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NEW EARTH FISSURE MAPS AVAILABLE FOR DRAGOON ROAD AREA, COCHISE COUNTY, AND GREENE WASH AREA, PINAL COUNTY

Tucson. Earth fissure mapping for the largely rural Dragoon Road study area, Cochise County, and Greene Wash study area, Pinal County, is complete and the maps are available at the interactive Earth Fissure Viewer at <http://azmap.org/fissures>. PDF copies of the maps will be available at Arizona Geological Survey 's *Earth Fissure Center* www.azgs.az.gov/efmaps.shtml by midday on 23 December. Of 23 earth fissure study areas identified in Cochise, Maricopa, Pima, and Pinal Counties, 16 have now been mapped.

In the Dragoon Road area, AZGS geologists identified more than 3.5 miles of continuous and discontinuous earth fissures. The fissures constitute a narrow network of north-south trending features, from just south of the intersection of Dragoon Road and S Cochise Stronghold Road, north towards the intersection of W. Haywire Road and U.S. Route 191.

An additional two miles of reported but unconfirmed fissures are shown on the map. This includes nearly 3000 feet of fissure previously known to underlie the ash and sludge storage ponds at the Apache Station Combustion Waste Disposal Facility operated by Arizona Electric Power Cooperative. (The storage ponds are situated at the southwest end of Willcox Playa, just east of South Cochise Stronghold Road.) Fissures were first reported there in March 1993 and 1200 feet of fissure were mapped during the permitting stage of the storage ponds. At the same time, a geophysical study identified a buried, incipient fissure that continues north to the north section line of Section 04, T16S, R24E.

Because of the earth fissure, the storage pond system constructed in 1994 was modified to include a second geomembrane liner. In June 2009, the Environmental Protection Agency posted a "High Hazard Potential rating" for the seven Apache Station Combustion Waste Disposal Facility ponds. This rating does not infer problems with structural quality, but simply indicates the potential for loss of life should the containment fail.

The Greene Wash area, located about six miles south of Arizona City, hosts 3.5 miles of identifiable continuous and discontinuous earth fissures. Reported but unconfirmed earth fissures total an additional 5.5 miles. Some of the unconfirmed fissures occur in active farmlands, where seasonal plowing can obliterate the surface expression of fissures.

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BACKGROUND INFORMATION

Earth fissures are cracks, seams, or separations in the ground caused by tensional forces related to differential land subsidence that accompanies extensive drops in groundwater tables. The earliest appearance of fissures in Arizona was near Eloy in 1927. Individual fissures range in length from

hundreds of feet to miles, and in width from inches to tens of feet. Currently, geoscientists believe that fissures initially form at the groundwater table and then propagate upwards hundreds of feet to the surface. Because fissures are commonly oriented perpendicular to local drainages, they are capable of capturing surface runoff. Inrushing waters may cause dramatic changes in fissure geometry, both length and width, leading to erosion of sidewalls and gully development.

Earth fissures are a geologic hazard in the arid valleys of central and south-central Arizona. As population centers expand into subsiding areas of basins/valleys, residents and structures are placed in closer proximity to fissures. Property owners are encouraged to 1) set structures as far away from fissures as possible, and 2) prevent water from entering them.

Reports of earth fissures are confined to Cochise, Maricopa, Pima, and Pinal counties in central and south-central Arizona. In 2007, AZGS released 1:250,000-scale planning maps of the four counties showing the approximate locations of earlier reported earth fissures. These earth fissure planning maps are available free, online at the Earth Fissure Center at www.azgs.az.gov/efc.

AZGS is charged by state statute with mapping earth fissures in Arizona.

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