Section A
MASS WASTING

INTRODUCTION

This module summarizes the methods and results of a mass wasting assessment conducted on the Mendocino Redwood Company, LLC (MRC) ownership in the Navarro River watershed, the Navarro Watershed Analysis Unit (Navarro WAU). The Navarro WAU is separated into two separate administrative units Navarro West and Navarro East (Table A-1). This assessment is part of a watershed analysis initiated by MRC and utilizes modified methodology adapted from procedures outlined in the Standard Methodology for Conducting Watershed Analysis (Version 4.0, Washington Forest Practices Board).

Table A-1: Planning Watersheds of Mendocino Redwood Company's Navarro West and Navarro East Administrative Units.

Navarro West	**Navarro East**
Floodgate Creek	Dutch Henry Creek
Flynn Creek	John Smith Creek
Hendy Woods	Little North Fork Navarro River
Lower Navarro River	Lower South Branch Navarro River
Middle Navarro River	North Fork Indian Creek
Mill Creek	Middle South Branch Navarro River
North Fork Navarro River	Upper South Branch Navarro River
Rancheria Creek	
Ray Gulch	
Upper Navarro River	

The principle objectives of this assessment are to:
1) Identify the types of mass wasting processes active in the basin.
2) Identify the link between mass wasting and forest management related activities.
3) Identify where the mass wasting processes are concentrated.
4) Partition the ownership into zones of relative mass wasting potential (Mass Wasting Map Units) based on the likelihood of future mass wasting and sediment delivery to stream channels.

Additionally, the role of mass wasting sediment input to watercourses is examined. This information combined with the results of the Surface and Point Source Erosion module is used to construct a sediment input summary for the Navarro WAU, contained in the Sediment Input Summary section of this watershed analysis.

The products of this report are: a landslide inventory map (Map A-1), a mass wasting map unit (MWMU) map (Map A-2), and a mass wasting inventory database (Appendix A). The data for these products are the interpretation of five sets of aerial photographs, field observations during the summer of 1999, and interpretation of SHALSTAB (Dietrich and Montgomery, 1998) predictions. The 1978 aerial photograph set was used only for the Navarro East area and the 1981 aerial photograph set was used only for the Navarro West area due to lack of coverage in both aerial photographic sets for the entire Navarro WAU. The analysis was done without the use of older aerial photographs (pre-1970s). Therefore the analysis presented is, in general, representative for recent mass wasting conditions (last 32 years).

The assembled information will enable forestland managers to make better forest management decisions to reduce management-induced risk of mass wasting. The mass wasting inventory will provide the information necessary to understand the spatial distribution, causal mechanisms, relative size, and timing of mass wasting processes active in the basin with reasonable confidence.

LANDSLIDE TYPES AND PROCESSES IN THE NAVARRO WAU

The terminology used to describe landslides in this report closely follows the definitions of Cruden and Varnes (1996). This terminology is based on two nouns, the first describing the material that the landslide is composed of and the second describing the type of movement. Landslides identified in the Navarro WAU were described using the following names: debris slides, debris torrents, debris flows, rockslides, and earth flows. These names are described in Cruden and Varnes (1996) with the exception of our use of debris torrent.

Shallow-Seated Landslides

Debris slides, debris flows, and debris torrents are terms used through out Mendocino Redwood Company’s ownership to identify shallow-seated landslide processes. The material composition of debris slides, flows, or torrents is considered to be soil with a significant proportion of coarse material; 20 to 80 percent of the particles larger than 2 mm as stated in Cruden and Varnes (1996). Shallow-seated slides generally move quickly downslope and commonly break apart during failure. Shallow-seated slides commonly occur in converging topography where colluvial materials accumulate and subsurface drainage concentrates. Susceptibility of a slope to fail by shallow-seated landslides is affected by slope steepness, saturation of soil, soil strength (friction angle and cohesion), and root strength. Due to the shallow depth and fact that debris slides, flows, or torrents involve the soil mantle, these are landslide types that can be significantly influenced by forest practices.

Debris slides are, by far, the most common landslide type observed in the WAU. The landslide mass typically fails along a surface of rupture or along relatively thin zones of intense shear strain located near the base of the soil profile. The landslide deposit commonly slides a distance beyond the toe of the surface of rupture and onto the ground surface below the failure; it generally does not slide more than the distance equal to the length of the failure scar. Landslides with deposits that traveled a longer distance below the failure scar would be defined as a debris flow or debris torrent. Debris slides commonly occur on steep planar slopes, convergent slopes, along forest roads, and on steep slopes adjacent to watercourses. They usually fail by translational movement along an undulating or planar surface of failure. By definition debris slides do not continue downstream upon reaching a watercourse.

A debris flow is similar to a debris slide with the exception that the landslide mass continues to “flow” down the slope below the failure a considerable distance on top of the ground surface. A debris flow is characterized as a mobile, potentially rapid, slurry of soil, rock, vegetation, and water. High water content is needed for this process to occur. Debris flows generally occur on both steep, planar hillslopes and confined, convergent hillslopes. Often a failure will initiate as a debris slide, but will change as its moves downslope to a debris flow. During this analysis no debris flows where observed.

Debris torrents have the greatest potential to destroy stream habitat and deliver large amounts of sediment. The main characteristic distinguishing a debris torrent is that the mass of failed soil and debris “torrents” downstream in a confined channel and erodes the channel. As the debris torrent moves downslope and scours the channel, the liquefied landslide material increases in mass. Highly saturated soil or run-off in a channel is required for this process to occur. Debris torrents move rapidly and can potentially run down a channel for great distances. They typically initiate in headwall swales and torrent down intermittent watercourses. Often a failure will initiate as a debris slide, but will develop into a debris torrent upon reaching a channel. While actually a combination of two processes, these features were considered debris torrents.

Sediment Input from Shallow-Seated Landslides

The overall time period used for mass wasting interpretation and sediment budget analysis is thirty-two years. Sediment input to stream channels by mass wasting is quantified for three time periods (1969-1980, 1981-1987, 1988-2000). The evaluation assumes that the last 10 years of mass wasting is observed in the aerial photograph. This is because landslide surfaces can re-vegetate quickly, making shallow-seated landslides older than about 10 years difficult to see. We acknowledge that we have likely missed some small mass wasting events during the aerial photograph interpretation. However, we assume we have captured the majority of the larger mass wasting events in this analysis. It is the large mass wasting events that provide the greatest sedimentation impacts. In the case of the landslides observed in the Navarro WAU, landslides greater than 300 cubic yards in size represented over 74% of the sediment delivery estimated. Landslides greater than 200 and 100 cubic yards in size represented approximately 87% and 97%, of the sediment delivery estimated, respectively.

Sediment delivery estimates from mapped shallow-seated landslides were used to produce the total mass wasting sediment input. Some of the sediment delivery from shallow-seated landslides is the result of conditions created by deep-seated landslides. For example, a deep-seated failure could result in a debris slide or torrent, which could deliver sediment. Furthermore, over-steepened scarps or toes of deep-seated landslides may have shallow failures associated with them. These types of sediment delivery from shallow-seated landslides associated with deep-seated landslides are accounted for in the delivery estimates.

Deep-Seated Landslides

The two deep-seated landslide processes identified in the Navarro WAU are rockslides and earth flows. The failure dates of the deep-seated landslides generally could not be estimated with confidence and the landslides are likely to be of varying age with some landslides potentially being over 10,000 years old. Many of the deep-seated landslides are considered “dormant”, but the importance of identifying them lies in the fact that if reactivated, they have the potential to deliver large amounts of sediment and impair stream habitat. Accelerated or episodic movement in some landslides is likely to have occurred over time in response to seismic shaking or high rainfall events. Deep-seated landslides can be very large, exceeding tens to hundreds of acres.

Rockslides are deep-seated landslides with movement involving a relatively intact mass of rock and overlying earth materials. The failure plane is below the colluvial layer and involves the underlying bedrock. Mode of rock sliding generally is not strictly rotational or translational, but involves some component of each. Rotational slides typically fail along a concave surface, while translational slides typically fail on a planar or undulating surface of rupture. Rockslides commonly create a flat or back-tilted bench below the crown of the scarp. A prominent bench is usually preserved over time and can be indicative of a rockslide. Rockslides can fail in response to triggering mechanisms such as seismic shaking, adverse local structural geology, high rainfall, offloading or loading material on the slide, or channel incision. The stream itself can be the cause of chronic movement, if it periodically undercuts the toe of a rockslide.

Earth flows are deep-seated landslides composed of fine-grained materials and soils derived from clay-bearing rocks. Earth flow materials consist of 80% or more of the particles smaller than 2mm as stated in Cruden and Varnes (1996). Materials in an earth flow also commonly contain boulders, some very large, which move downslope in the clay matrix. Failure in earth flows is characterized by spatially differential rates of movement on discontinuous failure surfaces that are not preserved. The “flow” type of movement creates a landslide that can be very irregularly shaped. Some earth flow surfaces are dominantly grassland, while some are partially or completely forested. The areas of grassy vegetation are likely due to the inability of the unstable, clay-rich soils to support forest vegetation. The surface of an earth flow is characteristically hummocky with locally variable slope forms and relatively abundant gullies. The inherently weak materials within earth flows are not able to support steep slopes, therefore slope gradients are low to moderate. The rates of movement vary over time and can be accelerated by persistent high groundwater conditions. Timber harvesting can have the effect of increasing the amount of subsurface water, which can accelerate movement in an earth flow (Swanston et al 1988).

Sediment Delivery from Deep-Seated Landslides

A large, active deep-seated slide can deliver large volumes of sediment. Delivery generally occurs over long time periods compared to shallow-seated landslides, with movement delivering earth materials into the channel, resulting in an increased sediment load downstream of the failure. Actual delivery can occur by over-steepening of the toe of the slide and subsequent failure into the creek, or by the slide pushing out into the creek. It is very important not to confuse normal stream bank erosion at the toe of a slide as an indicator of movement of that slide. Before making such a connection, the slide surface should be carefully explored for evidence of significant movement, such as wide ground cracks. Sediment delivery could also occur in a catastrophic manner. In such a situation, large portions of the landslide essentially fail and move into the watercourse “instantaneously”. These types of deep-seated failures are relatively rare on MRC property and usually occur in response to unusual storm events or seismic ground shaking.

Movement of deep-seated landslides has definitely resulted in some sediment delivery in the Navarro WAU. Quantification of the sediment delivery from deep-seated landslides was not determined in this watershed analysis. Factors such as rate of movement, or depth of the deep-seated landslide are difficult to determine without in-depth geotechnical observations that were not conducted in the analysis. Sediment delivery to watercourses from deep-seated landslides (landslides typically $\geq$10 feet thick) can occur by several processes. Such processes can include surface erosion and shallow-or deep-seated movement of a portion or all of the deep-seated landslide deposit.

The ground surface of a deep-seated landslide, like any other hillside surface, is subject to surface erosion processes such as rain drop impact, sheet wash (overland flow), and gully/rill erosion. Under these conditions the sediment delivery from surficial processes is assumed to be the same as adjacent hillside slopes not underlain by landslide deposits. The materials within the landslide are disturbed and can be arguably somewhat weaker. However, once a soil has developed, the fact that the slope is underlain by a deep-seated landslide should make little difference regarding sediment delivery generated by erosional processes that act at the ground surface. Although, fresh unprotected surfaces that develop in response to recent or active movement could become a source of sediment until the bare surface becomes covered with leaf litter, re-vegetated, or soils develop.

Clearly, movement of a portion or all of a deep-seated landslide can result in delivery of sediment to a watercourse. To determine this the slide surface should be carefully explored for evidence of movement. However, movement would need to be on slopes immediately adjacent to or in close proximity to a watercourse and of sufficient magnitude to push the toe of the slide into the watercourse. A deep-seated slide that toes out on a slope far from a creek or moves only a short distance downslope will generally deliver little to a watercourse. It is also important to realize that often only a portion of a deep-seated slide may become active, though the portion could be quite variable in size. Ground cracking at the head of a large, deep-seated landslide does not necessarily equate to immediate sediment delivery at the toe of the landslide. Movement of large deep-seated landslides can create void spaces within the slide mass. Though movement can be clearly indicated by the ground cracks, many times the toe may not respond or show indications of movement until some of the void space is “closed up”. This would be particularly true in the case of very large deep-seated landslides that exhibit ground cracks that are only a few inches to a couple of feet wide. Compared to the entire length of the slide, the amount of movement implied by the ground crack could be very small. This combined with the closing up or “bulking up” of the slide, would not generate much movement, if any, at the toe of the slide. Significant movement, represented by large wide ground cracks, would need to occur to result in significant movement and sediment delivery at the toe of the slide.

Use of SHALSTAB by Mendocino Redwood Company for the Navarro WAU

SHALSTAB, a coupled steady state runoff and infinite-slope stability model, is used by MRC as one tool to demonstrate the relative potential for shallow-landslide hazard across the MRC ownership. A detailed description of the model is available in Dietrich and Montgomery (1998). In the watershed analysis, mass wasting hazard is expanded beyond SHALSTAB. Areas of mass wasting and sediment delivery hazards are mapped using field and aerial photograph interpretation techniques. However, SHALSTAB output was used to assist in this interpretation of the landscape and mass wasting map units.

METHODS

Landslide Inventory

The mass wasting assessment relies on an inventory of mass wasting features collected through the use of aerial photographs and field observations. The 2000 (color), 1996 (color), 1987 (B&W), and 1978 (color) photograph sets used to interpret landslides are owned by MRC. The 1981 (B&W) photograph set was borrowed from the Mendocino County Assessors office. The 2000 photographs are at a scale of 1:13000, the 1996 and 1987 photographs at a scale of 1:12000, the 1981 photographs at a scale of 1:20000 and the 1978 photograph are at a scale of 1:15840. MRC collected data regarding characteristics and dimensions of the identified landslides. Since mass wasting events were essentially “temporally sampled” based on available aerial photographs, we acknowledge that some landslides may have been missed, particularly small ones that may be obscured by vegetation. A description of select parameters inventoried for each landslide observed in the field and during aerial photograph interpretation is presented in Figure A-1.

Figure A-1. Description of Select Parameters used to Describe Mass Wasting in the Mass Wasting Inventory.

- Slide I.D. Number: Each landslide is assigned a two letter code (see below) that denotes which planning watershed the slide is located, followed by two numbers, the first number indicates the USGS designated map section number the slide is mapped in, and the second number indicates the consecutive amount of slides within the map section. For example WI-4-1, is landslide number 1 in Section 4 of the Mill Creek planning watershed.

  Planning Watershed Code
  WI = Mill Creek
  WU = Upper Navarro River
  WG = Floodgate Creek
  WM = Middle Navarro River
  WN = North Fork Navarro River
  WF = Flynn Creek
  WR = Ray Gulch
  WL = Lower Navarro River
  WC = Rancheria Creek
  WH = Hendy Woods
  EN = Little North Fork Navarro
  EJ = John Smith Creek
  ED = Dutch Henry Creek
  EU = Upper South Branch Navarro
  EM = Middle South Branch Navarro
  EL = Lower South Branch Navarro
  EI = North Fork Indian Creek

- MWMU # – Mass Wasting Map Unit in which landslide is located.
- Landslide Process:
  DS = debris slide
  DT = debris torrent
  DF = debris flow
  RS = rockslide
  EF = earth flow
- Certainty: The certainty of identification is recorded.
  D - Definite, P - Probable; Q - Questionable.
- Approximate Failure Date: Minimum failure date is typically the photo year that the slide first appears on or the year observed in the field.
- Physical Characteristics: Includes average length, width, depth, and volume of individual slides.
- Sediment delivery and routing: Includes sediment delivered to streams (N - no sediment delivered; Y - sediment delivered), estimate of the percent of landslide mass delivered, the type of stream that sediment was delivered to (perennial or ephemeral/intermittent).
- Land Use Association: Road, landing, or skid trail association.
- Deep seated landslides morphologic descriptions: toe, body, lateral scarps, and main scarp (see below for descriptions).

Landslides identified in the field and from aerial photograph observations are plotted on a landslide inventory map (Map A-1). All shallow-seated landslides are identified as a point plotted on the map at the interpreted head scarp of the failure. Deep-seated landslides are represented as a polygon representing the interpreted perimeter of the landslide feature.

Physical and geomorphic characteristics of shallow-seated landslides are categorized in a database including identification number, planning watershed, type of landslide, approximate failure date, slope gradient, length, width, depth, volume, sediment delivery, sediment routing, and associated land use (Appendix A). Landslide dimensions and depths can be quite variable, therefore length, width, and depth values that are recorded are considered to be the average dimension of that feature. When converting landslide volumes to mass (tons), we assume a soil bulk density of 100 lbs/cubic foot.

The certainty of landslide identification is assessed for each landslide. Three designations are used: definite, probable, and questionable. Definite means the landslide definitely exists. Probable means the landslide probably is there, but there is some doubt in the analyst’s interpretation. Questionable means that the interpretation of the landslide identification may be inaccurate; the analyst has the least amount of confidence in the interpretation. Accuracy in identifying landslides on aerial photographs is dependent on the size of the slide, scale of the photographs, thickness of canopy, and logging history. Landslides mapped in areas recently logged or through a thin canopy are identified with the highest level of confidence. Characteristics of the particular aerial photographs used affects confidence in identifying landslides. For example, sun angle creates shadows which may obscure landslides, the print quality of some photo sets varies, and photographs taken at larger scale makes identifying small landslides difficult. The landslide inventory results are considered a minimum estimate of sediment production. This is because landslides that were too small to identify on aerial photographs may have been missed, landslide surfaces could have reactivated in subsequent years and not been quantified, and secondary erosion by rills and gullies on slide surfaces is difficult to assess. However, small landslides cumulatively may not deliver amounts of sediment that would significantly alter total sediment delivery.

Two techniques were employed in order to extrapolate a sediment volume delivery percentage to landslides not visited in the field. Landslides that were determined to be directly adjacent to a watercourse from topographic maps and aerial photograph interpretation were assigned 100% delivery. Landslides that were determined to deliver, but were not directly adjacent to a watercourse, were assigned the mean delivery percentage from landslides observed in the field.

Landslides were classified based on the likelihood that a road associated land use practice was associated with the landslide. In this analysis, the effects of silvicultural techniques were not observed. Because the Navarro WAU has been managed, recently and historically, for timber production, it was determined that the effect of silvicultural practices was too difficult to confidently assign to landslides. There have been too many different silvicultural activities over time for reasonable confidence in a landslide evaluation based on silviculture. The land use practices that were assigned to landslides were associations with roads, skid trails, or landings. It was assumed that a landslide adjacent to a road, landing, or skid trail was triggered either directly or indirectly by that land use practice. If a landslide appeared to be influenced by more than one land use practice, the more causative one was noted. If a cutslope failure did not cross the road prism, it was assumed that the failure would remain perched on the road, landing, or skid trail and would not deliver to a watercourse. Some surface erosion could result from a cutslope failure and is assumed to be addressed in the road surface erosion estimates (Surface and Fluvial Erosion module).

Mass wasting was separated into three time periods for analysis: 1969-1981, 1982-1987, and 1988-2000. The dates for each of the time periods are based on the date of aerial photographs used to interpret landslides (1978, 1981, 1987, 1996, and 2000) and field observations (1999). The available aerial photography did not correspond perfectly to ten year time periods for mass wasting assessment, however the time periods and the aerial photographs analyzed approximate decadal intervals. These time periods allow for a general evaluation of the relative magnitude of sediment delivery rate estimates across the Navarro WAU.

The characteristics of deep-seated landslides received less attention in the landslide inventory than shallow-seated landslides mainly due to the fact that complicated geotechnical analyses would have to be done to estimate attributes such as depth, failure date, activity, and sediment delivery. Few of the mapped deep-seated landslides were observed to have recent movement associated with them. Further assessment of deep-seated landslides will occur on a site-by-site basis in the Navarro WAU, likely during timber harvest plan preparation and review.

Systematic description of deep-seated landslide features

Deep-seated landslides were only interpreted by reconnaissance techniques (aerial photograph interpretation rather than field observations). Reconnaissance mapping criteria consist of observations of four morphologic features of deep seated landslides --toe, internal morphology, lateral flanks, main scarp--and vegetation (after McCalpin 1984 as presented by Keaton and DeGraff, 1996, p. 186, Table 9-1). The mapping and classification criteria for each feature are presented in detail below.

Aerial photo interpretation of deep seated landslide features in the Navarro WAU suggest that the first three morphologic features above are the most useful for inferring the presence of deep-seated landslides. The presence of tension cracks and/or sharply defined and topographically offset scarps are probably a more accurate indicator of recent or active landslide movement. These features, however, are rarely visible on aerial photos.

Sets of five descriptions have been developed to classify each deep-seated landslide morphologic feature or vegetation influence. The five descriptions are ranked in descending order from characteristics more typical of active landslides to characteristics more typical of dormant landslides, to characteristics more typical of relict landslides. One description should characterize the feature most accurately. Nevertheless, some overlap between classifications is neither unusual nor unexpected. We recognize that some deep-seated landslides may lack evidence with respect to one or more of the observable features, but show strong evidence of another feature. If there is no expression of a particular geomorphic feature (e.g. lateral flanks), the classification of that feature is considered “undetermined”. If a deep-seated landslide is associated with other deep-seated landslides, it may also be classified as a landslide complex.

In addition to the classification criteria specific to the deep-seated landslide features, more general classification of the strength of the interpretation of the deep-seated landslide is conducted. Some landslides are obscured by vegetation to varying degrees, with areas that are clearly visible and areas that are poorly visible. In addition, weathering and erosion processes may also obscure geomorphic features over time. The quality of different aerial photograph sets varies and can sometimes make interpretations difficult. Owing to these circumstances, each inferred deep-seated landslide feature is classified according to the strength of the evidence as either definite, probable or questionable as defined with respect to interpretation of shallow landslides.

At the project scale (THP development and planning), field observations of deep-seated landslide morphology and other indicators by qualified professionals are expected to be used to reduce uncertainty of interpretation inherent in reconnaissance mapping. Field criteria for mapping deep-seated landslides and assessment of activity are presented elsewhere.

***Deep seated landslide morphologic classification criteria*:**

I. Toe Activity

1. Steep streamside slopes with extensive unvegetated to sparsely vegetated debris slide scars. Debris slides occur on both sides of stream channel, but more prominently on side containing the deep-seated landslide. Stream channel in toe region may contain coarser sediment than adjacent channel. Stream channel may be pushed out by toe. Toe may be eroding, exhibiting sharp topography/geomorphology.
2. Steep streamside slopes with few unvegetated to sparsely vegetated debris slide scars. Debris slides generally are distinguishable only on streamside slope containing the deep-seated landslide. Stream channel may be pushed out by toe. Sharp edges becoming subdued.
3. Steep streamside slopes that are predominantly vegetated with little to no debris slide activity. Topography/geomorphology subdued.
4. Gently sloping stream banks that are vegetated and lack debris slide activity. Topography/geomorphology very subdued.
5. Undetermined

II. Internal Morphology

1. Multiple, well defined scarps and associated angular benches. Some benches may be rotated against scarps so that their surfaces slope back into the hill causing ponded water, which can be identified by different vegetation than adjacent areas. Hummocky topography with ground cracks. Jack-strawed trees may be present. No drainage to chaotic drainage/disrupted drainage.
2. Hummocky topography with identifiable scarps and benches, but those features have been smoothed. Undrained to drained but somewhat subdued depressions may exist. Poorly established drainage.
3. Slight benches can be identified, but are subtle and not prominent. Undrained depressions have since been drained. Moderately developed drainage to established drainage but not strongly incised. Subdued depressions but are being filled.
4. Smooth topography. Body of slide typically appears to have failed as one large coherent mass, rather than broken and fragmented. Developed drainage well established, incised. Essentially only large undrained depressions preserved and would be very subdued. Could have standing water. May appear as amphitheater slope where slide deposit is mostly or all removed.
5. Undetermined

III. Lateral Flanks

1. Sharp, well defined. Debris slides on lateral scarps fail onto body of slide. Gullies/drainage may begin to form at boundary between lateral scarps and sides of slide deposit. Bare spots are common or partially unvegetated.

2. Sharp to somewhat subdued, rounded, essentially continuous, might have small breaks; gullies/drainage may be developing down lateral edges of slide body. May have debris slide activity, but less prominent. Few bare spots.
3. Smooth, subdued, but can be discontinuous and vegetated. Drainage may begin to develop along boundary between lateral scarp and slide body. Tributaries to drainage extend onto body of slide.
4. Subtle, well subdued to indistinguishable, discontinuous. Vegetation is identical to adjacent areas. Watercourses could be well incised, may have developed along boundary between lateral scarp and slide body. Tributaries to drainage developed on slide body.
5. Undetermined

IV. Main Scarp

1. Sharp, continuous geomorphic expression, usually arcuate break in slope with bare spots to unvegetated; often has debris slide activity.
2. Distinct, essentially continuous break in slope that may be smooth to slightly subdued in parts and sharp in others, apparent lack of debris slide activity. Bare spots may exist, but are few.
3. Smooth, subdued, less distinct break in slope with generally similar vegetation relative to adjacent areas. Bare spots are essentially non-existent.
4. Very subtle to subdued, well vegetated, can be discontinuous and deeply incised, dissected; feature may be indistinct.
5. Undetermined

V. Vegetation

1. Less dense vegetation than adjacent areas. Recent slide scarps and deposits leave many bare areas. Bare areas also due to lack of vegetative ability to root in unstable soils. Open canopy, may have jack-strawed trees; can have large openings.
2. Bare areas exist with some regrowth. Regrowth or successional patterns related to scarps and deposits. May have some openings in canopy or young broad-leaf vegetation with similar age.
3. Subtle differences from surrounding areas. Slightly less dense and different type vegetation. Essentially closed canopy; may have moderately aged to old trees.
4. Same size, type, and density as surrounding areas.
5. Undetermined

Mass Wasting Map Units

Mass Wasting Map Units (MWMUs) are delineated by partitioning the landscape into zones characterized by similar geomorphic attributes, shallow-seated landslide potential, and sediment delivery to stream channels. A combination of aerial photograph interpretation, field investigation, SHALSTAB output, and observed mass wasting were utilized to delineate MWMUs. The MWMU designations for the Navarro WAU are only meant to be general characterizations of similar geomorphic and terrain characteristics related to shallow seated landslides. Deep-seated landslides are also shown on the MWMU map (Map A-2). The deep-seated landslides have been included to provide land managers with supplemental information to guide evaluation of harvest planning and subsequent needs for geologic review. The landscape and geomorphic setting in the Navarro WAU is certainly more complex than generalized

MWMUs delineated for this evaluation. The MWMUs are only meant to be a starting point for gauging the need for site-specific field assessments.

The delineation of each MWMU described is based on landforms present, the mass wasting processes, sensitivity to forest practices, mass wasting hazard, delivery potential, and forest management related trigger mechanisms for shallow seated landslides. The landform section of the MWMU description defines the terrain found within the MWMU. The mass wasting process section is a summary of landslide types found in the MWMU. Sensitivity to forest practice and mass wasting hazard is, in part, a subjective call by the analyst based on the relative landslide hazard and influence of forest practices. Delivery potential is based on proximity of MWMU to watercourses and the likelihood of mass wasting in the unit to reach a watercourse. The hazard potential is based on a combination of the mass wasting hazard and delivery potential (Figure A-2.). The trigger mechanisms are a list of forest management practices that may have the potential to create mass wasting in the MWMU.

Figure A-2. Ratings for Potential Hazard of Delivery of Debris and Sediment to Streams by Mass Wasting (letters designate hazard: L= low, M= moderate, H = high)(Version 4.0, Washington Forest Practices Board, 1995).

Mass Wasting Potential

Delivery Potential	Low	Moderate	High
Low	**L**	**L**	**M**
Moderate	**L**	**M**	**H**
High	**L**	**M**	**H**

RESULTS

Mass Wasting Inventory

A Landslide Inventory Data Sheet (Appendix A) was used to record attributes associated with each landslide. The spatial distribution and location of landslides is shown on Map A-1.

A total of 1220 shallow-seated landslides (debris slides, torrents, or flows) were identified and characterized in the Navarro WAU, 578 in Navarro West and 642 in Navarro East. A total of 270 deep-seated landslides (rockslides or earth flows) were mapped in the Navarro WAU, 187 in Navarro West and 83 in Navarro East. A considerable effort was made to field verify as many landslides as possible to insure greater confidence in the results. A total of 20% of the identified shallow-seated landslides were field verified. From this level of field observations, extrapolation of landslide depth and sediment delivery is assumed to be performed with a reasonable level of confidence.

To extrapolate depth to the shallow-seated landslides not visited in the field, an average was taken from the depths visited in the field. The mean depth of all shallow-landslides was 4 feet. Due to the relative lack of debris flows and torrents, no effort was made to differentiate landslide depths among different shallow landslide types. A mean depth of 4 feet was assumed for all landslides not field checked. The mean sediment delivery percentage assigned to shallow landslides determined to deliver sediment, but not visited in the field is 92%. Delivery statistics were not calculated for deep-seated landslides.

The temporal distribution of the 1220 shallow-seated landslides observed in the Navarro WAU is listed in Table A-2a for Navarro West and Table A-2b for Navarro East. The distribution by landslide type is shown in Table A-3a for Navarro West and Table A-3b for Navarro East.

Table A-2a. Shallow-Seated Landslide Summary for Navarro West by Time Periods.

Planning Watershed	1969 - 1981 Landslides	1982 - 1987 Landslides	1988 – 2000 Landslides
Rancheria Creek	1	7	10
Flynn Creek	3	6	18
Floodgate Creek	3	6	4
Hendy Woods	0	1	0
Mill Creek	0	0	8
Lower Navarro River	7	22	63
Middle Navarro River	42	54	108
North Fork Navarro River	23	24	37
Ray Gulch	2	4	47
Upper Navarro River	6	30	42
Total	***87***	***154***	***337***

Table A-2b. Shallow-Seated Landslide Summary for Navarro East by Time Periods

Planning Watershed	1969 - 1981 Landslides	1982 - 1987 Landslides	1988 – 2000 Landslides
Dutch Henry Creek	2	55	56
North Fork Indian Creek	5	10	30
John Smith Creek	0	6	2
Lower South Branch Navarro River	21	15	36
Little North Fork Navarro River	15	37	79
Middle South Branch Navarro River	35	49	84
Upper South Branch Navarro River	18	18	69
Total	***96***	***190***	***356***

Table A-3a. Landslide Summary by Type and Planning Watershed for MRC Ownership in Navarro West.

Planning Watershed	Debris Slides	Debris Torrents	Debris Flows	Rockslides	Earth Flows	Total	Road Assoc.
Rancheria Creek	17	0	1	6	0	24	9
Flynn Creek	25	1	1	12	0	39	8
Floodgate Creek	11	1	1	0	0	13	8
Hendy Woods	1	0	0	0	0	1	1
Mill Creek	7	0	1	0	0	8	5
Lower Navarro River	90	2	0	71	0	163	54
Middle Navarro River	192	7	5	33	0	237	94
North Fork Navarro River	81	1	2	17	0	101	50
Ray Gulch	53	0	0	10	0	63	19
Upper Navarro River	74	2	2	37	1	116	36

Table A-3b. Landslide Summary by Type and Planning Watershed for MRC Ownership in Navarro East.

Planning Watershed	Debris Slides	Debris Torrents	Debris Flows	Rockslides	Earth Flows	Total	Road Assoc.
Dutch Henry Creek	104	3	6	19	0	132	88
North Fork Indian Creek	37	0	8	10	0	55	27
John Smith Creek	8	0	0	1	1	10	6
Lower South Branch Navarro River	67	1	4	12	0	84	46
Little North Fork Navarro River	119	3	9	12	1	144	102
Middle South Branch Navarro River	147	9	12	8	0	176	124
Upper South Branch Navarro River	86	3	16	16	3	124	82

The majority of landslides observed in the Navarro WAU are debris slides and rockslides. Only a few of the rock slides are likely to be active in the Navarro WAU, the remaining are most likely dormant features. Of the 1220 shallow-seated landslides in the Navarro WAU, 759 are determined to be road-associated. This is approximately 62% of the total number of shallow-seated landslides.

There were 101 debris torrents and flows observed in the Navarro WAU. This is approximately 8% of the total shallow landslides observed in the Navarro WAU. Debris torrents or flows are common in the Navarro WAU.

A total of 91% of the shallow landslides inventoried were initiated on slopes of 60% gradient or greater. Twelve landslides occurred on slopes with gradients less than 60%. Of those 12, only 4 were not road associated. The majority of inventoried landslides originated in convergent topography where sub-surface water tends to concentrate or on steep, planar topography where sub-surface water can be concentrated at the base of slopes, in localized topographic depressions, or by subsoil geologic structures. Few landslides originated in divergent topography, where subsurface water is routed to the sides of ridges. Such observations were, in part, the basis for the delineation of the Navarro WAU into Mass Wasting Map Units.

Mass Wasting Map Units

The landscape was partitioned into six Mass Wasting Map Units (MWMU) representing general areas of similar geomorphology, landslide processes, and sediment delivery potential for shallow-seated landslides (Map A-2). The units are to be used by forest managers to assist in making decisions that will minimize future mass wasting sediment input to watercourses. The delineation for the MWMUs was based on qualitative observations and interpretations from aerial photographs, field evaluation, and SHALSTAB output. Deep-seated landslides are also shown on the MWMU map (Map A-2). The deep-seated landslides have been included to provide land managers with supplemental information to guide evaluation of harvest planning and subsequent needs for geologic review.

Shallow-seated landslide characteristics considered in determination of map units are size, frequency, delivery to watercourses, and spatial distribution. Hillslope characteristics considered are slope form (convergence, divergence, planar), slope gradient, magnitude of stream incision, and overall geomorphology. The range of slope gradients was determined from USGS 1:24000 topographic maps and field observations. Hillslope and landslide morphology vary within each individual Mass Wasting Map Unit and the boundaries are not exact. This evaluation is not intended to be a substitute for site-specific field assessments. Site-specific field assessments will still be required in MWMUs and at deep-seated landslides or specific areas of some MWMUs to assess the risk and likelihood of mass wasting impacts from a proposed management action. The Mass Wasting Map Units are compiled on the entitled Mass Wasting Map Unit Map (Map A-2).

MWMU Number: 1

Description: Inner Gorge or Steep Slopes adjacent to Low Gradient Watercourses

Materials: Shallow soils formed on weathered marine sedimentary rocks. May be composed of sediment from the toe of a deep-seated landslide deposit.

Landform: Characterized by steep slopes or steep inner gorge topography along low gradient watercourses (typically less than 6-7%). An inner gorge is considered a geomorphic feature created from down cutting of the stream in response to a change in base level (tectonic uplift or receding sea level). Inner gorge slopes extend from either one side or both sides of the stream channel to the first break in slope. Inner gorge slope gradients typically exceed 70%. Slopes with lower inclination are locally present. Heights of inner gorge slopes range from 25 to 300 feet in the Navarro WAU. Slopes commonly contain areas of multiple, coalescing shallow seated landslide scars of varying age. Steep slopes adjacent to low gradient streams are generally planar in form with slope gradients typically exceeding 70%. The difference from inner gorge topography is the lack of a distinct break in slope. The upper extent of the unit is variable. Where there is not a break in slope, the unit may exceed 150 feet upslope (based on the range of lengths of landslides observed being 16-500 feet, mean length of all landslides in the unit is 110 feet). Landslides in this unit generally deposit sediment directly into Class I and II streams. Small areas of incised terraces may be locally present.

Slope: 70 % to vertical, (mean slope of observed mass wasting events is 82%, range: 45 %-128%)

Total Area: 2416 acres; 4 % of the total WAU area.

MW Processes: *146 road-associated landslides*

- 137 Debris slides
- 5 Debris flow
- 4 Debris torrent

87 non-road associated landslides

- 82 Debris slides
- 1 Debris torrent
- 4 Debris flows

Non Road-related Landslide Density: 0.04 landslides per acre for the past 32 years.

Road-related Landslide Density: 3.5 landslides per mile of road for the past 32 years.

Forest Practices Sensitivity: High sensitivity to road construction due to proximity to watercourses, bedrock underlying inner gorge slopes may create increased stability, high sensitivity to harvesting and forest management practices due to steep slopes with localized colluvial or alluvial soil deposits next to watercourses.

Mass Wasting Potential: High localized potential for landslides in both unmanaged and managed conditions.

Delivery Potential: High

Delivery Criteria Used: Steep slopes adjacent to stream channels, all observed landslides delivered sediment into streams.

Hazard-Potential Rating: **High**

Forest Management Related Trigger Mechanisms:

- Sidecast fill material placed on steep slopes can initiate debris slides or flows in this unit.
- Concentrated drainage from roads onto unstable areas can initiate debris slides or flows in this unit.
- Poorly sized culvert or excessive debris at watercourse crossings can initiate failure of the fill material creating debris slides, torrents or flows in this unit.
- Cut-slope of roads can expose potential failure planes creating debris slides, torrents or flows in this unit.
- Sidecast fill material created from skid trail construction placed on steep slopes can initiate debris slides or flows in this unit.
- Concentrated drainage from skid trails onto unstable areas can initiate debris slides or flows in this unit.
- Cut-slope of skid trails can remove support of slope creating debris slides, torrents or flows in this unit.
- Root decay of hardwood or non-redwood conifer species can be a contributing factor in the initiation of debris slides, torrents or flows in this unit.
- Concentrated drainage from roads can increase groundwater, accelerating movement of rockslides or earth flows and over-steepening inner gorge slopes.
- Removal of vegetation above these slopes can result in loss of evapo-transpiration and thus increase pore water pressures that could create debris slides in this unit.

Confidence: High confidence for susceptibility of landslides and sediment delivery in this unit. Moderate confidence for placement of this unit. This unit is locally variable and exact boundaries are better determined from field observations.

MWMU Number: 2

Description: Steep slopes or inner gorge topography adjacent to high gradient intermittent or ephemeral watercourses.

Materials: Shallow soils formed from weathered marine sedimentary rocks with localized areas of thin to thick colluvial deposits.

Landforms: Characterized by steep slopes or inner gorge topography adjacent to high gradient intermittent or ephemeral watercourses. An inner gorge is considered a geomorphic feature created from down cutting of the stream in response to a change in base level (tectonic uplift or receding sea level). Inner gorge slopes extend from either one side or both sides of the stream channel to the first break in slope. Inner gorge slope gradients typically exceed 70%. Slopes with lower inclination are locally present. Steep slope form is largely concave or planar with gradients typically greater than 70%. The break in slope in this unit is typically about 100 feet from the watercourse (based on mean observed debris slide length of 109 feet; maximum observed landslide length is 500 feet). Landslides in this unit commonly are debris slides that deposit sediment directly into Class II and III watercourses. Occasionally the debris slides can form debris torrents that can transport material down the slope through and out of this unit. This unit typically extends upstream from MWMU 1.

Slope: >70% (mean slope of observed mass wasting events is 82%, range: 60%-98%).

Total Area: 3053 acres; 6% of total WAU area

MW Processes: *53 road-associated landslides*

- 51 Debris slides
- 1 Debris flow
- 1 Debris torrent

84 non-road associated landslides

- 82 Debris slides
- 1 Debris flow
- 1 Debris torrent

Non Road-related Landslide Density: 0.02 landslides per acre for the past 32 years.

Road-related Landslide Density: 1.8 landslides per mile of road for the past 32 years.

Forest Practices Sensitivity: High sensitivity to roads due to steep slopes adjacent to watercourses, high to moderate sensitivity to harvesting and forest management due to steep slopes next to watercourses. Localized areas of steeper and/or convergent slopes may have an even higher sensitivity to forest practices.

Mass Wasting Potential: High, due to the steep converging topography of the slope in both unmanaged and managed conditions.

Delivery Potential: High

Delivery Criteria Used: Steep slopes adjacent to stream channels, all observed landslides delivered sediment into streams.

Hazard-Potential Rating: **High**

Forest Management Related Trigger Mechanisms:

- Sidecast fill material placed on steep slopes can initiate debris slides, torrents or flows in this unit.
- Concentrated drainage from roads onto unstable areas can initiate debris slides, torrents or flows in this unit.
- Poorly sized culvert or excessive debris at watercourse crossings can initiate failure of the fill material creating debris slides, torrents or flows in this unit.
- Cut-slope of roads can over-steepen the slope creating debris slides, torrents or flows in this unit.
- Cut-slope of roads can remove support of the toe or expose potential failure planes of rockslides or earth flows.
- Sidecast fill material created from skid trail construction placed on steep slopes can initiate debris slides, torrents or flows.
- Concentrated drainage from skid trails onto unstable areas can initiate debris slides, torrents or flows.
- Cut-slope of skid trails can remove support of the toe or expose potential failure planes of rockslides or earth flows.
- Root decay of hardwood or non-redwood conifer species can be a contributing factor in the initiation of debris slides, torrents or flows in this unit.
- Loss of evapo-transpiration from forest harvest can increase groundwater levels initiating or accelerating movement in rockslides or earth flows or aid in the initiation of debris slides, torrents or flows.

Confidence: High confidence for susceptibility of unit to landslides and deliver sediment. Moderate confidence in the placement of this unit. This unit is highly localized and exact boundaries are better determined from field observations. Within this unit there are areas of low gradient slopes that are less susceptible to mass wasting.

MWMU Number: 3

Description: Dissected and convergent topography

Materials: Shallow soils formed from weathered marine sedimentary rocks with localized thin to thick colluvial deposits.

Landforms: These areas have steep slopes (typically greater than 60%) that have been sculpted over geologic time by repeated debris slide events. The area is characterized primarily by 1) steep convergent and dissected topography located within steep gradient collivial hollows or headwall swales and small high gradient watercourses, and 2) local very steep planar slopes, where there is strong evidence of past shallow landslide failures. MRC intends this unit to represent areas of potential high to moderate high risk for shallow landslides that does not constitute a continuous streamside unit (otherwise would classify as MWMU 1 or 2). The mapped unit may represent isolated individual “high risk” areas or areas where there is a concentration of “high risk” areas. Boundaries between higher hazard areas and other more stable areas (i.e. divergent and lower gradient slopes) within the unit should be keyed out as necessary based on field verification of diagnostic landslide form features.

Slope: >60%, (mean slope of observed mass wasting events is 79% range: 30%-125%)

Total Area: 9297 ac., 17% of the total WAU

MW Processes: *120 road associated landslides*

- 114 Debris slides
- 2 Debris flow
- 4 Debris Torrent

116 non-road associated landslides

- 107 Debris slides
- 6 Debris flow
- 3 debris torrent

Non Road-related Landslide Density: 0.01 landslides per acre for the past 32 years.

Road-related Landslide Density: 1.7 landslides per mile of road for the past 32 years.

Forest Practices Sensitivity: Moderate to high sensitivity to road building, moderate to high sensitivity to harvesting and forest management practices due to moderately steep slopes within this unit. Localized areas of steeper and/or convergent slopes have even higher sensitivity to forest practices.

Mass Wasting Potential: High

Delivery Potential: Moderate

Delivery Criteria Used: The converging topography directs mass wasting down slopes toward watercourses. Delivery potential may be high based on relatively high number of debris slides. Landslides in headwater swales often torrent or flow down watercourses. Approximately 74% of landslides in this unit delivered sediment.

Hazard-Potential Rating: **High**

Forest Management Related Trigger Mechanisms:

- Sidecast fill material placed on steep slopes can initiate debris slides, torrents or flows in this unit.
- Concentrated drainage from roads onto unstable areas can initiate debris slides, torrents or flows in this unit.
- Concentrated drainage from roads can increase groundwater, accelerating movement of rockslides or earth flows in this unit.
- Poorly sized culvert or excessive debris at watercourse crossings can initiate failure of the fill material creating debris slides, torrents or flows in this unit.
- Cut-slope of roads can over-steepen the slope creating debris slides, torrents or flows in this unit.
- Cut-slope of roads can remove support of the toe or expose potential failure planes of rockslides or earth flows.
- Sidecast fill material created from skid trail construction placed on steep slopes can initiate debris slides, torrents or flows.
- Concentrated drainage from skid trails onto unstable areas can initiate debris slides, torrents or flows.
- Cut-slope of skid trails can remove support of the toe or expose potential failure planes of rockslides or earth flows.
- Root decay of hardwood or non-redwood conifer species can be a contributing factor in the initiation of debris slides, torrents or flows in this unit.
- Loss of evapo-transpiration from forest harvest can increase groundwater levels initiating or accelerating movement in rockslides or earth flows or aid in the initiation of debris slides, torrents or flows.

Confidence: Moderate confidence in placement of unit. This unit is locally variable and exact boundaries are better determined from field observations. Some areas within this unit could have higher susceptibility to landslides and higher delivery rates due to localized areas of steep slopes with weak soils, and unusually adverse ground water conditions.

MWMU Number: 4

Description: Non-dissected topography

Materials: Shallow to moderately deep soils formed from weathered marine sedimentary rocks.

Landforms: Moderate to moderately steep hillslopes with planar, divergent, or broadly convergent slope forms with isolated areas of steep topography or strongly convergent slope forms. Unit is generally a midslope region of lesser slope gradient and more variable slope form than unit 3.

Slope: >40%, (mean slope of observed mass wasting events 83%, range: 36%-135%)

Total Area: 38372 acres, 69.9% of the total WAU

MW Processes: *432 road-associated landslides*

- 390 Debris slides
- 28 Debris flow
- 14 Debris torrent

159 non-road associated landslides

- 144 Debris slides
- 11 Debris flow
- 4 Debris Torrents

Non Road-related Landslide Density: 0.004 landslides per acre for the past 32 years.

Road-related Landslide Density: 1.0 landslides per mile of road for the past 32 years.

Forest Practices Sensitivity: Moderate sensitivity to road building, moderate to low sensitivity to harvesting and forest management practices due to moderate slope gradients and non-converging topography within this unit. Localized areas of steeper slopes have higher sensitivity to forest practices.

Mass Wasting Potential: Moderate

Delivery Potential: High

Delivery Criteria Used: This unit has the largest area, which accounts for it having the highest number of landslides. This unit has a low landslide density, and therefore has a moderate mass wasting hazard. Although the landslides in this unit are highly localized, when landslides occur, the landslide has a high potential to deliver. Approximately 84% of landslides in this unit delivered sediment. This unit has a moderate sensitivity to road building due to a relatively low road landslide density.

Hazard-Potential Rating: **Moderate**

Forest Management Related Trigger Mechanisms:

- Sidecast fill material placed on steep slopes can initiate debris slides, torrents or flows in this unit.
- Concentrated drainage from roads onto unstable areas can initiate debris slides, torrents or flows in this unit.
- Concentrated drainage from roads can increase groundwater, accelerating movement of rockslides or earth flows in this unit.
- Poorly sized culvert or excessive debris at watercourse crossings can initiate failure of the fill material creating debris slides, torrents or flows in this unit.
- Cut-slope of roads can over-steepen the slope creating debris slides, torrents or flows in this unit.
- Cut-slope of roads can remove support of the toe or expose potential failure planes of rockslides or earth flows.
- Sidecast fill material created from skid trail construction placed on steep slopes can initiate debris slides, torrents or flows.
- Concentrated drainage from skid trails onto unstable areas can initiate debris slides, torrents or flows.
- Cut-slope of skid trails can remove support of the toe or expose potential failure planes of rockslides or earth flows.
- Root decay of hardwood or non-redwood conifer species can be a contributing factor in the initiation of debris slides, torrents or flows in this unit.
- Loss of evapo-transpiration from forest harvest can increase groundwater levels initiating or accelerating movement in rockslides or earth flows or aid in the initiation of debris slides, torrents or flows.

Confidence: High confidence in placement of unit. Some areas within this unit could have higher susceptibility to landslides and higher delivery rates due to localized areas of steep slopes with weak soils, and adverse groundwater conditions.

MWMU Number: 5

Description: Low relief topography

Material: Moderately deep to deep soils, formed from weathered marine sedimentary rocks.

Landforms: Characterized by low gradient slopes generally less than 40%, although in some places slopes can be steeper. This unit occurs on ridge crests, low gradient side slopes, and well-developed terraces. Shallow-seated landslides seldom occur and usually do not deliver sediment to stream channels.

Slope: <55% (based on field observations)

Total Area: 1849 acres, 3% of WAU area

MW Processes: *8 road associated landslides (debris slide)*

Non Road-related Landslide Density: 0 landslides per acre for past 32 years.

Road-related Landslide Density: 0.26 landslides per mile of road for the past 32 years.

Forest Practices Sensitivity: Low sensitivity to road building and forest management practices due to low gradient slopes

Mass Wasting Potential: Low

Delivery Potential: Low

Delivery Criteria Used: Sediment delivery in this unit is low.

Hazard-Potential Rating: **Low**

Forest Management Related Trigger Mechanisms:

- Poorly sized culvert or excessive debris at watercourse crossings can initiate failure of the fill material creating debris slides, torrents or flows in this unit.
- Concentrated drainage from roads and skid trails can initiate or accelerate gully erosion, which can increase the potential for mass wasting processes.

Confidence: High confidence in placement of unit in areas of obviously stable topography. High confidence in mass wasting potential and sediment delivery potential ratings.

MWMU Number: 6

Description: Earth Flow Topography

Materials: Fine-grained soils and clays of highly weathered and sheared marine sedimentary and metamorphic rocks. Soils contain >80% particles less than 2mm in size with boulders, some very large, within the soil matrix.

Landforms: Boundaries of this unit correspond to the mapped, deep-seated earth flows from mass wasting inventory, regardless of state of activity. Characterized by hummocky slopes with localized areas of steep, and areas of flat topography. Slopes commonly contain areas of backtilted topography, creating ponded water. Ground surfaces in this unit commonly contain areas of grassy vegetation, which may be attributed to the inability of the clay-rich soil to support dense forests. Gullies are common in this unit. Rate of movement within earth flows typically is variable and likely fluctuates seasonally according to groundwater conditions. Most of unit 6 is earth flow complexes with many scarps and benches that create a step-like profile.

Slope: Unknown (no field observations)

Total Area: 5 acres; 0.01% of the total WAU.

MW Processes: no shallow landslides

Non Road-related Landslide Density: 0 landslides per acre for past 32 years.

Forest Practices Sensitivity: High sensitivity to roads, harvesting, and forest management practices on active earth flow surfaces. Potential forest practices in this unit should be assessed on at a site specific basis due to variable topography and differing rates of movement within an earth flow.

Mass Wasting Potential: High

Delivery Potential: High

Delivery Criteria Used: Many of the earth flows in the Navarro WAU have the toe or lateral edges along watercourses. If earth flow movement occurs the landslides will deliver sediment.

Hazard Potential Rating: **High**

Forest Management Related Trigger Mechanisms:

- Sidecast fill material placed on locally steep slopes can initiate debris slides, torrents or flows in this unit.
- Concentrated drainage from roads onto unstable areas can initiate debris slides, torrents or flows in this unit.
- Concentrated drainage from roads can increase groundwater, accelerating movement of earth flows of this unit.
- Poorly sized culvert or excessive debris at watercourse crossings can initiate failure of the fill material creating debris slides, torrents or flows in this unit.
- Cut-slope of roads can over-steepen the slope creating debris slides in this unit.
- Concentrated drainage from skid trails onto unstable areas can initiate debris slides, torrents or flows in this unit.
- Loss of evapo-transpiration from forest harvest can increase groundwater levels initiating or accelerating movement of earth flows of this unit or aid in initiation of debris slides, torrents or flows.
- Concentrated drainage from roads and skid trails can initiate or accelerate gully erosion, which can increase the potential for mass wasting processes.
- Cut-slope of skid trails can remove support of the toe or expose potential failure planes of earth flows.
- Sidecast fill material created from skid trail construction placed on locally steep slopes can initiate debris slides, torrents or flows.
- Root decay of hardwood or non-redwood conifer species can be a contributing factor in the initiation of debris slides, torrents or flows in this unit.

Confidence: Confidence in delineation of unit is consistent with confidence level in mass wasting inventory mapping of deep-seated earth flows. High confidence in hazard potential rating due to relatively low hazard for shallow-seated landslides

Sediment Input from Mass Wasting

Sediment delivery was estimated for shallow-seated landslides in the Navarro WAU. Landslides were determined to have either no sediment delivery or to deliver all or a percentage of their total volume. Of the shallow-seated landslides mapped by MRC in this watershed analysis, 86 percent of the landslides delivered some amount of sediment (Table A-4).

Table A-4a. Total Shallow-Seated Landslides Mapped for each Planning Watershed in Navarro West.

Planning Watershed	Total Landslides	Landslides with Sediment Delivery	Landslides with No Sediment Delivery
Rancheria Creek	18	18	0
Flynn Creek	27	22	5
Floodgate Creek	13	13	0
Hendy Woods	1	1	0
Mill Creek	8	7	1
Lower Navarro River	92	65	27
Middle Navarro River	204	167	37
North Fork Navarro River	84	75	9
Ray Gulch	53	39	14
Upper Navarro River	78	70	8
sum	***578***	***477***	***101***
Percentage	***100%***	***83%***	***17%***

Table A-4b. Total Shallow-Seated Landslides Mapped for each Planning Watershed in Navarro East.

Planning Watershed	Total Landslides	Landslides with Sediment Delivery	Landslides with No Sediment Delivery
Dutch Henry Creek	113	107	6
North Fork Indian Creek	45	42	3
John Smith Creek	8	7	1
Lower South Branch Navarro River	72	69	3
Little North Fork Navarro River	131	105	26
Middle South Branch Navarro River	168	145	23
Upper South Branch Navarro River	105	97	8
Sum	***642***	***572***	***70***
Percentage	***100%***	***89%***	***11%***

A total of 2,186,100 tons of mass wasting sediment delivery was estimated for the time period 1969-2000 in the Navarro WAU. This equates to 753 tons/sq. mi./yr. Of the total estimated amount, 258,500 tons (12% of total) occurred from 1969-1981, 441,700 tons (20% of total) occurred from 1982-1987,and 1,485,900 tons (68% of total) occurred in the 1988-2000 time period (Table A-5a and Table A-5b). A total of approximately 84,000 tons was delivered into Navarro West in 1995 by the Floodgate slide, which is 4% of the total delivery from 1969-2000 and 6% of the total amount delivered from 1988-2000 in the whole Navarro WMU. The floodgate slide consisted of a deep-seated rockslide and associated debris flow which delivered sediment into the Navarro River approximately 1/3 of a mile upstream of the confluence of the Navarro River with Floodgate Creek.

Relatively large amounts of sediment delivered from 1988-2000 compared to earlier time periods results from several factors, including high rain fall events during this time frame, two sets of aerial photographs analyzed during this time, and field work done in the summer of 1999. Unusually intense storms and/or high annual rainfall occurred in 1995, 1997 and 1998, and under wet conditions more landslides occurred. According to rainfall data taken from Casper Creek, just South of Fort Bragg, the most intense rainfall during the 1995 – 1998 period was January 8-9 1995 5.78 inches, March 13-14 1995 4.64 inches, December 30 1996 – January 1 1997 10.58 inches and March 21-23 1998 6.63 inches. During the 1988-2000 time period two sets of aerial photographs were analyzed, (1996 and 2000), both of which were photographed after a major storm event. Consequently more landslides where found in the 1988-2000 period than the other periods. Field surveys located additional landslides. The field assessment occurred in the summer of 1999 a year after the 1998 storm events. In Navarro West, 69% of the total amount of sediment delivered was from landslides found in the field and in Navarro East 76% of the total amount of the sediment delivered was from landslides found in the field. The high percent of landslides found in the field is due to field work being done before the 2000 aerial photographs could be assessed, therefore landslides where found in the field that would have been found in the 2000 photographs.

The highest overall sediment input from mass wasting occurred in the Dutch Henry planning watershed. The higher sediment delivery appears to be due to a large amount of landslides that occurred on roads adjacent to watercourses. In contrast, Hendy Woods planning watershed has the lowest mass wasting input. The low input for Hendy Woods on Mendocino Redwood Company property is attributable to relatively gentle terrain within this planning watershed.

Table A-5a. Sediment Volume Input by Time Period for Navarro West Planning Watersheds. Data Reported in Tons of Sediment Delivered.

Planning Watershed	1969 - 1981	1982 – 1987	1988 - 2000
Rancheria Creek	1600	16800	13900
Flynn Creek	3600	1700	25000
Floodgate Creek	6600	2500	5200
Hendy Woods	0	200	0
Mill Creek	0	0	12500
Lower Navarro River	6700	31600	64500
Middle Navarro River	47600	63000	168800
North Fork Navarro River	21400	21100	17300
Ray Gulch	1700	3800	13900
Upper Navarro River	15100	48000	124600
Total	***104,300***	***188,700***	***445,700***

Table A-5b. Sediment Volume Input by Time Period for Navarro East Planning Watersheds. Data Reported in Tons of Sediment Delivered.

Planning Watershed	1969 – 1981	1982 – 1987	1988 - 2000
Dutch Henry Creek	6000	116000	204000
North Fork Indian Creek	6000	20000	263000
John Smith Creek	0	4500	10000
Lower South Branch Navarro River	45000	12500	83000
Little North Fork Navarro River	28000	38000	142000
Middle South Branch Navarro River	42000	3000	238000
Upper South Branch Navarro River	28000	2800	100000
Total	***154,000***	***253,000***	***1,040,000***

Chart A-1a. Total Mass Wasting Sediment Input Rate (tons/yr/sq. mi.) from Landslides for MRC Ownership in Navarro West Shown by Watershed and Time Period.

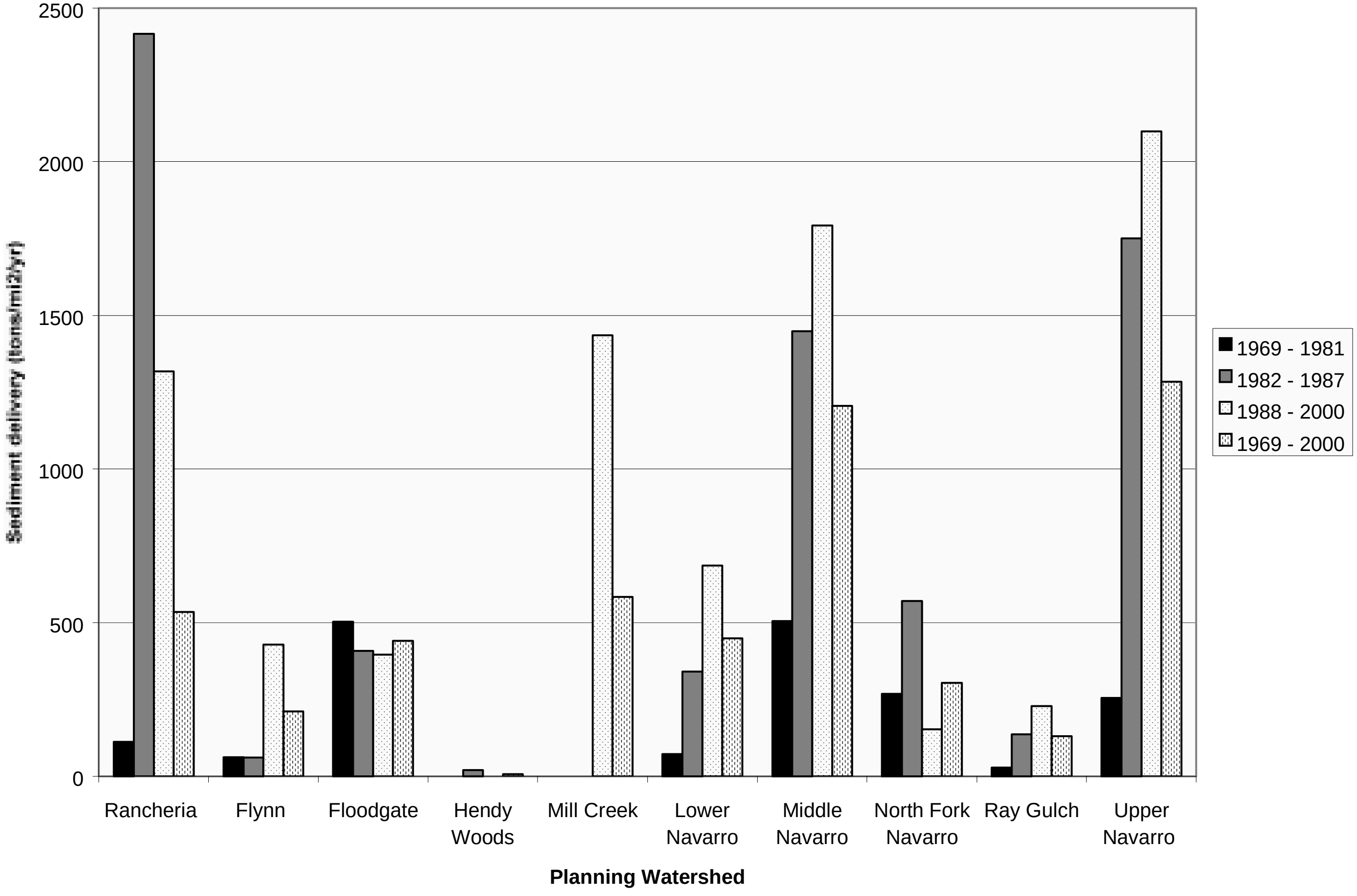
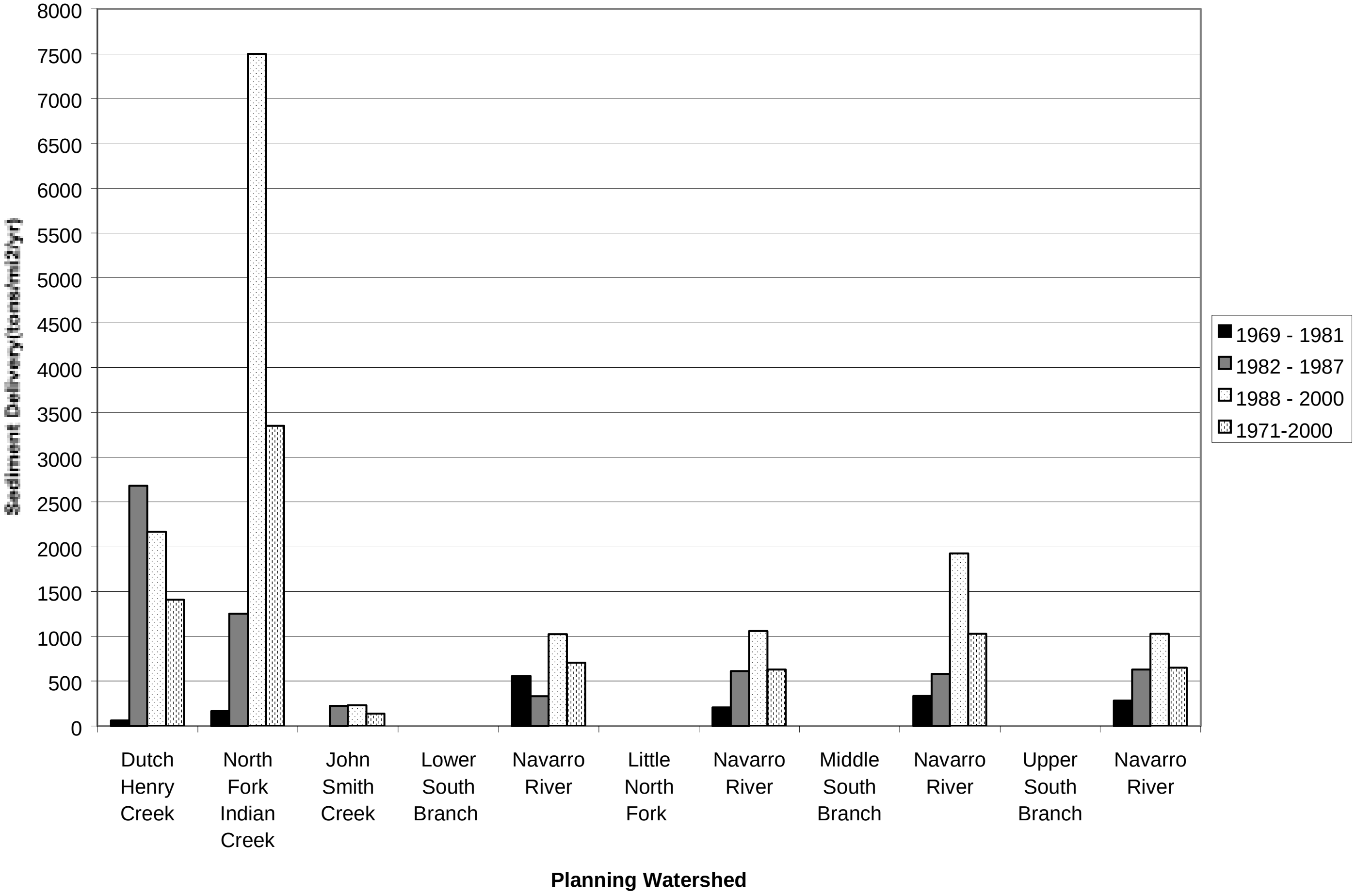


Chart A-1b. Total Mass Wasting Sediment Input Rate (tons/yr/sq. mi.) from Landslides for MRC Ownership in Navarro East Shown by Watershed and Time Period.



Road associated mass wasting was found to have contributed 1,548,000 tons (530 tons/sq. mi./yr) of sediment over the 32 years analyzed (1969-2000) in the Navarro WAU (Table A-6a and Table A-6b). This represents approximately 71% of the total mass wasting inputs for the Navarro WAU for 1969-2000. In the Dutch Henry Creek and North Fork Indian Creek planning watershed, road associated landslide sediment delivery was a major sediment source, contributing 87% of the sediment delivered into the Dutch Henry planning watershed and 93% of the sediment delivered into the North Fork Indian Creek planning watershed. In John Smith Creek planning watershed 98% of the sediment delivered was road associated, out of 7 shallow landslides that delivered, 6 where road related. However, the Upper Navarro River planning watershed had a low percentage of road associated mass wasting delivery, 25%, due to the large amount of sediment delivered from the Floodgate slide, which is attributed to non - road associated mass wasting.

One road in particular in the Navarro WAU, the Masonite Road, was constructed in the 1950's and is still in use today as a major haul road. This road has created many mass wasting events, causing the road to be a major source of sediment into the Navarro WAU. Between 1969-2000 the Masonite road is estimated to have delivered 300,000 tons of mass wasting sediment, 21% of the total mass wasting sediment delivered into Navarro East and 14% of the total sediment delivered into the Navarro WAU.

Table A-6a. Road Associated Sediment Delivery for Shallow-Seated Landslides for Navarro West by Planning Watershed, 1969-2000.

Planning Watershed	**Road Associated Mass Wasting Sediment Delivery (tons)**	**Percent of Total Sediment Delivery of Planning Watershed**
Rancheria Creek	18000	56%
Flynn Creek	17000	57%
Floodgate Creek	11500	80%
Hendy Woods	200	100%
Mill Creek	11000	89%
Lower Navarro River	54000	52%
Middle Navarro River	118000	38%
North Fork Navarro River	35000	59%
Ray Gulch	11000	56%
Upper Navarro River	39000	25%
Total	***315,000***	***43%***

Table A-6b. Road Associated Sediment Delivery for Shallow-Seated Landslides for Navarro East by Planning Watershed, 1969-2000.

Planning Watershed	**Road Associated Mass Wasting Sediment Delivery (tons)**	**Percent of Total Sediment Delivery of Planning Watershed**
Dutch Henry Creek	282400	87%
North Fork Indian Creek	268300	93%
John Smith Creek	13900	98%
Lower South Branch Navarro River	98700	70%
Little North Fork Navarro River	171300	82%
Middle South Branch Navarro River	254400	81%
Upper South Branch Navarro River	144900	93%
Total(rounded to 1000s)	***1,234,000***	***85%***

Sediment Input by Mass Wasting Map Unit

Total mass wasting sediment delivery for the Navarro WAU was separated into respective mass wasting map units. Sediment delivery statistics for each MWMU are summarized in Table A-7. It should be noted that not all planning watersheds contain all six MWMUs.

The mass wasting map unit with the highest sediment delivery is MWMU 4, which is estimated to deliver 51% of the total sediment input for the Navarro WAU. This is due to the high road density within this unit which makes the actual hazard of the unit appear artificially high; 86% of the total delivered sediment came from road related features in MWMU 4. MWMU 5 is estimated to have delivered 1% of the total sediment input. This is because the majority of the landslides are road associated in MWMU 5. Combining all streamside units (MWMU 1, 2, 3) would yield 48% of the total sediment input. The total sediment delivered from non-road related slides in MWMU 1, 2, and 3 was 77%, while MWMU 4 delivered 23% of the total non-road related delivery.

One measure of the intensity of mass wasting processes in a MWMU is the amount of sediment produced divided by the area in the MWMU. The last row in Table A-7 expresses landslide intensity as the ratio of the percentage of total sediment delivered by the percentage of watershed area in the MWMU. High values of this ratio indicate high landslide rates in a concentrated area. The MWMU with the highest ratio was unit 1 with a ratio of 5.8 while unit 5 and 4 had the lowest ratio with unit 5 having 0.3 and unit 4 having a ratio of 0.7.

Table A-7. Total Sediment Delivery by Mass Wasting Map Units in the Navarro WAU (1969-2000).

MWMU	1	2	3	4	5	6
Road Related Sediment Delivered (tons)	335700	84700	155400	961100	11200	n/a
Non-Road Related Sediment Delivered (tons)	175600	83300	227200	151900	0	n/a
Total Sediment Delivered (tons)	511300	168000	382600	1113000	11200	n/a
% road related delivery	22%	5%	10%	62%	1%	n/a
% non-road related delivery	28%	13%	36%	23%	0%	n/a
% of total delivered	23%	8%	17%	51%	1%	n/a
% of Watershed	4%	6%	17%	70%	3%	~0.01%
% ratio: delivery %/area %	5.8	1.3	1	0.7	0.3	n/a

CONCLUSIONS

In natural forest environments of the California Coast Range, mass wasting is a common occurrence. In the Navarro WAU this is due to steep slopes, the condition of weathered and fractured marine sedimentary rocks (interbedded sandstone and shale), tectonic activity, locally thick colluvial soils, a history of timber harvest practices, and the occurrence of high intensity rainfall events. Mass wasting events are episodic and many landslides may happen in a short time frame. Mass wasting features of variable age and stability are observed throughout the Navarro WAU. The vast majority of the landslides visited in the field during this assessment occurred on slopes greater than 60%, in main and side scarps. Seeps and springs were evident in the evacuated cavity at many sites. Particular caution should be exercised when conducting any type of forest management activity in areas with convergent or locally steep topography.

The steep streamside areas of MWMU 1, 2, and 3 contribute the highest amount of the sediment per unit area in the watershed. In the moderate and low hazard units of MWMU 4 and 5, a large amount of road associated landslides are occurring, suggesting the need to make improvements on roads within the Navarro WAU.

Almost 62% of the shallow-seated landslides in the Navarro WAU are road associated. Road associated mass wasting represented 70% of the sediment delivery. Roads are a significant factor in the cause of shallow-seated mass wasting events. Improved road construction practices combined with design upgrades of old roads should reduce sediment input rates and mass wasting hazards.

Navarro East has a higher amount of road delivered sediment then Navarro West. This is due to a higher road density directly adjacent to watercourses. One road in particular in the Navarro WAU; the Masonite Road, was constructed from 1948-1950 (Baldo and Brown, 2000) and is still in use today as a major haul road. This road has created many mass wasting events, causing the road to be a major source of sediment in the Navarro WAU. Between 1969-2000 the Masonite road is estimated to have delivered 300,200 tons of mass wasting sediment, 21% of the total mass wasting sediment delivered into Navarro East and 14% of the total sediment delivered into the Navarro WAU.

Mass wasting sediment input is estimated to be at least 750-tons/sq. mi./yr. over the 1969-2000 time period for the entire Navarro WAU. Overall in the Navarro WAU, sediment delivery from mass wasting was highest in the Dutch Henry planning watershed. The large amount of road landslides adjacent to watercourses is the reason for the high sediment delivery.

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Navarro Mass Wasting
Appendix A

Road slide following construction along the Masonite Road, circa 1950.

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%) Field	Average Landslide Dimensions (feet)			Volume (cub.-yrds.)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg.	Complex	
ED-29-1		RS	Q			2150	800	0		Y				Ephem./Int.		3	2	3	3	4	N	
ED-3-1	4	DS	D	1987	0	50	30	4	222	N	0	0	0		ROAD							
ED-3-2	4	DS	D	1987	0	160	65	4	1541	Y	92	1417	1871	Ephem./Int.								
ED-32-1	1	DS	D	96;87	65	60	30	4	267	Y	100	267	3600	Perennial	ROAD							inner gorge
ED-32-10	1	DS	D	1987	0	65	30	4	289	Y	100	289	381	Perennial	ROAD							
ED-32-11	1	DS	D	1987	0	200	100	4	2963	Y	92	2726	3598	Perennial	ROAD							starts above road and goes to stream
ED-32-12	1	DS	D	1987	0	80	50	4	593	Y	100	593	782	Perennial	ROAD							
ED-32-13	1	DS	D	1987	0	50	65	4	481	Y	100	481	636	Perennial	ROAD							
ED-32-14	1	DS	D	1987	0	80	480	4	5689	Y	92	5234	6909	Perennial	ROAD							
ED-32-15	1	DS	D	1987	0	30	50	4	222	Y	92	204	270	Perennial	ROAD							
ED-32-16	2	DS	P	2000	0	180	20	4	533	Y	92	491	662	Ephem./Int.								
ED-32-17		RS	Q			860	400	0		Y				Ephem./Int.		3	3	3	3	4	N	
ED-32-18		RS	P			820	2190	0		Y				Ephem./Int.		3	3	3	4	4	Y	
ED-32-19		RS	Q			960	690	0		Y				Ephem./Int.		3	3	3	3	4	N	
ED-32-2	1	DS	D	96	80	60	180	2	800	Y	100	800	1080	Perennial	ROAD							
ED-32-20		RS	Q			1540	980	0		Y				Perennial		3	2	3	5	4	N	
ED-32-3	1	DS	D	96	75	60	100	3	667	Y	100	667	900	Perennial	ROAD							inner gorge
ED-32-4	1	DS	D	96;87	70	60	20	7	311	Y	100	311	420	Perennial	ROAD							
ED-32-5	1	DS	D	96	0	94	64	4	891	Y	92	820	1107	Perennial								
ED-32-6	1	DS	Q	96	0	80	80	4	948	Y	92	872	1178	Ephem./Int.								
ED-32-7	1	DS	D	96	88	70	100	4	1037	Y	100	1037	1400	Ephem./Int.	ROAD							
ED-32-8	1	DS	D	1987	0	65	80	4	770	Y	100	770	1017	Perennial	ROAD							
ED-32-9	1	DS	D	1987	0	80	20	4	237	Y	100	237	313	Perennial	ROAD							
ED-3-3	1	DS	P	1987	0	30	15	4	67	Y	92	61	81	Ephem./Int.								
ED-33-1	1	DS	D	96	82	110	80	3	978	Y	100	978	1320	Perennial	ROAD							inner gorge
ED-33-10	1	DS	D	1987	0	80	30	4	356	Y	100	356	469	Perennial	ROAD							
ED-33-11	1	DS	D	1987	0	130	50	4	963	Y	92	886	1169	Perennial	ROAD							
ED-33-12	1	DS	D	1987	0	115	80	4	1363	Y	100	1363	1799	Perennial	ROAD							
ED-33-13	1	DS	D	1987	0	210	115	4	3578	Y	92	3292	4345	Perennial	ROAD							
ED-33-14	1	DS	D	1987	0	65	30	4	289	Y	100	289	381	Perennial	ROAD							
ED-33-15	1	DS	D	1987	0	50	35	4	259	Y	92	239	315	Perennial	ROAD							
ED-33-16	4	DS	D	1987	0	100	50	4	741	Y	92	681	900	Perennial	ROAD							
ED-33-17	4	DS	D	1987	0	200	30	4	889	Y	92	818	1079	Perennial	SKID							
ED-33-18		RS	P			1800	1120	0		Y				Perennial		3	2	3	3	4	N	
ED-33-19	3	DS	D	2000	0	100	30	4	444	Y	92	409	552	Ephem./Int.								
ED-33-2	4	DS	D	96	96	80	50	5	741	Y	100	741	1000	Perennial	ROAD							inner gorge
ED-33-20		RS	Q			700	960	0		Y				Perennial		3	3	3	4	4	N	
ED-33-21		RS	Q			460	750	0		Y				Ephem./Int.		3	3	3	3	4	N	
ED-33-3	4	DS	D	96	84	75	184	4	2044	Y	90	1840	2484	Perennial	ROAD							
ED-33-4	4	DS	D	96	66	50	75	2	278	Y	80	22	300	Perennial	SKID							
ED-33-5	4	DS	D	96	0	80	32	4	379	Y	92	349	471	Perennial								
ED-33-6	4	DS	D	96	90	60	40	2	178	Y	80	142	192	Perennial	ROAD							skid
ED-33-8	4	DS	D	96	0	200	100	12	8889	Y	100	8889	12000	Ephem./Int.	ROAD							
ED-33-9	4	DS	D	1987	0	100	30	4	444	Y	92	409	540	Ephem./Int.	LAND							
ED-3-4	2	DS	P	2000	0	220	70	4	2281	Y	92	2099	2834	Ephem./Int.								
ED-34-1		RS	Q			1390	1180	0		Y				Ephem./Int.		3	3	3	4	4	N	
ED-3-5		RS	Q			860	530	0		Y				Ephem./Int.		4	3	3	4	4	N	
ED-4-1	4	DS	D	96	0	240	80	4	2844	Y	92	2617	2553	Ephem./Int.								
ED-4-2	1	DF	P	96	0	64	16	4	152	Y	92	140	188	Ephem./Int.								
ED-4-3	4	DS	D	1987	0	230	115	4	3919	Y	92	3605	4759	Ephem./Int.								HW Swale
ED-4-4	1	DT	P	1987	0	50	20	4	148	Y	92	136	180	Perennial	ROAD							inner gorge
ED-4-5	4	DS	D	1987	0	130	30	4	578	Y	92	532	702	Perennial	ROAD							

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%) Field	Average Landslide Dimensions (feet)			Volume (cub.-yrds.)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg.	Complex	
ED-4-6	1	DT	D	1978	0	110	20	4	326	Y	92	300	405	Perennial	ROAD							
ED-4-7	1	DS	P	1978	0	260	110	4	4237	Y	92	3898	5262	Perennial	ROAD							
ED-5-1	1	DS	Q	96	0	48	80	4	569	Y	92	523	707	Perennial								
ED-5-10	4	DS	D	1987	0	130	50	4	963	Y	92	886	1169	Perennial	ROAD							
ED-5-11	1	DS	Q	1987	0	80	30	4	356	Y	92	327	432	Perennial	ROAD							
ED-5-12	1	DS	D	1987	0	160	200	4	4741	Y	92	4361	5757	Perennial	LAND							
ED-5-13	1	DS	D	1987	0	130	180	4	3467	Y	92	3189	4210	Perennial	ROAD							
ED-5-14	1	DS	D	1987	0	80	100	4	1185	Y	92	1090	1439	Perennial	ROAD							
ED-5-15	4	DS	D	1987	0	400	210	4	12444	Y	92	11449	15113	Perennial	ROAD							road top and middle skid as well
ED-5-16	4	DS	P	1987	0	560	130	4	10785	Y	92	9922	13098	Perennial	ROAD							
ED-5-17	2	DS	D	2000	0	160	50	4	1185	Y	92	1090	1472	Ephem./Int.	ROAD							
ED-5-18		RS	Q			780	450	0		Y				Perennial		3	2	3	3	4	N	
ED-5-19		RS	Q			780	400	0		Y				Perennial		3	3	3	3	4	N	
ED-5-2	1	DS	P	96	0	240	64	4	2276	N	0	0	0		ROAD							
ED-5-3	1	DS	D	96	0	80	32	4	379	N	0	0	0									
ED-5-4	1	DS	Q	96	0	160	240	4	5689	Y	92	5234	7066	Ephem./Int.								
ED-5-5	1	DS	D	96	100	300	130	4	5778	Y	100	5778	7800	Perennial								inner gorge
ED-5-6	1	DS	D	96	100	330	60	4	2933	Y	100	2933	3960	Perennial								inner gorge
ED-5-7	1	DS	D	96	98	300	100	4	4444	Y	100	4444	6000	Perennial	ROAD							
ED-5-8	1	DS	D	96	99	200	250	10	18519	Y	100	18519	25000	Perennial	ROAD							culvert
ED-5-9	4	DS	P	1987	0	160	50	4	1185	Y	92	1090	1439	Perennial								
ED-6-1	1	DS	D	96	0	80	128	4	1517	Y	92	1396	1884	Perennial	ROAD							inner gorge
ED-6-10	1	DS	D	>96	70	500	230	8	34074	Y	98	33393	45080	Perennial	ROAD							older slide
ED-6-11	1	DS	D	>98	73	120	100	10	4444	Y	100	4444	6000	Perennial	ROAD							
ED-6-12	1	DS	D	96	65	60	30	4	267	Y	100	267	360	Perennial	ROAD							inner gorge
ED-6-13	1	DF	P	96	0	64	16	4	152	N	0	0	0		ROAD							fill failure
ED-6-14	4	DS	Q	1996	0	96	32	4	455	Y	92	419	545	Perennial								
ED-6-15	1	DS	D	96	89	300	70	4	3111	Y	90	2800	3780	Perennial	ROAD							
ED-6-16	1	DS	D	96	91	300	50	8	4444	Y	100	4444	6000	Perennial	ROAD							culvert
ED-6-17	1	DF	D	97	0	230	20	4	681	Y	100	681	920	Perennial								
ED-6-18	1	DT	D	1987	0	65	20	4	193	Y	100	193	254	Perennial	ROAD							
ED-6-19	1	DS	D	1987	0	80	50	4	593	Y	92	545	720	Perennial	ROAD							
ED-6-2	1	DS	Q	96	0	48	16	4	114	N	0	0	0		SKID							
ED-6-20	1	DS	D	1987	0	50	10	4	74	Y	100	74	98	Perennial	ROAD							
ED-6-21	1	DS	D	1987	0	100	20	4	296	Y	100	296	391	Perennial	ROAD							
ED-6-22	1	DS	D	1987	0	320	100	4	4741	Y	92	4361	5757	Perennial	ROAD							
ED-6-23	1	DS	D	1987	0	50	30	4	222	Y	100	222	293	Perennial								stream failure
ED-6-24	1	DS	D	1987	0	100	270	4	4000	Y	92	3680	4858	Perennial	ROAD							
ED-6-25	1	DS	D	1987	0	100	320	4	4741	Y	100	4741	6258	Perennial	ROAD							
ED-6-26	1	DS	D	1987	0	80	50	4	593	Y	100	593	782	Perennial	ROAD							
ED-6-27		RS	P			3100	2880	0		Y				Perennial		2	3	4	4	4	Y	
ED-6-28		RS	P			1090	450	0		Y				Perennial		3	2	3	3	4	N	
ED-6-29		RS	Q			1460	700	0		Y				Perennial		3	3	3	4	4	N	
ED-6-3	1	DS	P	96	0	64	32	4	303	N	0	0	0		SKID							
ED-6-4	1	DS	D	96	0	80	64	4	759	Y	92	698	942	Perennial	ROAD							
ED-6-5	1	DS	D	96	72	150	240	4	5333	Y	90	4800	6480	Perennial	ROAD							SKID at top of slide
ED-6-6	1	DS	D	96	52	120	50	6	1333	Y	100	1333	1800	Perennial	ROAD							culvert blowout, inner gorge
ED-6-7	1	DF	D	96	0	224	32	4	1062	Y	92	977	1319	Perennial	ROAD							
ED-6-8	1	DS	Q	96	0	160	80	4	1896	Y	92	1745	2355	Perennial	ROAD							
ED-6-9	1	DS	D	96	0	80	160	4	1896	Y	92	1745	2355	Perennial	ROAD							inner gorge
ED-7-1	1	DF	P	96	0	80	32	4	379	Y	92	349	471	Perennial								inner gorge
ED-7-10	1	DS	D	96	0	400	320	4	18963	Y	92	17446	23552	Perennial	ROAD							

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%) Field	Average Landslide Dimensions (feet)			Volume (cub.-yrds.)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg.	Complex	
ED-7-11	1	DS	P	96	0	80	64	4	759	Y	92	698	942	Perennial	ROAD							inner gorge
ED-7-12	1	DS	P	96	0	80	64	4	759	Y	92	698	942	Perennial								inner gorge
ED-7-13	1	DS	D	1987	0	50	65	4	481	Y	92	443	585	Perennial	ROAD							
ED-7-14	1	DS	D	1987	0	50	65	4	481	Y	92	443	585	Perennial	ROAD							
ED-7-15	1	DS	D	1987	0	100	80	4	1185	Y	92	1090	1439	Perennial	ROAD							
ED-7-16	1	DS	D	1987	0	50	50	4	370	Y	92	341	450	Perennial	ROAD							
ED-7-17	1	DS	D	1987	0	65	50	4	481	Y	100	481	636	Perennial	ROAD							
ED-7-18	1	DS	D	1987	0	130	80	4	1541	Y	92	1417	1871	Perennial	ROAD							
ED-7-19	1	DS	D	1987	0	100	65	4	963	Y	100	963	1271	Perennial	ROAD							
ED-7-2	1	DS	P	96	0	80	32	4	379	Y	92	349	471	Perennial	ROAD							inner gorge
ED-7-20	1	DS	D	1987	0	200	100	4	2963	Y	92	2726	3598	Perennial	ROAD							
ED-7-21	1	DS	D	1987	0	100	50	4	741	Y	92	681	900	Perennial	ROAD							
ED-7-22	1	DS	D	1987	0	80	130	4	1541	Y	92	1417	1871	Perennial	ROAD							
ED-7-23	4	DS	D	1987	0	240	65	4	2311	Y	92	2126	2807	Perennial	ROAD							
ED-7-24	3	DS	D	2000	0	140	40	4	830	Y	92	763	1030	Ephem./Int.								
ED-7-25		RS	Q			1210	930	0		Y				Perennial		3	3	3	4	4	N	
ED-7-26		RS	Q			2540	1760	0		Y				Perennial		2	3	3	3	4	N	
ED-7-27		RS	Q			1035	450	0		Y				Perennial		3	3	3	3	4	N	
ED-7-3	1	DS	Q	96	0	64	32	4	303	Y	92	279	377	Perennial	ROAD							inner gorge
ED-7-4	1	DF	P	96	0	64	32	4	303	Y	92	279	377	Perennial								inner gorge
ED-7-5	1	DS	D	>96	68	400	50	6	4444	Y	95	4222	5700	Perennial	ROAD							still active, inner gorge
ED-7-6	1	DS	D	96	100	150	100	2	1111	Y	100	1111	1500	Perennial	ROAD							inner gorge
ED-7-7	4	DS	D	96	0	160	48	4	1138	Y	92	1047	1413	Perennial								HW SWALE, older slide
ED-7-8	1	DS	D	96	0	240	64	4	2276	Y	92	2094	2826	Perennial	ROAD							inner gorge
ED-7-9	1	DS	D	96	0	112	80	4	1327	Y	92	1221	1649	Perennial	ROAD							inner gorge
ED-8-1	1	DS	P	96	0	64	112	4	1062	Y	92	977	1319	Perennial	ROAD							inner gorge
ED-8-2	1	DS	D	1987	0	210	20	4	622	Y	92	572	756	Perennial	ROAD							
ED-8-3		RS	Q			2730	960	0		Y				Perennial		3	3	3	3	4	N	
EI-2-1	4	DF	D	96	0	96	32	4	455	Y	92	419	565	Perennial								
EI-2-10		RS	Q			1560	640	0		Y				Perennial		2	3	3	3	4	N	
EI-2-11		RS	Q			1120	680	0		Y				Perennial		3	3	3	3	4	N	
EI-2-12		RS	Q			2250	880	0		Y				Ephem./Int.		4	3	3	3	4	N	
EI-2-2	4	DF	D	96	0	112	16	4	265	Y	92	244	330	Perennial								
EI-2-3	4	DS	P	96	0	48	16	4	114	Y	100	114	154	Perennial								
EI-2-4	4	DS	Q	96	0	48	48	4	341	Y	100	341	461	Perennial	ROAD							
EI-2-5	1	DS	P	1987	0	110	50	4	815	Y	92	750	975	Perennial	SKID							
EI-2-6	4	DS	D	1978	0	45	70	4	467	Y	92	429	580	Perennial								stream failure
EI-2-7	1	DS	D	1978	0	90	70	4	933	Y	92	859	1159	Perennial								stream failure
EI-2-8	1	DS	D	2000	0	60	30	4	267	Y	92	245	331	Perennial								
EI-28-1	4	DS	Q	96	0	48	16	4	114	Y	92	105	141	Ephem./Int.	ROAD							
EI-28-2	4	DS	P	96	0	96	16	4	228	N	0	0	0		ROAD							
EI-28-3	4	DS	D	1987	0	65	50	4	481	Y	92	443	585	Perennial	ROAD							
EI-2-9	4	DS	P	2000	0	60	30	4	267	Y	92	245	331	Perennial	Road							
EI-3-3	4	DS	D	1987	0	80	160	4	1896	Y	92	1745	2303	Ephem./Int.								
EI-3-4	4	DS	P	1978	0	130	50	4	963	Y	92	886	1196	Perennial								stream failure
EI-34-1	4	DF	D	96	0	48	32	4	228	Y	92	209	283	Perennial	Landing							
EI-34-10	4	DS	P	1978	0	50	20	4	148	Y	92	136	184	Perennial	ROAD							
EI-34-12		RS	P			1560	580	0		Y				Perennial		2	3	3	3	4	Y	
EI-34-2	4	DF	D	96	0	35	16	4	83	Y	92	76	103	Perennial	Landing							
EI-34-3	4	DF	D	96	0	64	16	4	152	Y	92	140	188	Perennial	Landing							
EI-34-4	4	DF	P	96	0	80	16	4	190	N	0	0	0		ROAD							
EI-34-5	4	DF	D	96	0	64	16	4	152	N	0	0	0									

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%) Field	Average Landslide Dimensions (feet)			Volume (cub.-yrds.)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg.	Complex	
EI-34-6	4	DS	D	96	90	150	100	2	1111	Y	100	1111	1500	Perennial	ROAD							
EI-34-7		RS	Q			1540	1040	0		Y				Perennial		3	3	3	3	4	N	
EI-34-8	4	DS	D	1987	0	50	240	4	1778	Y	92	1636	2159	Perennial								
EI-34-9	4	DS	D	1987	0	65	100	4	963	Y	92	886	1169	Perennial								
EI-3-5	4	DS	P	1987	0	100	50	4	741	Y	92	681	900	Perennial	SKID							inner gorge
EI-35-1	4	DF	P	96	0	160	16	4	379	Y	92	349	471	Perennial								
EI-35-10	4	DS	D	96	56	100	40	3	444	Y	100	444	600	Perennial	ROAD							
EI-35-11	4	DS	D	96	85	100	150	4	2222	Y	80	1778	2400	Perennial	ROAD							
EI-35-12	4	DS	D	96	75	100	70	3	778	Y	100	778	1050	Perennial								
EI-35-13	4	DS	D	96	100	30	70	4	311	Y	100	311	420	Perennial	ROAD							
EI-35-14	4	DS	D	96	85	150	130	3	2167	Y	100	2167	2925	Perennial	ROAD							
EI-35-15	4	DS	D	96	65	60	50	3	333	Y	100	333	450	Perennial	ROAD							
EI-35-16	4	DS	D	96	60	50	100	2	370	Y	100	370	500	Perennial								
EI-35-17	4	DS	D	1987	65	240	80	4	2844	Y	92	2617	3454	Perennial	ROAD/Landing							
EI-35-18	4	DS	D	1987	0	80	130	4	1541	Y	92	1417	1871	Perennial								stream side
EI-35-19	4	DS	D	1987	0	80	240	4	2844	Y	92	2617	3454	Perennial								
EI-35-2	4	DS	D	96	65	120	30	2	267	Y	100	267	360	Perennial								
EI-35-20	4	DS	D	1978	0	290	50	4	2148	Y	92	1976	2668	Perennial	ROAD							takes out a couple roads
EI-35-21	4	DS	D	1987	0	240	80	4	2844	Y	92	2616	3401	Perennial								
EI-35-22		RS	Q			2420	1010	0		Y				Perennial		3	3	3	3	4	Y	
EI-35-23		RS	D			2930	2960	0		Y				Perennial		3	3	3	3	4	Y	
EI-35-24		RS	P			2280	1440	0		Y				Perennial		3	3	3	3	4	N	
EI-35-25		RS	P			1950	800	0		Y				Perennial		3	3	3	3	4	Y	
EI-35-26		RS	D			3380	1540	0		Y				Perennial		3	2	3	3	4	Y	
EI-35-3	4	DS	D	96	70	1000	600	8	177778	Y	100	177778	240000	Perennial	ROAD							SKID across slide, recent activity
EI-35-4	4	DS	D	96	80	170	100	2	1259	Y	100	1259	1700	Perennial	ROAD							
EI-35-5	4	DS	D	96	0	64	80	4	759	Y	92	698	942	Perennial	ROAD							
EI-35-6	4	DS	D	96	90	150	100	2	1111	Y	100	1111	1500	Perennial	ROAD							
EI-35-7	4	DS	D	96	90	200	80	2	2044	Y	100	2044	2760	Perennial	ROAD							
EI-35-8	4	DS	D	96	90	200	80	2	1185	Y	100	1185	1600	Perennial	ROAD							
EI-35-9	4	DS	D	96	0	250	200	5	9259	Y	100	9259	1250	Perennial	ROAD							
EJ-17-1	4	DS	D	99	42	350	100	8	10370	Y	70	7259	9800	Ephem./Int.	ROAD							ROAD at top of slide
EJ-21-1	4	DS	Q	96	0	64	16	4	152	N	0	0	0									
EJ-27-1		EF	Q			2240	1120	0		Y				Ephem./Int.		4	3	3	3	4	N	
EJ-28-1	4	DS	P	1987	0	50	30	4	222	Y	92	204	270	Ephem./Int.								
EJ-28-2	4	DS	D	1987	0	65	50	4	481	Y	92	443	585	Ephem./Int.	ROAD							
EJ-28-3	4	DS	D	1987	0	150	80	4	1778	Y	92	1636	2159	Ephem./Int.	SKID							older skid
EJ-28-4	4	DS	P	1987	0	80	50	4	593	Y	92	545	720	Ephem./Int.	ROAD							
EJ-28-5		RS	Q			1580	860	0		Y				Perennial		3	3	3	3	4	N	
EJ-33-1	4	DS	D	1987	0	65	30	4	289	Y	92	266	351	Perennial	ROAD							
EJ-33-2	4	DS	D	1987	0	30	50	4	222	Y	92	204	270	Perennial	ROAD							
EL-10-1	4	DS	Q	96	0	80	40	4	474	N	0	0	0									
EL-10-10	4	DS	P	2000	0	140	80	4	1659	Y	92	1527	2061	Ephem./Int.	SKID							
EL-10-11	4	DS	D	2000	0	120	70	4	1244	Y	92	1145	1546	Ephem./Int.								
EL-10-12	2	DS	P	2000	0	140	110	4	2281	Y	92	2099	2834	Ephem./Int.								
EL-10-2	4	DS	D	96	0	96	80	4	1138	Y	92	1047	1413	Ephem./Int.	ROAD							
EL-10-3	4	DF	D	96	0	160	48	4	1138	Y	92	1047	1413	Perennial								
EL-10-4	4	DS	P	96	0	80	32	4	379	Y	92	349	471	Ephem./Int.								
EL-10-5	4	DS	P	1978	0	110	70	4	1141	Y	92	1049	1417	Ephem./Int.	SKID							
EL-10-6	4	DS	D	1978	0	130	180	4	3467	Y	92	3189	4306	Ephem./Int.	ROAD							
EL-10-7	4	DS	D	1978	0	260	130	4	5007	Y	92	4607	6219	Perennial	ROAD							
EL-10-9	3	DS	D	2000	0	160	80	4	1896	Y	92	1745	2355	Ephem./Int.								HW SWALE

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%) Field	Average Landslide Dimensions (feet)			Volume (cub.-yrds.)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg.	Complex	
EL-13-1	3	DS	P	1981	0	220	90	4	2933	Y	92	2698	3507	Ephem./Int.	SKID							
EL-14-1	4	DF	D	96	0	112	48	4	796	Y	92	733	989	Ephem./Int.	ROAD							
EL-14-10	4	DS	D	78;81;87	0	50	80	4	593	Y	92	546	710	Perennial	ROAD							
EL-14-11	1	DS	D	1978	0	220	110	4	3585	Y	92	3298	4453	Perennial	ROAD							
EL-14-12	4	DS	D	1978	0	110	90	4	1467	Y	92	1349	1822	Ephem./Int.	SKID							
EL-14-13	4	DS	D	1978	0	110	50	4	815	Y	92	750	1012	Perennial	ROAD							
EL-14-14	4	DS	D	1978	0	50	50	4	370	Y	92	341	460	Perennial	ROAD							
EL-14-15	1	DS	D	1978	0	70	240	4	2489	Y	92	2290	3091	Perennial	ROAD							
EL-14-16	4	DS	D	1978	0	70	70	4	726	Y	92	668	902	Perennial	ROAD							
EL-14-17	4	DS	D	1978	0	110	90	4	1467	Y	92	1349	1822	Perennial	ROAD							
EL-14-18	4	DS	D	1978	0	110	130	4	2119	Y	92	1949	2631	Perennial	ROAD							
EL-14-19	4	DS	P	1978	0	150	20	4	444	Y	92	409	552	Perennial	ROAD							
EL-14-2	4	DS	D	96	0	80	112	4	1327	Y	92	1221	1649	Perennial	ROAD							inner gorge
EL-14-20		RS	Q			2260	1630	0		Y				Perennial		3	3	3	3	4	Y	
EL-14-21	3	DS	D	2000	0	490	130	4	9437	Y	92	8682	11721	Ephem./Int.	ROAD							
EL-14-22		RS	Q			2240	3890	0		Y				Perennial		3	3	3	3	4	Y	
EL-14-3	4	DS	D	98	73	150	300	4	6667	Y	80	5333	7200	Perennial	ROAD							
EL-14-4	4	DS	P	1987	0	80	20	4	237	Y	92	218	283	Perennial	ROAD							
EL-14-5	4	DS	D	1987	0	130	160	4	3081	Y	100	3081	4005	Perennial	ROAD							
EL-14-6	4	DS	D	1987	0	80	15	4	178	Y	100	178	231	Perennial	ROAD							
EL-14-7	4	DS	D	1987	0	80	30	4	356	Y	100	356	463	Perennial	ROAD							
EL-14-8	4	DS	D	1987	0	50	30	4	222	Y	92	204	265	Ephem./Int.	ROAD							
EL-14-9	4	DS	D	1987	0	50	20	4	148	Y	92	136	177	Ephem./Int.	ROAD							
EL-15-1	4	DS	P	96	0	80	96	4	1138	Y	92	1047	1413	Perennial								inner gorge
EL-15-2	4	DS	D	96	0	80	80	4	948	Y	92	872	1178	Perennial	ROAD							inner gorge
EL-15-4	4	DS	D	1987	0	30	15	4	67	Y	92	62	81	Perennial								stream bank failure
EL-15-5	4	DS	Q	1987	0	80	65	4	770	Y	92	708	920	Ephem./Int.	ROAD							
EL-15-6	4	DS	P	1987	0	50	15	4	111	Y	92	102	133	Perennial	LANDING							stream failure
EL-15-7	4	DT	D	1978	0	240	20	4	711	Y	92	654	883	Perennial	ROAD							
EL-15-8	3	DS	D	2000	0	220	120	4	3911	Y	92	3598	4858	Ephem./Int.	ROAD							
EL-15-9		RS	P			1580	450	0		Y				Perennial		3	3	3	3	4	N	
EL-16-1	4	DF	Q	96	0	80	48	4	569	Y	92	523	707	Ephem./Int.								
EL-16-10	4	DS	D	1978	0	90	90	4	1200	Y	92	1104	1490	Perennial	ROAD							
EL-16-11	4	DS	D	1978	0	110	70	4	1141	Y	92	1049	1417	Perennial	ROAD							older
EL-16-12		RS	Q			1560	530	0		Y				Ephem./Int.		4	3	3	3	4	N	
EL-16-2	4	DS	P	96	0	80	16	4	190	Y	92	174	236	Ephem./Int.								
EL-16-3	4	DS	P	1987	0	100	30	4	444	Y	92	408	530	Ephem./Int.								stream failure
EL-16-4	4	DS	P	1987	0	50	65	4	481	Y	92	443	576	Perennial	ROAD							
EL-16-5	4	DS	P	1987	0	50	50	4	370	Y	92	340	442	Ephem./Int.	ROAD							
EL-16-6	4	DS	P	1987	0	80	65	4	770	Y	92	708	920	Ephem./Int.								
EL-16-7	4	DS	D	1978	0	130	70	4	1348	Y	92	1240	1674	Perennial	ROAD							
EL-16-8	4	DS	P	1978	0	330	70	4	3422	Y	92	3148	4250	Perennial	SKID							
EL-16-9	4	DS	P	1978	0	130	70	4	1348	Y	92	1240	1674	Perennial	SKID							
EL-17-1	4	DS	P	96	0	32	96	4	455	Y	92	419	565	Perennial								inner gorge
EL-17-2	4	DF	D	96	0	176	48	4	1252	Y	92	1151	1554	Ephem./Int.	ROAD							
EL-17-3	4	DS	D	96	0	96	32	4	455	Y	92	419	565	Ephem./Int.	Landing							
EL-17-4	4	DS	D	1987	0	210	80	4	2489	Y	92	2290	2977	Ephem./Int.	ROAD							skid/road on top of slide
EL-17-5		RS	Q			780	580	0		Y				Perennial		3	3	3	3	4	N	
EL-18-1	4	DS	P	96	0	48	64	4	455	Y	92	419	565	Perennial								inner gorge
EL-18-2	4	DS	P	96	0	32	96	4	455	Y	92	419	565	Perennial								inner gorge
EL-18-3		RS	Q			720	260	0		Y				Perennial		3	2	3	3	4	N	
EL-18-6		RS	Q			2250	4480	0		Y				Perennial		3	3	3	3	4	Y	

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		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg.	Complex	
EL-7-1	4	DS	P	96	63	60	63	4	560	Y	100	560	756	Perennial	ROAD							
EL-8-1	4	DS	D	96	0	200	110	4	3259	Y	80	2607	3520	Perennial	ROAD							
EL-8-11	4	DS	P	1978	0	90	50	4	667	Y	92	613	828	Ephem./Int.	SKID							
EL-8-12		RS	Q			550	400	0		Y				Perennial		3	3	3	3	4	N	
EL-8-13		RS	Q			590	430	0		Y				Perennial		3	3	3	3	4	N	
EL-8-14		RS	Q			1560	1920	0		Y				Perennial		3	3	3	3	4	Y	
EL-8-2	4	DS	P	96	0	48	64	4	455	Y	92	419	565	Perennial								inner gorge
EL-8-3	4	DS	P	96	0	32	48	4	228	Y	92	209	283	Perennial								inner gorge
EL-8-4	4	DS	P	96	0	48	48	4	341	Y	92	314	424	Perennial								inner gorge
EL-8-5	4	DS	Q	96	0	48	48	4	341	Y	92	314	424	Perennial								inner gorge
EL-8-6	4	DS	D	96	0	160	48	4	1138	N	0	0	0									
EL-8-7	4	DS	D	96	95	200	70	8	4148	Y	100	4148	5600	Perennial	ROAD							culvert
EL-8-9	4	DS	D	98	76	150	70	3	1167	Y	70	817	1103	Perennial								
EL-9-1	4	DS	Q	96	0	80	400	4	4741	N	0	0	0		Landing							5-10 years old, reveg.
EL-9-2	4	DS	Q	1987	0	80	30	4	356	Y	92	328	426	Ephem./Int.								
EL-9-4	2	DS	D	2000	0	250	50	4	1852	Y	92	1704	2300	Ephem./Int.								
EL-9-5	4	DS	D	2000	0	510	100	4	7556	Y	92	6951	9384	Ephem./Int.								
EL-9-6	2	DS	D	2000	0	390	80	4	4622	Y	92	4252	5741	Ephem./Int.								
EL-9-7		RS	Q			800	320	0		Y				Ephem./Int.		3	2	3	3	4	N	
EL-9-8	2	DS	D	2000	0	210	180	4	5600	Y	92	5152	6955	Ephem./Int.								
EL-9-9		RS	Q			1410	700	0		Y				Perennial		2	2	3	3	4	N	
EM-1-1	4	DS	D	96	0	160	96	4	2276	Y	92	2094	2826	Ephem./Int.								
EM-11-1	4	DS	D	96	78	50	100	2	370	Y	20	74	100	Perennial	ROAD							recent activity
EM-11-2	4	DS	Q	96	0	64	16	4	152	N	0	0	0									
EM-11-3	4	DS	P	96	0	48	16	4	114	N	0	0	0									
EM-11-4	4	DS	Q	96	0	128	48	4	910	Y	92	837	1130	Perennial								
EM-11-5	4	DS	D	98	45	70	110	3	856	N	0	0	0		ROAD							
EM-11-6	4	DS	D	1978	0	180	90	4	2400	Y	92	2208	2981	Ephem./Int.	SKID							skid lower on slide as well
EM-11-7		RS	Q			1290	700	0		Y				Perennial		3	3	3	5	4	N	
EM-1-2	4	DS	P	96	0	64	32	4	303	Y	92	279	377	Ephem./Int.								
EM-12-1	4	DS	D	96	0	176	80	4	2086	Y	92	1919	2591	Ephem./Int.								
EM-12-2	2	DS	D	1987	0	160	50	4	1185	Y	92	1090	1439	Perennial	ROAD							
EM-12-3	4	DS	D	96	0	80	16	4	190	Y	92	174	236	Ephem./Int.	ROAD							
EM-12-4	4	DS	D	1978	0	130	90	4	1733	Y	92	1595	2153	Ephem./Int.	SKID							
EM-12-5	3	DS	P	2000	0	220	70	4	2281	Y	92	2099	2834	Ephem./Int.								
EM-12-6		RS	Q			870	1280	0		Y				Ephem./Int.		3	3	3	4	4	N	
EM-12-7	3	DS	P	2000	0	140	30	4	622	Y	92	572	773	Ephem./Int.								
EM-12-8	3	DS	Q	2000	0	250	100	4	3704	Y	92	3407	4600	Ephem./Int.								
EM-1-3	4	DS	D	1987	0	200	50	4	1481	Y	92	1363	1799	Ephem./Int.	SKID							
EM-13-1	4	DS	P	96	0	160	80	4	1896	Y	92	1745	2355	Perennial								
EM-13-10	4	DS	Q	1987	0	100	30	4	444	Y	92	409	540	Ephem./Int.								
EM-13-11	4	DS	D	1987	0	100	50	4	741	Y	92	682	887	Perennial	ROAD							
EM-13-12	4	DS	P	1987	0	160	20	4	474	Y	92	436	567	Perennial	ROAD							
EM-13-13	4	DS	P	1987	0	100	20	4	296	Y	92	272	354	Perennial								
EM-13-14	4	DS	P	1987	0	80	50	4	593	Y	92	545	720	Perennial	ROAD							
EM-13-15	4	DS	D	1978	0	50	50	4	370	Y	92	341	460	Perennial	ROAD							
EM-13-16	4	DS	D	1978	0	110	40	4	652	Y	92	600	810	Ephem./Int.	SKID							
EM-13-17	4	DS	P	1978	0	70	50	4	519	Y	92	477	644	Ephem./Int.	SKID							
EM-13-18	4	DS	D	1978	0	260	50	4	1926	Y	92	1772	2392	Ephem./Int.	SKID							inner gorge
EM-13-19	4	DT	D	1987	0	80	20	4	237	Y	92	218	288	Perennial	SKID							
EM-13-2	4	DS	D	96, 87	80	100	200	3	2222	Y	100	2222	3000	Perennial								
EM-13-20	2	DS	P	2000	0	160	70	4	1659	Y	92	1527	2061	Ephem./Int.								

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%)	Average Landslide Dimensions (feet)			Volume (cub.-yrds.)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty		Field	Length	Width	Depth								Toe	Bod	Lat. Scarps	Main Scarps	Veg.	Complex	
EM-13-21	2	DS	Q	2000	0	80	60	4	711	Y	92	654	883	Ephem./Int.								
EM-13-22		RS	Q			1190	1380	0		Y				Perennial		3	3	3	3	4	N	
EM-13-3	4	DS	P	96	0	272	80	4	3224	N	0	0	0									
EM-13-4	4	DS	D	96	0	96	64	4	910	Y	92	837	1130	Perennial	ROAD							inner gorge
EM-13-5	4	DF	P	96	0	160	16	4	379	Y	92	349	471	Ephem./Int.	ROAD							
EM-13-6	4	DS	P	96	0	64	32	4	303	Y	92	279	377	Ephem./Int.	ROAD							
EM-13-7	4	DS	D	96	0	80	80	4	948	Y	92	872	1178	Ephem./Int.								
EM-13-8	4	DS	P	1987	0	50	10	4	74	N	0	0	0		LAND							
EM-13-9	4	DS	D	1987	0	80	64	4	759	Y	92	698	921	Perennial	ROAD							
EM-1-4	4	DS	D	1987	0	160	80	4	1896	Y	92	1745	2303	Ephem./Int.	SKID							
EM-14-1	4	DS	Q	96	0	48	32	4	228	Y	92	209	283	Perennial								
EM-14-2	4	DS	P	1978	0	70	20	4	207	Y	92	191	258	Perennial	SKID							
EM-17-1	4	DF	P	96	0	320	32	4	1517	Y	92	1396	1884	Ephem./Int.								
EM-17-10	4	DS	P	96	0	64	64	4	607	N	0	0	0									
EM-17-11	4	DS	D	96	92	150	100	8	4444	Y	100	4444	6000	Perennial	ROAD							inner gorge, culvert
EM-17-12	4	DS	P	96	0	80	32	4	379	Y	92	349	471	Perennial								inner gorge
EM-17-13	4	DS	D	97	78	80	250	2	1481	Y	60	889	1200	Perennial	ROAD							
EM-17-14	4	DS	D	97	78	300	210	5	11667	Y	100	11667	15750	Perennial	ROAD							both road on top and middle of slide
EM-17-15	4	DS	D	96	73	100	40	5	741	Y	100	741	1000	Perennial	ROAD							
EM-17-16	4	DS	D	96	75	250	200	3	5556	Y	80	4444	6000	Perennial	ROAD/Landing							
EM-17-17	4	DS	D	96	80	100	100	4	1481	Y	100	1481	2000	Perennial	ROAD							
EM-17-18	4	DF	D	96	80	200	50	2	741	Y	100	741	1000	Perennial								
EM-17-19	4	DS	D	96	66	80	100	3	889	Y	40	356	480	Perennial	ROAD							
EM-17-2	4	DF	P	96	0	240	16	4	569	Y	92	523	707	Ephem./Int.	ROAD							
EM-17-20	4	DS	P	1987	0	160	20	4	474	Y	92	436	576	Perennial	ROAD							
EM-17-21	4	DS	P	1987	0	80	30	4	356	Y	92	327	432	Perennial	ROAD							
EM-17-22	4	DS	D	1987	0	160	30	4	711	Y	92	654	864	Perennial	ROAD							
EM-17-23	4	DS	D	1978	0	50	110	4	815	Y	92	750	1012	Perennial	ROAD							skid on top
EM-17-24	4	DS	D	1978	0	70	130	4	1348	Y	92	1240	1674	Perennial	ROAD							
EM-17-25	4	DS	P	1978	0	70	25	4	259	Y	92	239	322	Perennial	ROAD							
EM-17-26		RS	P			1560	1120	0		Y				Ephem./Int.		2	3	3	4	4	N	
EM-17-3	4	DS	P	96	0	64	32	4	303	Y	92	279	377	Perennial								
EM-17-4	4	DS	Q	96	0	32	64	4	303	N	0	0	0									
EM-17-5	4	DS	Q	96	0	32	48	4	228	N	0	0	0									
EM-17-6	4	DS	P	96	0	48	16	4	114	Y	92	105	141	Ephem./Int.	ROAD							
EM-17-7	4	DF	P	96	0	192	16	4	455	Y	92	419	565	Perennial								
EM-17-8	4	DS	D	96	72	150	100	4	2222	Y	100	2222	3000	Perennial	ROAD							inner gorge
EM-17-9	4	DF	D	96	0	272	16	4	645	Y	92	593	801	Perennial	ROAD							washed out two roads
EM-18-1	4	DS	D	96	78	400	330	5	24444	Y	90	22000	29700	Perennial	ROAD							inner gorge, recent activity, slide over road
EM-18-10	4	DS	D	97	68	80	130	2	770	Y	70	539	728	Perennial	ROAD							
EM-18-11	4	DS	D	97<	70	300	250	7	19444	Y	80	15556	21000	Perennial	ROAD							old road on top of slide
EM-18-12	4	DS	D	97	80	150	100	7	3889	Y	90	3500	4725	Ephem./Int.	ROAD							road on top of slide
EM-18-13	4	DS	D	97	78	80	250	2	1481	Y	60	889	1200	Perennial	ROAD							
EM-18-14	4	DF	D	98	73	150	300	4	6667	Y	80	5333	7200	Perennial								
EM-18-15	4	DS	D	97<	80	300	150	8	13333	Y	90	12000	16200	Perennial	ROAD/Landing							
EM-18-16	4	DS	D	1987	0	80	20	4	237	Y	92	218	288	Perennial	ROAD							inner gorge
EM-18-17	4	DS	P	1987	0	50	30	4	222	Y	92	204	270	Ephem./Int.	SKID							
EM-18-18	4	DS	Q	1987	0	80	50	4	593	Y	92	545	720	Ephem./Int.	ROAD							inner gorge
EM-18-19	4	DS	P	1987	0	50	20	4	148	Y	92	136	180	Perennial	ROAD							
EM-18-2	4	DS	D	96	78	110	80	3	15880	Y	100	15880	21438	Perennial	ROAD							inner gorge
EM-18-20	4	DS	D	1987	0	80	30	4	356	Y	92	327	432	Ephem./Int.	SKID							
EM-18-21	4	DS	D	1978	0	90	40	4	533	Y	92	491	662	Perennial	ROAD							

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%) Field	Average Landslide Dimensions (feet)			Volume (cub.-yrds.)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg.	Complex	
EM-18-22	4	DS	D	1978	0	150	110	4	2444	Y	92	2249	3036	Perennial	ROAD							
EM-18-23	4	DS	D	1978	0	220	180	4	5867	Y	92	5397	7286	Perennial	ROAD							inner gorge
EM-18-24	4	DS	D	1978	0	90	70	4	933	Y	92	859	1159	Perennial	ROAD							inner gorge
EM-18-25	4	DS	P	1978	0	70	70	4	726	Y	92	668	902	Ephem./Int.	SKID							
EM-18-26	4	DS	D	1987	0	240	35	4	1244	Y	92	1145	1511	Perennial								
EM-18-27	4	DS	D	1978	0	90	30	4	400	Y	92	368	497	Perennial	SKID							
EM-18-28	4	DS	D	1978	0	60	20	4	178	Y	92	164	221	Perennial	SKID							
EM-18-29	4	DS	P	1978	0	150	40	4	889	Y	92	818	1104	Ephem./Int.								
EM-18-3	4	DS	D	96	78	350	350	4	15880	Y	100	15880	21438	Perennial	ROAD							inner gorge, over road
EM-18-30		RS	Q			1070	700	0		Y				Perennial		3	3	3	3	4	N	
EM-18-4	4	DS	D	96	86	200	150	2	2222	Y	90	2000	2700	Perennial	ROAD							
EM-18-5	4	DS	P	96	0	48	32	4	228	Y	92	209	283	Ephem./Int.								
EM-18-6	4	DF	Q	96	0	32	10	4	47	N	0	0	0		Landing							
EM-18-7	4	DS	P	96	0	32	16	4	76	N	0	0	0		Landing							
EM-18-8	4	DS	P	96	0	32	16	4	76	Y	92	70	94	Ephem./Int.								
EM-18-9	4	DS	P	96	0	48	16	4	114	Y	92	105	141	Ephem./Int.	ROAD							inner gorge
EM-19-1		RS	P			1230	1120	0		Y				Perennial		3	3	3	3	4	N	
EM-20-1	4	DS	P	96	0	32	16	4	76	Y	92	70	94	Perennial	ROAD							
EM-20-10	4	DS	P	1978	0	90	50	4	667	Y	92	613	828	Perennial	ROAD							
EM-20-11	4	DS	P	1978	0	110	40	4	652	Y	92	600	810	Ephem./Int.	ROAD							
EM-20-12	4	DS	D	1978	0	130	50	4	963	Y	92	886	1196	Ephem./Int.	SKID							
EM-20-13	4	DS	D	1978	0	110	20	4	326	Y	92	300	405	Perennial	ROAD							
EM-20-14	4	DS	P	1978	0	110	50	4	815	Y	92	750	1012	Perennial	ROAD/SKID							
EM-20-15		RS	Q			1680	770	0		Y				Perennial		3	3	3	3	4	N	
EM-20-16		RS	P			3120	5680	0		Y				Perennial		3	3	4	4	4	Y	
EM-20-2	4	DS	D	96	0	80	32	4	379	N	0	0	0		ROAD							
EM-20-3	4	DS	P	96	0	80	192	4	2276	N	0	0	0		ROAD							
EM-20-4	4	DT	P	1987	0	160	20	4	474	Y	92	436	576	Perennial	ROAD							inner gorge
EM-20-5	4	DF	Q	96	0	80	16	4	190	Y	92	174	236	Ephem./Int.								
EM-20-6	1	DT	P	78;81;87	0	160	20	4	474	Y	92	436	567	Perennial	ROAD							
EM-20-8	4	DS	P	1978	0	70	20	4	207	Y	92	191	258	Perennial	ROAD/SKID							
EM-20-9	4	DS	D	1978	0	90	70	4	933	Y	92	859	1159	Perennial	SKID							
EM-21-1	4	DS	P	96	0	32	160	4	759	N	0	0	0									
EM-21-2	4	DS	P	1987	0	80	10	4	119	Y	92	109	144	Perennial	LAND							
EM-21-3	4	DS	D	1978	0	70	20	4	207	Y	92	191	258	Perennial	ROAD							
EM-24-1	3	DS	P	2000	0	220	50	4	1630	Y	92	1499	2024	Ephem./Int.	ROAD							
EM-24-2	3	DT	P	2000	0	670	80	4	7941	Y	92	7305	9862	Ephem./Int.								HW SWALE
EM-28-1	4	DS	P	96	0	96	48	4	683	N	0	0	0									
EM-28-2	4	DS	Q	96	0	96	32	4	455	N	0	0	0									
EM-28-3	4	DT	P	1987	0	80	10	4	119	Y	92	109	144	Perennial	ROAD							
EM-28-4	4	DS	D	1987	0	160	20	4	474	N	0	0	0		ROAD							
EM-28-5	4	DS	P	1987	0	80	10	4	119	Y	92	109	144	Perennial	ROAD							
EM-29-1	4	DS	D	96	0	48	16	4	114	N	0	0	0		Landing							
EM-29-2	4	DS	P	96	0	32	32	4	152	N	0	0	0		ROAD							
EM-29-3	4	DS	Q	96	0	16	32	4	76	N	0	0	0		ROAD							
EM-29-4	4	DF	P	96	0	160	32	4	759	Y	92	698	942	Ephem./Int.								
EM-29-5	4	DS	P	1987	0	65	10	4	96	Y	92	89	117	Perennial	LAND							
EM-5-1	4	DS	D	96	78	180	80	4	2133	Y	80	1707	2304	Perennial	Landing							
EM-6-1	4	DS	D	96	0	64	16	4	152	Y	92	140	188	Perennial	ROAD							
EM-7-1	4	DS	P	96	0	160	32	4	759	Y	92	698	942	Perennial	ROAD							
EM-7-10	4	DT	P	1987	0	80	60	4	711	Y	92	654	864	Perennial	SKID							
EM-7-11	4	DS	D	1987	0	80	30	4	356	Y	92	327	432	Ephem./Int.	SKID							

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		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg.	Complex	
EM-7-12	4	DS	P	1987	0	50	50	4	370	Y	92	341	450	Ephem./Int.	SKID							
EM-7-13	4	DF	Q	1987	0	50	10	4	74	Y	92	68	90	Ephem./Int.	SKID							
EM-7-14	4	DS	P	1987	0	80	50	4	593	Y	92	545	720	Ephem./Int.	SKID							
EM-7-15	4	DS	P	1987	0	80	30	4	356	Y	92	327	432	Ephem./Int.								
EM-7-16	4	DS	P	1987	0	50	15	4	111	Y	92	102	135	Ephem./Int.	SKID							
EM-7-17	4	DS	Q	1978	0	90	20	4	267	Y	92	245	331	Ephem./Int.								
EM-7-2	4	DS	D	96	0	160	32	4	759	N	0	0	0		Landing							
EM-7-3	4	DS	Q	96	0	48	16	4	114	Y	92	105	141	Ephem./Int.								
EM-7-4	4	DF	P	96	0	128	16	4	303	Y	92	279	377	Ephem./Int.	ROAD							
EM-7-5	4	DS	P	96	0	240	112	4	3982	Y	92	3664	4946	Perennial								
EM-7-6	4	DS	P	1987	0	80	30	4	356	Y	92	327	432	Perennial	ROAD							
EM-7-7	4	DS	P	1987	0	200	50	4	1481	Y	92	1363	1799	Ephem./Int.	LAND							
EM-7-8	4	DS	P	1987	0	80	30	4	356	Y	92	327	432	Perennial	SKID							
EM-7-9	4	DT	P	1987	0	115	50	4	852	Y	92	784	1034	Perennial	SKID							
EM-8-1	4	DS	D	96	0	160	80	4	1896	N	0	0	0		ROAD							
EM-8-10	4	DS	D	97	86	70	200	4	2074	Y	65	1348	1820	Perennial	ROAD							
EM-8-11	4	DS	D	1987	0	80	65	4	770	Y	100	770	1017	Perennial	ROAD							inner gorge
EM-8-12	4	DS	D	1980	0	80	65	4	770	Y	92	709	936	Perennial	ROAD							older slide
EM-8-13	4	DS	P	1987	0	80	20	4	237	Y	92	218	288	Perennial								
EM-8-14	4	DS	P	1987	0	80	20	4	237	Y	92	218	288	Ephem./Int.	ROAD							
EM-8-15	4	DS	P	1987	0	80	80	4	948	Y	92	872	1151	Perennial	ROAD							
EM-8-16	4	DT	P	1987	0	80	20	4	237	Y	92	218	288	Ephem./Int.	SKID							
EM-8-17	4	DS	D	1987	0	50	30	4	222	Y	92	204	270	Ephem./Int.								
EM-8-18	4	DS	D	1987	0	130	50	4	963	Y	92	886	1169	Ephem./Int.								
EM-8-19	4	DS	P	1978	0	20	40	4	119	Y	92	109	147	Perennial	ROAD							
EM-8-2	4	DS	P	96	0	160	80	4	1896	Y	92	1745	2355	Perennial	ROAD							
EM-8-20	4	DS	P	1978	0	150	90	4	2000	Y	92	1840	2484	Ephem./Int.	ROAD							
EM-8-21	4	DS	D	1978	0	70	220	4	2281	Y	92	2099	2834	Perennial	ROAD							
EM-8-22	4	DS	P	1978	0	110	50	4	815	N	0	0	0		ROAD							
EM-8-23	4	DS	D	1978	0	40	110	4	652	Y	92	600	810	Perennial	ROAD							
EM-8-24	4	DS	D	1978	0	40	20	4	119	Y	92	109	147	Perennial	ROAD							
EM-8-3	4	DS	P	96	0	80	16	4	190	Y	92	174	236	Ephem./Int.	ROAD							
EM-8-4	4	DS	D	96	82	200	370	4	10963	Y	85	9319	12580	Perennial	ROAD							
EM-8-5	4	DS	D	96	84	80	100	2	593	Y	20	119	160	Perennial	ROAD							
EM-8-6	4	DS	D	96	90	200	150	4	4444	Y	100	4444	6000	Perennial	ROAD							inner gorge
EM-8-7	4	DS	D	1987	78	100	20	4	296	Y	92	273	360	Perennial	ROAD							seen in field 1999
EM-8-8	4	DS	D	1987	78	130	35	4	674	Y	92	620	819	Perennial	ROAD							seen in field 1999
EM-8-9	4	DS	P	96	0	80	16	4	190	N	0	0	0		Landing/ROAD							
EM-9-1	4	DS	D	96	80	50	80	3	444	Y	100	444	600	Ephem./Int.	ROAD							
EM-9-2	4	DT	P	1987	0	120	50	4	889	Y	92	818	1079	Ephem./Int.	SKID							
EM-9-3	4	DS	Q	1987	0	100	30	4	444	Y	92	409	540	Ephem./Int.	SKID							could be skid
EN-1-1	4	DS	D	96	0	48	16	4	114	Y	92	105	141	Ephem./Int.	Landing							
EN-1-10	1	DS	D	1987	0	65	20	4	193	Y	92	177	234	Perennial	ROAD							
EN-1-11	1	DS	D	1978	0	200	70	4	2074	Y	92	1908	2576	Ephem./Int.	SKID							
EN-1-12	1	DS	D	1978	0	110	70	4	1141	Y	92	1049	1417	Ephem./Int.	SKID							
EN-1-13	4	DS	D	1987	0	160	100	4	2370	Y	92	2181	2879	Ephem./Int.	ROAD							
EN-1-14		RS	P			2340	1630	0		Y				Ephem./Int.		2	3	3	5	4	Y	
EN-1-2	4	DS	P	96	0	48	16	4	114	Y	92	105	141	Ephem./Int.	Landing							
EN-1-3	1	DS	D	1987	0	50	15	4	111	Y	92	102	135	Perennial	LAND							
EN-1-4	1	DS	Q	1987	0	100	30	4	444	N	0	0	0		SKID							
EN-1-5	1	DS	D	1987	0	80	30	4	356	Y	92	327	432	Ephem./Int.	SKID							
EN-1-6	1	DS	P	1987	0	100	50	4	741	Y	92	681	900	Ephem./Int.	ROAD							

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		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg.	Complex	
EN-1-7	4	DS	P	1987	0	115	30	4	511	N	0	0	0		SKID							
EN-1-8	4	DS	D	1987	0	260	160	4	6163	Y	92	5670	7484	Ephem./Int.	SKID							
EN-1-9	1	DS	D	1987	0	65	80	4	770	Y	92	709	936	Perennial	LAND							
EN-2-1	1	DF	D	96	100	110	10	2	81	N	0	0	0		ROAD							
EN-2-10	1	DS	D	2000	0	80	30	4	356	Y	92	327	442	Perennial								
EN-2-11	3	DS	D	2000	0	240	70	4	2489	Y	92	2290	3091	Ephem./Int.	ROAD							
EN-2-2	1	DS	D	96	98	170	60	10	3778	Y	50	1889	2550	Perennial	ROAD							
EN-2-3	1	DS	P	96	0	16	64	4	152	Y	92	140	188	Perennial	ROAD							
EN-2-4	4	DF	P	96	0	64	16	4	152	N	0	0	0		ROAD							
EN-2-5	4	DS	D	96	0	80	80	4	948	N	0	0	0									HW SWALE
EN-25-1	4	DS	D	96	0	80	48	4	569	Y	92	523	707	Ephem./Int.								
EN-25-2	4	DS	P	96	0	80	32	4	379	N	0	0	0		ROAD							
EN-25-4	4	DT	D	1987	0	240	30	4	1067	Y	92	981	1295	Perennial	LAND							road top and lower down slide
EN-25-5	4	DS	D	1987	0	160	30	4	711	Y	92	654	864	Ephem./Int.								HW Swale
EN-25-6	4	DS	D	1987	0	200	50	4	1481	Y	92	1363	1799	Perennial	LAND							
EN-25-7	4	DS	P	1987	0	80	50	4	593	Y	92	545	720	Ephem./Int.								
EN-25-8		RS	Q			1560	890	0		Y				Perennial		3	3	3	3	4	N	
EN-25-9		RS	Q			1190	1380	0		Y				Perennial		3	3	3	3	4	N	
EN-2-6	1	DS	P	96	0	48	16	4	114	Y	92	105	141	Ephem./Int.	Landing							
EN-26-1	4	DS	D	1987	0	80	50	4	593	N	0	0	0		LAND							
EN-2-7	1	DS	P	96	0	80	32	4	379	Y	92	349	471	Ephem./Int.								
EN-27-1		RS	Q			1760	850	0		Y				Ephem./Int.		3	2	3	3	4	N	
EN-2-8	4	DS	P	96	0	48	16	4	114	N	0	0	0									
EN-2-9	1	DS	D	87,96	0	100	70	4	1037	N	0	0	0									
EN-30-1	4	DF	D	96	0	560	16	4	1327	Y	92	1221	1649	Ephem./Int.	ROAD							
EN-30-10	4	DS	D	1978	0	130	50	4	963	Y	92	886	1196	Ephem./Int.	SKID							
EN-30-2	4	DS	P	96	0	128	80	4	1517	Y	92	1396	1884	Ephem./Int.								
EN-30-3	4	DS	D	96	0	64	32	4	303	Y	92	279	377	Ephem./Int.	ROAD							
EN-30-4	4	DS	D	96	0	112	48	4	796	N	0	0	0		ROAD							
EN-30-5	4	DF	D	96	0	192	64	4	1820	Y	92	1675	2261	Ephem./Int.	ROAD							washed out road
EN-30-6	4	DS	P	96	0	80	32	4	379	Y	92	349	471	Perennial	ROAD							
EN-30-7	4	DS	P	96	0	160	192	4	4551	Y	92	4187	5652	Ephem./Int.	ROAD/SKID							
EN-30-9	4	DS	D	1978	0	110	70	4	1141	Y	92	1049	1417	Perennial								
EN-3-1	1	DS	D	96	0	80	80	4	948	Y	92	872	1178	Perennial	ROAD							
EN-31-1	4	DS	P	96	0	80	16	4	190	N	0	0	0									
EN-31-10	4	DS	P	1987	0	50	30	4	222	Y	92	204	270	Ephem./Int.	SKID							
EN-31-11	4	DT	D	1987	0	100	10	4	148	Y	92	136	180	Perennial	ROAD							inner gorge
EN-31-12	1	DS	P	1987	0	80	20	4	237	Y	92	218	288	Perennial	ROAD							
EN-31-13	4	DS	P	1987	0	50	10	4	74	Y	92	68	90	Perennial	ROAD							
EN-31-14	4	DS	P	1987	0	50	10	4	74	Y	92	68	90	Perennial	ROAD							inner gorge
EN-31-15	4	DS	P	1987	0	30	30	4	133	Y	92	123	162	Perennial	ROAD							
EN-31-16	4	DS	D	1978	0	70	70	4	726	Y	92	668	902	Perennial	SKID							
EN-31-17	4	DS	D	1978	0	90	90	4	1200	Y	92	1104	1490	Perennial	ROAD							
EN-31-18	4	DS	P	1978	0	50	50	4	370	Y	92	341	460	Perennial	ROAD							
EN-31-19	4	DS	D	1978	0	90	20	4	267	Y	92	245	331	Perennial	ROAD							
EN-31-2	4	DS	D	96	135	40	100	4	593	Y	100	593	800	Perennial	ROAD							inner gorge
EN-31-20	1	DS	P	1978	0	110	70	4	1141	Y	92	1049	1417	Perennial	ROAD							
EN-31-21	4	DS	D	1978	0	150	70	4	1556	Y	92	1431	1932	Perennial								stream failure
EN-31-22		RS	Q			1110	1120	0		Y				Ephem./Int.		3	3	3	4	4	N	
EN-31-23	4	DS	P	2000	0	60	30	4	267	N	0	0	0		ROAD							
EN-31-24	3	DS	Q	2000	0	60	30	4	267	Y	92	245	331	Ephem./Int.								
EN-31-25	4	DS	D	78;81	0	260	90	4	3467	Y	92	3190	4147	Perennial	SKID							

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%) Field	Average Landslide Dimensions (feet)			Volume (cub.-yrds.)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg.	Complex	
EN-31-26		RS	Q			2770	990	0		Y				Perennial		2	3	3	4	4	Y	
EN-31-3	4	DF	P	96	0	80	16	4	190	Y	92	174	236	Perennial	ROAD							
EN-31-4	4	DS	Q	96	0	64	48	4	455	N	0	0	0		ROAD							
EN-31-5	4	DS	D	96	0	160	16	4	379	N	0	0	0		ROAD							
EN-31-6	4	DS	D	96	0	112	32	4	531	Y	92	488	659	Perennial	ROAD							inner gorge
EN-31-9	4	DS	P	1987	0	80	20	4	237	Y	92	218	288	Ephem./Int.								
EN-3-2	1	DS	P	96	0	48	32	4	228	N	0	0	0		ROAD							
EN-3-3	1	DS	D	98	73	100	300	4	4444	Y	80	3556	4800	Perennial	ROAD							
EN-3-4	1	DS	P	1987	0	100	30	4	444	Y	92	409	540	Perennial	ROAD							inner gorge
EN-34-1	4	DS	D	96	96	50	100	5	926	Y	100	926	1250	Perennial	ROAD							inner gorge
EN-34-10	4	DS	P	96	0	64	16	4	152	N	0	0	0									
EN-34-11	4	DS	D	96	108	30	80	2	178	N	0	0	0		ROAD							
EN-34-12	4	DS	D	96	60	60	100	3	667	Y	100	667	900	Perennial	ROAD							inner gorge
EN-34-13	4	DS	D	96	116	80	198	3	1760	Y	80	1408	1901	Perennial	ROAD							
EN-34-14	4	DS	D	1987	0	50	35	4	259	Y	100	259	342	Perennial	ROAD							
EN-34-15	4	DS	D	1987	0	35	50	4	259	Y	92	239	315	Perennial	ROAD							
EN-34-16	3	DS	D	2000	0	140	100	4	2074	Y	92	1908	2576	Ephem./Int.	ROAD							
EN-34-17		RS	P			1780	600	0		Y				Perennial		3	3	3	3	4	N	
EN-34-18	2	DS	P	2000	0	60	30	4	267	Y	92	245	331	Ephem./Int.								
EN-34-19		RS	Q			1950	1010	0		Y				Perennial		3	3	4	4	4	Y	
EN-34-2	4	DS	D	96	78	150	50	2	556	Y	100	556	750	Perennial	ROAD							
EN-34-3	4	DS	D	96	78	100	150	6	3333	Y	100	3333	4500	Perennial	ROAD							inner gorge
EN-34-4	4	DS	D	96	0	48	16	4	114	Y	92	105	141	Perennial	ROAD							inner gorge
EN-34-5	4	DS	D	96	98	120	80	3	1067	Y	95	1013	1363	Perennial	ROAD							
EN-34-6	4	DS	D	96	80	120	50	4	889	Y	100	889	1200	Perennial	ROAD							inner gorge
EN-34-7	4	DS	D	96	94	200	220	3	4889	Y	80	3911	5280	Perennial	ROAD							
EN-34-8	4	DS	Q	96	0	80	16	4	190	Y	92	174	236	Perennial								
EN-34-9	4	DS	P	96	0	96	48	4	683	N	0	0	0									older?
EN-35-1	1	DS	D	96	0	240	96	4	3413	Y	92	3140	4239	Perennial	ROAD							
EN-35-10	1	DS	D	1987	0	320	80	4	3793	Y	92	3489	4606	Perennial	ROAD							
EN-35-11	4	DS	P	1987	0	180	80	4	2133	Y	92	1963	2591	Ephem./Int.	SKID							multiple skids trails
EN-35-12	1	DS	D	1987	0	80	80	4	948	Y	92	872	1151	Perennial	ROAD							cut bank
EN-35-13	1	DS	D	1987	0	50	30	4	222	Y	100	222	293	Perennial	ROAD							inner gorge
EN-35-14	4	DS	D	1987	0	200	130	4	3852	Y	100	3852	5084	Perennial	ROAD							
EN-35-15	4	DS	D	1987	0	115	50	4	852	Y	92	784	1034	Ephem./Int.	SKID							HW Swale
EN-35-16	4	DS	P	1987	0	80	35	4	415	Y	100	415	548	Perennial	SKID							
EN-35-17	1	DS	D	1978	0	130	90	4	1733	Y	92	1595	2153	Perennial	ROAD							
EN-35-18	1	DS	D	1978	0	260	130	4	5007	Y	92	4607	6219	Perennial	ROAD							
EN-35-19	3	DS	D	2000	0	80	65	4	770	N	0	0	0		ROAD							
EN-35-2	1	DS	D	96	80	110	80	3	978	Y	100	978	1320	Perennial								inner gorge, recent activity
EN-35-20	4	DS	P	2000	0	270	100	4	4000	Y	92	3680	4968	Ephem./Int.	ROAD							
EN-35-21	3	DS	D	2000	0	200	50	4	1481	Y	92	1363	1840	Ephem./Int.								
EN-35-22	1	DS	D	2000	0	180	30	4	800	Y	92	736	994	Ephem./Int.	ROAD							
EN-35-23		RS	Q			1780	910	0		Y				Perennial		3	3	3	3	4	N	
EN-35-24		RS	Q			390	240	0		Y				Perennial		3	3	3	3	4	N	
EN-35-25	2	DS	D	2000	0	120	50	4	889	Y	92	818	1104	Ephem./Int.	ROAD							
EN-35-3	1	DS	P	96	0	128	80	4	1517	Y	92	1396	1884	Perennial	ROAD							older?
EN-35-4	1	DS	D	96	0	80	32	4	379	Y	92	349	471	Perennial	ROAD							
EN-35-5	1	DS	P	96	0	48	60	4	427	Y	92	393	530	Perennial	ROAD							inner gorge
EN-35-6	1	DS	D	98	80	210	130	4	4044	Y	100	4044	5460	Perennial	Landing							
EN-35-7	1	DS	D	98	80	180	120	4	3200	Y	100	3200	4320	Perennial	Landing							
EN-35-8	1	DS	D	96	80	230	80	3	2044	Y	100	2044	2760	Perennial	ROAD							

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%) Field	Average Landslide Dimensions (feet)			Volume (cub.-yrds.)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg.	Complex	
EN-35-9	4	DS	Q	1987	0	80	30	4	356	N	0	0	0		SKID							
EN-36-1	1	DS	D	96	70	180	150	6	6000	Y	95	5700	7695	Perennial								inner gorge, recent activity
EN-36-10	1	DS	P	1987	0	130	50	4	963	Y	92	886	1169	Perennial								
EN-36-11	1	DS	D	1978	0	200	50	4	1481	Y	92	1363	1840	Perennial	ROAD							
EN-36-12	4	DS	P	2000	0	160	30	4	711	Y	92	654	883	Ephem./Int.								
EN-36-15		EF	P			1760	1150	0		Y				Ephem./Int.		4	2	3	4	4	N	
EN-36-16		RS	P			1680	2960	0		Y				Perennial		3	3	3	5	4	Y	
EN-36-2	1	DS	D	96	0	80	40	4	474	Y	92	436	589	Perennial	ROAD							
EN-36-3	4	DS	D	96	0	32	64	4	303	N	0	0	0		ROAD							
EN-36-4	4	DF	D	96	36	150	50	4	1111	N	0	0	0		ROAD							
EN-36-5	4	DS	D	96	82	400	300	5	22222	Y	95	21111	28500	Perennial	ROAD							recent activity
EN-36-6	4	DS	P	96	0	92	20	4	273	N	0	0	0									
EN-5-1	4	DS	D	96	96	120	85	3	1133	Y	100	1133	1530	Perennial	ROAD							
EN-5-12	3	DS	P	2000	0	220	70	4	2281	Y	92	2099	2834	Ephem./Int.								
EN-5-2	4	DS	D	96	78	200	100	2	1481	Y	100	1481	2000	Perennial	ROAD							inner gorge
EN-5-3	4	DS	D	1978	0	130	20	4	385	Y	92	354	478	Ephem./Int.	ROAD							
EN-6-1	1	DF	Q	96	0	48	10	4	71	N	0	0	0		Landing							
EN-6-10	1	DS	Q	1987	0	80	50	4	593	Y	92	545	720	Ephem./Int.								stream failure
EN-6-11	1	DS	P	2000	0	320	140	4	6637	Y	92	6106	8243	Ephem./Int.								
EN-6-12	3	DT	P	2000	0	290	30	4	1289	Y	92	1186	1601	Ephem./Int.								HW SWALE
EN-6-14		RS	Q			2010	850	0		Y				Ephem./Int.		3	3	3	3	4	N	
EN-6-2	4	DF	P	96	0	160	16	4	379	N	0	0	0		ROAD							
EN-6-3	4	DF	D	96	0	160	48	4	1138	N	0	0	0		ROAD							
EN-6-4	4	DS	D	96	78	70	100	2	519	Y	95	493	665	Perennial								
EN-6-5	1	DS	D	96	0	80	32	4	379	Y	92	349	471	Perennial	ROAD							inner gorge
EN-6-6	1	DS	D	96	0	112	32	4	531	Y	92	488	659	Perennial	ROAD							inner gorge
EN-6-7	1	DS	D	96	105	150	130	8	5778	Y	100	5778	7800	Perennial	ROAD							inner gorge
EN-6-8	1	DS	P	1987	0	80	15	4	178	Y	92	164	216	Ephem./Int.	ROAD							
EN-6-9	4	DS	P	1987	0	80	20	4	237	Y	92	218	288	Ephem./Int.	ROAD							
EU-15-1	4	DF	P	96	0	176	16	4	417	N	0	0	0		Landing							
EU-15-2	4	DS	D	96	0	48	16	4	114	Y	100	144	154	Ephem./Int.								
EU-15-3	4	DS	Q	96	0	160	16	4	379	Y	100	379	512	Ephem./Int.								
EU-15-4		RS	P			2480	1600	0		Y				Ephem./Int.		4	3	2	3	4	N	
EU-16-1	4	DF	P	96	0	80	16	4	190	Y	92	174	236	Perennial								
EU-16-10	3	DS	D	2000	0	630	130	4	12133	Y	92	11163	15070	Perennial	ROAD							
EU-16-11		RS	P			980	300	0		Y				Ephem./Int.		4	3	3	3	4	N	
EU-16-12		EF	P			1560	590	0		Y				Ephem./Int.		3	3	3	4	4	N	
EU-16-13		EF	P			1270	480	0		Y				Ephem./Int.		4	3	3	3	4	N	
EU-16-2	4	DS	D	96	95	220	100	4	3259	Y	100	3259	4400	Perennial	ROAD							inner gorge, above road
EU-16-3	1	DS	P	1987	80	100	30	4	444	Y	92	409	540	Ephem./Int.	ROAD							stream failure
EU-16-4	4	DS	P	1987	0	50	65	4	481	Y	92	443	585	Perennial	ROAD							
EU-16-5	4	DS	D	98	92	100	30	2	222	Y	100	222	300	Perennial	ROAD							inner gorge
EU-16-6	4	DS	P	1987	0	100	35	4	519	Y	92	477	630	Ephem./Int.	SKID							
EU-16-7	4	DS	P	1987	0	100	20	4	296	Y	92	273	360	Ephem./Int.								
EU-16-8	4	DS	D	1978	0	70	20	4	207	Y	92	191	258	Perennial	ROAD							
EU-16-9		RS	Q			2190	670	0		Y				Perennial		3	3	3	4	4	N	
EU-21-1	4	DS	D	96	0	96	128	4	1820	Y	92	1675	2261	Perennial	ROAD							inner gorge
EU-21-10	4	DS	D	1978	0	150	90	4	2000	Y	92	1840	2484	Perennial	ROAD							
EU-21-12		RS	Q			3220	2790	0		Y				Perennial		3	3	3	3	4	Y	
EU-21-13		RS	P			1870	900	0		Y				Perennial		3	3	3	3	4	Y	
EU-21-14		RS	P			2360	1660	0		Y				Perennial		3	3	3	3	4	N	
EU-21-2	4	DS	D	96	0	80	32	4	379	Y	92	349	471	Perennial	SKID							inner gorge

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		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg.	Complex	
EU-21-3	4	DS	D	96	0	48	64	4	455	Y	92	419	565	Perennial	ROAD							
EU-21-4	4	DS	D	96	0	32	16	4	76	Y	92	70	94	Perennial	ROAD							inner gorge
EU-21-5	4	DS	P	1978	0	50	50	4	370	N	0	0	0		ROAD							
EU-21-6	4	DS	P	1978	0	70	20	4	207	N	0	0	0		ROAD							
EU-21-7	4	DS	P	1978	0	110	20	4	326	Y	92	300	405	Perennial	LAND							
EU-21-8	4	DS	D	1978	0	440	90	4	5867	Y	92	5397	7286	Perennial	ROAD							starts above road
EU-21-9	4	DS	D	1978	0	130	50	4	963	Y	92	886	1196	Perennial	ROAD							
EU-22-1	4	DS	D	96	65	310	110	3	3789	Y	80	3031	4092	Perennial	ROAD							
EU-22-10	4	DF	D	96	88	120	50	2	444	Y	100	444	600	Perennial	ROAD							
EU-22-11	4	DF	D	96	62	200	25	1	185	Y	100	185	250	Perennial	ROAD							
EU-22-12	4	DS	P	96	0	80	80	4	948	Y	100	948	1280	Ephem./Int.	ROAD							
EU-22-13	4	DS	Q	96	0	48	32	4	228	Y	100	228	307	Ephem./Int.								
EU-22-14	4	DF	D	96	77	80	25	2	148	Y	100	1480	200	Ephem./Int.								
EU-22-15	4	DF	D	96	85	100	20	2	148	Y	100	148	200	Perennial								
EU-22-16	4	DS	D	96	110	50	130	3	722	Y	100	722	975	Perennial	ROAD							inner gorge
EU-22-17	4	DS	D	96	85	200	80	4	2370	Y	100	2370	3200	Perennial								
EU-22-18	4	DF	D	96	0	256	16	4	607	N	0	0	0									
EU-22-19	4	DF	D	96	0	96	16	4	228	N	0	0	0									
EU-22-2	4	DS	D	96	78	130	70	5	1685	Y	100	1685	2275	Perennial	ROAD							inner gorge
EU-22-20	4	DS	D	96	90	40	40	4	237	Y	100	237	320	Perennial								
EU-22-21	4	DS	D	96	100	100	70	2	519	Y	100	519	700	Perennial								
EU-22-22	4	DS	D	96	99	150	40	3	667	Y	100	667	900	Perennial	ROAD							inner gorge
EU-22-23	4	DS	D	96	96	100	50	4	741	Y	100	741	1000	Perennial	ROAD							inner gorge
EU-22-24	4	DS	D	96	80	100	130	8	2852	Y	100	2852	5200	Perennial	ROAD							
EU-22-25	4	DS	D	96	114	30	50	2	111	Y	100	111	150	Perennial	ROAD							
EU-22-26	4	DS	D	96	84	150	90	4	2000	Y	70	1400	1890	Perennial	ROAD							
EU-22-27	4	DS	D	96	110	200	50	4	1481	Y	75	1111	1500	Perennial	ROAD							
EU-22-28	4	DS	D	96	65	150	120	8	5333	Y	85	4533	6120	Perennial	ROAD							
EU-22-29	4	DS	D	97	75	150	50	5	1389	Y	75	1042	1406	Perennial								
EU-22-3	4	DS	D	96	100	100	100	4	1481	Y	100	1481	2000	Perennial	ROAD							inner gorge
EU-22-30	4	DS	D	1987	0	160	35	4	830	Y	92	763	1008	Perennial	ROAD							
EU-22-31	4	DS	D	1987	0	80	20	4	237	Y	92	218	288	Perennial	ROAD							
EU-22-32	4	DS	P	1987	0	170	30	4	756	Y	92	696	905	Perennial	ROAD							washout??
EU-22-33	4	DS	D	1978	0	70	20	4	207	Y	92	191	258	Perennial	ROAD/SKID							
EU-22-34	4	DS	P	1978	0	110	70	4	1141	Y	92	1049	1417	Perennial	LAND							
EU-22-35	4	DS	D	1978	0	90	50	4	667	Y	92	613	828	Perennial	ROAD							
EU-22-36	4	DT	D	1978	0	180	40	4	1067	Y	92	981	1325	Ephem./Int.	SKID							
EU-22-37	4	DT	P	1978	0	130	20	4	385	Y	92	354	478	Ephem./Int.	SKID							
EU-22-38	4	DS	D	1978	0	110	60	4	978	Y	92	900	1214	Perennial	ROAD							
EU-22-4	4	DS	D	96	100	100	150	4	2222	Y	100	2222	3000	Perennial	ROAD							inner gorge
EU-22-40	4	DT	D	2000	0	220	30	4	978	N	0	0	0									
EU-22-41	4	DS	D	78;81;87	0	80	50	4	593	Y	92	546	710	Perennial	ROAD							
EU-22-42		RS	Q			3710	2590	0		Y				Perennial		2	3	3	3	4	N	
EU-22-5	4	DS	D	96	110	150	130	3	2167	Y	100	2167	2925	Perennial	Landing							inner gorge
EU-22-6	4	DS	P	96	0	48	80	4	569	Y	100	569	768	Perennial	ROAD							inner gorge
EU-22-7	4	DS	D	96	94	150	80	4	1778	Y	100	1778	2400	Perennial	ROAD							inner gorge
EU-22-8	1	DS	D	1987	90	320	160	4	7585	Y	100	7585	10012	Perennial	ROAD							inner gorge,,, seen
EU-22-9	4	DS	Q	96	0	48	64	4	445	Y	100	445	614	Perennial								inner gorge
EU-23-1	4	DF	P	96	0	176	16	4	417	N	0	0	0		ROAD							
EU-23-10	4	DS	D	96	88	80	40	8	948	Y	100	948	1280	Perennial	ROAD							inner gorge
EU-23-11	4	DF	D	96	88	180	30	6	1200	Y	100	1200	1620	Perennial	ROAD							
EU-23-13	4	DS	D	1987	0	65	130	4	1252	Y	92	1152	1520	Ephem./Int.	ROAD							

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%) Field	Average Landslide Dimensions (feet)			Volume (cub.-yrds.)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg.	Complex	
EU-23-14	4	DS	D	1987	0	50	30	4	222	Y	92	204	270	Perennial	ROAD							
EU-23-15	4	DS	P	1978	0	130	40	4	770	Y	92	709	957	Ephem./Int.	ROAD							
EU-23-16	4	DS	P	1978	0	220	50	4	1630	Y	92	1499	2024	Perennial	SKID							
EU-23-18		RS	P			2810	2350	0		Y				Ephem./Int.		3	3	3	4	4	Y	
EU-23-2	4	DS	D	96	95	80	50	5	741	Y	100	741	1000	Ephem./Int.	ROAD							
EU-23-3	4	DS	D	1996	0	32	32	4	152	Y	92	140	182	Ephem./Int.								
EU-23-4	4	DS	D	96	65	170	150	4	3778	Y	100	3778	5100	Perennial	ROAD							
EU-23-5	4	DS	P	96	0	48	16	4	114	Y	100	114	154	Perennial	ROAD							inner gorge
EU-23-6	4	DF	P	96	0	112	16	4	265	Y	92	244	330	Perennial								
EU-23-7	4	DS	P	96	0	96	16	4	228	Y	100	228	307	Perennial	ROAD							
EU-23-8	4	DS	D	96	90	200	80	3	1778	Y	100	1778	2400	Perennial	ROAD							
EU-23-9	4	DS	D	96	112	40	130	4	770	Y	100	770	1040	Perennial	ROAD							inner gorge
EU-24-1	4	DS	D	96	0	48	48	4	341	Y	92	314	424	Perennial	ROAD							
EU-24-2	4	DS	D	96	0	48	80	4	569	Y	92	523	707	Perennial	ROAD							
EU-24-3	4	DS	D	96	0	48	16	4	114	Y	100	114	154	Perennial								
EU-24-4	4	DS	D	96	65	170	150	4	3778	Y	100	3778	5100	Perennial	ROAD							
EU-24-5		RS	P			2730	1150	0		Y				Perennial		3	3	3	3	5	Y	
EU-24-6		RS	P			1870	750	0		Y				Perennial		3	3	3	3	5	Y	
EU-24-7		RS	Q			2320	400	0		Y				Perennial		3	3	3	3	4	N	
EU-24-8		RS	Q			1450	2000	0		Y				Perennial		3	3	3	3	4	Y	
EU-25-1	4	DS	D	96	0	112	32	4	531	Y	92	488	659	Ephem./Int.	ROAD							
EU-25-2	4	DS	D	1987	0	240	80	4	2844	Y	92	2617	3454	Ephem./Int.	ROAD							
EU-25-3	4	DS	D	1987	0	130	50	4	963	Y	92	886	1169	Ephem./Int.	ROAD							
EU-25-4	4	DS	D	1987	0	115	50	4	852	Y	92	784	1019	Perennial	LANDING							
EU-26-1	4	DS	Q	96	0	16	48	4	114	N	0	0	0									
EU-26-10	4	DS	D	1987	0	160	65	4	1541	Y	92	1417	1871	Ephem./Int.	ROAD							
EU-26-11	4	DS	D	1987	0	65	30	4	289	Y	92	266	351	Ephem./Int.	LAND							
EU-26-12	4	DS	D	1987	0	150	50	4	1111	Y	92	1022	1349	Ephem./Int.	LAND							
EU-26-13	4	DS	D	1987	0	240	65	4	2311	Y	92	2126	2807	Ephem./Int.	ROAD							
EU-26-15		RS	P			2360	1170	0		N						4	2	3	3	4	N	
EU-26-16		RS	Q			2440	1150	0		Y				Perennial		3	3	3	3	4	N	
EU-26-2	4	DF	D	96	0	80	16	4	190	Y	92	174	236	Ephem./Int.	ROAD							
EU-26-3	4	DF	D	96	0	320	16	4	759	Y	92	698	942	Ephem./Int.	ROAD/Landing							
EU-26-4	4	DS	D	96	106	150	40	4	889	Y	75	667	900	Ephem./Int.	Landing							
EU-26-5	4	DS	D	96	73	100	130	2	963	Y	95	915	1235	Perennial	ROAD							
EU-26-6	4	DF	P	96	0	112	16	4	265	Y	92	244	330	Perennial								
EU-26-7	4	DS	D	96	0	64	48	4	445	Y	92	419	565	Perennial	Landing							
EU-26-8	4	DF	D	98	78	150	30	4	667	Y	80	533	720	Ephem./Int.	ROAD							
EU-26-9	4	DS	D	97	119	70	100	4	1037	Y	100	1037	1400	Perennial								
EU-27-1	4	DS	D	96	93	80	150	5	2222	Y	100	2222	3000	Perennial	Landing							
EU-27-2	4	DF	D	96	0	200	50	3	1111	Y	80	889	1200	Perennial	ROAD							
EU-27-3	4	DS	P	1987	0	80	15	4	178	Y	92	164	216	Ephem./Int.	LANDING							
EU-27-4	4	DS	P	1978	0	440	80	4	5215	Y	92	4798	6477	Perennial	SKID							
EU-27-5	4	DS	D	1978	0	130	20	4	385	Y	92	354	478	Ephem./Int.	ROAD							
EU-27-6		RS	Q			3830	3760	0		Y				Ephem./Int.		2	3	4	4	4	Y	
EU-27-7	2	DS	P	2000	0	60	30	4	267	Y	92	245	331	Ephem./Int.								
EU-27-8	2	DS	D	2000	0	120	30	4	533	Y	92	491	662	Ephem./Int.								
EU-34-6		RS	D			1210	1150	0		Y				Perennial		3	3	3	3	4	N	
EU-9-1		EF	P			1270	560	0		Y				Ephem./Int.		4	3	3	4	4	N	

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		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg	Complex	
WC-15-1	1	DS	P	1981	0	80	110	4	1304	Y	92	1199	1559	Perennial	ROAD							
WC-22-2	4	DS	D	>90	0	330	100	4	4889	Y	92	4498	6072	Ephem./Int.								
WC-22-3	1	DS	D	96,87	0	75	60	4	667	Y	100	667	900	Ephem./Int.								inner gorge
WC-22-4	2	DS	D	1987	0	200	50	4	1481	Y	92	1363	1840	Ephem./Int.	ROAD							road top and bottom
WC-22-5	4	DS	D	87	0	200	50	4	1481	Y	92	1363	1772	Ephem./Int.	ROAD							road top and bottom
WC-22-6		RS	Q			550	320	0		Y				Ephem./Int.		3	3	3	3	4	N	
WC-27-1	3	DS	Q	96	0	60	40	4	356	Y	92	327	442	Ephem./Int.								
WC-27-10	2	DS	D	1987	0	290	160	4	6874	Y	92	6324	8538	Ephem./Int.	SKID							
WC-27-11	4	DS	D	2000	0	230	50	4	1704	Y	92	1567	2116	Ephem./Int.								
WC-27-12	2	DS	D	2000	0	100	50	4	741	Y	92	681	920	Ephem./Int.								
WC-27-13		RS	P			1380	460	0		Y				Ephem./Int.		3	3	3	4	4	N	
WC-27-14		RS	Q			390	260	0		Y				Ephem./Int.		4	3	3	3	4	N	
WC-27-15		RS	Q			390	260	0		Y				Ephem./Int.		3	3	5	4	4	N	
WC-27-16		RS	Q			1750	610	0						Ephem./Int.		4	3	3	3	4	N	
WC-27-2	4	DS	D	96	0	60	25	4	222	Y	92	204	276	Ephem./Int.	Landing							
WC-27-3	3	DF	D	96	0	350	35	4	1815	Y	92	1670	2254	Ephem./Int.								
WC-27-4	1	DS	P	96	0	30	60	4	267	Y	100	267	360	Perennial								streamside adjacent to log dam
WC-27-5	3	DS	P	96	0	40	40	4	237	Y	100	237	320	Perennial								streamside adjacent to log dam
WC-27-6	4	DS	D	96,87	0	110	40	4	652	Y	92	600	442	Ephem./Int.	ROAD							
WC-27-7	3	DS	P	96	0	70	30	4	311	Y	92	286	650	Ephem./Int.								
WC-27-8	2	DS	D	90,87	0	170	85	4	2141	Y	92	1969	2659	Ephem./Int.	ROAD							
WC-27-9	2	DS	D	96,87	64	50	130	2	481	Y	100	481	650	Ephem./Int.	ROAD							
WC-28-1	4	DS	D	96	0	60	40	4	356	Y	92	327	442	Ephem./Int.	ROAD							
WC-28-2		RS	Q			445	320	0		Y				Ephem./Int.		3	3	3	4	4	N	
WF-10-1	3	DS	P	1987	0	80	20	4	237	Y	92	218	283	Ephem./Int.								
WF-10-10		RS	P			620	340	0		Y				Ephem./Int.		3	2	3	4	4	N	
WF-10-9		RS	P			1190	640	0		Y				Ephem./Int.		3	3	3	3	4	Y	
WF-11-1	2	DS	P	96	0	80	35	4	415	Y	92	382	515	Ephem./Int.								
WF-11-2	2	DS	D	96	74	500	100	4	7407	Y	100	7407	10000	Ephem./Int.	ROAD							
WF-11-3	3	DF	D	96	73	200	80	3	1778	Y	90	1600	2160	Perennial	ROAD							
WF-11-4		RS	P			1780	1630	0		Y				Perennial		3	3	3	5	4	N	
WF-11-5	4	DS	Q	2000	0	220	110	4	3585	Y	92	3298	4453	Ephem./Int.								
WF-11-6		RS	P			660	700	0		Y				Ephem./Int.		3	3	3	3	4	N	
WF-11-8		RS	D			1660	1250	0		Y				Perennial		3	2	3	3	4	Y	
WF-13-1		RS	P			2400	4270	0		Y				Perennial		3	3	4	5	4	Y	
WF-2-1		RS	Q			335	210	0		Y				Ephem./Int.		4	3	5	4	4	N	
WF-26-1	4	DS	D	96	0	150	100	4	2222	Y	92	2044	2760	Ephem./Int.								
WF-26-2	4	DS	D	96	0	80	100	4	1185	Y	92	1090	1472	Ephem./Int.								
WF-26-3	3	DS	D	96	0	70	100	4	1037	Y	92	954	1288	Ephem./Int.								
WF-26-4	2	DS	P	96	0	60	15	4	133	Y	92	123	166	Ephem./Int.	ROAD							
WF-26-5	2	DS	P	96	0	40	40	4	237	Y	92	218	294	Ephem./Int.								
WF-26-6	2	DS	P	96	0	40	30	4	178	Y	92	164	221	Ephem./Int.								
WF-26-7		RS	Q			1000	560	0		N						3	3	3	3	4	N	toe bounded by Flynn Creek Road
WF-27-1	3	DS	P	1981	0	250	60	4	2222	Y	92	2044	2760	Ephem./Int.	ROAD							
WF-3-1	4	DS	P	1987	0	50	10	4	74	N	0	0	0									
WF-3-2	4	DS	D	2000	0	120	30	4	533	N	0	0	0									
WF-3-3		RS	Q			330	210	0		Y				Ephem./Int.		3	3	3	4	4	N	
WF-3-4		RS	P			1390	1380	0		Y				Ephem./Int.		2	2	5	4	5	Y	
WF-34-1	3	DS	P	96	0	40	40	4	237	N	0	0	0									
WF-34-2	2	DS	P	96,87	0	40	20	4	119	Y	92	109	147	Ephem./Int.								
WF-34-3	3	DS	P	1987	0	80	50	4	593	Y	92	545	736	Ephem./Int.								older
WF-34-4	4	DS	P	1981	0	90	60	4	800	N	0	0	0									

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		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg	Complex	
WF-34-7	3	DS	Q	2000	0	60	20	4	178	N	0	0	0									
WF-34-8	4	DS	Q	2000	0	40	20	4	119	Y	92	109	147	Ephem./Int.								
WF-35-1	3	DS	Q	96	0	40	30	4	178	Y	92	164	221	Ephem./Int.	ROAD							
WF-35-2	3	DS	P	96	0	65	30	4	289	Y	92	266	359	Ephem./Int.								
WF-35-3	3	DS	P	1987	0	80	10	4	119	Y	92	109	142	Ephem./Int.								
WF-35-4	3	DS	P	1987	0	65	30	4	289	Y	92	266	346	Ephem./Int.								
WF-35-5	2	DT	D	1981	0	240	40	4	1422	Y	92	1308	883	Perennial	ROAD							
WF-35-6	3	DS	D	2000	0	120	30	4	533	Y	92	491	662	Ephem./Int.	ROAD							
WF-35-7	3	DS	P	2000	0	60	30	4	267	Y	92	245	331	Ephem./Int.	ROAD							
WF-35-8		RS	Q			1070	600	0		Y				Perennial		2	3	3	3	4	N	
WF-35-9		RS	Q			590	400	0		Y				Ephem./Int.		3	3	3	3	4	N	
WG-24-1	3	DF	Q	96,87	0	200	25	4	741	Y	92	681	920	Ephem./Int.								
WG-24-2	4	DS	P	1981	0	140	60	4	1244	Y	92	1145	1546	Ephem./Int.	SKID							
WG-24-3	3	DS	D	1981	0	110	30	4	489	Y	92	450	607	Ephem./Int.								
WG-24-4	3	DT	D	2000	0	430	50	4	3185	Y	92	2930	3956	Ephem./Int.	ROAD							
WG-24-5	3	DS	D	2000	0	80	30	4	356	Y	92	327	442	Ephem./Int.	ROAD							
WG-25-1	3	DS	D	96	0	50	50	4	370	Y	92	341	460	Ephem./Int.	ROAD							
WG-25-2	4	DS	D	1987	0	80	50	4	593	Y	92	545	736	Ephem./Int.								
WG-25-3	3	DS	P	1987	0	50	15	4	111	Y	92	102	138	Ephem./Int.	SKID							older skid
WG-30-1	4	DS	P	96	0	60	30	4	267	Y	92	245	331	Ephem./Int.								
WG-30-2	2	DS	Q	1987	0	50	30	4	222	Y	92	204	266	Ephem./Int.	SKID							
WG-30-3	2	DS	P	1987	0	50	15	4	111	Y	92	102	138	Ephem./Int.								
WG-31-1	4	DS	P	1987	0	50	30	4	222	Y	92	204	276	Ephem./Int.	SKID							
WG-31-2	2	DS	D	1981	0	220	110	4	3585	Y	92	3298	4453	Ephem./Int.	SKID							
WH-10-1	2	DS	D	1987	0	50	20	4	148	Y	92	136	184	Perennial	ROAD							
WI-19-1	2	DS	D	96	0	100	100	4	1481	Y	92	1363	1840	Ephem./Int.	ROAD							
WI-30-1	1	DS	P	96	0	60	40	4	356	Y	100	356	480	Perennial								inner gorge
WI-30-2	4	DS	D	96	0	230	50	4	1704	Y	92	1567	2116	Ephem./Int.	ROAD							
WI-30-3	4	DS	D	96	0	40	30	4	178	Y	92	164	221	Ephem./Int.								
WI-30-4	3	DF	P	96	0	200	20	4	593	Y	92	545	736	Ephem./Int.								
WI-30-5	3	DS	D	96	0	220	130	4	4237	Y	92	3898	5262	Perennial	ROAD							
WI-30-6	3	DS	D	96	0	50	30	4	222	N	0	0	0		ROAD							
WI-30-7	3	DS	D	96	0	125	80	4	1481	Y	92	1363	1840	Ephem./Int.	SKID							
WL-11-1	2	DS	Q	96	0	30	40	4	178	Y	92	164	221	Ephem./Int.								
WL-11-10	4	DS	D	1981	0	90	60	4	800	Y	92	736	957	Perennial	LANDING							
WL-11-13		RS	Q			1270	640	0		Y				Ephem./Int.		4	3	3	4	3	N	
WL-11-15		RS	D			680	250	0		Y				Perennial		3	4	3	3	3	N	
WL-11-16		RS	P			1270	640	0		Y				Perennial		4	3	3	3	3	N	
WL-11-2	4	DS	D	96	90	60	20	6	267	Y	100	267	360	Perennial	ROAD							inner gorge
WL-11-3	4	DS	D	96	63	150	40	3	667	Y	100	667	900	Perennial	ROAD							inner gorge
WL-11-4	3	DS	D	89<	92	100	50	3	556	N	0	0	0		ROAD							
WL-11-5	4	DS	D	1987	94	65	30	4	289	Y	92	266	359	Ephem./Int.	LANDING							
WL-11-6	4	DS	D	1987	70	80	30	4	356	Y	92	327	442	Ephem./Int.	LANDING							inner gorge
WL-11-9	4	DS	D	1981	0	110	60	4	978	Y	92	900	1169	Perennial	ROAD							
WL-12-1	3	DS	D	96	0	40	30	4	178	N	0	0	0		ROAD							
WL-12-10		RS	D			2540	2430	0		Y				Perennial		3	2	3	3	3	Y	
WL-12-11	4	DS	P	1987	0	100	20	4	296	N	0	0	0		ROAD							
WL-12-12	4	DS	P	1987	0	130	30	4	578	Y	92	532	691	Ephem./Int.								
WL-12-13		RS	D			780	320	0		N						4	2	3	2	3	N	
WL-12-14		RS	P			1460	400	0		Y				Ephem./Int.		3	3	3	3	3	N	
WL-12-15		RS	P			1460	400	0		Y				Ephem./Int.		3	3	3	3	3	N	
WL-12-19		RS	D			1250	800	0		Y				Perennial		3	3	3	3	3	N	

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%) Field	Average Landslide Dimensions (feet)			Volume (cubic-yards)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg	Complex	
WL-12-2	3	DS	D	96	0	80	100	4	1185	N	0	0	0		ROAD							
WL-12-20		RS	P			1560	640	0		Y				Perennial		3	3	3	3	3	N	
WL-12-3	3	DS	P	96	0	70	30	4	311	N	0	0	0		Landing							
WL-12-4	1	DS	Q	96	0	40	20	4	119	Y	92	109	147	Perennial								
WL-12-5	4	DS	D	96	109	150	50	4	1111	Y	100	1111	1500	Perennial	ROAD							meander bend
WL-12-6	4	DS	D	96	98	50	70	5	648	Y	100	648	875	Perennial	ROAD							inner gorge
WL-12-7	5	DS	D	96	92	130	70	3	1011	Y	100	1011	1365	Perennial	ROAD							inner gorge
WL-12-8	4	DS	D	96	135	70	30	5	389	N	0	0	0		ROAD							
WL-12-9		RS	D			1660	720	0		Y				Perennial		3	3	3	3	3	N	
WL-13-1	3	DS	D	96	0	70	50	4	519	Y	92	477	644	Perennial	ROAD							
WL-13-10	4	DS	P	1987	0	100	30	4	444	Y	92	409	532	Ephem./Int.	ROAD							
WL-13-11	4	DS	D	1987	0	130	30	4	578	Y	92	532	691	Ephem./Int.	LANDING							
WL-13-12	4	DS	P	1981	0	250	30	4	1111	Y	92	1022	1380	Perennial	ROAD							
WL-13-13		RS	P			900	240	0		Y				Perennial		3	2	3	3	3	N	
WL-13-14		RS	P			1110	200	0		Y				Perennial		3	2	3	3	3	N	
WL-13-15		RS	P			920	240	0		Y				Perennial		3	4	3	2	3	N	
WL-13-16	2	DS	D	2000	0	200	80	4	2370	Y	92	2181	2944	Ephem./Int.								
WL-13-17		RS	P			980	480	0		Y				Perennial		3	3	3	3	3	N	
WL-13-18		RS	P			1670	910	0		Y				Ephem./Int.		3	4	3	3	3	Y	
WL-13-19		RS	D			1900	2680	0		Y				Ephem./Int.		3	3	3	3	3	Y	
WL-13-2	3	DS	D	96	0	280	30	4	1244	Y	92	1145	1546	Perennial	ROAD							
WL-13-20		RS	P			1660	1040	0		Y				Ephem./Int.		3	3	3	4	3	Y	
WL-13-21		RS	P			1660	1040	0		Y				Ephem./Int.		3	3	3	4	3	Y	
WL-13-22	3	DS	D	2000	0	170	50	4	1259	Y	92	1159	1564	Ephem./Int.								
WL-13-3	4	DS	Q	96	0	70	15	4	156	N	0	0	0		ROAD							
WL-13-4	1	DS	P	96	0	60	30	4	267	Y	92	245	331	Perennial								
WL-13-5	1	DS	P	96	0	70	30	4	311	Y	92	286	386	Perennial	ROAD							
WL-13-6	3	DS	P	1987	0	70	30	4	311	Y	92	286	386	Ephem./Int.	ROAD							
WL-13-7	3	DS	P	1987	0	80	15	4	178	Y	92	164	221	Ephem./Int.	ROAD							
WL-13-8	4	DS	P	1987	0	50	15	4	111	Y	92	102	138	Ephem./Int.	ROAD							
WL-13-9	2	DS	D	1987	0	65	30	4	289	Y	92	266	359	Perennial	SKID							
WL-14-1	3	DS	P	94-89	0	50	50	4	370	N	0	0	0									re-veg.
WL-14-2	3	DS	Q	96	0	20	20	4	59	N	0	0	0									
WL-14-3	3	DS	P	96	0	20	30	4	89	N	0	0	0		ROAD							
WL-14-4	3	DS	D	2000	0	160	50	4	1185	N	0	0	0									
WL-14-5		RS	P			740	450	0		Y				Perennial		3	2	3	3	2	N	
WL-14-7		RS	P			1660	430	0		Y				Ephem./Int.		4	4	4	3	3	Y	
WL-17-1	2	DS	D	96	98	300	80	4	3556	Y	100	3556	4800	Ephem./Int.								
WL-17-10	3	DS	D	1987	0	240	80	4	2844	Y	92	2617	3533	Ephem./Int.	ROAD							
WL-17-11	3	DS	P	87	0	80	30	4	356	Y	92	327	425	Ephem./Int.	ROAD							
WL-17-12	1	DS	P	1987	0	60	50	4	444	Y	92	409	552	Perennial								stream failure
WL-17-13	5	DS	D	1987	0	50	20	4	148	Y	92	136	184	Perennial	ROAD							stream bank failure
WL-17-14	2	DS	P	1981	0	110	50	4	815	Y	92	750	1012	Ephem./Int.	LANDING							
WL-17-15	4	DS	Q	1981	0	90	60	4	800	Y	92	736	994	Ephem./Int.	LANDING							
WL-17-16		RS	D			1540	690	0		Y				Perennial		3	2	3	3	3	N	
WL-17-17		RS	D			700	320	0		Y				Perennial		3	3	3	2	2	N	
WL-17-18		RS	P			550	320	0		Y				Ephem./Int.		3	2	3	3	3	N	
WL-17-19		RS	D			1270	350	0		Y				Ephem./Int.		3	3	3	3	3	N	
WL-17-2	3	DS	D	96,87	95	350	100	3	3889	Y	100	3889	5250	Perennial								
WL-17-20	4	DS	P	2000	0	140	30	4	622	Y	92	572	744	Ephem./Int.								
WL-17-21	3	DS	P	2000	0	160	60	4	1422	N	0	0	0		ROAD							
WL-17-22		RS	D			1540	690	0		Y				Perennial		3	2	3	3	3	Y	

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%) Field	Average Landslide Dimensions (feet)			Volume (cubic-yards)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg	Complex	
WL-17-23		RS	P			1950	880	0		Y				Perennial		3	3	3	3	3	N	
WL-17-3	4	DS	D	96	110	100	30	2	222	N	0	0	0									
WL-17-4	3	DS	D	96	0	40	40	4	237	Y	92	218	294	Ephem./Int.	ROAD							Failing off old legacy road
WL-17-5	3	DS	P	96	0	60	40	4	356	N	92	328	426		ROAD							Failing off old legacy road
WL-17-6	4	DS	D	96	60	130	50	4	963	N	0	0	0									
WL-17-8		RS	D			1130	960	0		Y				Perennial		4	3	3	3	3	N	
WL-18-12	4	DS	Q	1987	0	160	80	4	1896	Y	92	1745	2355	Ephem./Int.	ROAD							
WL-18-13	4	DS	D	1987	0	400	120	4	7111	Y	92	6542	8832	Perennial	ROAD							
WL-18-14	4	DT	D	1987	0	400	50	4	2963	Y	92	2726	3680	Perennial	ROAD							Run off WL-18-14
WL-18-15	2	DT	D	1987	0	160	20	4	474	Y	92	436	589	Ephem./Int.	LANDING							
WL-18-16	4	DS	P	1987	0	80	20	4	237	Y	92	218	294	Ephem./Int.								
WL-18-17		RS	D			1760	720	0		Y				Ephem./Int.		3	2	3	2	3	N	
WL-18-18	2	DS	Q	2000	0	40	20	4	119	N	0	0	0									
WL-18-19		RS	P			1190	1200	0		Y				Ephem./Int.		4	3	3	4	3	N	
WL-18-2	4	DS	D	96	0	70	20	4	207	N	0	0	0		Landing							
WL-18-20		RS	Q			960	530	0		Y				Ephem./Int.		3	4	4	3	3	N	
WL-18-21	1	DS	D	2000	0	215	65	4	2070	Y	92	1905	2571	Ephem./Int.								
WL-18-22	1	DS	D	2000	0	100	50	4	741	Y	92	681	920	Ephem./Int.								
WL-18-23		RS	P			1660	830	0		Y				Ephem./Int.		3	2	2	3	3	Y	
WL-18-24	3	DS	D	2000	0	100	20	4	296	N	0	0	0									
WL-18-25	3	DS	D	2000	0	120	30	4	533	N	0	0	0									
WL-18-26	3	DS	D	2000	0	200	65	4	1926	N	0	0	0									
WL-18-27	4	DS	D	2000	0	370	50	4	2741	N	0	0	0									
WL-18-28		RS	P			600	270	0		Y				Ephem./Int.		2	2	3	3	2	N	
WL-18-29		RS	P			600	530	0		Y				Ephem./Int.		2	2	3	3	3	N	
WL-18-3	3	DS	D	96	0	70	30	4	311	N	0	0	0		ROAD							
WL-18-30		RS	P			1030	530	0		Y				Ephem./Int.		3	3	3	3	2	N	
WL-18-31	4	DS	P	2000	0	60	30	4	267	N	0	0	0		SKID							
WL-18-32		RS	P			720	320	0		Y				Ephem./Int.		3	2	3	3	2	N	
WL-18-33		RS	D			1190	1140	0		Y				Ephem./Int.		3	2	3	3	3	Y	
WL-18-34		RS	P			600	210	0		Y				Ephem./Int.		3	2	3	3	2	N	
WL-18-35		RS	D			1370	590	0		Y				Ephem./Int.		2	2	3	3	2	Y	
WL-18-36		RS	P			600	220	0		Y				Ephem./Int.		2	2	3	3	2	N	
WL-18-37		RS	P			1460	1200	0		Y				Ephem./Int.		3	3	3	3	3	Y	
WL-18-38		RS	Q			720	340	0		Y				Ephem./Int.		3	3	3	4	3	N	
WL-18-39		RS	P			780	480	0		Y				Ephem./Int.		3	3	3	3	3	N	
WL-18-4	3	DS	P	96	0	20	30	4	89	Y	92	92	110	Ephem./Int.								
WL-18-40		RS	P			1270	4480	0		Y				Perennial		0	0	0	0	0	Y	large complex
WL-18-41		RS	P			11701	220	0		Y				Ephem./Int.		3	2	3	3	3	N	
WL-18-5	1	DS	D	96	0	80	30	4	356	Y	92	327	442	Perennial								
WL-18-6	2	DS	Q	96	0	30	60	4	267	Y	92	245	331	Ephem./Int.								
WL-18-7	2	DS	D	96	0	100	30	4	444	Y	92	409	552	Ephem./Int.								
WL-18-8	4	DS	D	96	0	80	25	4	296	N	0	0	0									
WL-18-9	1	DS	D	96	0	300	100	6	6667	Y	90	6000	8100	Perennial								
WL-19-1	3	DS	D	96	0	100	40	4	593	Y	92	545	736	Ephem./Int.	ROAD							
WL-19-2	3	DS	D	96	65	140	70	3	1089	Y	20	218	294	Ephem./Int.	ROAD							
WL-19-3	3	DS	D	96	60	60	150	5	1667	Y	100	1667	2550	Ephem./Int.	ROAD							
WL-19-4		RS	P			1500	1920	0		Y				Ephem./Int.		3	3	3	3	3	N	
WL-19-6		RS	P			780	1150	0		Y				Ephem./Int.		3	2	3	3	3	N	
WL-19-7		RS	Q			510	390	0		Y				Ephem./Int.		3	3	3	3	3	N	
WL-19-8		RS	P			1190	400	0		Y				Ephem./Int.		2	2	3	3	2	N	
WL-20-1	4	DS	Q	96	0	70	30	4	311	N	0	0	0									

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		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg	Complex	
WL-20-10		RS	P			590	1150	0		Y				Ephem./Int.		3	3	3	3	3	N	
WL-20-11		RS	D			880	500	0		Y				Perennial		3	3	3	3	3	N	
WL-20-12		RS	D			1210	670	0		Y				Ephem./Int.		3	3	4	3	2	N	
WL-20-13		RS	P			1190	270	0		Y				Perennial		2	3	3	3	3	N	
WL-20-2	3	DS	D	96	108	200	70	2	1037	Y	100	1037	1400	Ephem./Int.								
WL-20-3		RS	D			1210	350	0		Y				Ephem./Int.		4	2	3	2	2	N	
WL-20-4		RS	D			740	300	0		Y				Ephem./Int.		3	2	3	3	2	N	
WL-20-5	3	DS	D	1981	0	90	60	4	800	Y	92	736	957	Ephem./Int.	ROAD							
WL-20-6	1	DS	D	2000	0	140	65	4	1348	Y	92	1240	1674	Perennial								
WL-20-7		RS	P			410	270	0		Y				Ephem./Int.		3	3	3	3	3	N	
WL-20-8		RS	P			390	900	0		Y				Ephem./Int.		3	3	3	3	2	N	
WL-20-9	3	DS	D	2000	0	660	65	4	6356	Y	92	5847	7894	Ephem./Int.								
WL-2-1	5	DS	D	96	90	100	70	6	1556	Y	100	1556	2100	Perennial	ROAD							inner gorge (starts above road)
WL-2-2	5	DS	D	96	78	50	50	2	185	Y	100	185	250	Perennial	ROAD							inner gorge
WL-24-1	4	DS	D	96	0	140	55	4	1141	Y	92	1049	1417	Perennial	Landing							
WL-24-17		RS	D			2770	3840	0		Y				Perennial		3	3	3	3	2	Y	
WL-24-2		RS	Q			490	720	0		Y				Ephem./Int.		3	3	3	3	5	N	
WL-3-1	4	DS	D	96	0	80	120	4	1422	Y	92	1308	1766	Ephem./Int.	ROAD							above road and cut slope
WL-32-1		RS	D			900	450	0		Y				Perennial		2	1	1	2	1	Y	Flood Gate Slide
WL-7-1	4	DS	Q	96	0	80	20	4	237	N	0	0	0									
WL-7-10		RS	D			780	1220	0		Y				Ephem./Int.		3	3	3	3	3	Y	
WL-7-11		RS	D			980	960	0		Y				Perennial		3	3	3	3	3	N	
WL-7-12		RS	D			1370	1220	0		Y				Perennial		3	3	3	3	3	Y	
WL-7-13		RS	P			860	510	0		Y				Perennial		3	3	3	3	3	N	
WL-7-14		RS	Q			680	540	0		Y				Perennial		4	3	3	3	3	N	
WL-7-15		RS	Q			1030	740	0		Y				Perennial		4	3	3	3	3	N	
WL-7-16		RS	Q			1270	530	0		Y				Perennial		3	3	3	3	3	N	
WL-7-2	4	DS	D	96	0	100	30	4	444	Y	92	409	552	Perennial								
WL-7-3	3	DS	Q	96	0	50	60	4	444	N	0	0	0									
WL-7-4	5	DS	D	96	65	100	200	6	4444	Y	80	3556	4800	Perennial	ROAD							
WL-7-5		RS	P			840	430	0		Y				Perennial		4	3	5	3	3	N	
WL-7-6	5	DS	P	1987	0	100	65	4	963	Y	92	886	1196	Perennial	ROAD							stream bank failure
WL-7-7	3	DS	D	1981	0	30	50	4	222	Y	92	204	276	Perennial	ROAD							Stream bank failure
WL-7-9		RS	P			1560	640	0		Y				Perennial		3	3	3	3	3	N	
WL-8-15		RS	P			850	290	0		Y				Ephem./Int.		4	3	3	3	4	N	
WL-8-17		RS	D			1130	960	0		Y				Perennial		4	3	3	3	3	N	
WM-16-1	3	DS	D	96	0	100	20	4	296	N	0	0	0									
WM-16-2	2	DF	Q	96	0	64	16	4	152	Y	92	140	188	Ephem./Int.	SKID							
WM-16-3		RS	P			1500	1010	0		Y				Perennial		3	3	3	4	4	N	
WM-16-4		RS	D			1460	690	0		Y				Perennial		3	3	3	3	3	N	
WM-17-1	3	DS	D	96	125	400	60	3	2667	Y	100	2667	3600	Perennial	Landing							
WM-21-1	2	DS	D	96	0	70	40	4	415	Y	92	382	515	Perennial	Landing							
WM-21-10	2	DS	P	96	0	70	25	4	259	N	0	0	0									
WM-21-11	3	DS	P	1987	0	50	20	4	148	Y	92	136	184	Ephem./Int.	ROAD							
WM-21-12	2	DS	P	1987	0	80	50	4	593	Y	92	545	736	Ephem./Int.	ROAD							
WM-21-13	3	DT	D	1987	0	400	30	4	1778	Y	92	1636	2208	Perennial	LANDING							
WM-21-14	1	DS	D	1987	0	160	60	4	1422	Y	92	1308	1766	Perennial	ROAD							
WM-21-2	3	DS	D	96	0	75	80	4	889	Y	92	818	1104	Perennial	Landing							
WM-21-3	3	DS	P	96	0	100	50	4	741	Y	92	681	920	Perennial	Landing							
WM-21-32		RS	Q			1560	1040	0		Y				Perennial		3	3	3	4	4	N	
WM-21-4	2	DS	D	96	0	80	30	4	356	Y	92	327	442	Ephem./Int.								
WM-21-5	4	DS	Q	96	0	50	40	4	296	N	0	0	0									

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		Type	Certainty		Field	Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg	Complex	
WM-21-6	4	DS	Q	96	0	180	30	4	800	N	0	0	0									
WM-21-7	3	DS	P	96	0	50	30	4	222	Y	92	204	276	Ephem./Int.								
WM-21-8	3	DS	P	96	0	50	70	4	519	N	0	0	0									
WM-21-9	3	DS	P	96	0	50	40	4	296	N	0	0	0		ROAD							
WM-22-1	3	DS	P	96	0	80	30	4	356	N	0	0	0		ROAD							
WM-22-10	3	DF	D	85-90	70	150	30	2	333	Y	80	267	360	Ephem./Int.	ROAD							
WM-22-11	3	DS	P	96	0	80	200	4	2370	Y	92	2181	2944	Ephem./Int.								
WM-22-12	3	DS	P	96	0	80	50	4	593	Y	92	545	736	Ephem./Int.								
WM-22-14	3	DS	D	98	68	550	100	6	12222	Y	80	9778	13200	Perennial								
WM-22-15	3	DS	D	98	70	40	80	3	356	Y	70	249	336	Perennial								
WM-22-16	3	DS	P	1987	0	80	50	4	593	Y	92	545	736	Perennial	ROAD							
WM-22-17	3	DS	D	1987	0	115	60	4	1022	Y	92	940	1270	Perennial								
WM-22-19	4	DS	D	1987	0	160	30	4	711	Y	92	654	883	Perennial	LANDING							
WM-22-2	3	DS	D	96	0	250	35	4	1296	Y	92	1193	1610	Ephem./Int.								
WM-22-20	4	DS	P	1987	0	80	60	4	711	Y	92	654	883	Perennial	ROAD							
WM-22-21	4	DS	D	1987	0	320	200	4	9481	Y	92	8723	11776	Perennial	ROAD							
WM-22-22	3	DS	P	1987	0	240	30	4	1067	Y	92	981	1325	Perennial	ROAD							
WM-22-23	3	DS	D	1987	0	80	50	4	593	N	0	0	0		ROAD							
WM-22-24	4	DS	D	1987	0	30	50	4	222	N	0	0	0		LANDING							
WM-22-25	3	DS	P	1981	0	90	30	4	400	Y	92	368	497	Perennial	ROAD							Stream bank failure
WM-22-26	3	DS	P	1981	0	110	60	4	978	Y	92	900	1214	Perennial	ROAD							Skid at top of slide
WM-22-27	3	DS	P	1981	0	140	30	4	622	Y	92	572	773	Ephem./Int.								
WM-22-28	4	DS	D	1981	0	90	30	4	400	Y	92	368	497	Ephem./Int.	ROAD							
WM-22-29	3	DS	D	1981	0	30	20	4	89	N	0	0	0		ROAD							
WM-22-3	3	DS	P	96	0	100	50	4	741	Y	92	681	920	Perennial	Landing							
WM-22-30	3	DS	P	1981	0	140	30	4	622	Y	92	572	773	Perennial	SKID							
WM-22-32		RS	P			1460	2350	0		Y				Perennial		3	3	3	3	4	Y	
WM-22-4	4	DS	P	1981	75	60	30	4	267	Y	92	245	331	Ephem./Int.	ROAD							
WM-22-5	4	DS	D	96	65	100	130	3	1444	Y	85	1228	1658	Perennial	ROAD							
WM-22-6	1	DS	D	96	75	200	80	3	1778	Y	80	1422	1920	Perennial								meander bend, inner gorge
WM-22-7	3	DS	D	90,87	0	100	70	4	1037	Y	92	954	1288	Perennial								
WM-22-8	3	DS	D	96	0	200	20	4	593	N	0	0	0		ROAD							
WM-22-9	3	DS	D	96	58	100	20	4	296	Y	92	273	368	Ephem./Int.								
WM-23-1	2	DS	P	96	0	80	30	4	356	Y	92	327	442	Ephem./Int.								
WM-23-10	3	DS	P	1981	0	60	30	4	267	Y	92	245	331	Perennial	ROAD							
WM-23-11	3	DS	P	1987	0	160	20	4	474	Y	92	436	589	Perennial								
WM-23-12	4	DT	Q	81	0	110	60	4	978	Y	92	900	1169	Perennial	ROAD							
WM-23-13	3	DS	D	1981	0	200	60	4	1778	Y	92	1636	2208	Ephem./Int.								
WM-23-14	3	DS	Q	2000	0	100	30	4	444	N	0	0	0									
WM-23-2	3	DS	P	96	0	30	80	4	356	N	0	0	0									
WM-23-3	1	DS	P	96	0	50	50	4	370	Y	92	341	460	Perennial								
WM-23-4	1	DS	P	96	0	100	30	4	444	Y	92	409	552	Perennial								
WM-23-5	1	DS	P	96	0	80	30	4	356	Y	92	327	442	Perennial								
WM-23-6	3	DS	D	96	45	80	70	2	415	Y	100	415	560	Perennial								
WM-23-7	1	DS	P	96	0	75	150	4	1667	Y	92	1533	2070	Perennial								
WM-23-8	3	DS	P	90,87	0	80	35	4	415	N	0	0	0		ROAD							
WM-23-9		RS	P			740	430	0		Y				Ephem./Int.		4	3	3	4	4	N	
WM-25-1	4	DS	P	85-91	0	80	80	4	948	Y	92	872	1178	Perennial								run out 100 by 4 ft.
WM-25-10	2	DS	P	1981	0	65	30	4	289	Y	92	266	346	Ephem./Int.								
WM-25-11	4	DS	P	1987	0	65	115	4	1107	Y	92	1019	1324	Perennial	ROAD							older road?
WM-25-12	3	DS	P	1987	0	50	30	4	222	Y	92	204	266	Perennial	ROAD							
WM-25-13	3	DS	D	1987	0	100	50	4	741	Y	92	681	886	Perennial								stream failure

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%) Field	Average Landslide Dimensions (feet)			Volume (cubic-yards)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg	Complex	
WM-25-14	1	DS	P	1981	0	170	80	4	2015	Y	92	1854	2502	Perennial	ROAD							
WM-25-15	2	DS	P	1981	0	80	60	4	711	Y	92	654	883	Ephem./Int.	ROAD							
WM-25-16	2	DS	P	1981	0	110	30	4	489	Y	92	450	607	Ephem./Int.	ROAD							
WM-25-17	3	DS	D	1981	0	80	30	4	356	Y	92	327	442	Perennial	ROAD							Stream bank failure
WM-25-19		RS	Q			6190	4080	0		Y				Perennial		3	3	3	3	4	Y	
WM-25-2	3	DS	P	96	0	50	50	4	370	N	0	0	0									
WM-25-20	3	DS	P	2000	0	300	160	4	7111	Y	92	6542	8832	Perennial	ROAD							
WM-25-21		RS	Q			1680	1220	0		Y				Perennial		3	3	3	2	4	N	
WM-25-22	3	DS	D	2000	0	180	20	4	533	Y	92	491	662	Ephem./Int.	ROAD							
WM-25-3	3	DS	P	96	0	40	40	4	237	N	0	0	0									
WM-25-4	3	DS	D	96	86	30	100	3	333	Y	70	233	315	Perennial	ROAD							
WM-25-5	3	DS	D	96	104	250	100	10	9259	Y	100	9256	12500	Perennial								HW SWALE
WM-26-1	4	DS	D	96	85	300	80	3	2667	Y	100	2667	3600	Ephem./Int.	ROAD							
WM-26-10	2	DS	P	96	0	30	30	4	133	Y	92	123	166	Ephem./Int.								
WM-26-11	2	DS	P	96	0	60	50	4	444	Y	92	409	552	Perennial								inner gorge
WM-26-12	2	DS	P	96	0	30	20	4	89	Y	92	82	110	Perennial								inner gorge
WM-26-13	3	DS	P	96	0	100	70	4	1037	Y	92	954	1288	Ephem./Int.								
WM-26-14	2	DS	P	96	0	50	25	4	185	Y	92	170	230	Ephem./Int.								
WM-26-15	2	DS	Q	96	0	20	20	4	59	Y	92	55	74	Perennial								inner gorge
WM-26-16	2	DS	P	96	0	50	45	4	333	Y	92	307	414	Perennial								inner gorge
WM-26-17	2	DS	P	1987	0	80	30	4	356	Y	92	327	425	Ephem./Int.	ROAD							
WM-26-18	2	DS	P	1987	0	80	65	4	770	Y	92	709	921	Ephem./Int.								
WM-26-19	2	DS	D	87,81	0	65	20	4	193	Y	92	177	230	Ephem./Int.								
WM-26-2	2	DS	D	96	92	220	80	3	1956	Y	100	1956	2640	Ephem./Int.	ROAD							
WM-26-20	2	DS	P	1987	0	40	30	4	178	Y	92	164	213	Perennial	ROAD							
WM-26-21	4	DS	D	1987	0	230	80	4	2726	Y	92	2508	3386	Ephem./Int.	ROAD							
WM-26-22	2	DS	D	1981	0	140	80	4	1659	Y	92	1527	2061	Perennial	ROAD							
WM-26-23	4	DS	D	1981	0	110	30	4	489	Y	92	450	607	Ephem./Int.	LANDING							
WM-26-24	3	DS	D	1981	0	140	100	4	2074	Y	92	1908	2576	Ephem./Int.	LANDING							
WM-26-25	2	DS	P	1981	0	200	110	4	3259	Y	92	2999	4048	Ephem./Int.	ROAD							
WM-26-3	2	DS	D	96	80	60	30	3	200	Y	100	200	270	Ephem./Int.								inner gorge
WM-26-4	2	DS	D	96	93	100	150	3	1667	Y	100	1667	2550	Ephem./Int.								inner gorge
WM-26-5	2	DS	P	96	0	50	40	4	296	Y	92	273	368	Ephem./Int.								
WM-26-6	3	DS	P	96	0	40	40	4	237	Y	92	218	294	Ephem./Int.								
WM-26-7	3	DS	D	96,87	75	150	200	6	6667	Y	30	2000	2700	Ephem./Int.	Landing							
WM-26-8	4	DS	D	96,87	0	40	50	4	296	N	0	0	0									
WM-26-9	2	DS	P	96	0	100	20	4	296	Y	92	273	368	Perennial								inner gorge
WM-27-1	3	DS	D	96,87,81	80	100	100	3	1111	Y	100	1111	1500	Perennial								inner gorge
WM-27-10	3	DS	P	96,87	0	100	70	4	1037	N	0	0	0									
WM-27-11	3	DS	D	96	0	150	50	3	833	Y	50	417	563	Perennial	ROAD							
WM-27-12	3	DS	D	98,87	0	200	100	3	2222	Y	100	2222	3000	Ephem./Int.	ROAD							
WM-27-13	3	DS	D	1996<	0	50	100	3	556	Y	100	556	722	Ephem./Int.	ROAD							
WM-27-14	2	DS	D	96	0	150	100	3	1667	Y	100	1667	2250	Ephem./Int.								
WM-27-15	2	DS	D	96	0	150	130	3	2167	Y	100	2167	2925	Ephem./Int.	ROAD							
WM-27-16	4	DT	D	1987	0	480	20	4	1422	Y	92	1308	1766	Ephem./Int.								
WM-27-17	1	DS	P	1987	0	80	50	4	593	Y	92	545	736	Ephem./Int.								
WM-27-18	1	DS	D	1987	0	80	110	4	1304	Y	92	1199	1619	Ephem./Int.								
WM-27-19	1	DS	P	1987	0	50	110	4	815	Y	92	750	1012	Ephem./Int.	ROAD							
WM-27-2	1	DS	D	96	93	100	50	3	556	Y	100	556	750	Perennial								inner gorge
WM-27-20	2	DS	D	1987	0	30	80	4	356	Y	92	327	442	Ephem./Int.	ROAD							stream failure
WM-27-21	1	DS	P	1987	0	50	50	4	370	Y	92	341	460	Ephem./Int.	ROAD							
WM-27-22	1	DS	P	1987	0	50	20	4	148	Y	92	136	184	Ephem./Int.								

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%) Field	Average Landslide Dimensions (feet)			Volume (cubic-yards)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg	Complex	
WM-27-23	4	DS	P	1987	0	240	30	4	1067	Y	92	981	1325	Ephem./Int.	LANDING							
WM-27-24	2	DS	P	1987	0	80	30	4	356	Y	92	327	442	Ephem./Int.								
WM-27-25	4	DT	D	87	0	100	15	4	222	Y	92	204	266	Ephem./Int.								
WM-27-26	2	DS	D	1987	0	80	30	4	356	Y	92	327	442	Perennial	ROAD							
WM-27-27	2	DS	P	1981	0	60	80	4	711	Y	92	654	883	Ephem./Int.								
WM-27-28	2	DS	P	1981	0	90	90	4	1200	Y	92	1104	1490	Ephem./Int.								
WM-27-29	2	DS	D	81	0	110	80	4	1304	Y	92	1199	1559	Perennial								
WM-27-3	1	DS	D	96	93	100	70	3	778	Y	100	778	1050	Perennial								inner gorge
WM-27-30	2	DS	D	1981	0	80	100	4	1185	Y	92	1090	1472	Ephem./Int.	SKID							
WM-27-31	3	DS	D	1981	0	60	110	4	978	Y	92	900	1214	Ephem./Int.								
WM-27-32	1	DS	D	1981	0	110	60	4	978	Y	92	900	1214	Ephem./Int.								
WM-27-33	1	DS	D	1981	0	100	60	4	889	Y	92	818	1104	Ephem./Int.								
WM-27-34	1	DS	D	1981	0	60	30	4	267	Y	92	245	331	Ephem./Int.								
WM-27-35	1	DS	P	1981	0	60	30	4	267	Y	92	245	331	Ephem./Int.								Wasteland inner gorge
WM-27-36	1	DS	D	1981	0	90	60	4	800	Y	92	736	994	Ephem./Int.								
WM-27-37		RS	P			3200	3200	0		Y				Perennial		3	3	3	4	4	Y	
WM-27-38		RS	P			1950	960	0		Y				Perennial		3	3	3	3	3	N	
WM-27-39		RS	Q			1130	800	0		Y				Perennial		2	3	3	2	4	N	
WM-27-4	1	DS	D	96	95	100	100	3	1111	Y	100	1111	1500	Perennial								inner gorge
WM-27-40	3	DS	D	2000	0	80	50	4	593	N	0	0	0									
WM-27-41	1	DS	D	2000	0	120	65	4	1156	Y	92	1063	1435	Perennial								
WM-27-42		RS	Q			1230	500	0		Y				Perennial		3	3	3	3	4	N	part of WM-27-37
WM-27-43		RS	P			2890	960	0		Y				Perennial		3	3	3	2	4	N	
WM-27-5	1	DS	D	96	94	50	100	3	556	Y	100	556	750	Perennial								inner gorge
WM-27-6	1	DS	D	96,87	0	100	30	2	222	Y	100	222	300	Perennial								inner gorge,
WM-27-7	3	DS	D	96	75	70	70	4	726	Y	92	668	902	Ephem./Int.	Landing							5-10 years old,
WM-27-8	1	DS	D	96,87	47	100	60	3	667	Y	100	667	900	Perennial	ROAD							
WM-27-9	1	DS	D	96	58	130	70	1	337	Y	100	337	455	Perennial	ROAD							
WM-30-1	3	DS	P	96,87	0	75	40	4	444	Y	92	409	552	Ephem./Int.								
WM-30-2	3	DS	D	96	0	125	50	4	926	N	0	0	0									
WM-30-3	2	DS	P	96	0	80	60	4	711	Y	92	654	883	Ephem./Int.								
WM-30-4	1	DT	P	1987	0	320	20	4	948	Y	92	872	1178	Ephem./Int.								
WM-30-5	3	DT	P	1987	0	240	20	4	711	Y	92	654	883	Ephem./Int.								
WM-31-1	3	DS	P	96	0	100	30	4	444	N	0	0	0									
WM-31-10	1	DS	D	96	0	300	600	7	46667	Y	100	46667	63000	Perennial								toe of WM-6-9 sliding into river, meander bend
WM-31-11	2	DS	P	96	0	40	30	4	178	Y	92	164	221	Ephem./Int.								
WM-31-12	3	DS	P	96	0	40	30	4	178	N	0	0	0									
WM-31-13	1	DS	D	96<	72	100	30	5	556	Y	100	556	750	Perennial	ROAD							inner gorge
WM-31-14	1	DS	D	96	128	30	65	4	289	Y	100	289	290	Perennial	ROAD							inner gorge
WM-31-15	1	DS	D	96	88	45	70	2	233	Y	100	233	315	Perennial	ROAD							inner gorge
WM-31-16	1	DS	D	96	100	40	20	4	119	Y	100	119	160	Perennial	ROAD							inner gorge
WM-31-17	1	DS	D	96	98	60	150	3	1000	Y	100	1000	1350	Perennial	ROAD							inner gorge
WM-31-18	3	DS	D	1987	0	150	80	4	1778	Y	92	1636	2208	Perennial	ROAD							road on top as well
WM-31-19	1	DS	P	1987	0	50	15	4	111	Y	92	102	133	Perennial	ROAD							
WM-31-2	3	DS	P	96	0	50	50	4	370	N	0	0	0									
WM-31-20	3	DS	D	1987	0	200	100	4	2963	Y	92	2726	3680	Perennial	ROAD							
WM-31-21	2	DS	P	1987	0	80	30	4	356	Y	92	327	442	Ephem./Int.								
WM-31-22	4	DS	P	1981	0	80	60	4	711	Y	92	654	850	Perennial	ROAD							
WM-31-23		RS	P			2200	540	0		Y				Perennial		2	2	3	3	4	N	
WM-31-24	1	DS	P	2000	0	100	30	4	444	Y	92	409	552	Perennial								
WM-31-25	2	DS	D	2000	0	60	60	4	533	Y	92	491	662	Perennial								
WM-31-28	4	DS	P	2000	0	120	80	4	1422	N	0	0	0		LANDING							

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		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg	Complex	
WM-31-29		RS	P			1870	300	0		Y				Perennial		2	2	3	3	4	N	
WM-31-3	3	DS	D	>96	65	120	40	3	533	Y	100	533	720	Ephem./Int.	ROAD							
WM-31-30		RS	P			1580	860	0		Y				Perennial		2	3	3	3	4	N	
WM-31-31	3	DS	P	2000	0	80	20	4	237	N	0	0	0									
WM-31-34		RS	Q			200	1180	0		Y				Ephem./Int.		4	3	3	3	4	N	
WM-31-36		RS	Q			1020	860	0		Y				Perennial		3	3	3	3	4	N	
WM-31-37	4	DS	D	2000	0	140	100	4	2074	Y	92	1908	2576	Ephem./Int.								
WM-31-38	4	DS	P	2000	0	60	15	4	133	N	0	0	0									
WM-31-39		RS	P			660	300	0		Y				Ephem./Int.		3	2	3	2	4	N	
WM-31-4	4	DS	D	96	0	150	100	4	2222	N	0	0	0									
WM-31-40		RS	Q			640	320	0		N						4	3	3	3	5	N	
WM-31-41		RS	Q			450	270	0		Y				Perennial		3	3	3	3	4	N	
WM-31-42		RS	Q			630	270	0		Y				Perennial		3	3	3	3	4	N	
WM-31-42		RS	Q			630	270	0		Y				Perennial		3	3	3	3	4	N	
WM-31-43		RS	P			760	820	0		Y				Perennial		3	3	3	2	4	N	
WM-31-44		RS	Q			550	510	0		Y				Perennial		3	3	3	3	4	N	
WM-31-45	2	DT	D	2000	0	220	50	4	1630	N	0	0	0									
WM-31-46	1	DS	Q	2000	0	20	50	4	148	Y	92	136	184	Perennial								
WM-31-47	3	DS	P	2000	0	100	50	4	741	Y	92	681	920	Ephem./Int.	ROAD							
WM-31-5	2	DS	P	96	0	60	40	4	356	Y	92	327	442	Ephem./Int.								
WM-31-6	3	DS	P	96	0	70	30	4	311	N	0	0	0		ROAD							
WM-31-7	3	DS	P	96	0	125	220	4	4074	N	0	0	0									
WM-31-8	3	DS	P	96	0	60	50	4	444	Y	92	409	552	Ephem./Int.	ROAD							
WM-31-9	3	DS	D	96,87	0	100	100	4	1481	N	0	0	0		SKID							
WM-34-1	2	DS	D	1981	0	90	30	4	400	Y	92	368	497	Ephem./Int.	SKID							
WM-35-1	2	DS	D	1981	0	140	60	4	1244	Y	92	1145	1488	Ephem./Int.								
WM-36-1	4	DS	P	96	0	100	25	4	370	N	0	0	0									
WM-36-10	4	DS	D	1987	0	100	80	4	1185	N	0	0	0		LANDING							
WM-36-11	4	DS	D	1987	0	65	20	4	193	Y	92	177	230	Ephem./Int.								
WM-36-12	3	DS	D	1987	0	50	100	4	741	Y	92	681	886	Ephem./Int.	ROAD							
WM-36-13	3	DS	D	1987	0	80	30	4	356	Y	100	356	462	Perennial								stream failure
WM-36-15	2	DS	P	1981	0	80	30	4	356	Y	92	327	442	Ephem./Int.	SKID							
WM-36-16	3	DS	Q	1981	0	140	60	4	1244	N	0	0	0		SKID							
WM-36-17	3	DS	P	1981	0	170	60	4	1511	Y	92	1390	1877	Ephem./Int.	SKID							
WM-36-18	3	DS	P	1981	0	170	80	4	2015	Y	92	1854	2502	Ephem./Int.	ROAD							
WM-36-19	4	DS	D	1981	0	140	30	4	622	Y	92	572	773	Ephem./Int.								
WM-36-2	3	DF	D	96,87	0	200	90	4	2667	Y	92	2453	3312	Ephem./Int.								runout 500 by 10 ft.
WM-36-20	2	DS	P	1981	0	140	140	4	2904	Y	92	2671	3606	Ephem./Int.	SKID							
WM-36-21		RS	Q			1760	930	0		Y				Perennial		3	3	3	4	4	N	
WM-36-22		RS	Q			2030	640	0		Y				Ephem./Int.		4	2	3	2	4	N	
WM-36-23		RS	Q			1210	1344	0		Y				Ephem./Int.		3	3	3	3	3	N	
WM-36-24		RS	Q			780	130	0		N						3	2	3	3	4	N	
WM-36-26		RS	Q			635	400	0		Y				Perennial		3	3	2	3	4	Y	
WM-36-3	2	DS	P	96	0	60	40	4	356	Y	92	327	442	Ephem./Int.								
WM-36-4	3	DS	D	96	0	50	50	4	370	N	0	0	0									
WM-36-5	3	DF	D	96	0	150	60	8	2667	Y	100	2667	3600	Ephem./Int.	ROAD							
WM-36-7	1	DS	D	96	104	60	110	2	189	Y	100	489	660	Perennial	ROAD							inner gorge
WM-36-8	3	DS	D	1987	0	210	50	4	1556	Y	92	1431	1932	Ephem./Int.	ROAD							
WM-36-9	3	DS	P	1987	0	50	50	4	370	Y	92	341	460	Ephem./Int.	ROAD							
WM-39-25		RS	Q			3490	3680	0		Y				Perennial		3	3	3	3	4	Y	
WM-6-1	1	DS	D	96	0	70	40	4	415	Y	92	382	515	Perennial								inner gorge
WM-6-10	2	DF	D	96	0	260	20	4	770	Y	92	709	957	Ephem./Int.								

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%) Field	Average Landslide Dimensions (feet)			Volume (cubic-yards)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg	Complex	
WM-6-11	3	DS	D	1981	0	90	30	4	400	Y	92	368	478	Perennial	SKID							
WM-6-12	2	DS	P	1981	0	80	60	4	711	Y	92	654	850	Ephem./Int.	SKID							
WM-6-13	3	DS	D	2000	0	160	160	4	3793	N	0	0	0		ROAD							
WM-6-14		RS	P			2030	1070	0		Y				Ephem./Int.		3	2	3	4	4	N	
WM-6-15		RS	P			410	210	0		Y				Ephem./Int.		3	3	5	3	4	N	
WM-6-2	1	DS	P	96	0	50	100	4	741	Y	92	681	920	Perennial								inner gorge
WM-6-3	1	DS	P	96	0	160	25	4	593	Y	92	545	736	Perennial	ROAD							
WM-6-4	1	DS	P	96	0	50	80	4	593	Y	92	545	736	Perennial								inner gorge
WM-6-5	1	DS	P	96	0	40	30	4	178	Y	92	164	221	Perennial								inner gorge
WM-6-6	2	DS	Q	96	0	40	75	4	444	Y	92	409	552	Perennial								inner gorge
WM-6-7	2	DS	P	96	0	80	40	4	474	Y	92	436	589	Perennial								inner gorge
WM-6-8	3	DS	P	96	0	75	80	4	889	N	0	0	0									
WM-6-9		RS	D			3420	900	0		Y				Perennial		2	1	2	3	2	Y	Bare spots
WN-10-1	4	DS	P	1987	80	80	20	4	237	Y	92	218	294	Ephem./Int.	ROAD							run out caused by slide
WN-10-10	2	DS	D	1987	0	200	80	4	2370	Y	92	2181	2944	Ephem./Int.								
WN-10-11	2	DS	D	1987	0	240	70	4	2489	Y	92	2290	3091	Ephem./Int.								
WN-10-12		RS	D			1370	1040	0		Y				Perennial		3	2	3	2	4	N	
WN-10-13		RS	Q			820	270	0		Y				Perennial		3	3	3	3	4	N	
WN-10-14		RS	P			1150	560	0		Y				Perennial		3	2	2	3	4	N	
WN-10-15		RS	P			550	290	0		Y				Ephem./Int.		3	2	3	3	4	N	
WN-10-2	2	DS	D	96	0	80	80	4	948	Y	92	872	1178	Ephem./Int.								
WN-10-3	2	DS	D	96	0	150	50	4	1111	Y	92	1022	1380	Ephem./Int.								
WN-10-4	4	DS	D	96	85	90	110	3	1100	Y	100	1100	1485	Ephem./Int.								
WN-10-5	2	DS	P	96	96	130	100	4	1926	Y	100	1926	2600	Ephem./Int.								
WN-10-6	2	DS	P	96	0	50	30	4	222	Y	92	204	276	Ephem./Int.								
WN-10-7	4	DS	P	96	0	120	60	4	1067	N	0	0	0		Landing							above road
WN-10-8	3	DS	D	96	0	100	30	4	444	N	0	0	0									Headwall Failure
WN-10-9	3	DS	D	96	0	60	20	4	178	Y	92	164	221	Ephem./Int.								
WN-11-1	3	DS	P	96	0	90	40	4	533	Y	92	491	662	Ephem./Int.								
WN-13-1	4	DS	P	96	0	110	35	4	570	N	0	0	0									
WN-13-10	3	DS	D	1981	0	60	80	4	711	Y	92	654	883	Perennial	ROAD							
WN-13-11	3	DS	P	1981	0	90	30	4	400	Y	92	368	497	Ephem./Int.	SKID							
WN-13-12	3	DS	P	1981	0	90	30	4	400	Y	92	368	497	Ephem./Int.	SKID							
WN-13-14		RS	P			1370	480	0		Y				Perennial		3	3	3	3	4	N	
WN-13-15		RS	P			650	370	0		N						4	3	3	3	4	N	
WN-13-16		RS	Q			390	210	0		N						4	3	3	4	4	N	
WN-13-18		RS	Q			610	360	0		Y				Ephem./Int.		3	3	3	3	4	N	
WN-13-2	3	DS	P	96	0	40	20	4	119	Y	92	109	147	Ephem./Int.								
WN-13-3	3	DS	D	96	0	65	40	4	385	Y	92	254	478	Perennial	ROAD							initiates above road
WN-13-4	5	DS	D	96	110	110	70	1	285	Y	100	285	385	Perennial	ROAD							
WN-13-5	4	DS	D	1987	0	80	30	4	356	Y	92	327	442	Perennial								
WN-13-6	4	DS	D	1987	0	80	15	4	178	Y	92	164	221	Ephem./Int.								
WN-13-7	4	DT	P	1987	0	240	50	4	1778	Y	92	1636	2208	Ephem./Int.								
WN-13-8	4	DS	P	1981	0	80	60	4	711	Y	92	654	883	Ephem./Int.	ROAD							
WN-13-9	4	DS	P	1981	0	80	30	4	356	Y	92	327	442	Ephem./Int.	SKID							
WN-14-1	4	DS	D	96,87	0	180	50	4	1333	Y	92	1227	1656	Ephem./Int.								
WN-14-10	4	DS	D	1981	0	50	30	4	222	Y	92	204	276	Perennial	ROAD							
WN-14-11	4	DS	P	1981	0	140	110	4	2281	Y	92	2099	2834	Ephem./Int.	SKID							
WN-14-13	3	DS	Q	2000	0	100	20	4	256	N	0	0	0									
WN-14-17		RS	P			760	540	0		Y				Perennial		3	3	3	3	4	N	
WN-14-18		RS	Q			980	1120	0		Y				Perennial		3	3	3	3	4	Y	
WN-14-2	3	DS	P	96,87	0	40	40	4	237	N	0	0	0		SKID							

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%) Field	Average Landslide Dimensions (feet)			Volume (cubic-yards)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg	Complex	
WN-14-3	4	DS	P	96	0	50	25	4	185	N	0	0	0		SKID							
WN-14-4	1	DS	D	96,87	0	60	60	4	533	Y	92	491	662	Perennial	ROAD							
WN-14-5	1	DS	D	96	48	70	50	3	389	N	0	0	0		ROAD							
WN-14-6	3	DS	D	96	83	20	30	3	67	Y	100	67	90	Perennial	ROAD							
WN-14-8	3	DS	D	1987	0	50	80	4	593	Y	92	545	736	Perennial	ROAD							
WN-14-9	4	DS	P	1981	0	110	30	4	489	Y	92	450	585	Perennial	ROAD							
WN-15-1	3	DF	P	96	0	110	30	4	489	Y	92	450	607	Ephem./Int.								
WN-15-10	4	DS	P	1981	0	110	30	4	489	Y	92	450	607	Ephem./Int.	ROAD							Ground zero
WN-15-12		RS	Q			660	240	0		Y				Perennial		3	3	3	3	4	N	
WN-15-13		RS	Q			640	290	0		Y				Perennial		3	3	3	3	4	N	
WN-15-14	3	DS	D	2000	0	130	60	4	1156	Y	92	1063	1435	Ephem./Int.	ROAD							
WN-15-2	2	DS	D	96	0	140	60	4	1244	Y	92	1145	1546	Perennial	Landing							a 120 by 20 ft. run out formed due to this slide
WN-15-3	3	DS	D	96	30	30	10	2	22	Y	100	22	30	Ephem./Int.								
WN-15-4	3	DS	D	96	94	130	50	3	722	Y	95	686	926	Ephem./Int.	ROAD							
WN-15-5	4	DS	D	1987	0	160	30	4	711	Y	92	654	883	Ephem./Int.	ROAD							
WN-15-6	4	DS	D	1987	0	160	30	4	711	Y	92	654	883	Ephem./Int.	SKID							
WN-15-7	3	DS	P	1987	0	160	30	4	711	Y	92	654	883	Ephem./Int.	SKID							
WN-15-8	4	DS	P	1987	0	30	65	4	289	Y	92	266	359	Ephem./Int.	ROAD							
WN-15-9	1	DS	D	1981	0	110	90	4	1467	Y	92	1349	1754	Ephem./Int.	SKID							
WN-16-1	2	DS	D	1987	0	100	30	4	444	Y	92	409	552	Ephem./Int.	ROAD							
WN-17-1	4	DS	P	96	0	80	15	4	178	Y	92	164	221	Ephem./Int.	ROAD							culvert outlet?
WN-17-2	4	DS	P	96	0	100	20	4	296	Y	92	273	368	Ephem./Int.								
WN-18-1	2	DS	Q	1985	0	200	40	4	1185	Y	92	1090	1417	Ephem./Int.								> 5-10 years old
WN-18-2	2	DS	P	96	0	30	20	4	89	Y	92	82	110	Ephem./Int.								
WN-18-3	2	DS	P	1987	0	100	30	4	444	Y	92	409	552	Ephem./Int.								older
WN-18-4	3	DS	D	1981	0	230	60	4	2044	Y	92	1881	2539	Ephem./Int.	LANDING							
WN-18-5	4	DS	D	1981	0	100	30	4	444	Y	92	409	552	Ephem./Int.	SKID							
WN-18-6	4	DS	P	1987	0	65	30	4	289	Y	92	266	359	Ephem./Int.								HW Swale
WN-21-1	2	DS	D	96	0	60	40	4	356	Y	92	327	442	Ephem./Int.								
WN-22-1	2	DS	P	96,87	0	70	20	4	207	N	0	0	0									
WN-22-12	4	DS	Q	2000	0	40	20	4	119	Y	92	109	147	Ephem./Int.	ROAD							
WN-22-13	4	DS	Q	2000	0	80	30	4	356	Y	92	327	442	Ephem./Int.	ROAD							
WN-22-2	3	DS	P	96	0	30	50	4	222	Y	92	204	276	Ephem./Int.								
WN-22-3	3	DS	D	96	0	30	50	4	222	Y	92	204	276	Ephem./Int.	Landing							
WN-22-4	2	DS	P	1981	0	60	30	4	267	Y	92	245	319	Ephem./Int.	ROAD							
WN-22-5	2	DS	D	1981	0	60	60	4	533	Y	92	491	662	Ephem./Int.	SKID							
WN-22-6	2	DS	P	1981	0	90	60	4	800	Y	92	736	994	Ephem./Int.	ROAD							Skid at bottom of slide
WN-22-7		RS	Q			820	340	0		Y				Ephem./Int.		4	3	3	3	4	N	
WN-23-1	4	DS	P	96,87	0	80	30	4	356	Y	92	327	442	Ephem./Int.								
WN-23-10	1	DS	P	1981	0	60	30	4	267	Y	92	245	319	Perennial	ROAD							
WN-23-11	1	DS	P	1981	0	85	20	4	252	Y	92	232	301	Perennial								
WN-23-12	4	DS	Q	2000	0	40	20	4	119	Y	92	109	147	Ephem./Int.	ROAD							
WN-23-13		RS	P			1350	1890	0		Y				Perennial		3	3	3	4	4	N	
WN-23-14		RS	Q			1030	820	0		Y				Perennial		3	2	3	3	4	N	bare soil
WN-23-15		RS	Q			390	290	0		Y				Ephem./Int.		3	3	3	3	3	N	
WN-23-16		RS	Q			410	230	0		Y				Ephem./Int.		3	3	3	3	4	N	
WN-23-17	3	DS	Q	2000	0	60	30	4	267	Y	92	245	331	Ephem./Int.								
WN-23-2	1	DS	Q	96	0	30	20	4	89	Y	92	82	110	Perennial								
WN-23-3	1	DF	D	98	50	350	20	2	519	Y	90	467	630	Perennial	ROAD							old sink
WN-23-4	1	DS	D	96	70	20	50	3	111	N	0	0	0		ROAD							
WN-23-5	3	DS	D	1987	0	50	65	4	481	Y	92	443	598	Ephem./Int.								
WN-23-6	4	DS	P	1987	0	80	65	4	770	Y	92	709	957	Ephem./Int.	ROAD							

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		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg	Complex	
WN-23-7	5	DS	P	1987	0	80	60	4	711	Y	92	654	883	Ephem./Int.	SKID							
WN-23-8	4	DS	D	1987	0	50	10	4	74	Y	92	68	92	Ephem./Int.	SKID							
WN-23-9	3	DS	D	81	0	80	30	4	356	Y	92	327	425	Ephem./Int.	ROAD							
WN-24-1	2	DS	P	96	0	40	30	4	178	Y	92	164	221	Ephem./Int.								
WN-24-2	3	DS	P	96	0	30	20	4	89	Y	92	82	110	Ephem./Int.								
WN-24-3	2	DS	D	1981	0	140	80	4	1659	Y	92	1527	2061	Ephem./Int.	SKID							
WN-24-4	3	DS	P	1981	0	80	80	4	948	Y	92	872	1178	Ephem./Int.	ROAD							
WN-24-5	2	DS	P	1981	0	60	30	4	267	Y	92	245	319	Ephem./Int.	ROAD							
WN-24-6	2	DS	Q	1981	0	100	80	4	1185	Y	92	1090	1472	Ephem./Int.	SKID							
WN-24-7	2	DS	P	1981	0	140	40	4	830	Y	92	763	1030	Ephem./Int.	SKID							
WR-10-1	2	DS	P	96	0	110	20	4	326	Y	92	300	405	Ephem./Int.								
WR-10-2		RS	D			590	210	0		Y				Perennial		3	1	5	3	4	N	
WR-10-3	3	DS	Q	1987	0	80	65	4	770	Y	92	709	957	Ephem./Int.	SKID							
WR-10-4	2	DS	P	1981	0	110	40	4	652	Y	92	600	810	Ephem./Int.	SKID							Older
WR-10-5	2	DS	D	2000	0	120	50	4	889	Y	92	818	1104	Perennial	ROAD							
WR-10-7		RS	Q			760	320	0		Y				Ephem./Int.		3	3	2	3	4	N	
WR-3-1	1	DS	P	96	0	60	40	4	356	Y	92	327	442	Perennial								
WR-4-1	4	DS	D	96	78	200	30	2	444	Y	60	267	360	Ephem./Int.	ROAD							
WR-4-10	1	DS	P	1981	0	100	50	4	741	Y	92	681	886	Perennial	ROAD							
WR-4-11		RS	D			570	400	0		Y				Perennial		3	2	2	3	4	N	
WR-4-12		RS	Q			980	590	0		Y				Ephem./Int.		3	3	3	3	5	N	
WR-4-13		RS	P			1540	480	0		Y				Ephem./Int.		4	3	3	3	4	N	
WR-4-14	3	DS	D	2000	0	100	20	4	178	Y	92	164	213	Ephem./Int.								
WR-4-15	3	DS	P	2000	0	80	30	4	356	Y	92	327	442	Ephem./Int.								
WR-4-2	4	DS	D	96	78	60	30	3	200	N	0	0	0		ROAD							
WR-4-3	3	DS	P	96	0	40	25	4	148	N	0	0	0									Headwall
WR-4-4	3	DS	Q	96	0	30	80	4	359	Y	92	327	442	Ephem./Int.								
WR-4-5	2	DS	D	96	0	150	10	4	222	Y	92	204	276	Ephem./Int.								
WR-4-6	2	DS	P	96	0	50	30	4	222	Y	92	204	276	Ephem./Int.								
WR-4-7	3	DS	Q	96	0	30	25	4	111	Y	92	102	138	Ephem./Int.								
WR-4-8	2	DS	P	96	0	75	40	4	444	Y	92	409	552	Ephem./Int.								
WR-4-9	1	DS	P	1987	0	50	10	4	74	Y	92	68	92	Ephem./Int.								
WR-5-1	4	DS	D	96	0	200	15	1	111	Y	20	22	30	Ephem./Int.								
WR-5-18	3	DS	D	2000	0	80	35	4	415	Y	92	382	515	Ephem./Int.	ROAD							
WR-5-19		RS	P			410	180	0		Y				Ephem./Int.		3	3	3	3	4	N	
WR-5-2	3	DS	D	96	0	50	30	2	111	N	0	0	0									
WR-5-20		RS	Q			708	336	0		Y				Ephem./Int.		3	3	3	3	4	N	
WR-5-3	2	DS	Q	96	0	40	20	4	119	Y	92	109	147	Ephem./Int.								
WR-5-4	2	DS	Q	96	0	20	20	4	59	Y	92	55	74	Ephem./Int.								
WR-5-5	4	DS	Q	96	0	50	20	4	148	Y	92	136	184	Ephem./Int.								
WR-6-1	3	DS	P	96	0	30	30	4	133	N	0	0	0									
WR-6-2	3	DS	Q	96	0	30	70	4	311	Y	92	286	386	Ephem./Int.								
WR-6-3	4	DS	D	96	0	50	10	2	37	N	0	0	0									
WR-6-4	4	DS	D	96	98	60	150	3	1000	N	0	0	0		ROAD							
WR-6-5		RS	P			580	270	0		Y				Ephem./Int.		3	3	3	3	1	N	
WR-7-1	4	DS	P	96	0	80	60	4	711	N	0	0	0		ROAD							
WR-7-3		RS	Q			430	270	0		Y				Ephem./Int.		3	3	3	3	3	N	
WR-8-1	3	DS	P	96	0	200	100	4	2963	N	0	0	0									
WR-8-13	3	DS	D	2000	0	180	30	4	800	Y	92	736	994	Ephem./Int.								
WR-8-14	3	DS	Q	2000	0	60	30	4	267	N	0	0	0									
WR-8-2	2	DS	Q	96	0	50	80	4	593	Y	92	545	736	Ephem./Int.								
WR-8-3	2	DS	Q	96	0	50	60	4	444	Y	92	409	552	Ephem./Int.								

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		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg	Complex	
WR-8-4	3	DS	D	96	0	300	5	4	222	Y	92	204	276	Ephem./Int.								run out of a 20 leg. x 10 wth. ft debris slide
WR-8-5	3	DS	P	96	0	30	20	4	89	N	0	0	0									
WR-8-6	2	DS	D	96	60	100	30	3	333	Y	10	33	45	Ephem./Int.	ROAD							HW SWALE (DF run out delivers sed.)
WR-8-7	3	DS	D	96	85	30	30	5	167	Y	100	167	225	Ephem./Int.	ROAD							
WR-8-9	4	DS	P	1987	0	210	65	4	2022	Y	92	1860	2512	Perennial	SKID							
WR-9-1	3	DS	P	96	0	60	30	4	267	N	0	0	0									
WR-9-10	3	DS	P	96	0	30	30	4	133	N	0	0	0									
WR-9-11	3	DS	P	96	0	30	40	4	178	N	0	0	0		SKID							
WR-9-12	4	DS	D	96<	66	50	30	3	167	Y	15	25	34	Ephem./Int.	ROAD							run out of
WR-9-13	4	DS	D	96<	70	200	30	3	667	Y	90	600	810	Ephem./Int.	ROAD							
WR-9-14	4	DS	D	96	65	130	100	4	1926	Y	50	963	1300	Ephem./Int.	ROAD							
WR-9-15	2	DS	P	1987	0	65	20	4	193	Y	92	177	239	Ephem./Int.	ROAD							
WR-9-16		RS	P			1090	1760	0		Y				Ephem./Int.		3	3	3	3	4	Y	
WR-9-2	3	DS	P	96	0	60	40	4	356	N	0	0	0									
WR-9-3	2	DS	P	96	0	60	40	4	356	Y	92	327	442	Perennial								
WR-9-4	3	DS	P	96	0	60	50	4	444	Y	92	409	552	Ephem./Int.								
WR-9-5	2	DS	P	96	0	70	40	4	415	Y	92	382	515	Ephem./Int.								
WR-9-6	4	DS	D	96	0	80	50	4	593	Y	92	545	736	Ephem./Int.	SKID							inner gorge
WR-9-7	3	DS	P	96	0	110	20	4	326	Y	92	300	405	Ephem./Int.	SKID							
WR-9-8	3	DS	P	96	0	50	20	4	148	Y	92	136	184	Ephem./Int.								
WR-9-9	3	DS	P	96	0	40	10	4	59	Y	92	55	74	Ephem./Int.								
WU-10-1	3	DT	D	1981	0	170	30	4	756	Y	92	695	938	Perennial	SKID							Inner gorge
WU-10-2	4	DS	Q	2000	0	40	30	4	178	N	0	0	0									
WU-10-3	4	DS	P	2000	0	60	20	4	178	Y	92	164	221	Ephem./Int.								
WU-10-5		RS	Q			470	380	0		Y				Ephem./Int.		3	3	3	3	4	N	
WU-10-6	3	DS	P	2000	0	200	30	4	889	Y	92	818	1104	Ephem./Int.	ROAD							
WU-32-10		RS	Q			940	240	0		Y				Perennial		3	3	3	3	4	N	
WU-32-11		RS	Q			840	370	0		Y				Perennial		3	3	3	4	4	N	
WU-32-13		RS	Q			600	300	0		Y				Perennial		3	3	3	4	4	N	
WU-32-16	3	DS	P	2000	0	60	20	4	178	Y	92	164	221	Ephem./Int.	ROAD							
WU-32-17		RS	Q			560	240	0		Y				Ephem./Int.		3	3	3	3	4	N	
WU-32-18		RS	Q			550	300	0		Y				Perennial		3	3	3	4	4	N	
WU-32-19		RS	Q			310	160	0		Y				Perennial		3	3	3	4	4	N	
WU-32-2	3	DF	D	95	56	700	100	24	62222	Y	100	62222	84000	Perennial								debris flow off Floodgate slide
WU-32-3	1	DS	D	96	88	100	30	2	222	Y	100	222	300	Perennial	ROAD							
WU-32-4	1	DS	D	96	82	70	100	3	778	Y	100	778	1050	Perennial	ROAD							
WU-32-6	3	DS	D	1987	0	160	20	4	474	Y	92	436	567	Ephem./Int.								HW SWALE
WU-32-7	4	DS	D	1987	0	65	30	4	289	Y	92	266	359	Ephem./Int.	ROAD							
WU-32-8		RS	P			2930	2110	0		Y				Perennial		3	3	3	4	4	Y	
WU-4-1	4	DF	D	96,87	0	100	80	4	1185	Y	92	1092	1472	Perennial	Landing							runout of 250 by 20 ft.
WU-4-10	4	DS	D	2000	0	120	30	4	533	Y	92	491	662	Perennial								
WU-4-11		RS	P			700	540	0		Y				Perennial		3	3	3	4	4	Y	
WU-4-12		RS	Q			2190	1310	0		Y				Perennial		3	3	3	4	4	Y	
WU-4-14		RS	P			1620	960	0		Y				Perennial		3	3	5	4	4	N	
WU-4-15		RS	P			980	630	0		Y				Perennial		3	3	3	4	4	N	
WU-4-2	1	DS	P	96,87	0	70	60	4	622	Y	100	622	840	Perennial								inner gorge
WU-4-3	1	DS	P	96,87	0	40	50	4	296	Y	100	296	400	Perennial								inner gorge
WU-4-4	1	DS	P	96,87	0	70	70	4	726	Y	100	726	980	Perennial								inner gorge
WU-4-5	1	DS	P	96,87	0	30	50	4	222	Y	100	222	300	Perennial								inner gorge
WU-4-6	1	DS	P	96	0	20	30	4	89	Y	100	89	120	Perennial								
WU-4-7	1	DS	D	96	102	80	10	2	59	Y	100	59	80	Perennial	ROAD							inner gorge
WU-4-8		RS	P			2090	1250	0		Y				Perennial		3	3	4	3	4	N	

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%) Field	Average Landslide Dimensions (feet)			Volume (cubic-yards)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty			Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg	Complex	
WU-4-9		RS	P			1480	1120	0		Y				Perennial		2	3	3	3	4	N	
WU-5-1	4	DS	P	96	0	180	70	4	1867	Y	92	1717	2318	Ephem./Int.								
WU-5-10	2	DS	P	96	0	100	60	4	889	Y	92	818	1063	Perennial								
WU-5-11	4	DS	D	96	0	100	120	3	1333	Y	75	1000	1300	Perennial	Landing							
WU-5-12	4	DS	D	96	75	100	40	1	148	Y	100	148	200	Perennial	ROAD							
WU-5-13	4	DS	D	96	70	150	40	4	889	Y	100	889	1200	Perennial	ROAD							inner gorge
WU-5-14	2	DS	D	96	95	200	30	1	222	Y	100	222	300	Perennial	ROAD							inner gorge
WU-5-15	4	DS	D	96	86	100	30	3	333	Y	100	333	450	Perennial	Landing							inner gorge
WU-5-16	3	DS	D	96	85	80	50	6	889	Y	100	889	1200	Ephem./Int.	ROAD							
WU-5-17	3	DS	D	96	95	150	200	5	5556	Y	100	5556	7223	Perennial								inner gorge
WU-5-18	2	DS	D	1987	0	130	80	4	1541	Y	92	1417	1914	Perennial	ROAD							inner gorge
WU-5-19	1	DS	P	1996	0	50	50	4	370	Y	100	370	481	Ephem./Int.								
WU-5-2	4	DS	Q	>90	0	100	60	4	889	N	0	0	0									
WU-5-20	4	DS	D	1987	0	200	50	4	1481	Y	92	1363	1840	Ephem./Int.	ROAD							
WU-5-21	3	DS	D	1987	0	210	50	4	1556	Y	92	1431	1932	Perennial	ROAD							stream failure
WU-5-22	4	DS	P	1987	0	160	15	4	356	Y	92	327	425	Ephem./Int.	ROAD							
WU-5-23		RS	P			3360	2430	0		Y				Perennial		3	3	4	4	4	Y	
WU-5-24		RS	Q			800	460	0		Y				Ephem./Int.		3	3	3	3	4	N	
WU-5-25		RS	P			4680	2560	0		Y				Perennial		3	3	4	4	4	Y	
WU-5-26	1	DS	D	2000	0	80	50	4	593	Y	92	545	736	Ephem./Int.								
WU-5-27		RS	Q			430	220	0		Y				Ephem./Int.		3	3	3	4	4	N	
WU-5-29		RS	P			1700	1660	0		Y				Perennial		3	3	4	3	4	Y	
WU-5-3	4	DS	D	96	0	150	80	4	1778	N	0	0	0									
WU-5-30		RS	Q			2580	400	0		Y				Ephem./Int.		3	3	3	3	4	Y	
WU-5-31		RS	Q			570	380	0		Y				Ephem./Int.		3	3	3	3	4	N	
WU-5-32		RS	Q			880	1230	0		Y				Perennial		3	3	3	3	4	Y	
WU-5-33		RS	D			470	190	0		Y				Perennial		2	1	2	2	1	N	
WU-5-34		RS	Q			780	500	0		Y				Ephem./Int.		3	3	3	3	4	N	
WU-5-36	4	DS	D	2000	0	120	50	4	889	Y	92	818	1104	Ephem./Int.	ROAD							
WU-5-4	1	DS	Q	96	0	100	40	4	593	Y	92	545	736	Perennial								
WU-5-5	1	DS	P	96,87	0	150	100	4	2222	Y	92	2044	2760	Perennial								
WU-5-6	3	DS	P	96	0	40	30	4	178	N	0	0	0									
WU-5-7	3	DS	P	96	0	120	25	4	444	N	0	0	0		SKID							
WU-5-8	1	DS	D	96	95	150	200	5	5556	Y	100	5556	7500	Perennial								inner gorge
WU-5-9	3	DS	D	96	0	125	50	4	926	N	0	0	0		Landing							
WU-6-1	1	DS	D	96	96	30	50	5	278	Y	100	278	375	Ephem./Int.	ROAD							
WU-6-13		RS	P			1210	500	0		Y				Ephem./Int.		3	3	3	3	4	N	
WU-6-14		RS	Q			1630	880	0		Y				Ephem./Int.		4	3	3	3	4	N	
WU-7-1	2	DS	D	96	0	70	30	4	311	Y	92	286	372	Ephem./Int.								inner gorge
WU-8-1	3	DS	P	>90,87,81	0	330	100	4	4889	Y	92	4498	5847	Ephem./Int.								
WU-8-10	2	DS	D	1987	0	240	80	4	2844	Y	92	2617	3533	Ephem./Int.	ROAD							HW Swale
WU-8-11	3	DT	P	1987	0	210	30	4	933	Y	92	859	1159	Ephem./Int.	ROAD							HW Swale
WU-8-12	3	DS	P	1987	0	80	80	4		Y	92			Ephem./Int.	ROAD							
WU-8-13	3	DS	P	1987	0	65	50	4	481	Y	92	443	576	Ephem./Int.	ROAD							
WU-8-14	2	DS	D	1981	0	200	110	4	3259	Y	92	2999	4048	Perennial								
WU-8-15		RS	Q			1600	880	0		Y				Ephem./Int.		4	3	3	3	4	N	
WU-8-16		RS	Q			680	480	0		Y				Ephem./Int.		3	3	3	3	3	N	
WU-8-17		RS	Q			2715	660	0		Y				Ephem./Int.		4	3	4	4	4	N	
WU-8-18		RS	Q			390	990	0		Y				Ephem./Int.		3	3	5	4	4	N	
WU-8-19		RS	Q			1810	500	0		Y				Ephem./Int.		4	3	3	3	4	N	
WU-8-2	1	DS	Q	96,87	0	40	100	4	593	Y	92	546	709	Perennial								inner gorge
WU-8-3	1	DS	Q	96,87	0	70	40	4	415	Y	92	382	496	Perennial								inner gorge

Id	MWMU	Landslides		Approx. Failure Date	Slope Gradient (%)	Average Landslide Dimensions (feet)			Volume (cubic-yards)	Sediment Delivery	Delivery (%)	Delivery Volume (cub.-Yrds.)	Delivery Mass (tons)	Sediment Routing	Land Use Assoc.	Deep Seated Landslide Morphological Descriptions						Comments
		Type	Certainty		Field	Length	Width	Depth								Toe	Body	Lat. Scarps	Main Scarps	Veg	Complex	
WU-8-4	3	DS	P	96	0	220	40	4	1304	Y	92	1200	1560	Ephem./Int.								
WU-8-5	3	DS	P	85-90	0	130	80	4	1541	Y	92	1418	1843	Ephem./Int.								
WU-8-6	2	DS	P	96	0	50	25	4	185	Y	92	170	230	Ephem./Int.								
WU-8-7	2	DS	P	96	0	50	25	4	185	Y	92	170	230	Ephem./Int.								
WU-8-8	4	DS	P	96	0	100	60	4	889	N	0	0	0		LANDING							
WU-8-9	1	DS	D	96,87	0	32	32	3	114	Y	100	114	154	Ephem./Int.								
WU-9-1	1	DS	P	96	0	60	40	4	356	Y	92	327	442	Perennial								
WU-9-10	3	DS	D	96,87	80	250	50	2	926	Y	100	926	1250	Perennial	ROAD							inner gorge
WU-9-11	3	DS	D	96	77	280	70	3	2178	Y	100	2178	2940	Perennial	ROAD							starts above road and goes over
WU-9-12	3	DS	D	96,87	80	50	30	3	167	Y	100	167	225	Perennial	ROAD							
WU-9-13	1	DS	D	96,87	81	40	70	4	415	Y	100	415	560	Perennial	ROAD							
WU-9-14	4	DS	P	1987	0	80	15	4	178	N	0	0	0		LANDING							
WU-9-15	4	DS	D	1987	0	80	30	4	356	Y	92	327	425	Ephem./Int.	ROAD							
WU-9-16	2	DS	Q	1987	0	240	160	4	5689	Y	92	5234	7066	Ephem./Int.	SKID							
WU-9-17	4	DS	D	1987	0	65	115	4	1107	Y	92	1019	1375	Ephem./Int.								
WU-9-18	3	DS	D	1981	0	110	50	4	815	Y	92	750	1012	Ephem./Int.	ROAD							
WU-9-19	1	DS	D	1981	0	60	110	4	978	Y	92	900	1214	Ephem./Int.								
WU-9-2	3	DS	D	96,87	0	200	100	4	2963	Y	100	2963	4000	Perennial								
WU-9-20	1	DS	D	1981	0	140	80	4	1659	Y	92	1527	2061	Ephem./Int.	SKID							
WU-9-21		RS	P			860	240	0		Y				Ephem./Int.		4	3	3	3	4	N	
WU-9-22		EF	P			2050	450	0		Y				Ephem./Int.		3	3	3	4	4	N	
WU-9-23		RS	P			2230	2240	0		Y				Perennial		3	3	3	4	4	Y	
WU-9-24		RS	P			1170	580	0		Y				Perennial		3	3	3	3	4	N	part of WU 9-22
WU-9-25		RS	Q			760	290	0		Y				Ephem./Int.		3	3	3	3	3	N	
WU-9-26		RS	P			900	540	0		Y				Ephem./Int.		3	3	3	3	4	N	
WU-9-27		RS	Q			780	880	0		Y				Ephem./Int.		3	3	4	3	4	N	
WU-9-3	2	DS	D	96,87	0	60	80	4	711	Y	100	711	960	Perennial								inner gorge
WU-9-4	3	DS	D	96,87	0	250	180	4	6667	Y	92	6133	8280	Ephem./Int.								
WU-9-5	1	DS	D	96,87	96	150	230	2	2556	Y	100	2556	3450	Perennial								
WU-9-6	1	DS	D	96	0	70	150	2	778	Y	100	778	1050	Ephem./Int.								inner gorge
WU-9-7	1	DS	P	96	0	50	100	4	741	Y	100	741	1000	Ephem./Int.								inner gorge
WU-9-8	1	DS	D	96	0	70	30	3	233	Y	100	233	315	Ephem./Int.								inner gorge
WU-9-9	2	DS	P	96	0	60	60	4	533	Y	100	533	720	Perennial								