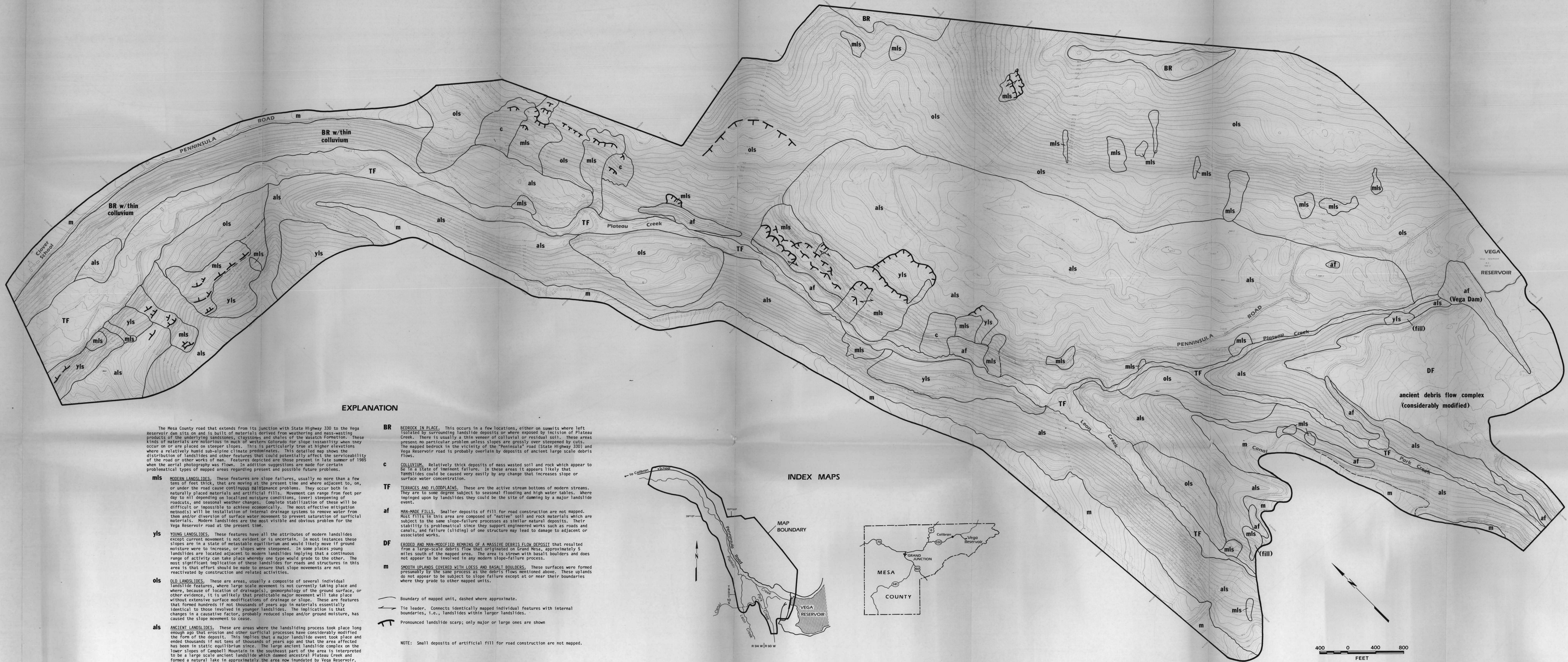


Vega Reservoir Access Road and Vicinity - Assessment of Landslide Hazards and Related Problems

by James M. Soule



EXPLANATION

The Mesa County road that extends from its junction with State Highway 330 to the Vega Reservoir dam sits on and is built of materials derived from weathering and mass-wasting products of the underlying sandstones, claystones, and shales of the Wasatch Formation. These kinds of materials are notorious in much of western Colorado for slope instability when they occur on or are placed on steeper slopes. This is particularly true at higher elevations where a relatively humid sub-alpine climate predominates. This detailed map shows the distribution of landslides and other features that could potentially affect the serviceability of the road or other works of man. Features depicted are those present in late summer of 1985 when the aerial photography was flown. In addition suggestions are made for certain problematical types of mapped areas regarding present and possible future problems.

- BR** BEDROCK IN PLACE. This occurs in a few locations, either on summits where left isolated by surrounding landslide deposits or where exposed by incision of Plateau Creek. There is usually a thin veneer of colluvium or residual soil. These areas present no particular problem unless slopes are grossly over steepened by cuts. The mapped bedrock in the vicinity of the "Peninsula" road (State Highway 330) and Vega Reservoir road is probably overlain by deposits of ancient large scale debris flows.
- c** COLLUVIUM. Relatively thick deposits of mass wasted soil and rock which appear to be in a state of imminent failure. In these areas it appears likely that landslides could be caused very easily by any change that increases slope or surface water concentration.
- TF** TERRACES AND FLOODPLAINS. These are the active stream bottoms of modern streams. They are to some degree subject to seasonal flooding and high water tables. Where impinged upon by landslides they could be the site of damming by a major landslide event.
- af** MAN-MADE FILLS. Smaller deposits of fill for road construction are not mapped. Most fills in this area are composed of "native" soil and rock materials which are subject to the same slope-failure processes as similar natural deposits. Their stability is problematical since they support engineered works such as roads and canals, and failure (sliding) of one structure may lead to damage to adjacent or associated works.
- DF** FROZEN AND MAN-MODIFIED REMAINS OF A MASSIVE DEBRIS FLOW DEPOSIT that resulted from a large-scale debris flow that originated on Grand Mesa, approximately 5 miles south of the mapped area. The area is strewn with basalt boulders and does not appear to be involved in any modern slope-failure process.
- m** SMOOTH UPLANDS COVERED WITH LOESS AND BASALT BOULDERS. These surfaces were formed presumably by the same process as the debris flows mentioned above. These uplands do not appear to be subject to slope failure except at or near their boundaries where they grade to other mapped units.
- als** ANCIENT LANDSLIDES. These are areas where the landsliding process took place long enough ago that erosion and other surficial processes have considerably modified the form of the deposit. This implies that a major landslide event took place and ended thousands if not tens of thousands of years ago and that the area affected has been in static equilibrium since. The large ancient landslide complex on the lower slopes of Campbell Mountain in the southeast part of the area is interpreted to be a large scale ancient landslide which dammed ancestral Plateau Creek and formed a natural lake in approximately the area now inundated by Vega Reservoir.
- mls** MODERN LANDSLIDES. These features are slope failures, usually no more than a few tens of feet thick, that are moving at the present time and where adjacent to, on, or under the road cause continuing maintenance problems. They occur both in naturally placed materials and artificial fills. Movement can range from feet per day to nil depending on localized moisture conditions, (over) steepening of roadcuts, and seasonal weather changes. Complete stabilization of these will be difficult or impossible to achieve economically. The most effective mitigation method(s) will be installation of internal drainage systems to remove water from them and/or diversion of surface water movement to prevent saturation of surficial materials. Modern landslides are the most visible and obvious problem for the Vega Reservoir road at the present time.
- yls** YOUNG LANDSLIDES. These features have all the attributes of modern landslides except current movement is not evident or is uncertain. In most instances these slopes are in a state of metastable equilibrium and would likely move if ground moisture were to increase, or slopes were steepened. In some places young landslides are located adjacent to modern landslides implying that a continuous range of activity can take place whereby one type would grade to the other. The most significant implication of these landslides for roads and structures in this area is that effort should be made to ensure that slope movements are not reactivated by construction and related activities.
- ols** OLD LANDSLIDES. These are areas, usually a composite of several individual landslide features, where large scale movement is not currently taking place and where, because of location of drainages, geomorphology of the ground surface, or other evidence, it is unlikely that predictable major movement will take place without extensive surface modifications of drainage or slope. These are features that formed hundreds if not thousands of years ago in materials essentially identical to those involved in younger landslides. The implication is that changes in a causative factor, probably reduced slope and/or ground moisture, has caused the slope movement to cease.

- Boundary of mapped unit, dashed where approximate.
- Tie leader. Connects identically mapped individual features with internal boundaries, i.e., landslides within larger landslides.
- Pronounced landslide scarp; only major or large ones are shown

NOTE: Small deposits of artificial fill for road construction are not mapped.

INDEX MAPS

