

**COLORADO GEOLOGICAL SURVEY**  
**Online Resources ON-006-18D**  
**Alluvial Fan Mapping of Pitkin County, Colorado**  
**(Data) – v20250716**

**Citation**

*Crandall, A., and Lovekin, J.R., 2025, ON-006-18D Alluvial Fan Mapping of Pitkin County, Colorado (Data) – v20250716: Online Resources, variable scale.*  
<https://coloradogeologicalsurvey.org/publications/alluvial-fan-map-pitkin-colorado/>

**ABOUT THIS REPORT**

The CGS is providing LiDAR-based mapping to refine the currently mapped alluvial fans and debris flow prone areas in Pitkin County. This new mapping is based on the County's existing geologic hazard maps but also includes new areas mapped from LiDAR. Debris flows or mudflows are significant hazards associated with alluvial fans. According to the American Geosciences Institute, alluvial fans are

*“A low, outspread, relatively flat to gently sloping mass of loose rock material, shaped like an open fan or a segment of a cone, deposited by a stream (esp. in a semiarid region) at the place where it issues from a narrow mountain valley upon a plain or broad valley, or where a tributary stream is near or at its junction with the main stream, or wherever a constriction in a valley abruptly ceases or the gradient of the stream suddenly decreases; it is steepest near the mouth of the valley where its apex points upstream, and it slopes gently and convexly outward with gradually decreasing gradient.”*

Most alluvial fans in Pitkin County have been previously identified. However, LiDAR allows more extensive mapping of these features where debris flow hazards could occur. The magnitude of debris flow hazards will increase following wildfire events. The county has expressed concern about their preparedness for post-wildfire natural hazards and contracted CGS to use readily available LiDAR technologies to more completely define alluvial fan areas at risk for debris flows especially after wildfire events. This study seeks to compile, map, and define known and previously unrecognized alluvial fans with the aid of high-resolution LiDAR imagery.

**HOW TO USE THIS ZIP FILE**

To open the compressed (.zip) file that you downloaded, double-click on the file. Inside the folder labeled **ON-006-18D Alluvial Fan Mapping of Pitkin County, Colorado (Data) - v20250716**, there are several files and folders. Some files are stored in Adobe Portable Document (.pdf) format. Geographic Information Systems (GIS) data are also included.

**HOW TO IDENTIFY AND READ FILES**

**REPORT DOCUMENTS**

- ON-006-18D-v20250716-Read\_Me.pdf

*This file*

- ON-006-18D-v20250716-GIS\_Data folder  
*Contains ArcGIS Pro project package file **Pitkin\_Fans\_v20250716.ppkx** which includes the current data as of 16 July 2025. Consult enclosed metadata for further information on methodology, data processing, and use limitations. Also contains zip file **Pitkin\_Fans\_v20250716-shapefiles.zip** with separate shapefiles for use in other GIS applications*
- ON-006-18D-v20250716-metadata.pdf  
*PDF version of ArcGIS Pro metadata*

### To view .pdf files

If you don't already have Adobe Reader installed on your device, visit <https://get.adobe.com/reader/> to download a free version of the software. Then, start Adobe Reader and choose "File," "Open," and locate the .pdf files where you downloaded them, they will open in Adobe Reader.

### To view GIS files

GIS files may be viewed using Geographic Information Systems software packages such as ESRI's ArcGIS Pro platform. Within ArcGIS Pro, it may be necessary to reset the "data source" on layer files to ensure proper viewing. Metadata is assigned at project and map levels and is best viewed using the Metadata option in the Catalog pane or in the Info tab.

Alternatively, these files may be viewed using QGIS, a free and open-source GIS software package, available for download at <https://qgis.org/>.

For further information or assistance, contact the Colorado Geological Survey at:  
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