



2880 International Circle, Suite 110  
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 www.elpasoco.com

**EL PASO COUNTY PLANNING AND  
 COMMUNITY DEVELOPMENT  
 DEPARTMENT**

**SOILS & GEOLOGY REPORT CHECKLIST**

Revised: January 2022

<b>Soils and Geology Report</b>		
All sketch plans and preliminary plans submitted for review shall be accompanied by geology and soils report. The geology and soils report shall be prepared by, or under the direction of, a professional geologist as defined by CRS 34-1-201(3), or a Professional Engineer as defined by Board Policy Statement 50.2 - "Engineering in Natural Hazard Areas" of the Colorado State Board of Registration for Professional Engineers and Professional Surveyors.		
The PCD Director may modify the applicable requirements, including requiring additional items or removing items, based upon the project and site-specific circumstances.		
	<b>Applicant</b>	<b>PCD</b>
<b>NOTE: Please confirm each item below has been included by placing a check mark in the "Applicant" column. See right for an example. The "PCD" column is for office use only.</b>	<b>✓</b>	Office use only
<b>Report Content</b>		
<b>Issues to be Addressed by Report</b>		
1	A detailed map, drawn to scale, is required for geology and soils reports.	
	Where 3-dimensional relationships are significant but cannot be described satisfactorily in words alone, the geology and soils report should be accompanied by 1 or more appropriately positioned structure sections.	
	The locations of test holes, percolation tests, soil investigation test pit excavations, and other specific sources of	
	The geology and soils report shall include definite statements concerning the following matters:	
	Location and size of subject area and its general setting with respect to major geographic and geologic features	
	Who did the geologic mapping on which the report is based and when the mapping was done	
	Any other kinds of investigations made by the geologist and, where pertinent, reasons for doing the work	
	Topography and drainage in the subject area	
	Abundance, distribution, and general nature of exposures of earth materials within the area	
	Nature and source of available subsurface information. Suitable explanations should provide any technical reviewer with the means for assessing the probable reliability of the data. Subsurface relationships can be variously determined or inferred, for example, by projection of surface features from adjacent areas, by the use of test hole logs, and by interpretation of geophysical data. It is evident that different sources of the information can differ markedly from one another in degree of detail and reliability according to the method used. The relative reliability of the methods used shall be discussed in the report	
2	The geology and soils report should contain brief but complete descriptions of all natural and man-made materials and structural features recognized or inferred within the subject area. Where interpretations are added to the recording of direct observations, the basis for the interpretations should be clearly stated. The following checklist may be useful as a general, though not necessarily complete, guide for descriptions:	
	<b>Bedrock (Igneous, Sedimentary, Metamorphic Types)</b>	
	Identification as to rock type (e.g., granite, silty sandstone, mica schist);	
	Relative age, and where possible, correlations with named formations;	
	Distribution;	
	Dimension features (e.g., thickness, outcrop breadth, vertical extent);	
	Physical characteristics (e.g., color, grain size, nature of stratification, foliation, or schistosity, hardness, coherence);	
	Special physical or chemical features (e.g., calcareous or siliceous cement, concretions, mineral deposits, alteration other than weathering);	
	Distribution and extent of weather zones; significant differences between fresh and weathered rock; and	
	Response to natural surface and near surface processes (e.g., raveling, gullyng, and mass movement).	
	<b>Structural Features</b>	



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	The geology and soils report should contain brief descriptions of the structural features, stratification, foliation, schistosity, folds, and zones of contortion or crushing, joints, shear zones, faults, etc., including information about:		
	Occurrence and distribution;		
	Dimensional characteristics;		
	Orientation and shifts in orientation;		
	Relative ages (where pertinent);		
	Special effects on the bedrock (Describe conditions of planar surfaces); and		
	Specific features of faults (e.g., zones of gouge and breccia, nature of offsets, timing of movements) and whether faults are active in either the geological sense or the historical sense.		
	Surficial (Unconsolidated) Deposits		
	The geology and soils report should contain brief description of surficial deposits include artificial (man-made) fill, topsoil, stream-laid alluvium, beach sands and gravels, residual debris, lake and pond sediments, swamp accumulations, dune sands, marine and non-marine terrace deposits, talus accumulations, creep and slopewash materials, various kinds of slump and slide debris, etc., including the following information:		
	Distribution, occurrence, and relative age; relationships with present topography;		
	Identification of material as to general type;		
	Dimensional characteristics (e.g., thickness, variations in thickness, shape);		
	Surface expression and correlation with features such as terraces, dunes, undrained depressions, anomalous protuberances;		
	Physical or chemical features (e.g., moisture content, mineral deposits, content of expansive clay minerals, alteration, cracks and fissures, fractures);		
	Physical characteristics (e.g., color, grain size, hardness, compactness, coherence, cementation);		
	Distribution and extent of weathered zones; significant differences between fresh and weathered material; and		
	Response to natural surface and near-surface processes (e.g., raveling, gullying, subsidence, creep, slope-washing, slumping, and sliding).		
	Drainage of Surface Water and Groundwater		
	The geology and soils report shall contain information about surface and groundwater, as applicable, including:		
	Distribution and occurrence (e.g., streams, ponds, swamps, springs, seeps, subsurface basins);		
	Relations to topography;		
	Relations to geologic features (e.g., previous strata, fractures, faults);		
	Sources and permanence;		
	Variations in amounts of water (e.g., intermittent spring and seeps, floods);		
	Evidence for earlier occurrence of water at localities now dry;		
	Occurrence or conveyance of water into or within man-made features; and		
	The effect of water on the properties of the in-place materials.		
	Features of Special Significance		
	The geology and soils report should describe features of special significance including:		
	Features representing accelerated erosion (e.g., cliff reentrants, badlands, advancing gully heads);		
	Features indicating subsidence or settlement (e.g., fissures, scarplets, offset reference features,		
	Features indicating creep (e.g., fissures, scarplets, distinctive patterns of cracks or vegetation,		
	Slump and slide masses in bedrock or surficial deposits; distribution, geometric characteristics,		
	Deposits related to recent floods (e.g., talus aprons, debris ridges, canyon-bottom trash); and		
	Active faults and their recent effects on topography and drainage.		
	Mineral Resources.		



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	<p>The geology and soils report should contain brief description of mineral resources including the identification of the types, location and value of mineral resources within the land to be subdivided. These include, but are not limited to, limestone used for construction, coal, sand, gravel, and quarry aggregate, for which extraction by an extractor is or will be commercially feasible, or which is a deposit having significant economic or strategic value to the County, state, or nation. Any area known to contain a commercial mineral deposit shall not be subdivided until the deposit is extracted, unless the BoCC finds that extraordinary environmental damage or public hazard results from the extraction.</p>		
3	<p>The geology and soils report should contain brief but complete descriptions of all natural and man-made materials and structural features recognized or inferred within the subject area. Where interpretations are added to the recording of direct observations, the basis for the interpretations should be clearly stated. The following checklist may be useful as a general, though not necessarily complete, guide for descriptions:</p> <p><b>Bedrock (Igneous, Sedimentary, Metamorphic Types).</b></p> <p>Identification as to rock type (e.g., granite, silty sandstone, mica schist);          Relative age, and where possible, correlations with named formations;          Distribution;          Dimension features (e.g., thickness, outcrop breadth, vertical extent);          Physical characteristics (e.g., color, grain size, nature of stratification, foliation, or schistosity, hardness,          Special physical or chemical features (e.g., calcareous or siliceous cement, concretions, mineral          Distribution and extent of weather zones; significant differences between fresh and weathered rock;          Response to natural surface and near surface processes (e.g., raveling, gullying, and mass movement)</p> <p><b>Structural Features.</b></p> <p>The geology and soils report should contain brief descriptions of the structural features, stratification, foliation, schistosity, folds, and zones of contortion or crushing, joints, shear zones, faults, etc., including information about:</p> <p>Occurrence and distribution;          Dimensional characteristics;          Orientation and shifts in orientation;          Relative ages (where pertinent);          Special effects on the bedrock (Describe conditions of planar surfaces); and          Specific features of faults (e.g., zones of gouge and breccia, nature of offsets, timing of movements)</p> <p><b>Surficial (Unconsolidated) Deposits.</b></p> <p>The geology and soils report should contain brief description of surficial deposits include artificial (man-made) fill, topsoil, stream-laid alluvium, beach sands and gravels, residual debris, lake and pond sediments, swamp accumulations, dune sands, marine and non-marine terrace deposits, talus accumulations, creep and slopewash materials, various kinds of slump and slide debris, etc., including the following information:</p> <p>Distribution, occurrence, and relative age; relationships with present topography;          Identification of material as to general type;          Dimensional characteristics (e.g., thickness, variations in thickness, shape);          Surface expression and correlation with features such as terraces, dunes, undrained depressions,          Physical or chemical features (e.g., moisture content, mineral deposits, content of expansive clay          Physical characteristics (e.g., color, grain size, hardness, compactness, coherence, cementation);          Distribution and extent of weathered zones; significant differences between fresh and weathered          Response to natural surface and near-surface processes (e.g., raveling, gullying, subsidence, creep,  <b>Drainage of Surface Water and Groundwater.</b></p> <p>The geology and soils report shall contain information about surface and groundwater, as applicable, including:</p> <p>Distribution and occurrence (e.g., streams, ponds, swamps, springs, seeps, subsurface basins);          Relations to topography;          Relations to geologic features (e.g., previous strata, fractures, faults);          Sources and permanence;          Variations in amounts of water (e.g., intermittent spring and seeps, floods);          Evidence for earlier occurrence of water at localities now dry;          Occurrence or conveyance of water into or within man-made features; and          The effect of water on the properties of the in-place materials</p>		



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	Features of Special Significance.		
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	Features indicating creep (e.g., fissures, scarplets, distinctive patterns of cracks or vegetation,		
	Slump and slide masses in bedrock or surficial deposits; distribution, geometric characteristics,		
	Deposits related to recent floods (e.g., talus aprons, debris ridges, canyon-bottom trash); and		
	Active faults and their recent effects on topography and drainage		
	Mineral Resources.		
	of the types, location and value of mineral resources within the land to be subdivided. These include, but are not limited to, limestone used for construction, coal, sand, gravel, and quarry aggregate, for which extraction by an extractor is or will be commercially feasible, or which is a deposit having significant economic or strategic value to the County, state, or nation. Any area known to contain a commercial mineral deposit shall not be subdivided until the deposit is extracted, unless the BoCC finds that extraordinary environmental damage or public hazard results from the extraction.		
	Treatment of this general topic, whether presented as a separate section or integrated in some manner with the geologic descriptions, normally constitutes the principal contribution of the geologic and soils report. It involves: (1) the effects of geologic features on the proposed grading, construction, and land use; and (2) the effects of these proposed modifications on future geological processes in the area. The following checklist includes the topics that ordinarily should be considered in submitting discussion, conclusions, and recommendations in the geologic reports:		
	Compatibility with Proposal.		
	General compatibility of natural features with proposed land use related to:		
	Topography;		
	Lateral stability of earth materials;		
	Problems of flood inundation, erosion, and deposition;		
	Problems caused by features or conditions in adjacent properties; and		
	Other general problems.		
	Proposed Cuts.		
	Prediction of what materials and structural features will be encountered;		
	Prediction of stability based on geologic factors;		
	Problems of excavation (e.g. unusually hard or massive rock, excessive flow of groundwater); and		
	Recommendations for reorientation or repositioning of cuts, reduction of cut slopes, development of compound cut slopes, special stripping above daylight lines, buttressing, protection against erosion, handling of seepage water, setbacks for structures above cuts, etc.		
	Proposed Masses of Fill.		
	General evaluation of planning with respect to canyon-filling and sidehill masses of fill;		
	Comment on suitability of existing natural materials for fill; and		
	Recommendations for positioning of fill masses, provision for underdrainage, buttressing, special		
4	Onsite Wastewater Treatment System (if applicable).		
	Soil types, depths, distributions and relationship to bedrock;		
	General slope conditions, and limitations of slope to building sites and disposal sites; and Present and expected percolation rates		
	Recommendations for Subsurface Testing and Exploration.		
	Cuts and test holes needed for additional geologic information; and		
	Program of subsurface exploration and testing, based on geologic considerations that are most likely to provide data needed by the soils engineer.		
	Special Recommendations.		
	Areas to be left as natural ground;		
	Removal or buttressing of existing slide masses;		
	Flood protection;		
	Problems of groundwater circulation; and		
	Position of structures, with respect to active faults.		