsibilities for the Production and Issuance of Flood Forecasting Products

NWS has 122 Weather Forecast Offices (WFOs) across the country, staffed with meteorologists to monitor local weather and provide information to the public and core partners around the clock. Each WFO is responsible for issuing all flood watches, advisories, and warnings for its designated geographic area of responsibility, supported by river forecasts and guidance from its supporting NWS River Forecast Center, as well as guidance from other national centers.[9] When developing its flood forecasts, the WFO also relies on data from USGS river gauges that provide water levels and flow information.

For Kerr County, Texas, the primary NWS entities and their roles in flood prediction are:

- **Austin/San Antonio WFO:** Located in New Braunfels, Texas, this office operates 24 hours a day, 365 days a year, and is responsible for the issuance of all flood and flash flood watches, advisories, and warnings for 33 counties, including Kerr County. The WFO compiles locally observed meteorological and hydrologic data[10] and weather model forecast guidance for decision-making about public alerts. When the WFO determines that a flood or flash flood watch, advisory, or warning is warranted, it will disseminate those alerts to the public and core partners (as further described later).
- **West Gulf River Forecast Center (WGRFC):** Located in Fort Worth, Texas, the WGRFC provides river forecasts supporting an area covering approximately 400,000 square miles and about 15 WFOs, including the Austin/San Antonio WFO. The WGRFC typically provides operational support for 16 hours a day but will surge to 24-hour daily operations during periods of heightened flooding threats. The WGRFC is responsible for producing and coordinating river flood forecast guidance for watersheds in its area of responsibility, which includes the Guadalupe River and its tributaries in Kerr County. The WGRFC does not issue public alerts; it provides

[8] On July 17, 2025, we announced this project on NWS staffing (Project No. 2025-523).

[9] Other national NWS centers that support WFOs include the Office of Water Prediction and the Weather Prediction Center.

[10] Meteorological and hydrologic data includes but is not limited to precipitation (i.e., the amount and location of rainfall), air temperature and dew point, radar data, and river gauge data.

guidance to the WFOs, which the WFOs incorporate into their decision-making processes for alerts.

NWS Flood-Related Forecasting Products

NWS disseminates flood-related products to alert the public and core partners about potential and impending flood hazards. These products create awareness, motivate preparedness, and call for action when a hazardous flood event is occurring or imminent. Table 1 defines the types of products that the Austin/San Antonio WFO issued from July 3 to 4 covering Kerr County during the flash flood event.

Table 1. Types of Flood-Related Products Issued July 3–4 in Kerr County

Product	What It Means
Flood Watch	Current or developing conditions are favorable for flooding, but flooding is not certain or imminent. Can be issued hours to days in advance.
Flood Advisory	A flood event warrants notification but is less urgent than a warning—specifically, conditions could cause significant inconvenience, and if caution is not exercised, could threaten life or property.
Flood Warning	Current or imminent flooding poses a serious threat to life or property. Can be issued hours to days in advance.
River Flood Warning	River flooding is occurring or imminent at one or more forecast points along a river. Categorized as either “minor” (nuisance flooding), “moderate” (flooding may inundate the lowest homes, businesses, and roads along a river), “major” (a significant flooding threat to riverside structures, roads, life, and property), or “record” (higher than ever recorded).
Flash Flood Warning	Flash flooding is in progress, imminent, or highly likely. Signifies a serious and rapidly developing threat to life and property, usually issued minutes to hours before the onset of flooding.
Flash Flood Statement	Provides follow-up information on flash flood watches and warnings, including information about ongoing or imminent weather hazards, which can include wording designating the situation as a flash flood emergency.*

Source: OIG synthesized these definitions from information found on multiple, public NWS websites

* A flash flood emergency is an exceedingly rare situation when extremely heavy rain is leading to a severe threat to human life and catastrophic damage from a flash flood that is occurring or imminent. Typically, emergency officials are reporting life-threatening water rises, resulting in water rescues and evacuations.

NWS Alerting Mechanisms

WFOs have various methods to inform the public of hazardous weather conditions. One such method is issuing alerts, but not all alerts issued by a WFO will necessarily activate all distribution channels (the key channels are defined below). Alerts may activate all, some, or no channels, depending on the type and severity of the alert. In addition, all active alerts are posted on the NWS website. Alerts can also be distributed in other ways, such as via social media, other websites, and television and print media that monitor NWS dissemination systems.

WFO personnel issue alerts using the Federal Emergency Management Agency's (FEMA's) national system for local alerting, called the Integrated Public Alert and Warning System (IPAWS).[11] The mechanisms WFOs use to issue alerts are described below.

Wireless Emergency Alert (WEA): Authorized government officials send WEAs to mobile phones and devices using IPAWS. Alerts are sent automatically to phones and devices in the affected area during an emergency.[12] All nationwide wireless providers and dozens of regional providers, serving over 99 percent of wireless subscribers, participate in the WEA program.

- Not all types of alerts are sent via WEA. There are different levels of flash flood warnings, and the lowest level, or baseline flash flood warning, does not trigger WEAs to mobile phones. The Austin/San Antonio WFO decided that since its local area is prone to flash flooding, it would label all of its flash flood warnings with the "considerable" or "catastrophic" damage threat tags to ensure they would all be issued via WEA, as events with these labels are considered significantly life threatening with urgent action needed.[13]

Emergency Alert System (EAS): Federal, state, and local authorities use the EAS to deliver emergency information to affected communities through radio and television. The EAS is a voluntary system for commercial broadcasters that is maintained jointly by FEMA, the Federal Communications Commission, and NWS.

- NWS uses the EAS for imminent and dangerous weather conditions.

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[11] IPAWS delivers emergency and life-saving information through mobile phones, radio and television, and weather radio. An authorized individual (called the alert originator) composes an alert, which is then authenticated and distributed to the public. NWS is an authorized "alerting authority" for IPAWS. FEMA does not monitor, review, modify, approve, or disapprove the content of NWS alerts.

[12] Cell phones and mobile devices receive WEAs based on location, even if cellular networks are overloaded and can no longer support calls, texts, and emails. However, alerts may arrive on individual devices at different times depending on the location or wireless provider, or they may not arrive if the user has opted out or the device is in airplane mode or not connected to a wireless provider.

[13] Considerable flood events are significantly life threatening and may cause substantial damage to property. Catastrophic events are violent flash floods that extraordinarily threaten lives and cause disastrous damage.

NOAA Weather Radio (NWR) is a nationwide network of radio stations that broadcast continuous weather information from the nearest WFO 24 hours a day, 7 days a week.

- NWS forecasts, as well as flash flood watches, advisories, warnings, and other hazard information, are broadcast via NWR.

Coordination and Roles in WFOs

During weather events, WFOs coordinate with federal, state, and local emergency management agencies to ensure an organized and effective preparedness and response effort. Advanced coordination is accomplished through a WFO's warning coordination meteorologist, who works closely with core partners to ensure effective communication and the appropriate use of weather information.[14] During hazardous events, WFO staff leverage the advanced coordination performed by the warning coordination meteorologist to provide direct support to core partners. This support includes providing weather-related information in multiple ways, such as via briefings, situational reports, emails, phone calls, and a messaging platform called NWSChat.[15]

[14] The Weather Research and Forecasting Innovation Act of 2017 (Pub. L. No. 115-25) requires the NWS Director to designate at least one warning coordination meteorologist at each WFO. *See* 15 U.S.C. § 8545(a)(1). Other staff may also be assigned certain responsibilities of the warning coordination meteorologist as considered appropriate by the NWS Director. *See* 15 U.S.C. § 8545(c)(2).

[15] NWSChat provides chat and collaboration capabilities for NWS to communicate internally and also externally with core partners. NWS operational personnel use NWSChat to deliver IDSS and exchange hydrometeorological or other weather information within NWS and to core partners through channels, huddles, and direct messages, in support of local, state, regional, and national emergency response and recovery efforts. NWSChat can be accessed through a web browser or a third-party application on any device, and users can receive push notifications for unread activity.

Key NWS Actions and Staffing Levels During the July 4 Flash Flood Event in Kerr County

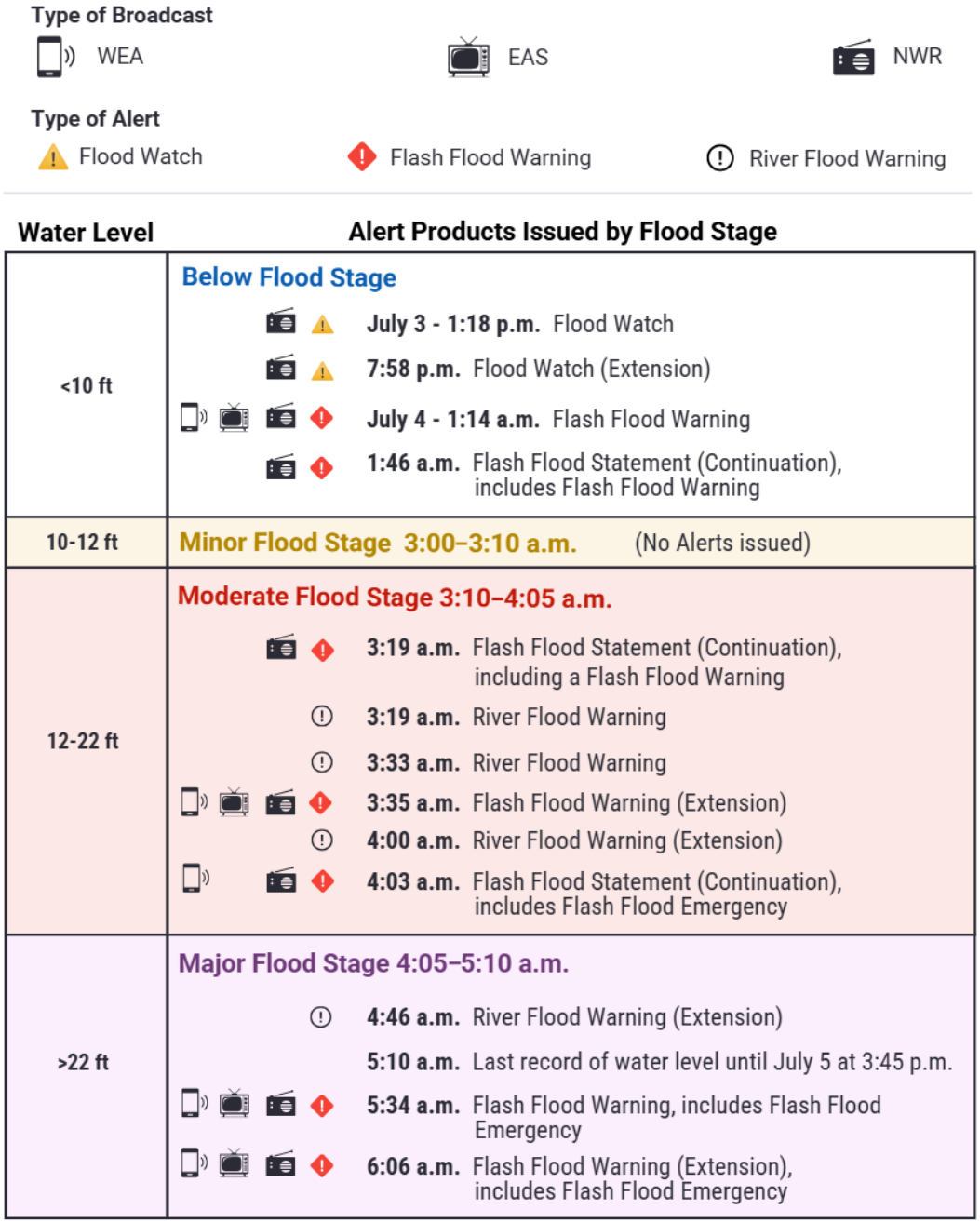
NWS plays a crucial role in informing the public during weather events that threaten life and property and coordinating with federal, state, and local emergency management agencies. During July 3 and 4, 2025, the Austin/San Antonio WFO issued multiple flood alerts to support Kerr County, Texas, including flood watches, advisories, and warnings aimed at safeguarding the community.

The following sections describe the key actions and decisions made during this flash flood event, including lead times for the Austin/San Antonio WFO's issuance of its flash flood warnings, its coordination efforts, and staffing levels for both the Austin/San Antonio WFO and the WGRFC.

Issuance of Emergency Alerts to Support Kerr County

NWS issued multiple flood alerts to support Kerr County from July 3 to July 4, but the below accounting of NWS actions discusses only the key alerts. Figure 2 illustrates alert products that were issued starting on July 3 through 1 hour after the last recorded river level at Hunt on July 4. For a full accounting of watch, advisory, and warning products issued and the alerting systems those products activated from July 3 to July 4 in Kerr County, see appendix 2.

Figure 2. Flood Alert Products Issued from July 3 through 1 Hour after the Last Recorded River Level at Hunt on July 4 in Kerr County, by Flood Stage



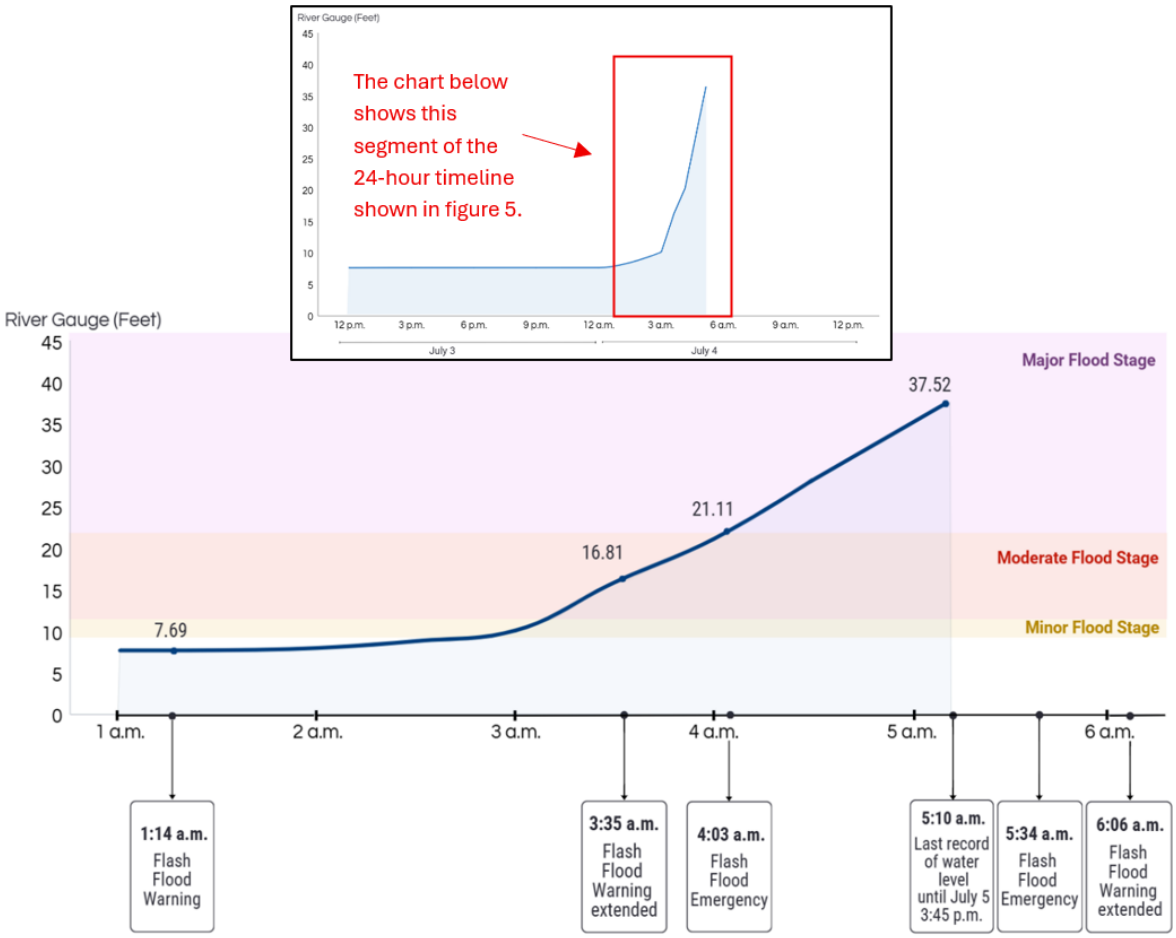
Source: OIG analysis of USGS water level measurements from the river gauge at Hunt and NWS alert documentation

Note: An alert "extension" updates the valid time period for an existing product (for the entire area or a portion thereof), making it either longer or shorter by changing the beginning time, ending time, or both without making changes to the area.
A "continuation" provides updates to an existing product, without making changes to the area or the valid time period.

According to the Austin/San Antonio WFO, early in the afternoon on July 3, staff developed sufficient confidence in the potential for excessive rain and the threat of flash flooding overnight on July 3 and extending into the morning hours on July 4 to issue a flood watch. (As previously defined, a flood watch is issued when current or developing conditions are favorable for flooding, but flooding is neither certain nor imminent.) The WFO issued its initial flood watch on July 3 at 1:18 p.m. and then extended it at 7:58 p.m. to remain in effect until 7 a.m. on July 4. Neither the initial issuance of the flood watch nor its update activated WEAs or the EAS, but these alerts were broadcast by NWR to the western portion of the WFO's area of responsibility, including Kerr County. On the afternoon of July 3, in recognition of the increased threat of heavy rainfall across central Texas, the WGRFC informed its supported WFOs that it had extended its duty hours to 24-hour operations until further notice.

Figure 3 shows key WEA notifications issued by the Austin/San Antonio WFO on July 4 and the corresponding water level measurements from the USGS river gauge at Hunt.

Figure 3. 5-Hour Timeline of Key WEA Notifications for Kerr County and the Rapid River Rise on July 4



Source: OIG analysis of USGS water level measurements from the river gauge at Hunt and NWS alert documentation

Note: All notifications shown were broadcast via WEA, the EAS, and NWR over portions of Kerr County except for the 4:03 a.m. alert, which was not broadcast via the EAS. Water level measurements noted in the figure are historic in nature and do not reflect the delay observed by the WFO in real-time, as data is received every 15 minutes with 6–7 minutes of latency. The last recorded water level measurement from the river gauge at Hunt was on July 4 at 5:10 a.m. (See appendix 3 for a map of areas where alerts were issued and appendix 4 for text of the WEA notifications shown here.) Additionally, the 4:03 a.m. and 5:34 a.m. alerts included a catastrophic damage threat tag.

As shown in figure 3, a flash flood warning (an urgent alert that flash flooding is in progress or imminent) was initially issued to portions of Kerr County, including Hunt, at 1:14 a.m. on July 4. (See appendix 4 for text of the notifications shown in figure 3.) This warning was broadcast via WEA, the EAS, and NWR. Based on data from the USGS river gauge at Hunt, the water level began rising to 10 feet around 3 a.m. and crested at 37.52 feet at 5:10 a.m.

In coordination with the WGRFC, the Austin/San Antonio WFO also began issuing river flood warnings[16] along the Guadalupe River: one at 3:19 a.m. for the region between Hunt and Kerrville, and one at 3:33 a.m. for the region between Kerrville and Comfort, Texas. Following the issuance of the river flood warnings, WFO call logs indicate unsuccessful attempts to contact the Kerr County emergency management coordinator at 3:39 a.m. and 4:42 a.m. and three unsuccessful attempts to contact the Kerr County Sheriff's Office between 3:40 a.m. and 3:43 a.m. (See appendix 5 for more details regarding the Austin/San Antonio WFO's communications with Kerr County.)

WFO staff said they could not obtain real-time observations of an ongoing flash flood upstream of Hunt because they were unable to contact either the Kerr County emergency management coordinator or the sheriff's office, and because there are no river gauges upstream of Hunt on the South Fork of the Guadalupe River (see figure 4 for a map of river gauge locations). Therefore, they decided to upgrade the existing flash flood warning threat tag from considerable damage to catastrophic damage, with flash flood emergency wording based on the observed radar and rain gauge data. Flash flood emergencies are exceedingly rare situations when extremely heavy rain is leading to a severe threat to human life and catastrophic flood damage. The Austin/San Antonio WFO issued a flash flood emergency for the Guadalupe River near Hunt at 4:03 a.m. on July 4 through a flash flood statement (providing updated observations and impact information) and subsequently broadcast it via WEA and NWR.

Based on the direct evidence of a deadly flood wave moving downriver observed by the Guadalupe River gauge at Hunt, the Austin/San Antonio WFO issued a second flash flood emergency via a flash flood warning at 5:34 a.m. This new alert covered the river between Hunt and Kerrville, which WFO personnel said was to ensure it would be issued via WEA along that portion of the Guadalupe River (see appendix 3 for a coverage map for flash flood warnings issued July 4 that triggered WEAs). By 5:40 a.m., WFO call logs indicate the first reports of rescues taking place along the South Fork of the Guadalupe River upstream of Hunt, as well as rescues along the Guadalupe River in Hunt.

Flash Flood Warning Lead-Time Performance for Kerr County

NWS issues more than 4,000 flash flood warnings annually. To comply with the Government Performance and Results Act (GPRA),[17] NWS established a performance goal for its flash flood warning lead time. Lead time is the amount of advance notification NWS provides to the public ahead of a flash flood event, and according to NWS, it is determined

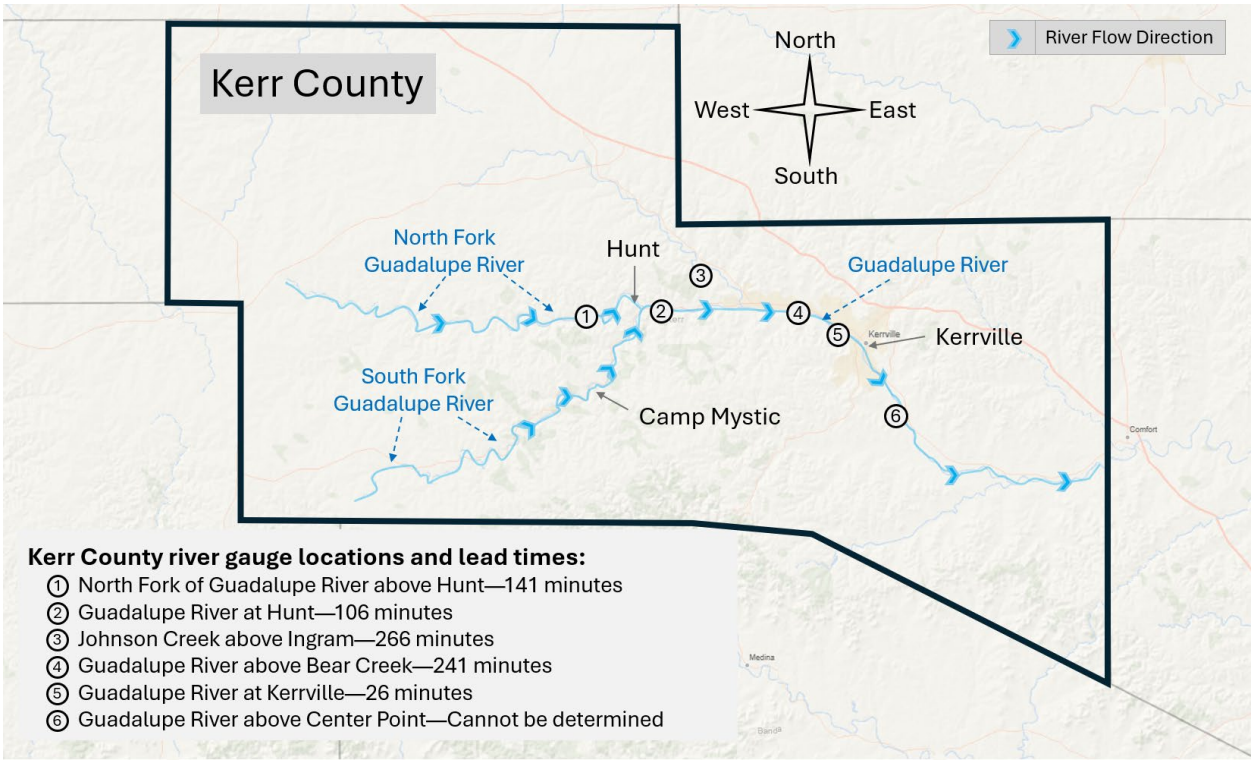
[16] River flood warnings are not broadcast via WEA, the EAS, or NWR, but can be sent through other methods such as social media and self-subscription to NWS alerts.

[17] Pub. L. No. 103-62; see also Pub. L. No. 111-352 and 31 U.S.C. § 1115.

by calculating the difference in minutes between the issuance of a warning and the onset of a corresponding event. NWS considers a flash flood warning lead time a success when it meets the GPRA performance goal of at least 65 minutes. A longer lead time allows the public more opportunity to take precautionary measures and prepare for a flash flood event.

There are six USGS river gauges in Kerr County.[18] For the flash flood event in central Texas, NWS calculated its flash flood lead times using two flash flood warnings covering the six USGS river gauge locations. Figure 4 shows where these gauges are located along the Guadalupe River and its tributaries in Kerr County. Lead times calculated for four of the six locations met NWS performance goals. The lead time for one gauge did not meet the performance goal, and gauge data was unavailable to calculate the lead time for the remaining gauge.

Figure 4. Kerr County River Gauge Locations and Lead Time Comparison



Source: OIG analysis of flash flood lead times associated with USGS river gauge locations in Kerr County

[18] According to NWS personnel, river gauge data is received every 15 minutes with a latency of 6–7 minutes.

For the initial flash flood warning issued at 1:14 a.m. on July 4, NWS calculated an estimated lead time[19] of 106 minutes, which exceeded its GPRA performance goal by 41 minutes. That lead time reflected the difference in minutes between the issuance of the warning (via WEA) at 1:14 a.m. and the time at which the river level measurement at the Guadalupe River gauge at Hunt reached flood stage, at about 3 a.m. In contrast, the flash flood warning lead time for Kerrville, which is about 9.5 miles downstream of Hunt, was estimated to be 26 minutes,[20] which did not meet the established GPRA goal by 39 minutes.[21] The Austin/San Antonio WFO issued a river flood warning at 3:33 a.m. that forecast moderate flooding for the Guadalupe River at Kerrville. However, river flood warnings are not configured to activate WEA, EAS, or NWR systems and thus were not conveyed through these distribution channels. As shown in figure 4, the Guadalupe River and its forks flow west to east, and there are no river gauges upstream of Camp Mystic and Hunt on the river's South Fork. It is also important to note that although NWS relies on river gauge data to help issue flash flood warnings, it is not responsible for funding or installing gauges.

Although we discuss the flash flood lead time performance goal and the associated results above, we did not evaluate their sufficiency, as our objective was to identify actions taken by NWS prior to the catastrophic flash flood event in Texas.

➤ WFO Coordination with Kerr County and Other Core Partners

As previously noted, the warning coordination meteorologist at the Austin/San Antonio WFO is the primary interface between the WFO and core partners regarding planning and executing the public awareness program and advising officials on preparedness planning to mitigate the impact of weather events. Leading up to and during the Texas flood event, the warning coordination meteorologist position was vacant. However, according to WFO personnel, the staff working during the event handled all coordination tasks, as summarized below. (See appendix 5 for details of coordination-related communications.)

[19] NWS staff characterized the lead time metrics provided as "estimated" because the official reporting had not yet been finalized.

[20] Using the Guadalupe River gauge at Kerrville, NWS determined the lead time by calculating the difference in minutes between the WFO's initial issuance of the flash flood warning (July 4 at 5:34 a.m.) and the observed time at which the river level reached flood stage (July 4 at about 6 a.m.).

[21] To compare lead time performance against the 65-minute GPRA goal, we used the flash flood warnings issued July 4 at 1:14 a.m. and 5:34 a.m., as they provided the earliest WEA notice for Camp Mystic, Hunt, or Kerrville. We excluded other warnings issued for Kerr County because they were issued after those warnings, did not activate WEAs, or did not cover these key locations.

The Austin/San Antonio WFO has approximately 1,970 core partner contacts in its email distribution list. For the Texas flood event, the WFO provided support virtually[22] through email, phone calls, and other channels.[23] The WFO communicated with its core partners, including Kerr County, before, during, and after the event. For example, the WFO sent out situational report emails to all core partners on July 3 at 2:22 p.m. and 8:32 p.m. and on July 4 at 2:45 a.m. discussing the flood watch and the forecast for heavy rain.

The WFO also used NWSChat to communicate with its core partners. From July 3 to 4, the WFO used NWSChat to share such information as rainfall projections, river flood stages, and details related to the flash flood emergency with core partners, including emergency management officials for counties and cities within the WFO's area of responsibility, weather spotters, and media. However, according to WFO personnel, not all Kerr County officials had an NWSChat account prior to the flash flood event. Additionally, WFO personnel also noted that two city officials in Kerr County have since requested access to NWSChat, providing them another channel to receive information for future events.

WFO personnel said they attempted to call both the Kerr County emergency management coordinator and the sheriff's office starting at approximately 3:38 a.m. but were unable to reach the sheriff's office until 4:32 a.m. and the emergency management coordinator until 6:19 a.m.

➤ Austin/San Antonio WFO and WGRFC Staffing

Austin/San Antonio WFO Staffing

According to the Austin/San Antonio WFO officials we interviewed, the WFO did not experience a gap in shift coverage during the flash flood event. During the event, the WFO had a total of 27 positions with 6 vacancies, as detailed in table 2.

[22] According to NWS, the Austin/San Antonio WFO did not receive a request from the local Kerr County emergency management coordinator or incident command post staff to deploy WFO personnel to Kerr County.

[23] Other channels include the NWS website, social media, other websites, and TV and print media that monitor NWS dissemination systems.

Table 2. Austin/San Antonio WFO Staffing Snapshot

Position	Vacant	Filled	Total Positions
Administrative Support Assistant	–	1	1
Automated Surface Observing System Electronics Technician	–	1	1
Electronics System Analyst	–	1	1
Electronics Technician	1	1	2
Facilities Engineering Technician	–	1	1
Hydrometeorological Technician	–	1	1
Information Technology Officer	–	1	1
Lead Meteorologist	1	5	6
Meteorologist	1	6	7
Meteorologist In Charge	–	1	1
Observing Program Leader	1	–	1
Regional Maintenance Specialist	–	1	1
Science and Operations Officer	1	–	1
Service Hydrologist	–	1	1
Warning Coordination Meteorologist	1	–	1
Total	**6**	**21**	**27**

Source: NWS personnel and OIG analysis of NWS documentation

Three vacancies occurred due to attrition prior to January 2025, and an additional three vacancies occurred in May 2025 due to workforce optimization incentives.[24] The duties for these vacancies were distributed among remaining WFO staff, who received help with certain duties from the NWS Southern Region Headquarters. Table 3 provides more details about the WFO vacancies.

[24] Workforce optimization incentives include the deferred resignation program and the ability to leverage voluntary early retirement authority and voluntary separation incentive payment.

Table 3. Austin/San Antonio WFO Staffing Vacancy Snapshot

Position	Role	Position Status	Reason for Vacancy	Duties Distributed To
Electronics Technician	Provides specialized support for scientific or engineering operations and research through designing and modifying equipment, conducting tests, and analyzing results.	Vacant since 2023	Attrition	Remaining electronics technicians, electronics systems analyst, and regional maintenance specialist
Lead Meteorologist	Prepares and issues all warning, forecast, and service products assigned to the WFO. Responsible for the quality and timeliness of all warning and forecast products.	Vacant since 2024	Attrition	Other lead meteorologists and meteorologists
Meteorologist	Integrates forecasts about weather, water, and climate hazards with associated societal risks to produce and communicate life-saving impact-based warnings, advisories, outlooks, and general forecasts.	Vacant since 2024	Attrition	Other lead meteorologists and meteorologists
Observing Program Leader	Monitors and reviews observations to ensure timely, high-quality data is incorporated into WFO forecast and warning decision-making processes.	Vacant since May 2025	Workforce optimization incentive	Hydrometeorological technician

Position	Role	Position Status	Reason for Vacancy	Duties Distributed To
Science and Operations Officer	Monitors and evaluates the accuracy and scientific basis of forecast and warning products and services provided by the WFO.	Vacant since May 2025	Workforce optimization incentive	Other meteorologists, with help from NWS Southern Region Headquarters
Warning Coordination Meteorologist	Primary interface between the WFO and core partners through planning and executing the public awareness program and advising officials on preparedness planning to mitigate the impact of weather events.	Vacant from May 2025 through mid-November 2025	Workforce optimization incentive	Other staff, including lead meteorologist and meteorologist in charge, with help from NWS Southern Region Headquarters

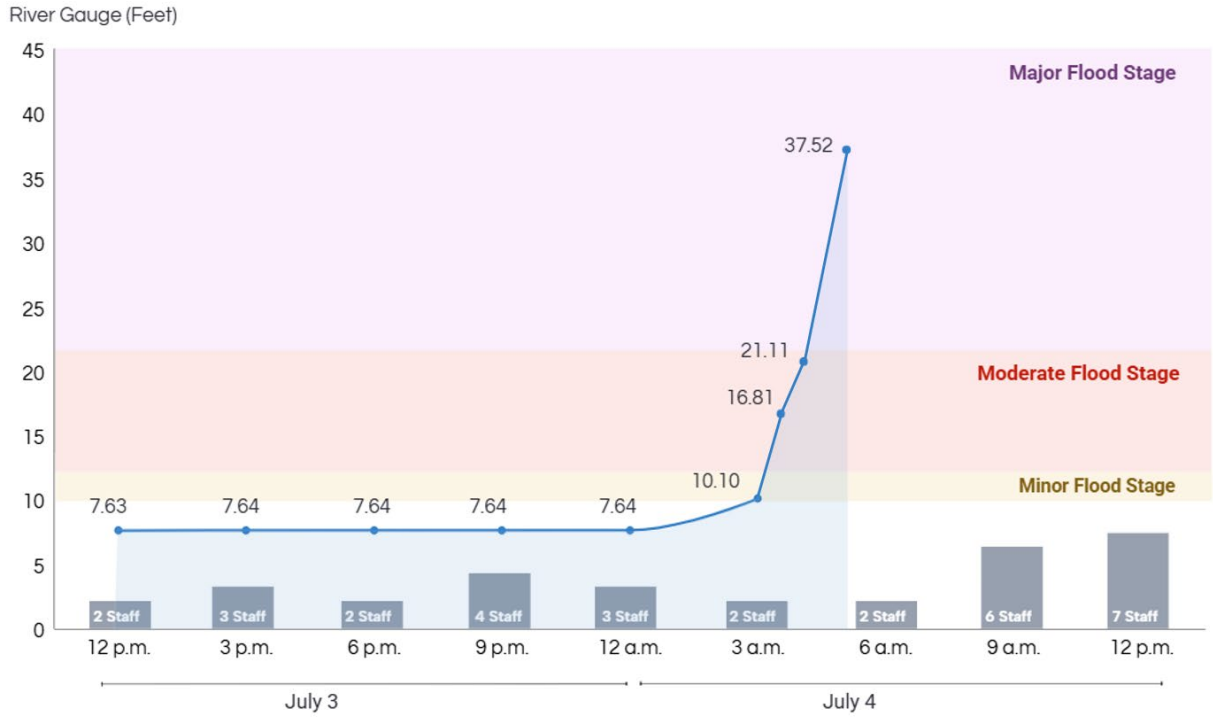
Source: NWS personnel and OIG analysis of NWS staffing documentation

According to NWS, a risk assessment had not been conducted related to staffing concerns regarding vacancies at the Austin/San Antonio WFO. Further, WFO personnel reported that vacancies did not affect their ability to forecast, issue flood alerts, and provide support to Kerr County officials and other core partners in response to the flash flood event. However, they expressed concern that if the warning coordination meteorologist position remains vacant, the lack of a full-time position dedicated to outreach could result in diminished engagement with core partners. Subsequently, the warning coordination meteorologist position was filled in November 2025.

The Austin/San Antonio WFO typically operates with 6 shifts each day, with a total of 11 lead meteorologists and meteorologists rotating to provide coverage for each shift. WFO personnel told us that normally, only two meteorologists are needed per shift to meet the day-to-day forecast production cycle, but during active weather events, they said they have the flexibility to call in additional meteorologists, extend the shifts of meteorologists who are currently on duty, or both. Both flexibilities were exercised on July 3 and 4.

The WFO maintained normal staffing levels on July 1 to 2 and surged its staffing between July 3 and 5, having up to 7 staff at a time.[25] See figure 5 for staffing levels during the 24-hour timeline surrounding the flash flood event.

Figure 5. 24-Hour Timeline of Measurements from the Guadalupe River Gauge at Hunt and Austin/San Antonio WFO Staffing Levels



Source: OIG analysis of USGS water level measurements from the river gauge at Hunt and NWS staffing documentation

Note: The last recorded water level measurement from the river gauge at Hunt was on July 4 at 5:10 a.m.

The lead meteorologist who reported for duty the evening of July 3 told us that the weather forecast warranted extending the shifts of the two meteorologists then on duty. The lead meteorologist extended one meteorologist's shift through 11 p.m. on July 3 and the other meteorologist's shift through 2 a.m. on July 4. Between 2 a.m. and 7 a.m., two WFO personnel, both lead meteorologists, remained on duty to support WFO operations—which, according to testimony from both, was sufficient from their perspective at the time, and in hindsight, to support the flash flood event that unfolded.

[25] The service hydrologist was on leave at the start of the event and returned on July 4. According to WFO staff, there was no operational impact from the absence. Additionally, according to WFO staff, there were no temporary duty personnel on site at the time of the event.

A lead meteorologist told us that due to the catastrophic nature of the flash flood event, at approximately 6:15 a.m. on July 4, he exercised the option to call in additional meteorologists for support, as it was still raining across the region and recovery efforts had begun. By 7 a.m., the WFO had five meteorologists on duty, and by 10 a.m., seven meteorologists were on duty. At 1:08 p.m. on July 4, the WFO issued a flash flood statement for west central Kerr County that replaced the flash flood warning with a flood advisory, but the WFO maintained its increased meteorologist staffing levels because future storms were affecting its area of responsibility.

WGRFC Staffing

The WGRFC office had 15 positions during the flash flood event, including three vacant senior hydrologist positions, according to WGRFC officials, as detailed in table 4.

Table 4. WGRFC Staffing Snapshot

Position	Vacant	Filled	Total Positions
Administrative Assistant	–	1	1
Development and Operations Hydrologist	–	1	1
Hydrologist	–	4	4
Hydrologist In Charge	–	1	1
Hydrometeorological Analysis and Support Forecaster	–	2	2
Senior Hydrologist	3	1	4
Senior Hydrometeorological Analysis and Support Forecaster	–	1	1
Service Coordination Hydrologist	–	1	1
Total	**3**	**12**	**15**

Source: NWS personnel and OIG analysis of NWS documentation

Two of the vacancies were due to attrition and one vacancy was due to a workforce optimization incentive. The remaining senior hydrologist and WGRFC management handled the duties of the vacancies as needed during the flash flood event. Table 5 provides more details on WGRFC vacancies.

Table 5. WGRFC Staffing Vacancy Snapshot

Position	Role	Status of Position	Reason for Vacancy	Duties Distributed To
Senior Hydrologist	Leads the center's daily hydrologic forecast operations and has in-depth expertise in one or more specialty areas such as flash flood hydrology.	3 vacancies occurred in 2023, 2024, and 2025	2 vacancies were due to attrition 1 vacancy was due to a workforce optimization incentive	Remaining senior hydrologist and WGRFC management as needed

Source: NWS personnel and OIG analysis of NWS staffing documentation

Although WGRFC officials said that staffing was adequate during the Texas flash flood event, they expressed concerns about future responses due to the loss of experienced staff and the impact on operational capabilities.

➤ Summary of OIG's Review

During the July 4 event, Austin/San Antonio WFO staff handled coordination activities and issued multiple flash flood alerts. NWS first communicated the threat of a flash flood event across central Texas, including Kerr County, via a flood watch issued on July 3, and subsequently issued multiple flash flood warnings and river flood warnings on July 4. Not all those warnings activated WEAs, the EAS, or NWR. The initial flash flood warning was issued to portions of Kerr County (including Hunt) at 1:14 a.m. on July 4, providing an estimated lead time of 106 minutes before the onset of flooding, which extended the lead time beyond NWS's 65-minute goal by an additional 41 minutes. In contrast, the flash flood warning lead time for Kerrville, which is about 9.5 miles downstream of Hunt, was estimated to be 26 minutes, which was 39 minutes short of the goal.

The Austin/San Antonio WFO coordinated with its core partners via email, telephone calls, and NWSChat. WFO staff said they attempted to call both the Kerr County emergency management coordinator and the sheriff's office starting at approximately 3:38 a.m. but were unable to reach the sheriff's office until 4:32 a.m. and the emergency management coordinator until 6:19 a.m. As there are no river gauges upstream of Hunt on the South Fork of the Guadalupe River, and WFO staff were unable to reach Kerr County officials, they decided to upgrade the existing flash flood warning to a flash flood emergency at 4:03 a.m. based on the observed radar and rain gauge data.

Although staffing vacancies existed at the WFO, staff asserted that the vacancies did not affect their ability to forecast, issue flood alerts, and provide support to Kerr County

officials and other core partners. During the interviews we conducted, WFO staff maintained that the vacancy in the warning coordination meteorologist position did not impact their ability to handle the flash flood event, but they cautioned that prolonged vacancy might hamper engagement with core partners. Subsequently, the warning coordination meteorologist position was filled in November 2025. WGRFC officials said that staffing was adequate during the Texas flash flood event but expressed concern about future responses due to the loss of experienced staff and its impact on operations.

NOAA's Technical Comments and OIG Response

We provided NOAA a draft version of this report for review in December 2025. NOAA did not provide a formal response. However, NOAA did provide technical comments. We considered these comments and made changes in this final report where appropriate. To provide clarity and perspective, we have commented on one of NOAA's technical comments below where we believed the disagreement was fundamental and material enough to warrant a response.

NOAA Comment: "The GPRA performance goal of 65 minutes is the average lead time for all Flash Flood Warnings, not a success metric for each individual event. Due to natural variability in meteorological and hydrological incidents, there is no established success metric for lead time for a singular event. To measure success on the event, the total number of warning lead times must be averaged over a period of time. Recognizing that this report focuses on one event, the flooding event, from July 2nd to 6th, [Austin/San Antonio WFO] provided an average of 99.09 minutes across 43 observed Flash Flood Events. This is far and above the GPRA standard."

OIG Response: Our report provides lead times for flash flood warnings issued for Kerr County on July 4, 2025. Accordingly, we presented the NWS's calculations separately for each gauge location across Kerr County, which allows the public to clearly see location-level warning lead times in a granular and informative way. However, as indicated in NOAA's technical response, NOAA reports an aggregated lead time. We have strong concerns that NOAA's methodology to calculate and report lead time as a single aggregated average would obscure meaningful differences among communities and would not be representative of public experience. Residents in one area may receive far less advance notice than those in another, yet the average would imply equivalent performance. Location-specific reporting more accurately represents the warning experience the public actually receives.

Appendix 1. Scope and Methodology

The objective of our evaluation was to determine actions taken by NWS prior to the catastrophic flash flood event in Texas. To accomplish our objective, we:

- Reviewed and analyzed the following laws, regulations, policy, and guidance:
  - Weather Research and Forecasting Innovation Act of 2017
  - Executive Order 13407, *Public Alert and Warning System,* June 26, 2006
  - NWS instructions and policy directives, including:
    - NWS Policy Directive 10-24, *Impact-Based Decision Support Services,* dated January 2, 2024
    - NWS Policy Directive 10-9, *Operations and Services, Water Resources Services Program,* dated October 20, 2021
    - NWS Instruction 10-921, *Weather Forecast Office Water Resources Operations,* dated December 6, 2019
- Conducted a site visit and interviewed officials from the Austin/San Antonio WFO
- Conducted virtual interviews with NWS officials from the Southern Regional Operations Center, WGRFC, and Office of Dissemination
- Reviewed and analyzed NWS documentation related to the Texas flood, including:
  - Weather alert products issued before and during the flash flood event
  - Coordination and communication with core partners
- Reviewed NWS staffing documentation, including:
  - Descriptions of staff positions and of standard daily shifts needed to support Austin/San Antonio WFO operations
  - Staffing data before and during the flood event, including organization charts and staffing authorizations filled and vacant, and distribution of duties for vacant positions to other existing Austin/San Antonio WFO and WGRFC staff
  - Staffing policy changes affecting the Austin/San Antonio WFO and WGRFC due to workforce optimization initiatives

We conducted our evaluation from July 2025 through December 2025 under the authority of the Inspector General Act of 1978, as amended (5 U.S.C. §§ 401-424), and Department Organization Order 10-13, as amended October 21, 2020.

We conducted this evaluation in accordance with *Quality Standards for Inspection and Evaluation* (December 2020) issued by the Council of the Inspectors General on Integrity and Efficiency. Those standards require that the evidence must sufficiently and appropriately support evaluation observations and provide a reasonable basis for conclusions related to the objective. We believe that the evidence obtained provides a reasonable basis for our observations and conclusions based on our review objective.

Appendix 2. Flood Alert Products Issued July 3–4

Table 6 lists the flood alert products issued by the Austin/San Antonio WFO from July 3 to 4, in support of Kerr County. Regarding the product status reflected in the third column (new, extension, continuation, cancellation, or expiration):

- An **extension** updates the valid time period for an existing product (for the entire area or a portion thereof), making it either longer or shorter by changing the beginning time, ending time, or both, without making changes to the area.
- A **continuation** provides updates to an existing product, without making changes to the area or the valid time period.

Note: River flood warnings are not broadcast via WEA, the EAS, or NWR, but can be sent through other methods such as social media and self-subscription to NWS alerts.

Table 6. Listing of Austin/San Antonio WFO Flood Alert Products Issued July 3–4

Date & Time	Type of Product	Product Status	Excerpts of Key Information	Area Affected	WEA	EAS	NWR
July 3, 1:18 p.m.	Flood Watch	New	Advises that locally heavy rainfall could cause flash flooding across portions of south-central Texas.	Eight south-central Texas counties, including Kerr County			✓
July 3, 7:58 p.m.	Flood Watch	Extension	Advises that a flood watch remains in effect until 7 a.m. Friday.	Eight south-central Texas counties, including Kerr County			✓
July 4, 1:14 a.m.	Flash Flood Warning	New	Advises of heavy rain across the warned area and that flash flooding is ongoing or expected to begin shortly.	Central Kerr County and northwestern Bandera County (See figure 6, Area A)	✓	✓	✓

Date & Time	Type of Product	Product Status	Excerpts of Key Information	Area Affected	WEA	EAS	NWR
July 4, 1:46 a.m.	Flash Flood Statement	Continuation	Flash flood warning remains in effect until 4:15 a.m., and expected rainfall for the next hour has increased to 2–4 inches (previously 2–3 inches).	Central Kerr County and northwestern Bandera County (See figure 6, Area A)			✓
July 4, 3:19 a.m.	Flash Flood Statement	Continuation	Advises of flash flood warning and notes that Doppler radar and automated rain gauges indicate thunderstorms are producing heavy rain in the warned area.	Central Kerr County and northwestern Bandera County (See figure 6, Area A)			✓
July 4, 3:19 a.m.	River Flood Warning	New	Advises that minor flooding is occurring and moderate flooding is forecast.	Guadalupe River at Hunt, affecting Kerr County			
July 4, 3:33 a.m.	River Flood Warning	New	Advises that moderate flooding is forecast for the Guadalupe River at Kerrville.	Guadalupe River at Kerrville, affecting Kerr County			
July 4, 3:35 a.m.	Flash Flood Warning	Extension	Advises that flooding is occurring or is imminent.	Central Kerr County and northwestern Bandera County (See figure 6, Area A)	✓	✓	✓
July 4, 4:00 a.m.	River Flood Warning	Extension	Severity of forecasted flooding has changed from moderate to major and expected duration has increased (until midnight).	Guadalupe River at Hunt			

Date & Time	Type of Product	Product Status	Excerpts of Key Information	Area Affected	WEA	EAS	NWR
July 4, 4:03 a.m.	Flash Flood Statement	Continuation	This alert also includes a flash flood emergency. At 4:03 a.m., Doppler radar and automated rain gauges indicate thunderstorms producing heavy rain; numerous low water crossings as well as the Guadalupe River at Hunt are flooding.	Flash flood emergency for south-central Kerr County, including Hunt Flash flood warning for central Kerr County and northwestern Bandera County (See figure 6, Area A)	✓		✓
July 4, 4:46 a.m.	River Flood Warning	Extension	Severity of forecasted flooding has changed from moderate to major and expected duration has increased.	Guadalupe River at Kerrville, affecting Kerr County			
July 4, 5:34 a.m.	Flash Flood Warning	New	This alert also includes a flash flood emergency. Automated rain gauges indicate a large and deadly flood wave is moving down the Guadalupe River; flash flooding is already occurring.	Guadalupe River from Hunt through Kerrville and Center Point (See figure 6, Area B)	✓	✓	✓

Date & Time	Type of Product	Product Status	Excerpts of Key Information	Area Affected	WEA	EAS	NWR
July 4, 6:06 a.m.	Flash Flood Warning	Extension	This alert also includes a flash flood emergency. At 6:06 a.m., local law enforcement reports numerous low water crossings flooded and major flooding occurring along the Guadalupe River with rescues taking place.	Flash flood emergency for south-central Kerr County, including Hunt Flash flood warning for central Kerr County and northwestern Bandera County (See figure 6, Area A)	✓	✓	✓
July 4, 6:27 a.m.	Flash Flood Warning	New	At 6:27 a.m., Doppler radar indicates thunderstorms producing heavy rain across the warned area. Flash flooding is ongoing or expected to begin shortly.	Northwestern Kerr County (See figure 6, Area C)	✓	✓	✓
July 4, 7:24 a.m.	Flash Flood Warning	New	At 7:24 a.m., automated rain gauges indicate a large and deadly flood wave is moving down the Guadalupe River. Flash flooding is already occurring.	Flash flood emergency for the Guadalupe River from Center Point to Sisterdale Flash flood warning for eastern Kerr County (See figure 6, Area D)	✓	✓	✓
July 4, 8:47 a.m.	Flash Flood Statement	Extension	Extends the flash flood warning until 11:30 a.m.	Northwestern Kerr County (See figure 6, Area C)	✓	✓	✓

Date & Time	Type of Product	Product Status	Excerpts of Key Information	Area Affected	WEA	EAS	NWR
July 4, 9:04 a.m.	Flash Flood Warning	Extension	This alert also includes a flash flood emergency. At 9:04 a.m., local law enforcement reports thunderstorms producing heavy rain in numerous low water crossings and the Guadalupe River.	Flash flood emergency for south-central Kerr County, including Hunt Flash flood warning for central Kerr County and northwestern Bandera County (See figure 6, Area A)	✓	✓	✓
July 4, 9:37 a.m.	Flash Flood Warning	New	At 9:37 a.m., Doppler radar indicates thunderstorms producing heavy rain across the warned area. Flash flooding is ongoing or expected to begin shortly.	West-central Kerr County (See figure 6, Area E)	✓	✓	✓
July 4, 10:06 a.m.	Flash Flood Warning	New	At 10:06 a.m., Doppler radar and automated rain gauges indicate thunderstorms producing heavy rain across the warned area. Flash flooding is ongoing or expected to begin shortly.	Southeastern Kerr County (See figure 6, Area F)	✓	✓	✓
July 4, 10:24 a.m.	Flash Flood Statement	Extension	Extends the flash flood warning until 1 p.m.	Northwestern Kerr County (See figure 6, Area C)	✓	✓	✓

Date & Time	Type of Product	Product Status	Excerpts of Key Information	Area Affected	WEA	EAS	NWR
July 4, 11:38 a.m.	Flash Flood Warning	Extension	This alert also includes a flash flood emergency. At 11:38 a.m., automated rain gauges indicate a large and deadly flood wave is moving down the Guadalupe River; flash flooding is already occurring.	Flash flood emergency for the Guadalupe River from Hunt through Kerrville and Center Point Flash flood warning for east-central Kerr County (See figure 6, Area B)	✓	✓	✓
July 4, 12:07 p.m.	Flash Flood Statement	Extension	Extends the flash flood warning until 2 p.m.	Northwestern Kerr County (See figure 6, Area C)	✓	✓	✓
July 4, 1:00 p.m.	Flash Flood Statement	New	Replaces flash flood warning with a flood advisory.	Northwestern Kerr County (See figure 6, Area C)			✓
July 4, 1:00 p.m.	Flood Advisory	New	At 1 p.m., Doppler radar and automated rain gauges indicate heavy rain due to thunderstorms. This will cause urban and small stream flooding. Between 3 and 5 inches of rain have fallen.	Kerr County			✓
July 4, 1:08 p.m.	Flash Flood Statement	Cancellation	Replaces flash flood warning with a flood advisory. A flood watch remains in effect until 7 p.m.	West-central Kerr County			✓

Date & Time	Type of Product	Product Status	Excerpts of Key Information	Area Affected	WEA	EAS	NWR
July 4, 1:08 p.m.	Flood Advisory	New	Replaces flash flood warning with a flood advisory. At 1:08 p.m., Doppler radar and automated rain gauges indicate heavy rain due to thunderstorms, causing urban and small stream flooding.	Real and Kerr Counties			✓
July 4, 1:20 p.m.	Flash Flood Statement	Extension	At 1:20 p.m., Doppler radar and automated rain gauges indicate thunderstorms producing heavy rain across the warned area. Flash flooding is ongoing.	Southeastern Kerr County (See figure 6, Area F)	✓	✓	✓
July 4, 1:24 p.m.	Flash Flood Emergency	Extension	At 1:24 p.m., automated rain gauges indicate a large and deadly flood wave is moving down the Guadalupe River. Flash flooding is already occurring.	Flash flood emergency for the Guadalupe River from Center Point to Sisterdale Flash flood warning for eastern Kerr County (See figure 6, Area D)	✓	✓	✓

Date & Time	Type of Product	Product Status	Excerpts of Key Information	Area Affected	WEA	EAS	NWR
July 4, 2:03 p.m.	Flash Flood Warning	Extension	This alert also includes a flash flood emergency. At 2:03 p.m., local law enforcement reports thunderstorms producing heavy rain in numerous low water crossings and the Guadalupe River.	Flash flood emergency for south-central Kerr County, including Hunt Flash flood warning for central Kerr County and northwestern Bandera County (See figure 6, Area A)	✓	✓	✓
July 4, 2:12 p.m.	Flash Flood Warning	Extension	This alert also includes a flash flood emergency. At 2:12 p.m., automated rain gauges indicate a large and deadly flood wave is moving down the Guadalupe River; flash flooding is already occurring.	Flash flood emergency for the Guadalupe River from Hunt through Kerrville and Center Point Flash flood warning for east-central Kerr County (See figure 6, Area B)	✓	✓	✓
July 4, 3:11 p.m.	Flood Advisory	New	Replaces flash flood warning with a flood advisory. At 3:11 p.m., Doppler radar and automated rain gauges indicate heavy rain due to thunderstorms. Urban and small stream flooding caused by excessive rainfall is expected.	Bandera and Kerr Counties			✓

Date & Time	Type of Product	Product Status	Excerpts of Key Information	Area Affected	WEA	EAS	NWR
July 4, 3:23 p.m.	Flash Flood Warning	Extension	At 3:23 p.m., Doppler radar and automated rain gauges indicate thunderstorms producing heavy rain along the Guadalupe River. Flash flooding is already occurring.	Eastern Kerr County (See figure 6, Area D)	✓	✓	✓
July 4, 3:47 p.m.	Flood Advisory	New	Urban and small stream flooding caused by excessive rainfall is expected. At 3:47 p.m., Doppler radar and automated rain gauges indicate heavy rain due to thunderstorms.	Gillespie and Kerr Counties			✓
July 4, 3:53 p.m.	Flash Flood Warning	Extension	At 3:53 p.m., local law enforcement reports thunderstorms producing heavy rain in the area; between 6 and 12 inches of rain have fallen and flash flooding is already occurring.	Central Kerr County and northwestern Bandera County (See figure 6, Area A)	✓	✓	✓
July 4, 3:56 p.m.	Flash Flood Warning	Extension	At 3:56 p.m., a large flood wave is moving down the Guadalupe River, and flash flooding is already occurring.	East-central Kerr County (See figure 6, Area A)	✓	✓	✓
July 4, 6:41 p.m.	Flash Flood Statement	New	Replaces flash flood warning with a flood advisory.	East-central Kerr County (See figure 6, Area A)			✓
July 4, 6:41 p.m.	Flood Advisory	New	Replaces flash flood warning with a flood advisory.	Kerr County (See figure 6, Area B)			✓
July 4, 6:47 p.m.	Flash Flood Statement	New	Replaces flash flood warning with a flood advisory.	Eastern Kerr County (See figure 6, Area D)			✓

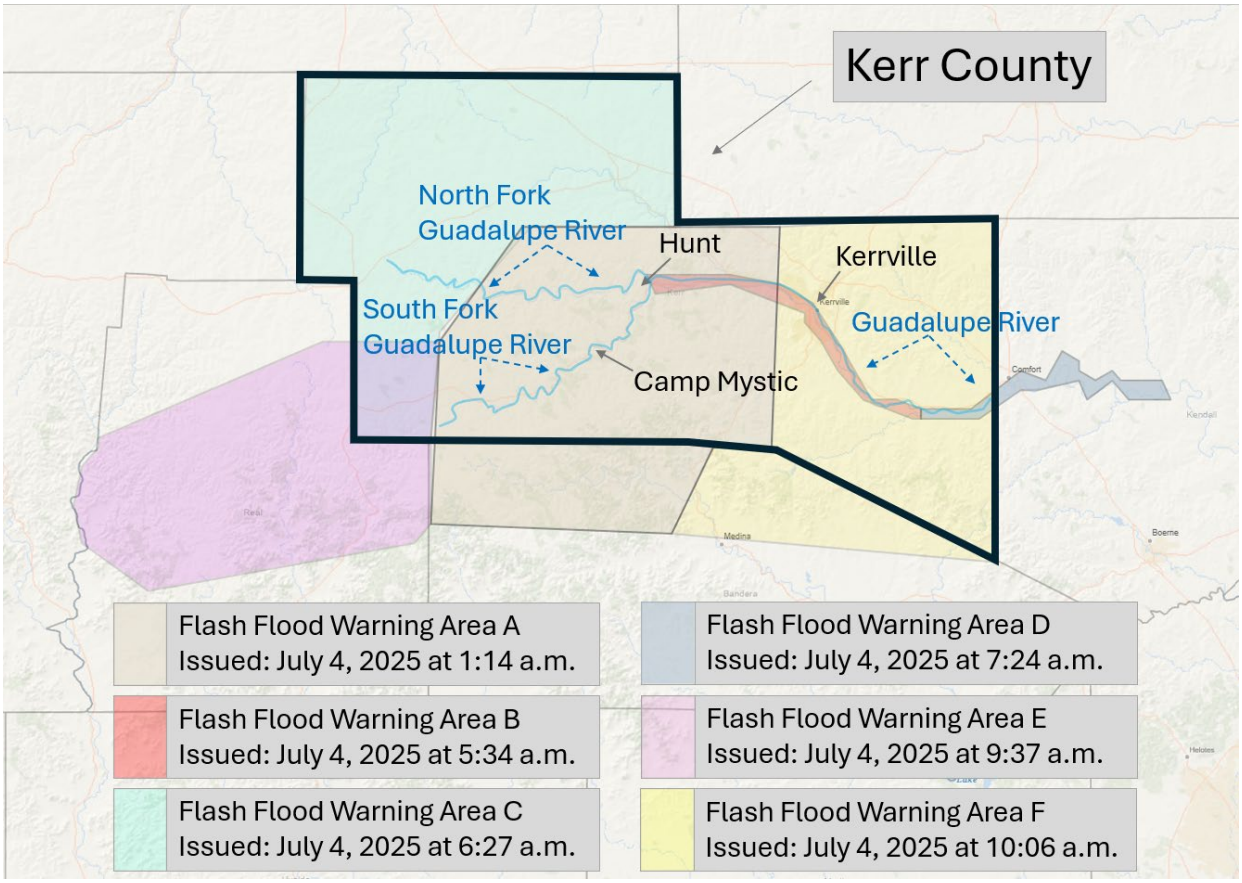
Date & Time	Type of Product	Product Status	Excerpts of Key Information	Area Affected	WEA	EAS	NWR
July 4, 6:47 p.m.	Flood Advisory	New	Replaces flash flood warning with a flood advisory. Flooding caused by excessive rainfall is still ongoing.	Kendall and Kerr Counties			✓
July 4, 6:57 p.m.	Flood Watch	Expiration	Flood watch will expire at 7 p.m. for portions of south-central Texas, including Kerr County. Excessive rain threat has ended, and NWS is letting the flood watch expire.	South-central Texas, including Kerr County			✓

Source: OIG analysis of NWS documentation

Appendix 3. Coverage Map for Flash Flood Warnings Issued July 4 that Triggered WEAs

Figure 6 shows the areas covered under NWS's WEA flash flood warnings issued on July 4.

Figure 6. Coverage Map for WEA Flash Flood Warnings Issued July 4 for Kerr County



Source: OIG analysis of NWS documentation

Appendix 4. Text of Key WEA Notifications Issued July 4

Text from the flash flood notifications shown in figure 3 is provided below, including verbatim excerpts from NWS-issued alert products and associated WEA text.

July 4, 2025 • 1:14 a.m. ▶ Flash Flood Warning

Alert Excerpt:

> Doppler radar indicated thunderstorms producing heavy rain across the warned area. Between 1 and 2 inches of rain have fallen. The expected rainfall rate is 2 to 3 inches in 1 hour. Additional rainfall amounts of 1 to 3 inches are possible in the warned area. Flash flooding is ongoing or expected to begin shortly.
>
> HAZARD ... Life threatening flash flooding. Thunderstorms producing flash flooding.
>
> SOURCE ... Radar.
>
> IMPACT ... Life threatening flash flooding of creeks and streams, urban areas, highways, streets and underpasses.
>
> PRECAUTIONARY/PREPAREDNESS ACTIONS ... Turn around, don't drown when encountering flooded roads. Most flood deaths occur in vehicles.
>
> FLASH FLOOD DAMAGE THREAT ... CONSIDERABLE

WEA Text:

> National Weather Service: A FLASH FLOOD WARNING is in effect for this area until 4:15 AM CDT. This is a dangerous and life-threatening situation. Do not attempt to travel unless you are fleeing an area subject to flooding or under an evacuation order.

July 4, 2025 • 3:35 a.m. ▶ Flash Flood Warning Extended

Alert Excerpt:

> Doppler radar and automated rain gauges indicated thunderstorms producing heavy rain across the warned area. Between 4 and 8 inches of rain have fallen. The expected rainfall rate is 2 to 4 inches in 1 hour. Additional rainfall amounts of 2 to 4 inches are possible in the warned area. Flash flooding is ongoing or expected to begin shortly.

HAZARD ... Life threatening flash flooding. Thunderstorms producing flash flooding.

SOURCE ... Radar and automated gauges.

IMPACT ... Life threatening flash flooding of creeks and streams, urban areas, highways, streets and underpasses.

PRECAUTIONARY/PREPAREDNESS ACTIONS ... Turn around, don't drown when encountering flooded roads. Most flood deaths occur in vehicles. Move to higher ground now. Act quickly to protect your life.

FLASH FLOOD DAMAGE THREAT ... CONSIDERABLE

WEA Text:

National Weather Service: A FLASH FLOOD WARNING is in effect for this area until 7:00 AM CDT. This is a dangerous and life-threatening situation. Do not attempt to travel unless you are fleeing an area subject to flooding or under an evacuation order.

July 4, 2025 • 4:03 a.m. ▶ Flash Flood Statement ... FLASH FLOOD EMERGENCY FOR SOUTH-CENTRAL KERR COUNTY, INCLUDING HUNT

Alert Excerpt:

Doppler radar and automated rain gauges indicated thunderstorms producing heavy rain. Numerous low water crossings as well as the Guadalupe River at Hunt are flooding. Between 4 and 10 inches of rain have fallen. The expected rainfall rate is 2 to 4 inches in 1 hour. Additional rainfall amounts of 2 to 4 inches are possible in the warned area. Flash flooding is already occurring.

This is a FLASH FLOOD EMERGENCY for South-central Kerr County, including Hunt. This is a PARTICULARLY DANGEROUS SITUATION. SEEK HIGHER GROUND NOW!

HAZARD ... Life threatening flash flooding. Thunderstorms producing flash flooding.

SOURCE ... Radar and automated gauges.

IMPACT ... This is a PARTICULARLY DANGEROUS SITUATION. SEEK HIGHER GROUND NOW! Life threatening flash flooding of low water crossings, small creeks and streams, urban areas, highways, streets and underpasses.

PRECAUTIONARY/PREPAREDNESS ACTIONS ... Move to higher ground now! This is an extremely dangerous and life-threatening situation. Do not attempt to travel unless you

are fleeing an area subject to flooding or under an evacuation order. Turn around, don't drown when encountering flooded roads. Most flood deaths occur in vehicles. Move to higher ground now. Act quickly to protect your life.

FLASH FLOOD DAMAGE THREAT ... CATASTROPHIC

WEA Text:

National Weather Service: A FLASH FLOOD EMERGENCY is in effect for this area until 7:00 AM CDT. This is an extremely dangerous and life-threatening situation. Do not attempt to travel unless you are fleeing an area subject to flooding or under an evacuation order.

July 4, 2025 • 5:34 a.m. ▶ Flash Flood Warning

Alert Excerpt:

Automated rain gauges indicate a large and deadly flood wave is moving down the Guadalupe River. Flash flooding is already occurring.

This is a FLASH FLOOD EMERGENCY for the Guadalupe River from Hunt through Kerrville and Center Point. This is a PARTICULARLY DANGEROUS SITUATION. SEEK HIGHER GROUND NOW!

HAZARD ... Life threatening flash flooding. Thunderstorms producing flash flooding.

SOURCE ... Radar and automated gauges.

IMPACT ... This is a PARTICULARLY DANGEROUS SITUATION. Residents and campers should SEEK HIGHER GROUND NOW! Life threatening flash flooding along the river is expected.

PRECAUTIONARY/PREPAREDNESS ACTIONS ... Move to higher ground now! This is an extremely dangerous and life-threatening situation. Turn around, don't drown when encountering flooded roads. Most flood deaths occur in vehicles. Stay away or be swept away. River banks and culverts can become unstable and unsafe. Flooding is occurring or is imminent. It is important to know where you are relative to streams, rivers, or creeks which can become killers in heavy rains. Campers and hikers should avoid streams or creeks.

FLASH FLOOD DAMAGE THREAT ... CATASTROPHIC

WEA Text:

National Weather Service: A FLASH FLOOD EMERGENCY is in effect for this area until 12:00 PM CDT. This is an extremely dangerous and life-threatening situation. Do not attempt to travel unless you are fleeing an area subject to flooding or under an evacuation order.

July 4, 2025 • 6:06 a.m. ▶ Flash Flood Warning Extended

Alert Excerpt:

Local law enforcement reported numerous low water crossings flooded and major flooding occurring along the Guadalupe River with rescues taking place. Between 5 and 10 inches of rain have fallen. Additional rainfall amounts up to 2 inches are possible in the warned area. Flash flooding is already occurring.

This is a FLASH FLOOD EMERGENCY for South-central Kerr County, including Hunt. This is a PARTICULARLY DANGEROUS SITUATION. SEEK HIGHER GROUND NOW!

HAZARD ... Life threatening flash flooding. Thunderstorms producing flash flooding.

SOURCE ... Law enforcement reported.

IMPACT ... This is a PARTICULARLY DANGEROUS SITUATION. SEEK HIGHER GROUND NOW! Life threatening flash flooding of low water crossings, small creeks and streams, and the Guadalupe River.

PRECAUTIONARY/PREPAREDNESS ACTIONS ... Move to higher ground now! Act quickly to protect your life. Turn around, don't drown when encountering flooded roads. Most flood deaths occur in vehicles. Be especially cautious at night when it is harder to recognize the dangers of flooding.

FLASH FLOOD DAMAGE THREAT ... CATASTROPHIC

WEA Text:

National Weather Service: A FLASH FLOOD EMERGENCY is in effect for this area until 10:00 AM CDT. This is an extremely dangerous and life-threatening situation. Do not attempt to travel unless you are fleeing an area subject to flooding or under an evacuation order.

Appendix 5. Austin/San Antonio WFO Communications with Kerr County, July 3–5

Table 7 provides a snapshot of the communication efforts between the Austin/San Antonio WFO and Kerr County from July 3 to 5.

Table 7. Austin/San Antonio WFO Communications with Kerr County Officials, July 3–5

Date & Time	Channel	Communication
July 3, 2:22 p.m.	Email	WFO provided a situational report to south-central Texas partners (including Kerr County) on the flood watch issued through 7 p.m. on July 4.
July 3, 8:32 p.m.	Email	WFO provided an updated situational report to south-central Texas partners (including Kerr County) on the flood watch in effect through 7 a.m. on July 4.
July 4, 2:45 a.m.	Email	WFO provided an updated situational report to south-central Texas partners (including Kerr County) on the extension of the flood watch until 1 p.m. on July 4.
July 4, 3:38 a.m. and 3:39 a.m.	Phone calls	WFO attempted to contact the Kerr County emergency management coordinator regarding flooding concerns, but according to WFO staff, the calls were unanswered.
July 4, 3:40 a.m., 3:41 a.m., and 3:43 a.m.	Phone calls	WFO attempted to contact the Kerr County Sheriff's Office to, according to WFO staff, obtain ground truth to validate the data from radar; however, the calls were immediately disconnected.
July 4, 4:32 a.m.	Phone call	WFO contacted the Kerr County Sheriff's Office, and according to WFO staff, the sheriff's office staff said they had flooding in low water crossings but could not talk long because they were busy with incoming calls.
July 4, 4:42 a.m.	Phone call	WFO staff said they left a voicemail for the Kerr County emergency management coordinator about the issuance of a flash flood emergency and river crest forecast in "major" category and requested a call back.
July 4, 6:19 a.m.	Phone call	WFO called the Kerr County emergency management coordinator and, according to WFO staff, briefed him on the 34-foot crest at Kerrville.

Date & Time	Channel	Communication
July 4, 7:25 a.m.	Phone call	WFO called the Kerr County emergency management coordinator but, according to WFO staff, the call was unanswered.
July 4, 8:11 a.m.	Phone call	WFO staff said they called the Kerr County emergency management coordinator and confirmed two fatalities and discussed additional rainfall.
July 4, 8:54 a.m. and 8:58 a.m.	Phone calls	WFO called the Kerr County emergency management coordinator but, according to WFO staff, the calls were unanswered.
July 4, 9:05 a.m.	Phone call	WFO staff said they called the Kerr County emergency management coordinator and briefed him on additional rainfall amounts of 2 to 4 inches moving into the area and a small secondary crest.
July 4, 9:19 a.m. and 11:15 a.m.	Phone calls	WFO called the Kerr County emergency management coordinator; however, there is no documentation of what was discussed.
July 4, 1:18 p.m.	Email	WFO provided a situational report to south-central Texas partners (including Kerr County) on the extension of the flood watch until 7 p.m. on July 4.
July 4, 1:52 p.m.	Phone call	WFO called the Kerr County emergency management coordinator; however, there is no documentation of what was discussed.
July 4, 1:55 p.m.	Phone call	WFO had an incoming call from the Kerr County emergency management coordinator; however, there is no documentation of what was discussed.
July 4, 3:50 p.m.	Phone call	WFO called the Kerr County emergency management coordinator; however, there is no documentation of what was discussed.
July 5, 1:26 a.m.	Email	WFO provided a situational report to south-central Texas partners (including Kerr County) on the flood watch issued through 7 p.m. on July 5.
July 5, 1:37 a.m.	Email	WFO provided the Kerr County emergency management coordinator with the flash flood warnings that activated WEAs.
July 5, 2:28 p.m.	Email	WFO provided an updated situational report to south-central Texas partners (including Kerr County) on the extension of the flood watch until 10 p.m. on July 5.

Date & Time	Channel	Communication
July 5, 4:25 p.m.	Phone call	WFO had an incoming call from the Kerr County emergency management coordinator; however, there is no documentation of what was discussed.
July 5, 4:52 p.m.	Email	WFO provided the Kerr County emergency management coordinator with the timeframe for all flash flood emergencies for Kerr County.
July 5, 9:43 p.m.	Email	WFO provided an updated situational report to south-central Texas partners (including Kerr County) on the extension of the flood watch until 1 p.m. on July 6.

Source: NWS personnel and OIG analysis of NWS communication

REPORT

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