OWTS and soils and geology reports must be separate reports, per LDC Secs. 8.4.8 and 8.4.9. Ensure that these reports meet the current criteria within these sections and revise accordingly.

At least two (2) test pit locations are required for the 40-acre site.

Regarding the Soils & Geology component per LDC Sec. 8.4.9(A)(2): The PCD Director may approve a report that was completed and reviewed at an earlier stage in the subdivision review process. If you are requesting to use an older report, please indicate so in your letter of intent and explain how the recommendations of the report and the review of the CGS have been followed in the preparation of the preliminary plan. This report must be prepared by a registered geologist.

ENTECH
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SOIL, GEOLOGY, GEOLOGIC HAZARD, AND WASTEWATER STUDY PRAIRIE RIDGE EL PASO COUNTY, COLORADO

Prepared for

Prairie Ridge Properties, LLC
c/o K & C Rushing, NV LLLP
P. O. Box 88270
Colorado Springs, Colorado 80908

Attn: Ken Rushing

May 31, 2007

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Kristen A. Andrew-Hoeser, P.G.
Engineering Geologist

Reviewed by:

Joseph C. Goode, Jr., P.E.
President

KAH/mf

Encl.

Entech Job No. 94477
2MSW/rep/2007/94477sgws

TABLE OF CONTENTS

1.0 SUMMARY

Project Location

The project lies in a portion of the SE¼ of Section 12, Township 11 South, Range 66 West of the 6th Principal Meridian in El Paso County, Colorado. The site is located east and south of Brown Road and north of Walker Road.

Project Description

Total acreage involved in the project is approximately 40 acres. The proposed site development consists of 7 single-family residential lots. The development will utilize individual wells and sewage treatment systems.

Scope of Report

This report presents the results of our geologic investigation, treatment of engineering geologic hazard study and wastewater study for individual sewage treatment systems.

Land Use and Engineering Geology

This site was found to be suitable for the proposed development. Areas were encountered where the geologic conditions will impose some constraints on development and land use. These include areas of seasonal and potentially seasonal shallow groundwater areas, drainage areas, areas of ponded water, erosion, artificial fill, collapsible soils, and expansive soils. Based on the proposed development plan, it appears that these areas will have some impact on the development. These conditions will be discussed in greater detail in the report.

In general, it is our opinion that the development can be achieved if the observed geologic conditions on site are either avoided or properly mitigated. All recommendations are subject to the limitations discussed in the report.

2.0 GENERAL SITE CONDITIONS AND PROJECT DESCRIPTION

The site is located in a portion of the SE¼ of Section 12, Township 11 South, Range 66 West of the 6th Principal Meridian in El Paso County, Colorado. The site is located 8 miles east of Monument, Colorado, on Brown Road, north of Walker Road. The location of the site is as shown on the Vicinity Map, Figure 1.

The topography of the site varies from gently to moderately sloping generally to the south. The drainages on site flow in southerly and easterly directions through the property. No water was observed flowing in the minor drainage that bisects the property flowing south at the time of this investigation. Water was observed flowing in the drainage that flows east in the southern portion of the site. Areas of ponded water were observed behind an embankment that exists east of the site and backs up onto the southeast corner of the site. The site boundaries are indicated on the USGS Map, Figure 2. An aerial photograph of the site is presented in Figure 3. Previous land uses have included grazing and pasture land. Additionally, some fill placement has occurred in the past. The site contains primarily low grasses, and field weeds. Site photographs, taken May 9, 2007, are included in Appendix A. The approximate locations and directions of the photographs are indicated on Figure 4.

Total acreage involved in the proposed development is approximately 40 acres. Seven (7) single-family residential lots are proposed with areas of open space. Lot sizes range from 5 acres to 6 acres. The area will be serviced by individual wells and sewage treatment systems.

3.0 SCOPE OF THE REPORT

The scope of the report will include the following:

- A general geologic analysis utilizing published geologic data. Detailed site-specific mapping will be conducted to obtain general information in respect to major geographic and geologic features, geologic descriptions and their effects on the development of the property.

- The site will be evaluated for individual sewage treatment systems in accordance with El Paso Land Development Code.

4.0 FIELD INVESTIGATION

Our field investigation on this site consisted of the preparation of a geologic map of any bedrock features and significant surficial deposits. The Soil Conservation Service (SCS) survey was also reviewed to evaluate the site. The position of mappable units within the subject property are shown on the Geologic Map. Our mapping procedures involved both field reconnaissance and measurements and air photo reconnaissance and interpretation. The same mapping procedures have also been utilized to produce the Engineering Geology Map which identified pertinent geologic conditions affecting development. The field mapping was performed by personnel of Entech Engineering, Inc. on May 9, 2007.

Three (3) percolation tests were performed on the site to determine general suitability of the site for the use of individual wastewater treatment systems. The locations of these percolation tests are indicated on the Percolation Test Location Plan, Figure 4. The Test Boring Logs from the Profile Holes are presented in Appendix B. Results of this testing will be discussed later in this report.

Laboratory testing was also performed on some of the soils to classify and determine the soils engineering characteristics. Laboratory tests include grain-size analysis, ASTM D-422, and Atterberg Limits, ASTM D-4318. Swell testing included both FHA Swell testing and Swell/Consolidation testing. Results of the laboratory testing are included in Appendix C. A Summary of Laboratory Test Results is presented in Table 1.

Soil, Geology and Wastewater Studies dated January 18, 2002 (Reference 1) and September 29, 2006 (Reference 2) were performed by Entech Engineering, Inc. for a property northeast of the site. Information from these studies was also used in evaluating the site.

5.0 SOIL, GEOLOGY AND ENGINEERING GEOLOGY

5.1 General Geology

Physiographically, the site lies in the western portion of the Great Plains Physiographic Province. Approximately 11 miles to the west is a major structural feature known as the Rampart Range Fault. This fault marks the boundary between the Great Plains Physiographic Province and the Southern Rocky Mountain Province. The site exists within the southeastern edge of a large structural feature known as the Denver Basin. Bedrock in the area tends to be very gently dipping in a northeasterly direction (Reference 3). The rocks in the area of the site are sedimentary in nature, and typically Tertiary to Upper Cretaceous in age. The bedrock underlying the site consists of the Dawson Arkose Formation. Overlying this formation are unconsolidated deposits of residual, colluvial, man-made, and alluvial soils of the Quaternary Age. The residual soils are produced by the in-situ action of weathering of the bedrock on site. Some colluvial soils exist which are deposited by gravity and sheetwash. The alluvial soils were deposited by water in the major drainages on site and as stream terraces on some of the ridge lines. Man-made soils exist in an area in the central portion of the site where several gullies were filled in. The site's stratigraphy will be discussed in more detail in Section 5.3.

5.2 Soil Conservation Service

The Soil Conservation Service has mapped two (2) soil types on the site (Figure 5)(Reference 4). In general, they vary from sandy loam and loamy sand to clay loam. The soils are described as follows:

Type	Description
15	Brussett loam, 3-5% slopes
69	Peyton-Pring complex, 8-15 % slopes

Complete descriptions of each soil type are presented in Figures 6 and 7. The soils have generally been described to have moderate to rapid permeabilities. Limitations on development include steep slopes, limited ability to support a load, shrink swell potential, and frost action potential. Possible hazards with soil erosion are present on the site. The erosion potential can be controlled with vegetation. The majority of the soils have been described to have moderate to high erosion hazards.

5.3 Site Stratigraphy

The Black Forest Quadrangle Geology Map showing the site is presented in Figure 8 (Reference 5). The Geology Map prepared for the site is presented in Figure 9. Four mappable units were identified on this site which are described as follows:

- **Qaf** **Artificial Fill of Quaternary Age:** These are man-made fill deposits associated with the filled gullies in the central portion of the site.

- **Qal** **Recent Alluvium of Quaternary Age:** These are recent stream deposits in the channels of the main drainages on site. Some areas have recent sand deposition, while others have highly organic soils.

- **QTa** **Alluvium of Palmer Divide of Quaternary to Tertiary Age:** These are older alluvial terraces typically composed of sandy, gravelly material.

- **Tkd** **Dawson Arkose of Tertiary to Cretaceous Age:** The Dawson formation consists of arkosic sandstone with interbedded lenses of fine-grained sandstone, claystone or siltstone. Typically, it is buff to light brown and light gray in color. Overlying the Dawson is a variable layer of colluvial and residual soil. These materials typically consist of silty to clayey sands and sandy clays deposited by the action of sheetwash and gravity. Some residual soils derived from the in-situ weathering of the bedrock on site exist in this mapping. These soils are overlying the Dawson Formation of Tertiary to Cretaceous Age. The soil layer encountered in the profile holes was more than 10 feet thick and consisted of sandy silty clays.

The soils listed above were mapped from site-specific mapping, the *Geologic Map of the Colorado Springs-Castle Rock Area*, distributed by the US Geological Survey in 1979 (Reference 6) and the *Geologic Map of the Black Forest Quadrangle* distributed by the Colorado Geological Survey in 2003 (Reference 5), and *The Geologic Map of the Denver 1^0 x 2^0 Quadrangle*, distributed by the US Geological Survey in 1081 (Reference 7). The Test Borings

from the profile holes were also used in evaluating the site and are included in Appendix B. The Geology Map prepared for the site is presented in Figure 9.

5.4 Soil Conditions

The soils encountered in the Test Borings of the percolation tests can be grouped into one general soil type. Bedrock was not encountered in any of the profile holes which were drilled to 10 feet. The soils were classified using the Unified Soil Classification System (USCS).

Soil Type 1 is a sandy clay (CL), and sandy clay – silt (CL- ML) encountered in all of the profile holes. These soils were encountered at stiff to very stiff consistencies and at moist conditions. Samples tested had 69% to 79% passing the 200 Sieve. A swell of 1177 psf was measured in the FHA Swell Test. This swell is in the moderate expansion range. The clays are also potentially collapsible. Consolidations of 0.4% and 0.6% were measured in the Swell/Consolidation Test. These values are in the low consolidation range.

The Test Boring Logs from the Profile Holes are presented in Appendix B. Laboratory test results are presented in Appendix C. A Summary of Laboratory Test Results is presented in Table 1.

5.5 Groundwater

Groundwater was not encountered in any of the profile holes which were drilled to 10 feet. Areas of seasonal and potentially seasonal shallow groundwater and ponded water have been mapped in the drainages on-site. These areas are discussed in the following section. Fluctuation in groundwater conditions may occur due to variations in rainfall and other factors not readily apparent at this time.

It should be noted that in the sandy materials on site, some groundwater conditions might be encountered due to the variability in the soil profile. Isolated sand and gravel layers within the soils, sometimes only a few feet in thickness and width, can carry water in the subsurface. Groundwater may also flow on top of the underlying bedrock or clays. Builders and planners should be cognizant of the potential for the occurrence of such subsurface water features during construction on-site and deal with each individual problem as necessary at the time of construction.

6.0 ENGINEERING GEOLOGY – IDENTIFICATION AND MITIGATION OF GEOLOGIC HAZARDS

As mentioned previously, detailed mapping has been performed on this site to produce an Engineering Geology Map (Figure 9). This map shows the location of various geologic conditions of which the developers should be cognizant during the planning, design and construction stages of the project. These hazards and the recommended mitigation techniques are as follows:

psw *Potentially Seasonal High Groundwater Area*

In these areas, we would anticipate the potential for periodically high subsurface moisture conditions, frost heave potential and highly organic soils. The majority of these areas lie within a defined drainage which can be avoided by the proposed development. Construction in any portions of these areas, if required, should follow these precautions.

Mitigation: In these locations, foundation in areas subject to severe frost heave potential should penetrate to a sufficient depth so as to discourage the formation of ice lenses beneath foundations. At this location and elevation, a foundation depth for frost protection of 3 feet is recommended. In areas where high subsurface moisture conditions are anticipated periodically, a subsurface perimeter drain will be necessary to help prevent the seepage of water into areas located below grade. Typical drain details are presented in Figure 10. Any grading in these areas should be done in a manner that directs surface flow around construction to avoid areas of ponded water. Areas of organic material will require removal before any filling is done.

sw *Seasonal High Groundwater Area*

These are areas within the main drainage on the southern portion of the site. Water was observed flowing in this area at the time of this investigation. These areas also contain frost heave potential and highly organic soils.

Mitigation: Because areas mapped as seasonally wet lie within a defined drainage, we do not recommend structures be built within this area. Septic fields should be located a minimum of 25 feet away from the drainage or pond areas. Any construction in these areas should be done in a manner that does not create ponded water. No areas of the

site are mapped within any floodplain zones according to the FEMA Map No. 08041CO325F, Figure 11 (Reference 8). Specific floodplain locations and drainage studies are beyond the scope of this report.

W *Areas of Ponded Water*

This area is within the drainage where water was observed ponded behind an earthen dam east of the site. It is anticipated this area will be avoided by development. The same mitigation techniques for seasonal shallow groundwater areas are recommended for this area as well.

ex *Expansive Soils*

Expansive soils were encountered in the profile holes of some of the Percolation Tests. The expansive soils in the area are typically highly sporadic, therefore, none have been indicated on the map. The soils are moderately expansive and can cause differential movement in the structure foundations.

Mitigation: Should expansive soils be encountered beneath the foundation, mitigation will be necessary. Mitigation of expansive soils may include overexcavation and replacement with non-expansive structural fill at a minimum of 90% of its maximum Modified Proctor Dry Density, ASTM D-1557. Drilled pier foundation systems are another option in areas of highly expansive soils. Floor slabs on expansive soils should be expected to experience movement. Overexcavation and replacement with compacted non-expansive soils has been successful in minimizing slab movements. Final recommendations should be determined after additional investigation of each building site.

c *Collapsible Soils*

Collapsible soils were encountered in some of the test borings drilled on-site. These soils are typically highly sporadic in the area, therefore, none have been indicated on the map. Should collapsible soils be encountered beneath foundations, mitigation will be necessary.

Mitigation: Mitigation of collapsible soils typically involves overexcavation of the material 2 to 3 feet and recompaction with thorough moisture conditioning. The soils should be recompacted at a minimum of 90% of its maximum Proctor Dry Density ASTM D-1557 at 2% over the optimum moisture. Specific recommendations should be made on an individual bases at the time of construction.

af *Artificial Fill*

These are areas of man-made fill associated with several gullies that were filled in the past.

Mitigation: It is our understanding the filled area is to be avoided by construction. Should any uncontrolled fill be encountered in other portions of the site beneath foundations, removal and recompaction at a minimum of 90% of its maximum Modified Procter Dry Density, ASTM D-1557 will be required.

er *Areas of Erosion and Gullying*

These are areas that are undergoing erosion by water and sheetwash producing gullies and rill erosion.

Mitigation: Due to the nature of the soils on this site, virtually all the soils are subject to erosion by wind and water. Other minor areas of erosion were observed on site other than those mapped, particularly where some rill erosion has occurred. Areas of erosion can occur across the entire site, particularly if the soils are disturbed during construction. Vegetation reduces the potential for erosion. The areas identified where erosion is actually taking place may require check dams, regrading and revegetation using channel lining mats to anchor vegetation. Further recommendations for erosion control are discussed under Section 9.0 "Erosion Control" of this report. Recommendations

pertaining to revegetation may require input from a qualified landscape architect and/or the Natural Resource Conservation Service (previously Soil Conservation Service).

6.1 Relevance of Geologic Conditions to Land Use Planning

As mentioned earlier in this report, we understand that the development will be residential. It is our opinion that the existing geologic and engineering geologic conditions will impose some constraints on the proposed development and construction. The most significant problems affecting development will be those associated with the drainages on site and can be avoided. Other hazards on site may be satisfactorily mitigated through proper engineering design and construction practices.

The upper residual soils are typically at stiff to very stiff consistencies. Expansive soils were encountered on portions of the site that will require mitigation. Foundations anticipated for the site are standard spread footings possibly in conjunction with overexcavation in areas of expansive or collapsible soils. Areas of expansive and collapsible soils encountered on site are sporadic; therefore, none have been indicated on the maps. Expansive or collapsible soils, if encountered, will require special foundation design and/or overexcavation. These soils will not prohibit development.

Areas of seasonal and potentially seasonal high groundwater areas and ponded water were encountered on site. It is anticipated these areas can be avoided by construction. Structures should not block drainages. Should structures encroach on these areas, drains should be used to help prevent the intrusion of water into areas below grade. Additionally, foundations should penetrate a minimum of 3 feet for protection against frost heave.

An area exists in the central portion of the site where several gullies were filled in the past. It is our understanding this area is to be avoided by building sites. Should any uncontrolled fill be encountered beneath foundations, overexcavation and recompaction or replacement with structural fill compacted at a minimum of 90% of its maximum modified Proctor Dry Density ASTM D-1557 will be necessary.

In summary, development of the site can be achieved if the items mentioned above are mitigated. These items can be mitigated through proper design and construction or through avoidance. Investigation on each lot is recommended prior to construction.

7.0 ON-SITE DISPOSAL OF WASTEWATER

The site was evaluated for individual sewage treatment systems in accordance with El Paso Land Development Code. Three (3) percolation tests were performed on the property. Percolation tests may not be located in the exact areas of proposed systems. The approximate locations of the percolation tests are indicated on Figure 4 and on the Septic Suitability Map, Figure 12. The percolation tests results are summarized in Table 2. The specific test results are presented in Appendix D of this report.

The Soil Conservation Service soil map and soil descriptions are presented in Figures 5 through 7. The site has been mapped with 2 soil descriptions. The soils are described as having moderate to rapid percolation rates. The individual percolation test results however, ranged from 160 minutes per inch to 320 minutes per inch. None of the percolation rates are suitable for conventional individual sewage treatment systems. El Paso County guidelines require designed systems for percolation rates that exceed 60 minutes per inch. Designed systems are fairly common in the area and do not preclude development of the site.

Standard penetration testing, ASTM D-1586, was performed in each profile hole to evaluate the density of the soil and the presence of bedrock. Bedrock was not encountered in any of the profile holes which were drilled to 10 feet. Designed systems are generally required in areas of shallow bedrock.

Leach fields must be maintained a minimum of 4 feet above groundwater. Groundwater was not encountered in any of the profile holes which were drilled to depths of 10 feet. Should any be encountered within 6 feet of the surface, shallow leaching fields would be recommended. In areas where groundwater is less than 4 feet, designed systems will be required.

The percolation rates measured in the tests were not suitable for conventional systems. All of the tests had rates of slower than 60 minutes per inch. El Paso County guidelines require

designed systems for percolation rates exceed 60 minutes per inch. Bedrock was not encountered in any of the profile holes at a depth that would affect conventional systems. Where bedrock is encountered above 6 feet, designed systems may be required. Due to the size of the building lots, additional drilling may reveal areas that are suitable for conventional systems. In areas where suitable percolation rates cannot be found, shallow groundwater exists or shallow bedrock exists, designed systems will be required.

8.0 ECONOMIC MINERAL RESOURCES

Some of the sandy materials on-site could be considered a low grade sand resource. According to the *El Paso County Aggregate Resource Evaluation Map* (Reference 9), the area is mapped as stream terrace and floodplain deposits. According to the *Atlas of Sand, Gravel and Quarry Aggregate Resources, Colorado Front Range Counties* distributed by the Colorado Geological Survey (Reference 10), areas of the site are not mapped with any resources. According to the *Evaluation of Mineral and Mineral Fuel Potential* (Reference 11), the area of the site has been mapped as "Little or No Potential" for industrial minerals. A small quarried area exist on of the site. It is possible sand and gravel deposits associated with the Palmer Divide Alluvium could be an aggregate resource. However, considering the silty to clayey nature of much of these materials and abundance of similar materials through the region and the close proximity to developed land, they would be considered to have little significance as an economic resource.

According to *the Evaluation of Mineral and Mineral Fuel Potential of El Paso County State Mineral Lands* (Reference 11), the site is mapped within the Denver Basin Coal Region. However, the area of the site has been mapped as "Poor" for coal resources. No active or inactive mines have been mapped in the area of the site. No metallic mineral resources have been mapped on the site (Reference 11).

The site has been mapped as "Fair" for oil and gas resources (Reference 11). No oil or gas fields have been discovered in the area of the site. The sedimentary rocks in the area lacked the essential elements for oil or gas.

9.0 EROSION CONTROL

The soil types observed on the site are mildly to highly susceptible to wind erosion, and moderately to highly susceptible to water erosion. A minor wind erosion and dust problem may be created for a short time during and immediately after construction. Should the problem be considered severe enough during this time, watering of the cut areas or the use of chemical palliative may be required to control dust. However, once construction has been completed and vegetation re-established, the potential for wind erosion should be considerably reduced.

With regard to water erosion, loosely compacted soils will be the most susceptible to water erosion, residually weathered soils and weathered bedrock materials become increasingly less susceptible to water erosion. For the typical soils observed on site, allowable velocities or unvegetated and unlined earth channels would be on the order of 3 to 4 feet/second, depending upon the sediment load carried by the water. Permissible velocities may be increased through the use of vegetation to something on the order of 4 to 7 feet/second, depending upon the type of vegetation established. Should the anticipated velocities exceed these values, some form of channel lining material may be required to reduce erosion potential. These might consist of some of the synthetic channel lining materials on the market or conventional riprap. In cases where ditch-lining materials are still insufficient to control erosion, small check dams or sediment traps may be required. The check dams will serve to reduce flow velocities, as well as provide small traps for containing sediment. The determination of the amount, location and placement of ditch linings, check dams and of the special erosion control features should be performed by or in conjunction with the drainage engineer who is more familiar with the flow quantities and velocities.

Cut and fill slope areas will be subjected primarily to sheetwash and rill erosion. Unchecked rill erosion can eventually lead to concentrated flows of water and gully erosion. The best means to combat this type of erosion is, where possible, the adequate re-vegetation of cut and fill slopes. Cut and fill slopes having gradients more than three (3) horizontal to one (1) vertical become increasingly more difficult to revegetate successfully. Therefore, recommendations pertaining to the vegetation of the cut and fill slopes may require input from a qualified landscape architect and/or the Soil Conservation Service.

10.0 CLOSURE

It is our opinion that the existing geologic engineering and geologic conditions will impose some constraints on development and construction of the site. The majority of these conditions can be avoided by construction. Others can be mitigated through proper engineering design and construction practices. The proposed development and use is consistent with anticipated geologic and engineering geologic conditions.

It should be pointed out that because of the nature of data obtained by random sampling of such variable and non-homogeneous materials as soil and rock, it is important that we be informed of any differences observed between surface and subsurface conditions encountered in construction and those assumed in the body of this report. Individual investigations for building sites and septic systems will be required prior to construction. Construction and design personnel should be made familiar with the contents of this report. Reporting such discrepancies to Entech Engineering, Inc. soon after they are discovered would be greatly appreciated and could possibly help avoid construction and development problems.

This report has been prepared for Prairie Ridge Properties for application to the proposed project in accordance with generally accepted geologic soil and engineering practices. No other warranty expressed or implied is made.

We trust that this report has provided you with all the information that you required. Should you require additional information, please do not hesitate to contact Entech Engineering, Inc.

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TABLES

TABLE 1

SUMMARY OF LABORATORY TEST RESULTS

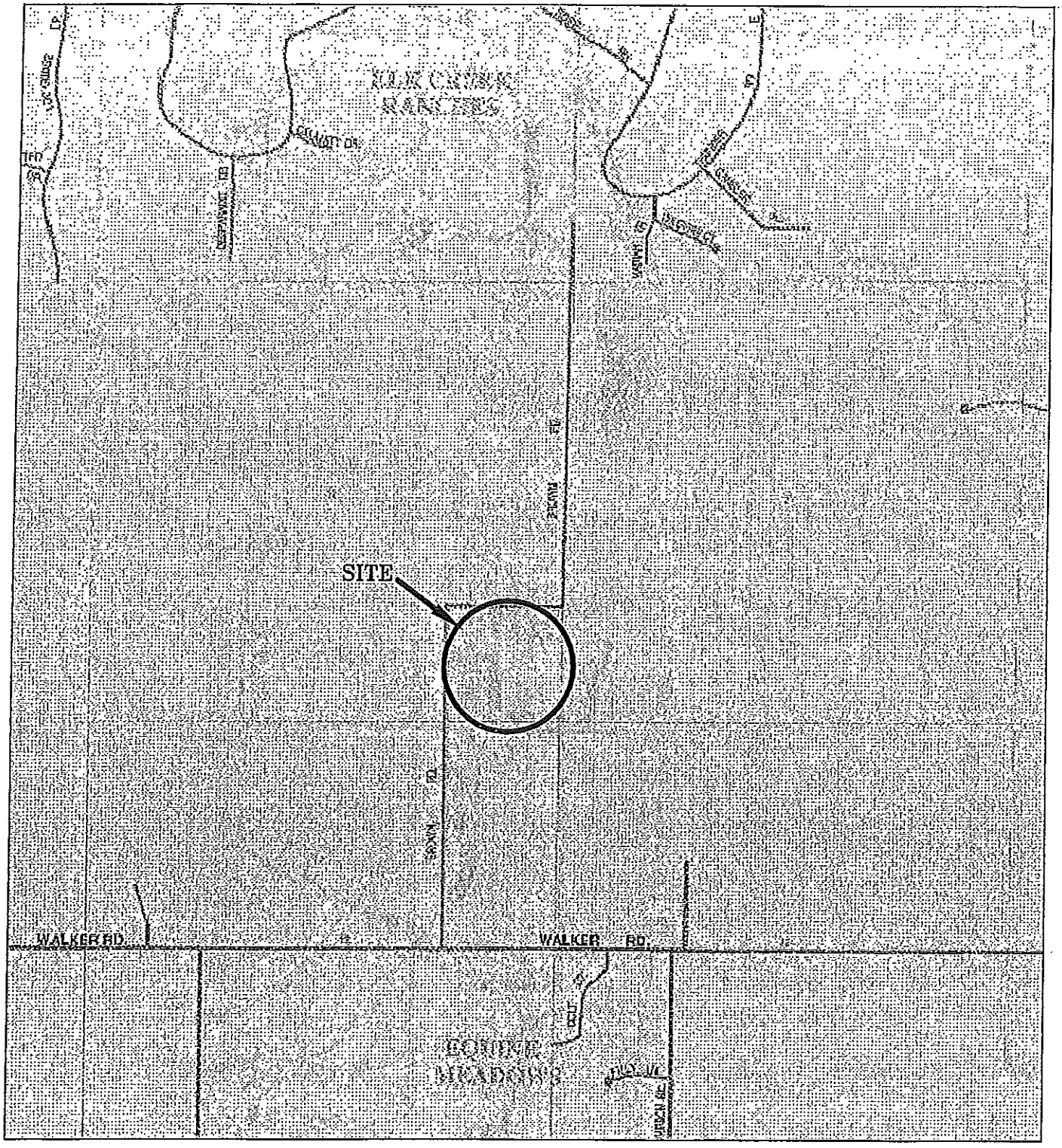
CLIENT PRAIRIE RIDGE PROP.
PROJECT PRAIRIE RIDGE
JOB NO. 94477

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	WATER (%)	DRY DENSITY (PCF)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT (%)	PLASTIC INDEX (%)	SULFATE (WT %)	FHA SWELL (PSF)	SWELL/ CONSOL (%)	UNIFIED CLASSIFICATION	SOIL DESCRIPTION
1	1	5-10			71.6				1177		CL-ML	CLAY-SILT, SANDY
1	2	10	9.0	93.1	78.9	28	11			-0.6	CL	CLAY, SANDY
1	3	5	6.6	94.1	69.2	24	6			-0.4	CL-ML	CLAY-SILT, SANDY

Table 2: Summary of Percolation Test Results

Percolation Test No.	Percolation Rate (min/in)	Depth to Bedrock (ft.)	Depth to Groundwater (ft.)
1	320	>10	>10
2	267	>10	>10
3	160	>10	>10

FIGURES



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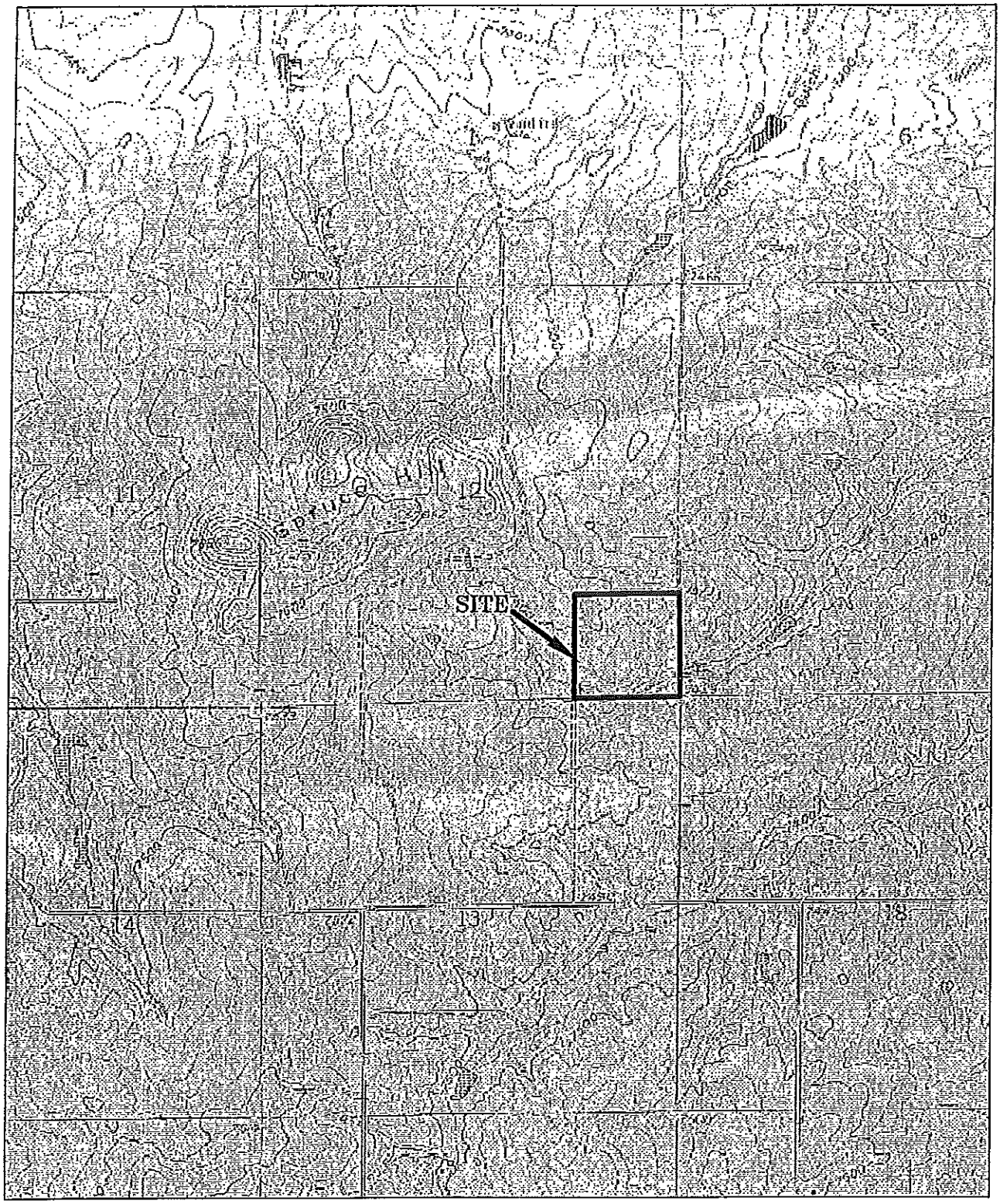
ENTECH ENGINEERING, INC.
565 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

Vicinity Map
Prairie Ridge
El Paso County, CO.
For: Prairie Ridge Properties

DRAWN:	DATE:	CHECKED:	DATE:
KAH	5/29/07		

JOB NO.: 94477

FIG NO.: 1



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ENGINEERING, INC.
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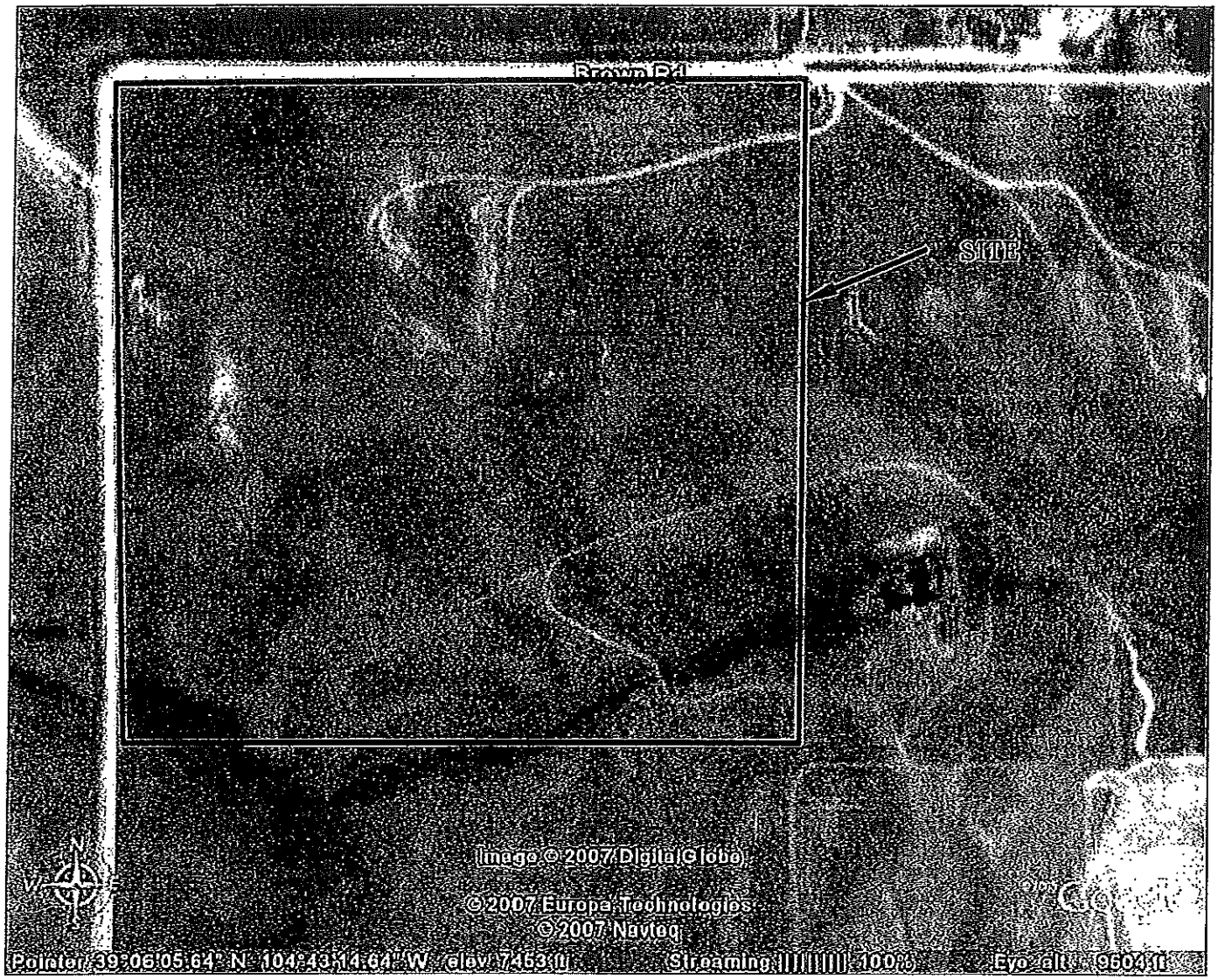
USGS Map
Prairie Ridge
El Paso County, CO.
For: Prairie Ridge Properties

DRAWN:	DATE:	CHECKED:	DATE:
KAH	5/29/07		

JOB NO.: 94477

FIG NO.: 2



ENTECH ENGINEERING, INC. 505 ELKTON DRIVE COLORADO SPRINGS, CO. 80907 (719) 531-5599	Aerial Photograph Prairie Ridge El Paso County, CO. For: Prairie Ridge Properties	JOB NO.: 94477 FIG NO.: 3

DRAWN:	DATE:	CHECKED:	DATE:
KAH	5/29/07		

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565 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

SCS Map
Prairie Ridge
El Paso County, CO.
For: Prairie Ridge Properties

DRAWN:	DATE:	CHECKED:	DATE:
KAH	5/29/07		

JOB NO.: 94477

FIG NO.: 5

15—Brussett loam, 3 to 5 percent slopes. This deep, well drained soil formed in eolian silt and sand on uplands. Elevation ranges from 7,200 to 7,500 feet. The average annual precipitation is about 18 inches, and the average annual air temperature is about 43 degrees F.

Typically, the surface layer is dark grayish brown loam about 8 inches thick. The subsoil is grayish brown and brown clay loam about 26 inches thick. The substratum is pale brown silt loam. Mycelia and soft masses of lime are common in the substratum.

Included with this soil in mapping are small areas of Peyton sandy lom, 1 to 5 percent slopes, and Peyton-Pring complex, 3 to 8 percent slopes.

Permeability of this Brussett soil is moderate. Effective rooting depth is 60 inches or more. Available water capacity is high. Surface runoff is medium to rapid. The hazard of erosion is moderate, especially when snow melts in spring while the ground is frozen. Some gullies are present.

Nearly all the acreage of this soil is used for nonirrigated winter wheat, spring oats, and improved pasture that is grazed by cattle and sheep. The chief pasture grasses are smooth brome, intermediate wheatgrass, and pubescent wheatgrass. Winter wheat is grown under a wheat-fallow system. Stubble mulching is the most important conservation practice. Application of fertilizer generally is not needed in the wheat-fallow system. Other crops respond to application of nitrogen. The growing season is too short for warm-season field crops. Management of plant cover is needed to control erosion.

Rangeland vegetation consists of mountain muhly, little bluestem, needleandthread, Parry oatgrass, and junegrass.

Deferment of grazing in spring helps to maintain the vigor and production of the cool-season bunchgrasses. Fencing and properly distributing livestock watering facilities may be needed to control grazing. Locating salt blocks in areas not generally grazed increases the amount of forage that is used on this soil.

Windbreaks and environmental plantings are generally well suited to this soil. Summer fallow a year prior to planting and continued cultivation for weed control are needed to insure the establishment and survival of plantings. Trees that are best suited and have good survival potential are Rocky Mountain juniper, eastern redcedar, ponderosa pine, Siberian elm, Russian-olive, and hackberry. Shrubs that are best suited are skunkbush sumac, lilac, Siberian peashrub, and American plum.

This soil is suited to wildlife habitat. It is best suited to habitat for openland and rangeland wildlife. In cropland areas, habitat favorable for ring-necked pheasant, mourning dove, and many nongame species can be developed by establishing areas for nesting and escape cover. For pheasant, undisturbed nesting cover is vital and should be provided for in plans for habitat development. This is especially true in areas of intensive farming. Rangeland wildlife, such as pronghorn antelope, can be encouraged by developing livestock watering facilities, properly managing livestock grazing, and reseeding range where needed.

The main limitations for urban development are moderate shrink-swell potential and frost action potential. Dwellings and roads can be designed to overcome these limitations. Capability subclass IVe.

69—Peyton-Pring complex, 8 to 15 percent slopes. These gently to moderately sloping soils are on valley side slopes and on uplands. Elevation ranges from 6,800 to 7,600 feet. The average annual precipitation is about 17 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 120 days.

The Peyton soil makes up about 40 percent of the complex, the Pring soil about 30 percent, and other soils about 30 percent.

Included with these soils in mapping are areas of Holderness loam, 8 to 15 percent slopes; Tomah-Crowfoot loamy sands, 8 to 15 percent slopes; Kettle gravelly loamy sand, 8 to 40 percent slopes; and a few areas of Rock outcrop.

The Peyton soil is commonly on the less sloping part of the landscape. It is deep, noncalcareous, and well drained. It formed in alluvium and residuum derived from weathered, arkosic, sedimentary rock. Typically, the surface layer is grayish brown sandy loam about 12 inches thick. The subsoil, about 23 inches thick, is pale brown sandy clay loam in the upper 13 inches and pale brown sandy loam in the lower 10 inches. The substratum is pale brown sandy loam to a depth of 60 inches or more.

Permeability of the Peyton soil is moderate. Effective rooting depth is 60 inches or more. Available water capacity is high. Surface runoff is medium to rapid, and the hazard of erosion is moderate to high. Some gullies have developed along drainageways and livestock trails.

The Pring soil is deep, noncalcareous, and well drained. It formed in sandy sediment derived from weathered, arkosic, sedimentary rock. Typically, the surface layer is dark grayish brown coarse sandy loam about 4 inches thick. The substratum is dark grayish brown coarse sandy loam about 10 inches thick over pale brown gravelly sandy loam that extends to a depth of 60 inches or more.

Permeability of the Pring soil is rapid. Effective rooting depth is 60 inches or more. Available water capacity is moderate. Surface runoff is medium to rapid, and the hazard of erosion is moderate to high. Some gullies have developed along drainageways and livestock trails.

The soils in this complex are used as rangeland, for wildlife habitat, and for homesites.

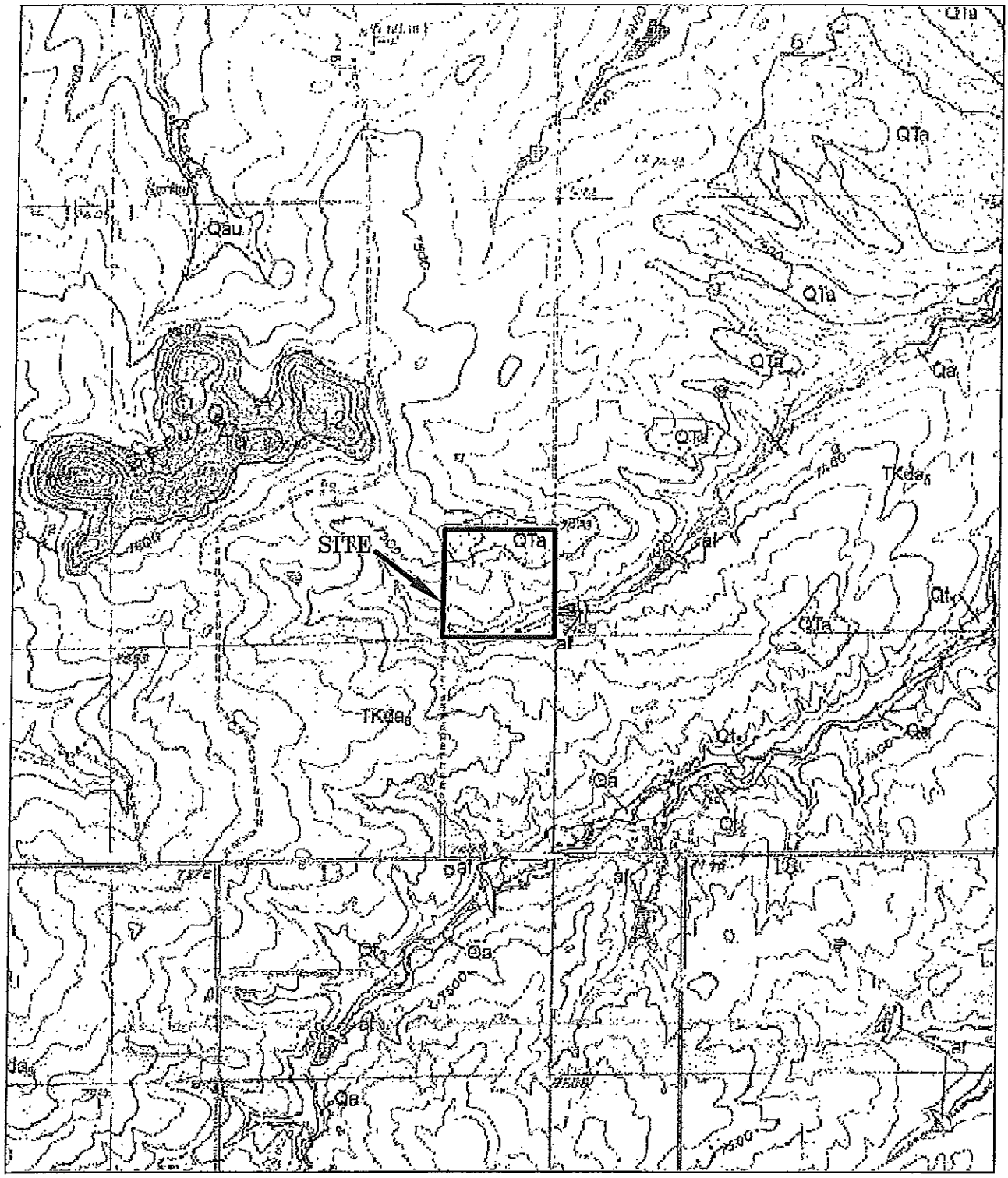
These soils are well suited to the production of native vegetation suitable for grazing. The dominant native species are mountain muhly, bluestem grasses, needleandthread, and blue grama. These soils are subject to invasion of Kentucky bluegrass and Gambel oak. Common forbs are hairy goldenrod, geranium, milkvetch, low larkspur, fringed sage, and buckwheat.

Properly locating livestock watering facilities helps to control grazing. Timely deferment of grazing is needed to protect the plant cover.

Windbreaks and environmental plantings generally are suited to these soils. Soil blowing is the main limitation to the establishment of trees and shrubs. This limitation can be overcome by cultivating only in the tree rows and leaving a strip of vegetation between the rows. Supplemental irrigation may be needed when planting and during dry periods. Trees that are best suited and have good survival are Rocky Mountain juniper, eastern redcedar, ponderosa pine, Siberian elm, Russian-olive, and hackberry. Shrubs that are best suited are skunkbush sumac, lilac, and Siberian peashrub.

These soils are well suited to wildlife habitat. They are best suited to habitat for openland and rangeland wildlife. Rangeland wildlife, such as pronghorn antelope, can be encouraged by developing livestock watering facilities, properly managing livestock grazing, and reseeding range where needed.

These soils have good potential for use as homesites. The main limitations are steepness of slope, limited ability to support a load, and frost-action potential. Buildings and roads can be designed to overcome these limitations. These soils also require special site or building designs because of the slope. Access roads should have adequate cut-slope grade, and drains should be provided to control surface runoff and keep soil losses to a minimum. Capability subclass VIe.



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Black Forest Quadrangle Geology Map
Prairie Ridge
El Paso County, CO.
For: Prairie Ridge Properties

DRAWN:	DATE:	CHECKED:	DATE:
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JOB NO.: 94477

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