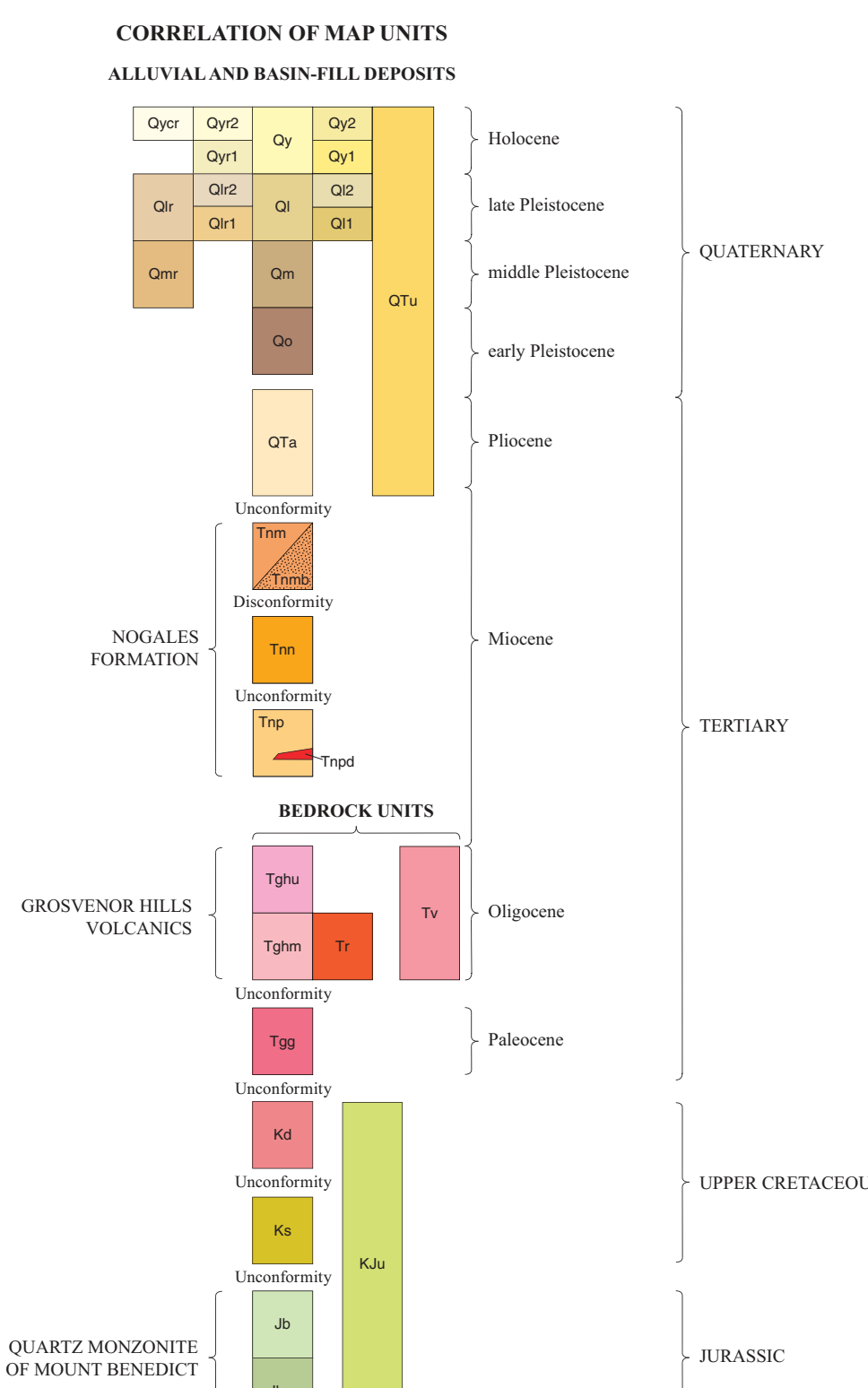
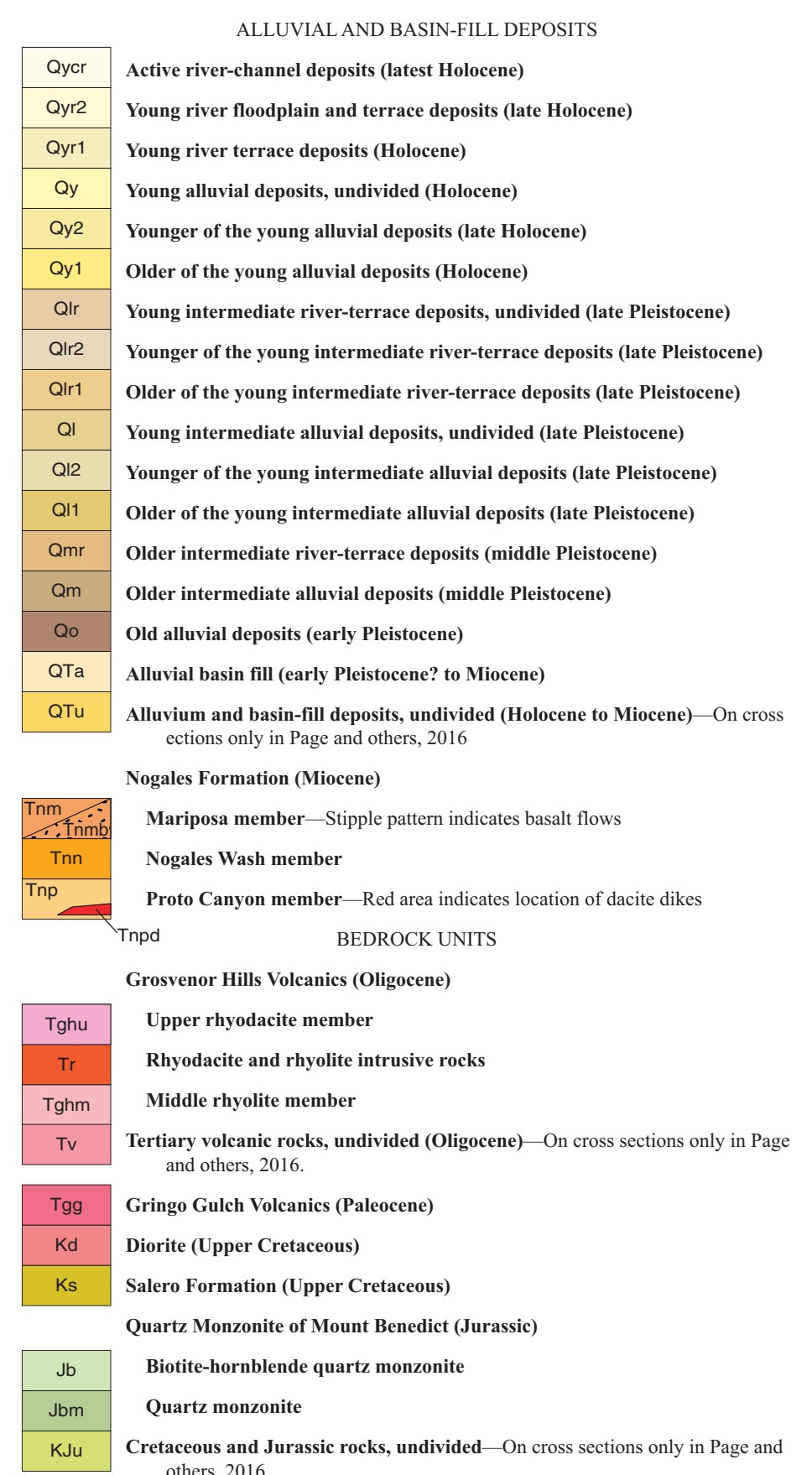




[Unit colors on are lighter on the map other Page and others, 2016) than in the Correlation of Map Units or this List of Map Units because they have been faded back so that the superimposed data is more visible]



NUMBERED LOCATIONS

- [There are a number of interesting relationships that appear on this plate, and a few are described below and tied to numbered locations on the plate. These are simply a few random locations that appeared interesting to the authors. There are many other locations that could be analyzed in a similar fashion. Map coordinates are in Universal Transverse Mercator (UTM), zone 12N.]
- Location 1, map coordinates 503600E, 3479300N:**
Here, an Earth's total intensity magnetic field anomaly horizontal gradient magnitude boundary (red dots) appears to connect the Grand Avenue and San Cayetano faults (see Fig. 2) across the basin based on the 1990 Patagonia aeromagnetic data. Surface data indicate that the displacement of the faults is in opposite directions, that is, down to the west on the Grand Avenue fault and down to the east on the San Cayetano fault. Also, the Grand Avenue fault has much more offset in this region than the San Cayetano fault, approximately 0.5 km compared to 0.1 km. This geophysical boundary may reflect a splay of the Grand Avenue fault or simply indicate the northern extent of map unit Qy (table 1). Also, moving south from location 1, the aeromagnetic horizontal gradient maximum hugs the range front right along the Grand Avenue fault then moves west of where the concealed fault is thought to exist near the surface. The subsurface expression of this range front fault may move basinward here, or a piece of map unit Qy may exist to the west of the fault here.
 - Location 2, map coordinates 503000E, 3470100N:**
Location 2a, map coordinates 506000E, 3473800N:
Further south along the Grand Avenue fault from location 1, the Earth's magnetic field horizontal gradient magnitude boundary may show a westward splay of the fault that merges with a nearly north-south complete Bouguer anomaly horizontal gradient magnitude boundary (blue dots). The gravity data may depict a deeper part of this range front fault (the Grand Avenue fault) lying west of the main fault. The range front fault is clearly seen as both gravity and magnetic potential field boundaries in the basin fill further south where both of these features turn east near location 2a.
 - Location 3, map coordinates 502000E, 3472900N:**
Here, an Earth's magnetic field horizontal gradient magnitude boundary aeromagnetic horizontal gradient ridge is aligned with an inferred fault along an unnamed canyon that runs along N. Al Harrison Road in the city of Nogales, Ariz. In addition, several other similar alignments can be seen in this area.
 - Location 4, map coordinates 502100E, 3473000N:**
At this location, an Earth's magnetic field horizontal gradient magnitude boundary runs parallel to a mapped inferred fault about 0.3 km west of location 4.
 - Location 5, map coordinates 510000E, 3477000N:**
An Earth's magnetic field horizontal gradient magnitude boundary runs just to the south of this location and trends along a north-east trending concealed fault. Potential splays of this fault may exist along Earth's magnetic field horizontal gradient magnitude boundaries just to the north and south of this location.
 - Location 6, map coordinates 508500E, 3476300N:**
Location 6a, map coordinates 506000E, 3478300N:
The Mt. Benedict fault (see Fig. 2) can be seen as a complete Bouguer anomaly horizontal gradient magnitude boundary in this location. About 1 km to the north of this location the geophysical boundary moves to the northeast of the mapped fault and may show that the predominant range front fault is associated with this feature (or the Earth's total intensity magnetic field anomaly horizontal gradient magnitude boundary just to the west, see location 7 below) especially considering that bedrock (map unit Kd) appears east of the mapped surface location of the Mt. Benedict fault which follows the Santa Cruz River. Also, a complete Bouguer anomaly horizontal gradient magnitude boundary demarks the southern boundary of the Mt. Benedict Jurassic igneous rocks (map units Qy and Jm) at location 6a.
 - Location 7, map coordinates 505900E, 3478300N:**
Here, an Earth's magnetic field horizontal gradient magnitude boundary is strongly correlated with the mapped fault (the Mt. Benedict fault) that forms the east side of the graben in which the Santa Cruz River runs.
 - Location 8, map coordinates 510200E, 3483200N:**
Two northeast trending Earth's magnetic field horizontal gradient magnitude boundaries may be edges of buried volcanic rocks or structural features. The feature to the south of location 8 seems to control the path of Sonora Creek in this area.
 - Location 9, map coordinates 503400E, 3483800N:**
North and east-trending Earth's magnetic field horizontal gradient magnitude boundaries lie parallel and close to the San Cayetano fault and may show other faults in this structurally complex region.

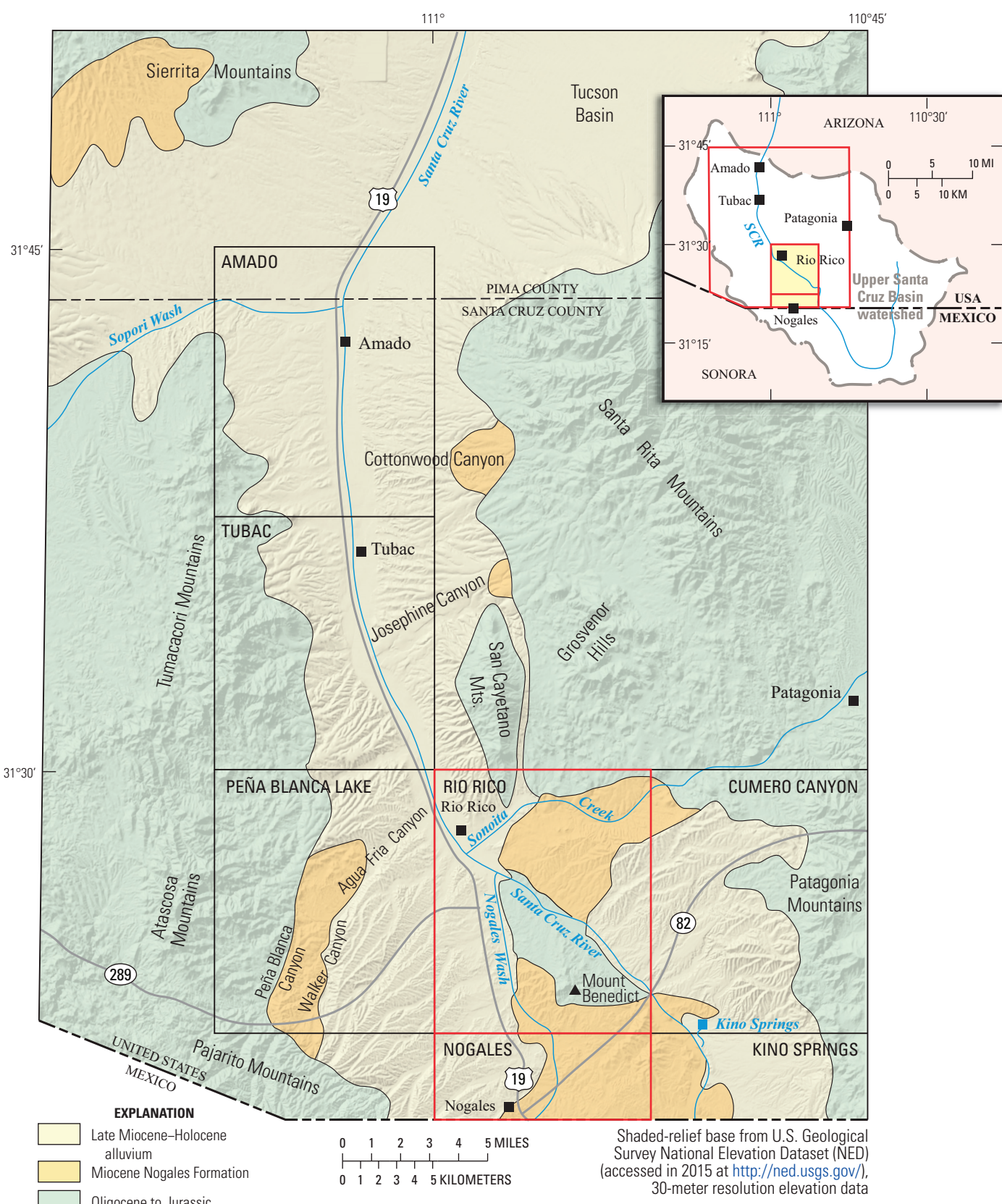
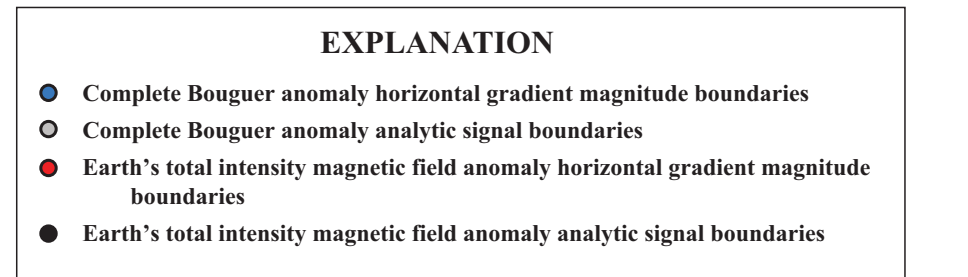


Figure 1. Map showing location of upper Santa Cruz basin study area (Rio Rico and Nogales, Arizona). 1:24,000-scale quadrangles outlined in red. Map shows the generalized geology as well as major physiographic and hydrologic features in the region. Black squares are town locations. Inset map in upper right shows location of upper Santa Cruz River basin with boundary in red, Santa Cruz River (SCR) in blue, and the location of Rio Rico and Nogales quadrangles outlined in red and shaded in yellow (after Page and others, 2016).

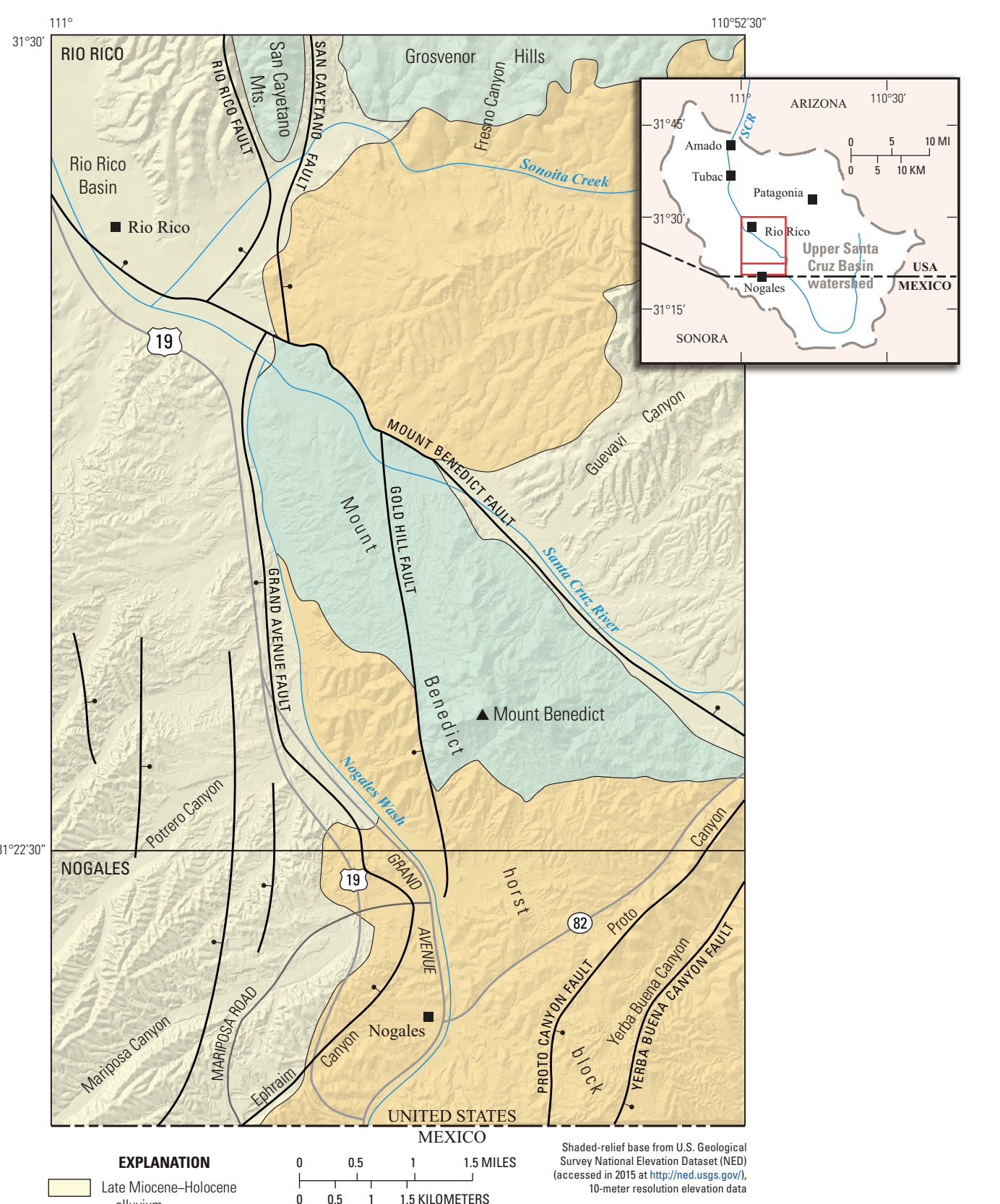


Figure 2. Map of upper Santa Cruz Basin study area (Rio Rico and Nogales, Arizona). 1:24,000-scale quadrangles showing major geologic, physiographic, and hydrologic features. Black squares are town locations and black ball and bar symbols indicate the downthrown side of normal faults (after Page and others, 2016).

Map Showing Potential Field Boundaries Plotted Over Upper Santa Cruz Basin Study Area Geology

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