Debris-Flow Deposits at the Mouths of Molino, La Milagrosa and Agua Caliente Canyons, Pima County, AZ

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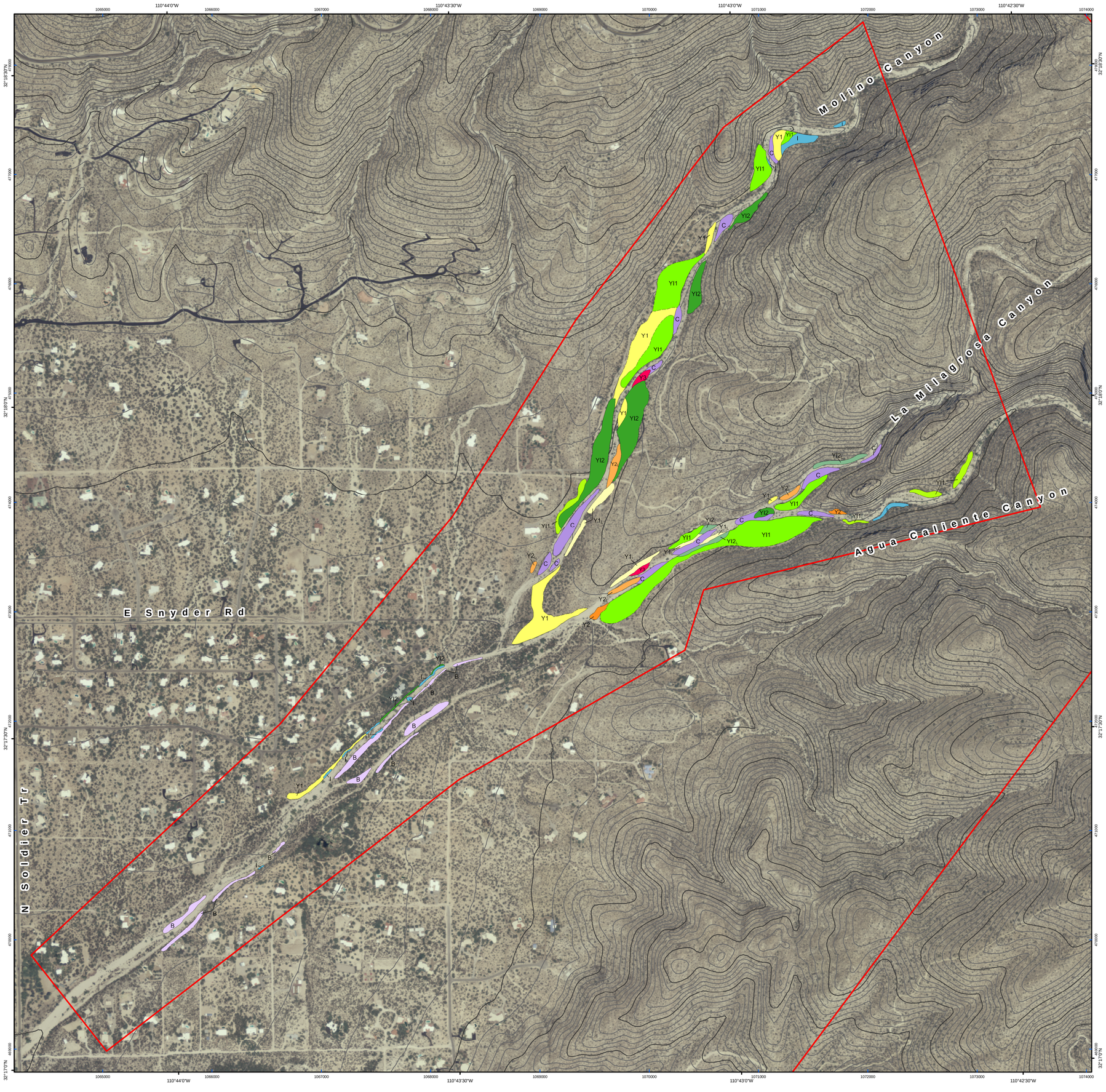
Arizona Geological Survey Digital Map Series
Debris Flow Map 1A (DM-DF-1A)



Generalized Map Unit Descriptions

In deposits that are identifiable as either levees or snouts, the type of deposit is denoted by subscripted letter:
L = Debris-flow levees
S = Debris-flow snouts

Y3 — **Very young debris-flow deposits (latest Holocene to modern)** - Debris-flow deposits found in and adjacent to active channels near the mountain front and on upper portions of active alluvial fans. Clasts are fresh and unweathered. Y3 deposits commonly are in or immediately adjacent to stream channels and are subject to re-working by fluvial processes, so the extent and characteristics of deposits may change with flow events.

Y2 ($Y2_L$, $Y2_S$) — **Young debris-flow deposits (middle to late Holocene)** - Debris-flow deposits found along banks and terraces of active washes typically 1-2 meters above channel floors. Fine grained matrix sediments are generally absent from Y2 deposits leaving only clasts that appear fresh and unweathered. Vegetation typically is sparse on boulder levees and snouts.

Y1 ($Y1_L$, $Y1_S$) — **Intermediate debris-flow deposits (early to middle Holocene)**- Debris-flow deposits found 2-3 m above active washes near the mountain front and 1-2 m above active washes farther away from the mountain fronts. Y1 deposits typically are fairly extensive on the upper portions of alluvial fans, but are confined to the vallye bottoms along incised drainages farther out from the mountain front. Clasts are generally slightly weathered, with light surface oxidation and little rock fracturing. Clasts in Y1 deposits may be slightly buried from initial deposition and subsequentabandonment, soil accumulation, or overbank deposition. Soil color varies from gray (10YR) to brown (7.5YR).

YI (YI_L, YI_S) — **Older debris-flow deposits (latest Pleistocene to early Holocene)** - Debris-flow deposits that are spatially removed from active fluvial systems, either high-standing or laterally separate from younger deposits. Clasts are slightly to moderately weathered, lightly to moderately stained by oxidation, and commonly exhibit in-place fracturing. Surfaces between boulders are slightly reddened (7.5YR), and in some areas clasts are partially to almost completely buried by finer deposits. Clasts from disturbed deposits often have thin, discontinuous carbonate coatings. In some areas YI deposits can be further classified into two levels:

YI1 ($YI1_L$, $YI1_S$) — Highest standing debris-flow deposits.

YI2 ($YI2_L$, $YI2_S$) — Debris-flow deposits of similar age inset 1-2 m below YI1 deposits.

I — **Pleistocene debris-flow deposits, undifferentiated** - Debris-flow deposits that are either the highest, most weathered deposits in the landscape and have clearly reddened soil (5YR), or are indurated deposits that have been buried by younger debris flows and exposed through subsequent erosion.

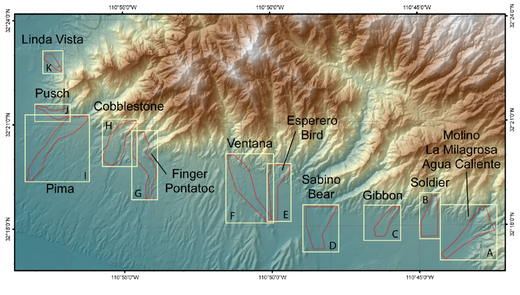
B — **Boulder-bar deposits** - Elongate cobble and boulder dominated deposits. B deposits resemble debris-flow levees but are often partially buried or possibly reworked by fluvial processes. B deposits are often inundated by fine sediments either from initial deposition and subsequent abandonment, soil accumulation, or overbank deposition. B deposits were used to define downstream extent of paleo-debris-flow deposits in several canyons.

Description of Debris-Flow Deposit Boundaries

- Contact, accurately located
- Contact, approximately located
- Contact, concealed beneath development

Location Map

Showing Mapped Areas



2007 National Agricultural Imagery Program aerial photo basemap
Topographic contours generated automatically from 10m NED DEM.
North American Datum of 1983 HARN
1000-meter ticks and map projection: Stateplane projection FIPS Zone 0202 (AZ central), international feet.

0.5 0.25 0 0.5 Miles

0.5 0.25 0 0.5 Kilometers

1,000 500 0 1,000 2,000 Feet

Contour interval 20 feet

1:6,000 Scale

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