

June 23, 2021

Land Development Consultants, Inc.
3898 Maizeland Road
Colorado Springs, CO 80909



ENTECH
ENGINEERING, INC.

505 ELKTON DRIVE
COLORADO SPRINGS, CO 80907
PHONE (719) 531-5599
FAX (719) 531-5238

Attn: Dan Kupferer

Re: Soil, Geology, and Geologic Hazard Study
Manley Subdivision Filing No. 2
Curtis Road and Jones Road
El Paso County, Colorado

Dear Mr. Kupferer:

GENERAL SITE CONDITIONS AND PROJECT DESCRIPTION

The project lies in the SW¼ of the SW¼ of Section 22, Township 13 South, Range 64 West of the 6th Principal Meridian in El Paso County, Colorado. The site is located northeast of the intersection of Curtis and Jones Roads, 3 miles southeast of Falcon, Colorado. The location of the site is as shown on the Vicinity Map, Figure 1.

The topography of the site is gradually to moderately sloping to the south-southeast. Minor drainage swales are located in the northern and southern portions of the property. Water was not observed in the drainages at the time of this investigation. The site boundaries are indicated on the USGS Map, Figure 2. Previous land uses have included undeveloped and rural residential/agricultural land. The site contains field grasses, weeds, and yuccas. An existing house with a water well and septic system is located on Lot 2 of the Manley Subdivision Filing No. 1. The house will remain and be replatted as Lot 1 of the Manley Subdivision Filing No. 2. An existing mobile home is located on proposed Lot 2, which will remain. Site photographs were taken and site mapping was completed on was June 16, 2021. Site photographs are included in appendix A. Test Borings and Test Pits were performed on April, 23, 2021.

Total acreage involved in the proposed second filing of the subdivision is 21.65-acres. Two rural residential lots are proposed as part of the subdivision. The proposed lot sizes range from 5.513-acres to 16.137-acres. The existing houses located on the lots will remain. The lots will be serviced by individual wells and on-site wastewater treatment systems. The Site Plan is presented in Figure 3.

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 potentially seasonal shallow groundwater. Based on the proposed development plan, it appears that these areas will have minor impacts 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.

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El Paso County, Colorado

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.

FIELD INVESTIGATION

Our field investigation consisted of the preparation of a geologic map of bedrock features and significant surficial deposits. The Natural Resource Conservation Service (NRCS), previously 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 aerial photo reconnaissance and interpretation. The same mapping procedures have also been utilized to produce the Geology/Engineering Geology Map which identified pertinent geologic conditions affecting development. The field mapping was performed by personnel of Entech Engineering, Inc. on June 16, 2021.

Two test pits were excavated on the site to determine general suitability of the soil characteristics for residential construction. The locations of the test pits are indicated on the Site Plan/Test Boring Location Map, Figure 3. The Test Pit Logs 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 included grain-size analysis, ASTM D-422. Results of the laboratory testing are included in Appendix C.

SOIL AND GEOLOGIC CONDITIONS

Soil Survey

The Natural Resource Conservation Service (NRCS) (Reference 1, Figure 4), previously the Soil Conservation Service (Reference 2) has mapped three soil types on the site. Complete descriptions of the soil type are presented in Appendix D. In general, the soils consist of sandy loam to gravelly loamy sand. The soils are described as follows:

<u>Type</u>	<u>Description</u>
8	Blakeland loamy sand, 1-9% slopes
83	Stapleton sandy loam, 3-8% slopes
95	Truckton loamy sand, 1-9% slopes

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The soils have generally been described to have moderately rapid to rapid permeabilities. The soils are described as well suited for use as home sites. Possible hazards with soils erosion are present on the site. The erosion potential can be controlled with vegetation. The soils have been described to have moderate erosion hazards (Reference 2).

Soils

The soils encountered in the test borings consisted of silty sand. Bedrock was not encountered in the test pits. The upper sands were encountered at medium dense states and moderate moisture conditions. The samples of sand tested had 11 to 22 percent of the soil size particles passing the No. 200 sieve. The silty sand typically has low expansion potential.

Groundwater

Groundwater was not encountered in the test pits which were excavated to depths of 8 feet. Groundwater is not anticipated to affect shallow foundations on the majority of the site. Areas have been mapped on the site with the potential for seasonal shallow groundwater. These areas are discussed in the following section. Fluctuations in groundwater conditions may occur due to variations in rainfall or other factors not readily apparent at this time. Isolated sand layers within the soil profile can carry water in the subsurface. Contractors should be cognizant of the potential for the occurrence of subsurface water features during construction.

Geology

Approximately 18 miles west of the site 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 a large structural feature known as the Denver Basin. Bedrock in the area is typically gently dipping in a northerly direction (Reference 3). The bedrock underlying the site consists of the Dawson Formation of Tertiary to Cretaceous Age. The Dawson Formation typically consists of coarse-grained arkosic sandstone with interbedded layers of claystone or siltstone. Overlying the Dawson Formation are younger deposits of sheetwash and alluvium.

The geology of the site was evaluated using the *Geologic Map of the Falcon Quadrangle*, by Morgan in 2012, (Reference 4, Figure 5). The Geology Map for the site is presented in Figure 6. Three mappable units were identified on this site which is described as follows:

- Qsw Sheetwash Deposits of Holocene to Late Pleistocene Age:** These materials consist of silty to clayey sands with some gravel. The material was deposited by the action of sheetwash derived from nearby deposits.
- Qb Broadway Alluvium (Alluvium Three) of Late Pleistocene Age:** These materials consist of middle stream terrace deposits. The materials typically consist of silty to clayey gravelly sands.
- Qg₂ Pediment Gravel Two of Middle Pleistocene Age:** These are stream terrace deposits that consist of reddish-brown silty sand and gravels and may contain some cobble and

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boulder-size materials. Much of the material contained in the Pediment Gravel Two has been derived from the Pikes Peak Granite to the west. The Pediment Gravel Two correlates to the Verdos Alluvium of Quaternary Age as mapped in US Geological Survey mappings (Reference 4).

The soils listed above were mapped from site-specific mapping, the *Geologic Map of the Falcon Quadrangle* distributed by the Colorado Geologic Survey in 2012 (Reference 4, Figure 5), and the *Geologic Map of the Pueblo 1° x 2° Quadrangle*, distributed by the US Geological Survey in 1978 (Reference 5). The test borings were used in evaluating the site and are included in Appendix B. The Geology Map prepared for the site is presented in Figure 6.

ENGINEERING GEOLOGIC HAZARDS

Mapping has been performed on this site to identify areas where various geologic conditions exist of which developers should be cognizant during the planning, design and construction stages where new construction is proposed. The engineering geologic constraints identified on this site include potentially seasonal shallow groundwater, and shallow bedrock, as indicated on the Engineering Geology Map, Figure 6. Potential Hazards including expansive soils and minor drainage swales, have also been addressed below. These hazards and recommended mitigation techniques are discussed as follows:

Drainage Areas

Minor drainage areas exist in the northeastern portion of Lot 1 and southern portion of Lot 2. No water was observed flowing in the drainages at the time of the investigation, however, these areas have the potential for seasonal shallow groundwater. These areas are indicated in the Geology/Engineering Geology Map (Figure 6) and are discussed below. Due to the size of the proposed lots these areas can be avoided or redirected around proposed structures or proposed soil treatment areas. The proposed building areas are not affected by these areas. The site does not lie within any floodplain zones according to the FEMA Map No. 08041CO568G dated December 7, 2018 (Figure 7, Reference 6). Exact locations of floodplain and specific drainage studies are beyond the scope of this report.

Potentially Seasonal Shallow Groundwater Area

In these areas, we would anticipate the potential for periodically high subsurface moisture conditions, frost heave potential and highly organic soils. These areas lie within defined minor drainages and can be avoided by the proposed development. Construction in any portions of these areas, if required, or immediately adjacent to these areas should follow these precautions.

Mitigation: Foundations must have a minimum 30-inch depth for frost protection. In areas where high subsurface moisture conditions are anticipated periodically, subsurface perimeter drains are recommended to help prevent the intrusion of water into areas below grade. Typical drain details are presented in Figure 8. Any grading in these areas should be done to direct surface flow around construction to avoid areas of ponded water. All organic material would be

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completely removed prior to any fill placement. **Specific drainage studies are beyond the scope of this report.**

RELEVANCE OF GEOLOGIC CONDITIONS TO LAND USE PLANNING

The proposed development will be rural-residential lots utilizing individual on-site wastewater treatment systems and water wells. Two rural residential lots are proposed. The lot sizes range from 5.5-acres to 16.1-acres. The existing house and barns located on Lot 1 will remain. The lots will be serviced by individual wells and on-site wastewater treatment systems. The existing geologic and engineering geologic conditions will impose minor constraints on development and construction. The geologic constraints on the site include potentially seasonal shallow groundwater, which can be satisfactorily mitigated through avoidance or proper engineering design and construction practices.

The upper granular soils encountered in the test pits excavated on the site were encountered at medium dense states. Foundations anticipated for the site are standard spread footings. Areas of loose soils encountered in building areas may require recompaction. Expansive layers may also be encountered in the soil and bedrock on this site. The expansive soils encountered are sporadic, therefore, no areas were indicated on the maps. It is anticipated that the majority of the lots will not encounter expansive soils. Expansive soils, if encountered, will require special foundation design or overexcavation. These soils will not prohibit development.

Minor drainages exist in the northern and southern portions of Filing No. 2. No water was observed flowing in the drainages, however, the potential for seasonal shallow groundwater exists in these areas during periods of high runoff. Based on lot sizes, these areas can be avoided by the structures. Structures should not block drainages. Grading should direct surface waters around structures and roadways to prevent areas of ponded water.

In summary, the granular soils will likely provide suitable support for shallow foundations. The geologic conditions encountered on site can be mitigated with avoidance or proper engineering and construction practices.

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 7), of the area of the site is mapped as upland deposits with the potential fine aggregate resources. According to the *Atlas of Sand, Gravel and Quarry Aggregate Resources, Colorado Front Range Counties* distributed by the Colorado Geological Survey (Reference 8), the site is mapped with potential fine aggregate resources, however, considering the silty nature of these materials and abundance of similar materials through the region, they would be considered to have little significance as an economic resource. According to the *Evaluation of Mineral and Mineral Fuel Potential* (Reference 9), the area of the site has been mapped as "good" for industrial minerals.

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According to *the Evaluation of Mineral and Mineral Fuel Potential of El Paso County State Mineral Lands* (Reference 9), 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 9).

The site has been mapped as "Fair" for oil and gas resources (Reference 9). No oil or gas fields have been discovered in the area of the site. The sedimentary rocks in the area may lack the geologic structure for trapping oil or gas; therefore, it may not be considered a significant resource. Hydraulic fracturing is a new method that is being used to extract oil and gas from rocks. It utilizes pressurized fluid to extract oil and gas from rocks that would not normally be productive. The area of the site has not been explored to determine if the rocks underlying the site would be commercially viable utilizing hydraulic fracturing. The practice of hydraulic fracturing has come under review due to concerns about environmental impacts, health and safety.

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

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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.

CLOSURE

It is our opinion that the existing geologic engineering and geologic conditions will impose some minor 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 are 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 new 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 Land Development Consultants, Inc., 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.

Respectfully Submitted,

ENTECH ENGINEERING, INC.



Logan L. Langford, P.G.
Geologist




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

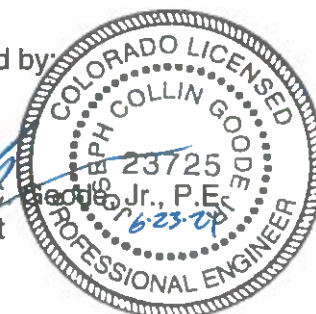
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Encl.
Entech Job No. 210545
AAprojects/2021/210545 sg&ghs

Reviewed by:



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



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Soil, Geology, and Geologic Hazard Study
Manley Subdivision Filing No. 2
Curtis Road and Jones Road
El Paso County, Colorado

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1. Natural Resource Conservation Service, September 13, 2019. *Web Soil Survey*. United States Department Agriculture, <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.
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4. Morgan, Matthew, L., and White, Jonathan, L., 2012. *Geologic Map of the Falcon Quadrangle, El Paso County, Colorado*. Colorado Geological Survey. Open-File Report 12-05.
5. Scott, Glen R.; Taylor Richard B.; Epis, Rudy C; and Wobus, Reinhard A. 1978. *Geologic Map of the Pueblo 1° x 2° Quadrangle, South-Central Colorado*. Sheet 2. U.S. Geologic Survey. Map I-1022.
6. Federal Emergency Management Agency. December 7, 2018. *Flood Insurance Rate Maps for the City of Colorado Springs, Colorado*. Map Number 08041CO568G.
7. El Paso County Planning Development. December 1995. *El Paso County Aggregate Resource Evaluation Maps*.
8. Schwochow, S.D.; Shroba, R.R. and Wicklein, P.C. 1974. *Atlas of Sand, Gravel, and Quarry Aggregate Resources, Colorado Front Range Counties*. Colorado Geological Survey. Special Publication 5-B.
9. Keller, John W.; TerBest, Harry and Garrison, Rachel E. 2003. *Evaluation of Mineral and Mineral Fuel Potential of El Paso County State Mineral Lands Administered by the Colorado State Land Board*. Colorado Geological Survey. Open-File Report 03-07.

TABLE

Table 1: Summary Test Pit Results

Test Pit No.	Depth to Bedrock (ft.)	Depth to Groundwater (ft.)	USDA Soil Type	LTAR Value
1	>8	>8	2A	0.50
2	>8	>8	2	0.60

FIGURES



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380 ELKTON DRIVE
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VICINITY MAP
MANLEY SUBDIVISION, FILING NO. 2
CURTIS ROAD & JONES ROAD
EL PASO COUNTY, CO.
FOR: LAND DEVELOPMENT CONSULTANTS, INC

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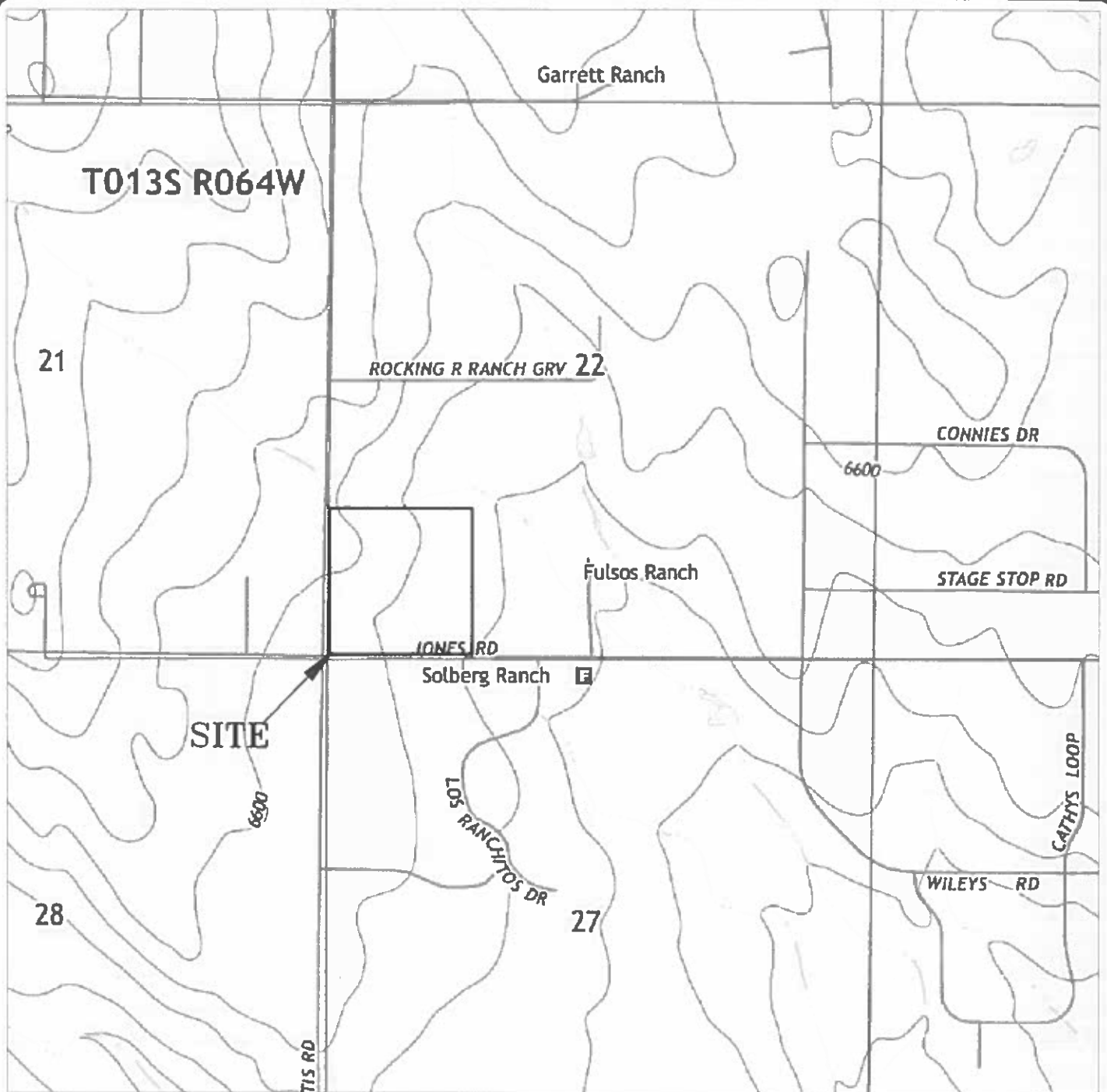
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210545

FIG NO.:
1



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395 ELKTON DRIVE
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USGS TOPOGRAPHY MAP
MANLEY SUBDIVISION, FILING NO. 2
CURTIS ROAD & JONES ROAD
EL PASO COUNTY, CO.
FOR: LAND DEVELOPMENT CONSULTANTS, INC

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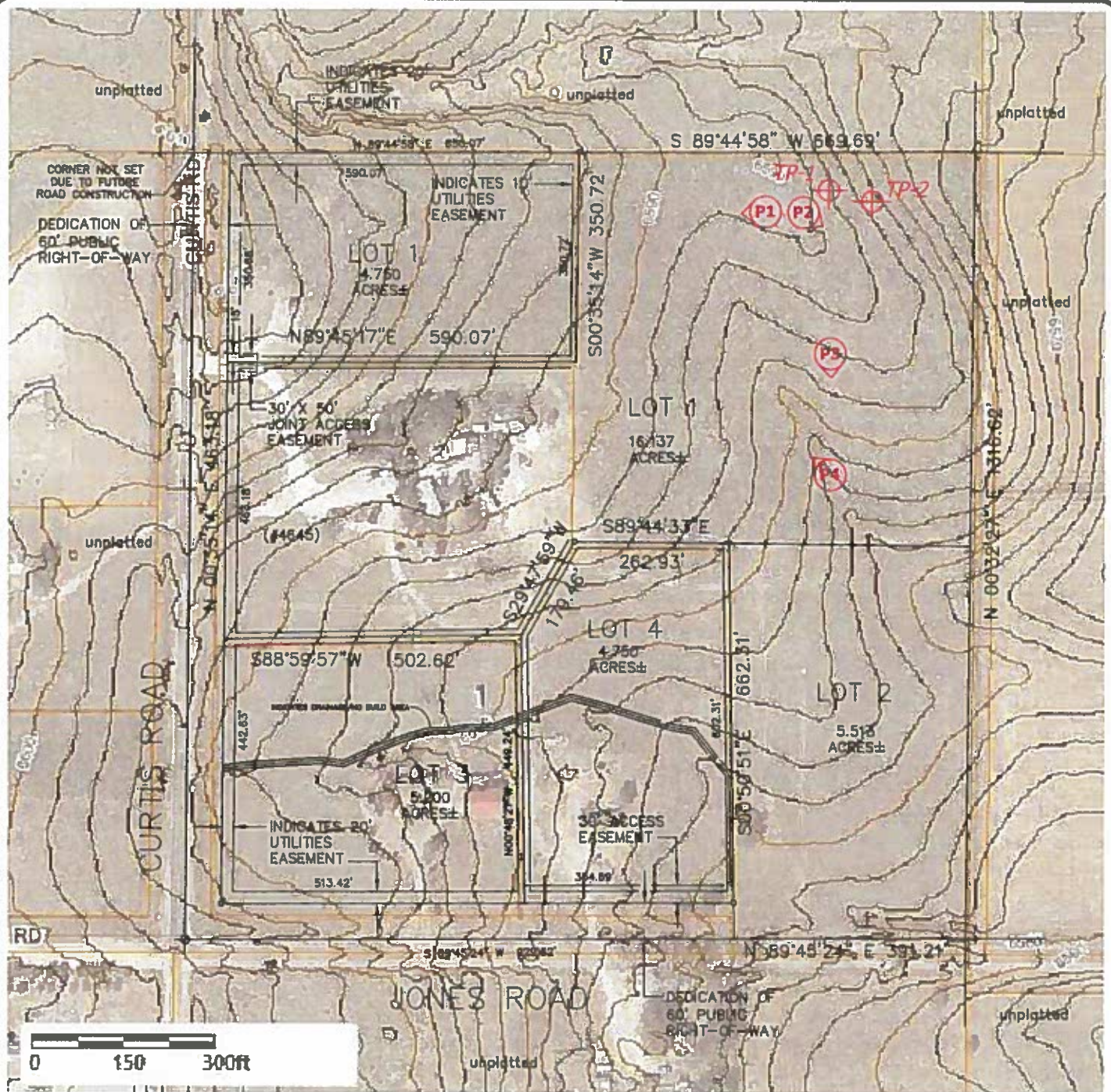
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FIG NO.:
2



TP- APPROXIMATE TEST PIT LOCATION AND NUMBER



- APPROXIMATE PHOTOGRAPH LOCATION AND NUMBER

N



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305 ELIXON DRIVE
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SITE PLAN/TESTING LOCATION MAP
MANLEY SUBDIVISION, FILING NO. 2
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EL PASO COUNTY, CO.
FOR: LAND DEVELOPMENT CONSULTANTS, INC

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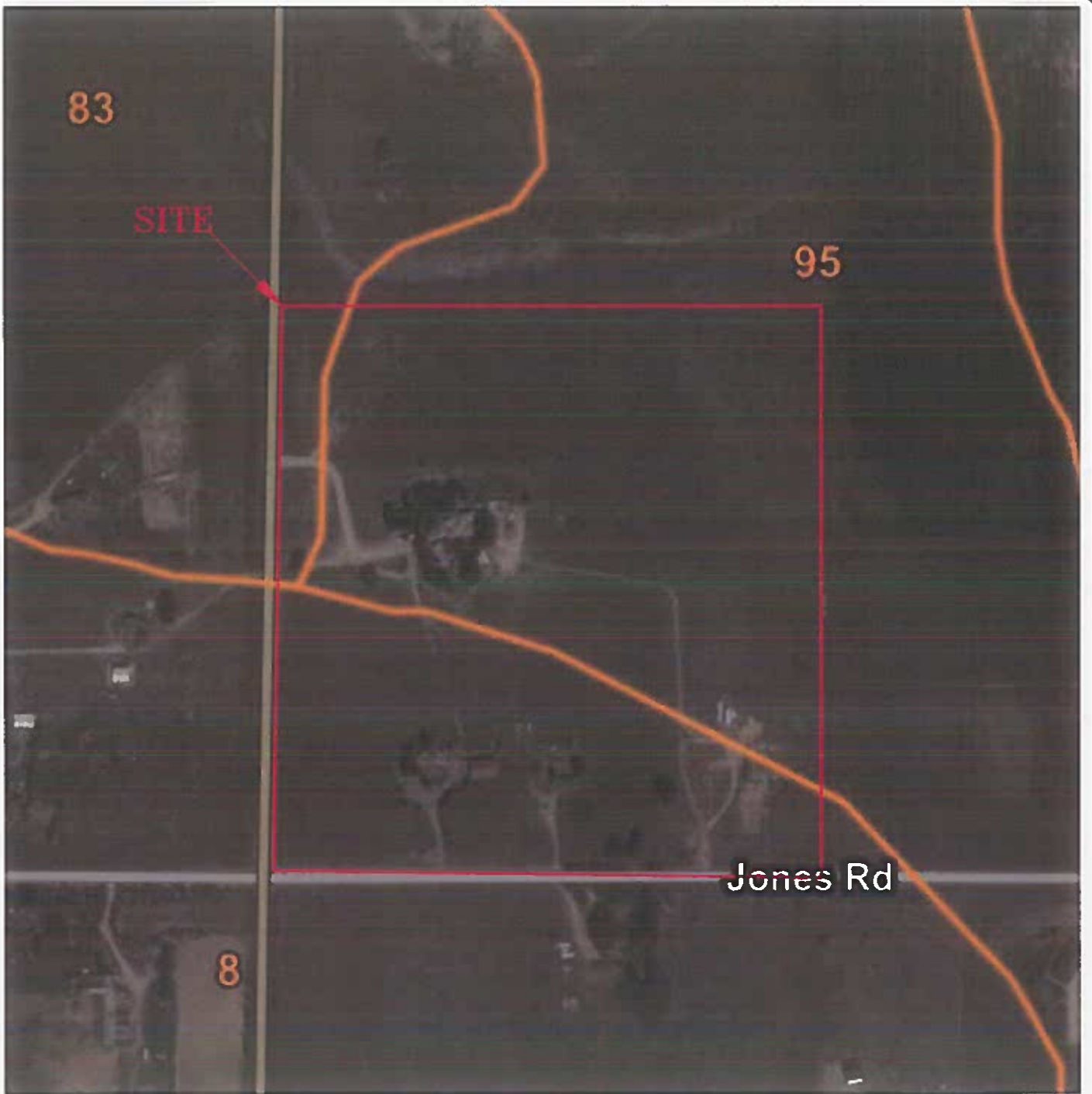
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FIG NO.:
3



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SOIL SURVEY MAP
MANLEY SUBDIVISION, FILING NO. 2
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EL PASO COUNTY, CO.
FOR: LAND DEVELOPMENT CONSULTANTS, INC

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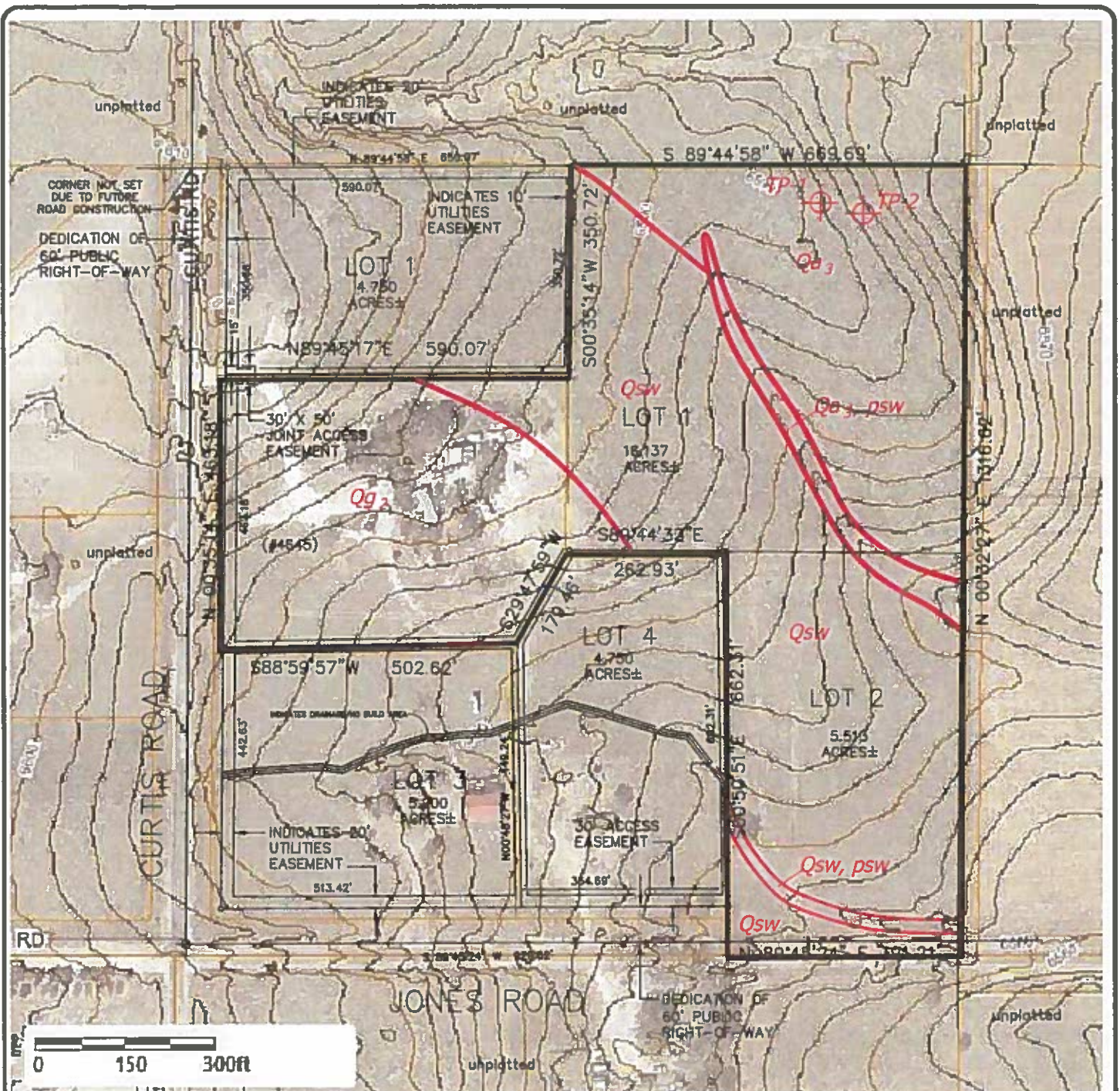
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FIG NO.:
4



Legend:

- Qsw - Sheetwash Deposits of Holocene to late Pleistocene Age.
silty to clayey sands deposited by the action of sheetwash and gravity
- Qa3 - Alluvium Three of late Pleistocene Age.
Stream terrace deposited sands correlated to the Broadway Alluvium
- Qg2 - Piedmont Gravel Two of middle Pleistocene Age.
Red brown sandy stream terrace deposits
- psw - potentially shallow groundwater area

N



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565 ELKTON DRIVE
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GEOLOGY/ENGINEERING GEOLOGY MAP
MANLEY SUBDIVISION, FILING NO. 2
CURTIS ROAD & JONES ROAD
EL PASO COUNTY, CO.
FOR: LAND DEVELOPMENT CONSULTANTS, INC

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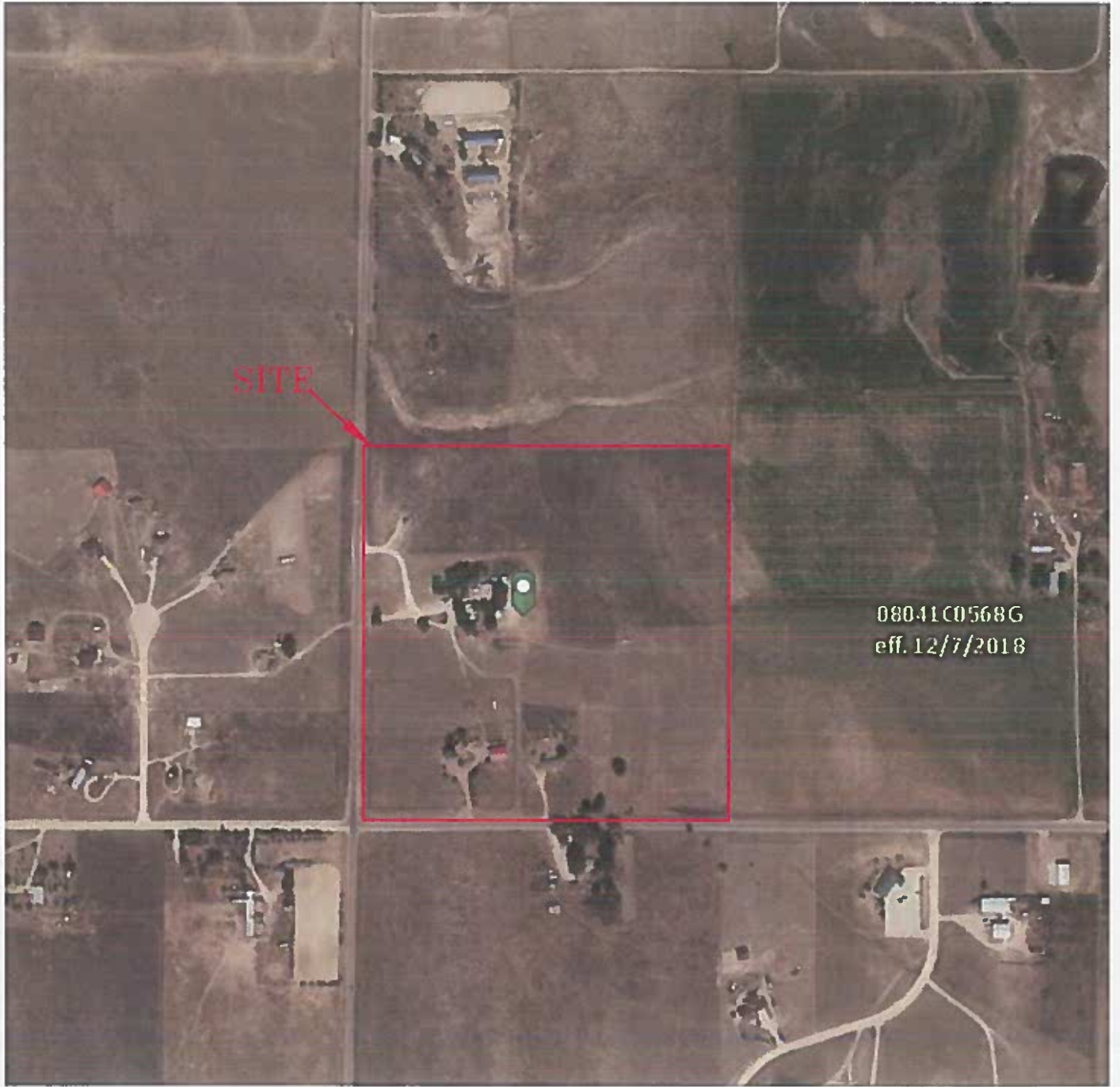
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FIG NO.:
6



080-41C0568G
eff. 12/7/2018



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FEMA FLOODPLAIN MAP
MANLEY SUBDIVISION, FILING NO. 2
CURTIS ROAD & JONES ROAD
EL PASO COUNTY, CO.
FOR: LAND DEVELOPMENT CONSULTANTS, INC

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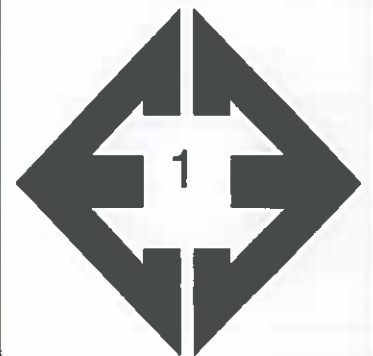
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FIG NO.:
7

APPENDIX A: Photographs



**Looking west from the
northeastern portion of
the property.**

June 16, 2021



**Looking southeast
from the northeastern
portion of the property.**

June 16, 2021



**Looking south from
the central portion of
the property.**

June 16, 2021



**Looking northwest
along minor drainage
swale in the east
central portion of the
property.**

June 16, 2021

APPENDIX B: Test Pit Logs

TEST PIT NO. 1
 DATE EXCAVATED 5/4/2021
 Job # 210545

TEST PIT NO. 2
 DATE EXCAVATED 5/4/2021
 CLIENT NANCY MANLEY
 LOCATION MANLEY SUBDIVISION

REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	USDA Soil Type	REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	USDA Soil Type
topsoil, sandy clay loam, brown, moist	1						topsoil, sandy clay loam, brown, moist	1					
sandy loam, fine to coarse grained, pale brown, moist	2			ma		2A	sandy loam, fine to coarse grained, pale brown, moist	2			ma		2A
	3							3					
	4							4					
	5							5					
sandy loam, fine to very coarse grained, pale brown, moist	6			gr	m	2		6					
	7							7					
	8							8					
	9							9					
	10							10					

Soil Structure Shape

granular - gr
 platy - pl
 blocky - bl
 prismatic - pr
 single grain - sg
 massive - ma

Soil Structure Grade

weak - w
 moderate - m
 strong - s
 loose - l



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 COLORADO SPRINGS, COLORADO 80907

TEST PIT LOG

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5/4/2021

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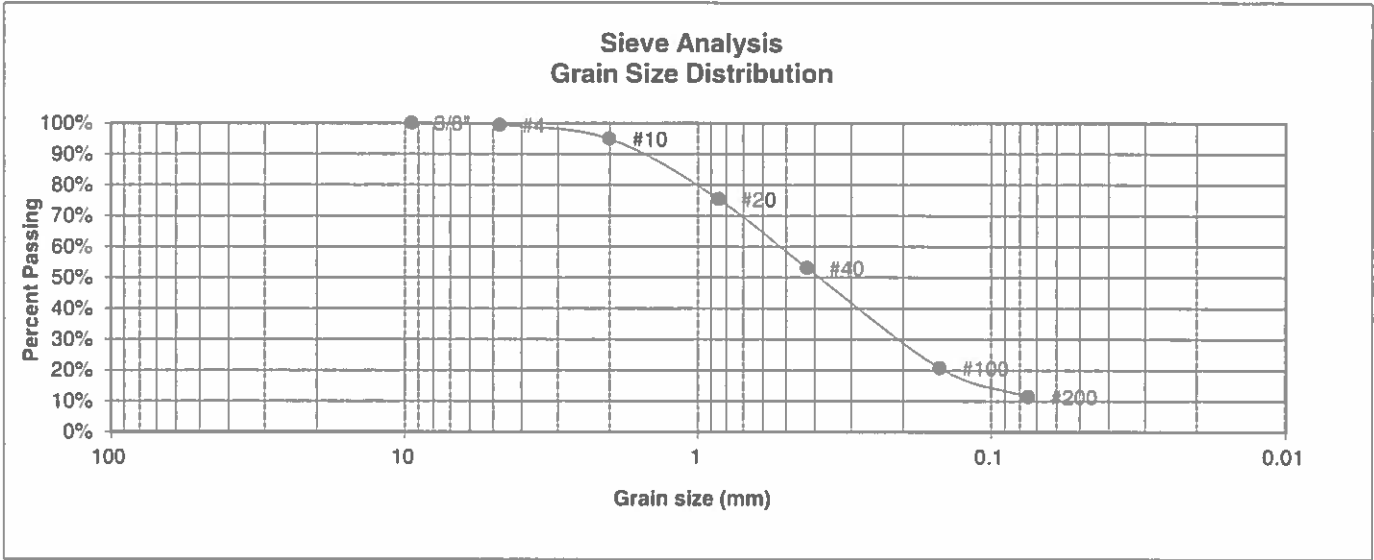
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5/17/21

JOB NO:
210545

FIG NO:
B-1

APPENDIX C: Laboratory Test Results

BORING NO.	TP-1	UNIFIED CLASSIFICATION	SM-SW	TEST BY	BL
DEPTH(ft)	2	AASHTO CLASSIFICATION		JOB NO.	210545
CLIENT	NANCY MANLEY				
PROJECT	MANLEY SUBDIVISION				



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.4%
10	94.9%
20	75.4%
40	53.1%
100	20.7%
200	11.4%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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LABORATORY TEST RESULTS

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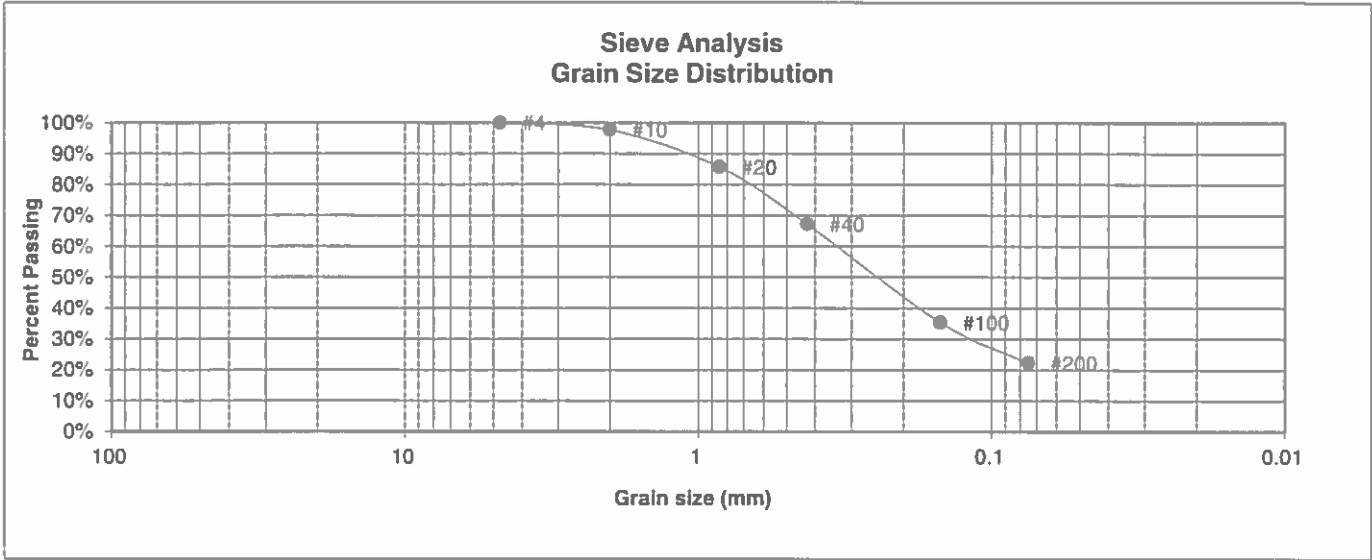
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5/22/21

JOB NO.:
210545

FIG NO.:
C-1

BORING NO.	TP-2	UNIFIED CLASSIFICATION	SM	TEST BY	BL
DEPTH(ft)	2	AASHTO CLASSIFICATION		JOB NO.	210545
CLIENT	NANCY MANLEY				
PROJECT	MANLEY SUBDIVISION				



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	97.7%
20	85.7%
40	67.2%
100	35.4%
200	22.3%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index
Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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**LABORATORY TEST
RESULTS**

DRAWN:	DATE:	CHECKED:	DATE:
		LL	12/22/5

JOB NO.:
210545

FIG NO.:
6-2

APPENDIX D: Soil Survey Descriptions

El Paso County Area, Colorado

8—Blakeland loamy sand, 1 to 9 percent slopes

Map Unit Setting

National map unit symbol: 369v
Elevation: 4,600 to 5,800 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Blakeland and similar soils: 98 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blakeland

Setting

Landform: Hills, flats
Landform position (three-dimensional): Side slope, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock and/or
eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 11 inches: loamy sand
AC - 11 to 27 inches: loamy sand
C - 27 to 60 inches: sand

Properties and qualities

Slope: 1 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to
very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Minor Components

Pleasant

Percent of map unit: 1 percent

Landform: Depressions

Hydric soil rating: Yes

Other soils

Percent of map unit: 1 percent

Hydric soil rating: No

Data Source Information

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 18, Jun 5, 2020

El Paso County Area, Colorado

83—Stapleton sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 369z
Elevation: 6,500 to 7,300 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Stapleton and similar soils: 97 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stapleton

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium derived from arkose

Typical profile

A - 0 to 11 inches: sandy loam
Bw - 11 to 17 inches: gravelly sandy loam
C - 17 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High
(2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R049XB215CO - Gravelly Foothill
Hydric soil rating: No

Minor Components

Pleasant

Percent of map unit: 1 percent

Landform: Depressions

Hydric soil rating: Yes

Other soils

Percent of map unit: 1 percent

Hydric soil rating: No

Fluvaquentic haplaquolls

Percent of map unit: 1 percent

Landform: Swales

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 18, Jun 5, 2020

El Paso County Area, Colorado

95—Truckton loamy sand, 1 to 9 percent slopes

Map Unit Setting

National map unit symbol: 36bd

Elevation: 6,000 to 7,000 feet

Mean annual precipitation: 14 to 16 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 125 to 145 days

Farmland classification: Not prime farmland

Map Unit Composition

Truckton and similar soils: 95 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Truckton

Setting

Landform: Hills, flats

Landform position (three-dimensional): Side slope, talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Arkosic alluvium derived from sedimentary rock and/or arkosic residuum weathered from sedimentary rock

Typical profile

A - 0 to 8 inches: loamy sand

Bt - 8 to 24 inches: sandy loam

C - 24 to 60 inches: coarse sandy loam

Properties and qualities

Slope: 1 to 9 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High
(1.98 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A

Ecological site: R049XB210CO - Sandy Foothill

Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 4 percent

Hydric soil rating: No

Pleasant

Percent of map unit: 1 percent

Landform: Depressions

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 18, Jun 5, 2020

APPENDIX E: El Paso County Health Department Septic Records

EL PASO COUNTY DEPARTMENT OF HEALTH AND ENVIRONMENT
INDIVIDUAL SEWAGE DISPOSAL SYSTEM INSPECTION FORM

Permit # 9777

Date 1/12/96

APPROVED: YES ☒ NO ☐

#4322005003

ENVIRONMENTALIST Larry Schaad

Address 14810 Jones Road

Owner Jerry & Nancy Manley

Legal Description SW4, SW4 Sec 22-13-64

Residence ☒ # of bedrooms 3; Commercial ☐; System Installer Firebaugh

SEPTIC TANK:

Commercial ☒; Noncommercial ☐ L ☐ W ☐ WD ☐

Construction Material Precast concrete, capacity 1250 gallons.

DISPOSAL FIELD:

Rock Systems:

Trench: depth ☐ width ☐ total length ☐ sq. feet ☐

Bed: depth ☐ length ☐ width ☐ sq. feet ☐

Rock type ☐ depth ☐ under PVC ☐ over PVC ☐

Seepage Pits: # of pits ☐ total # of rings ☐ working depth(s) ☐

size of pit(s) L X W ☐ lining material ☐ total sq. feet ☐

Rockless Systems:

Chamber: Type Bifidiffusers, number of chambers 19, bed ☐ trench ☒

sq. ft./section 19, reduction allowed 50%, sq. ft. required 331

total sq. ft. installed 684 with reduction, depth of installation 30-45"

Engineer Design Y or (N), Designing Engineer

Approval letter provided? Y or N

Well 50 feet from tank (Y) or N 100 feet from leach field (Y) or N

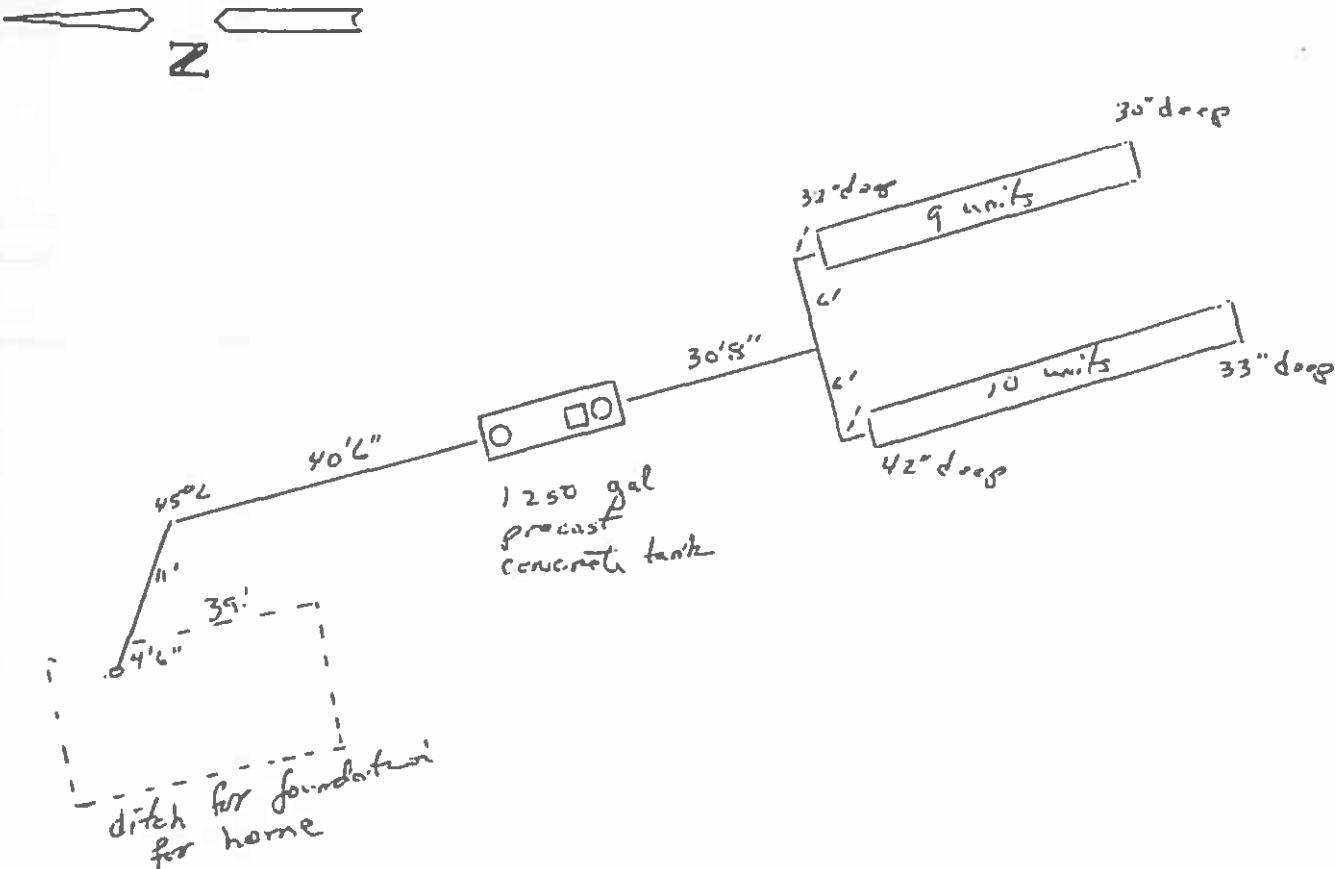
Well installed at time of septic system inspection (Y) or N Public Water

*Approval will be revoked if in the future the well is found to be within 50 feet of the septic tank and/or 100 feet of the disposal field.

NOTES: Well at 4645 Curt's several hundred feet to north.

Pipes SDR 35

Chambers set in trenches 3 1/2-4' wide with 3/4" rock ~10" deep on sides of ch



Across 40

EL PASO COUNTY • DEPARTMENT OF HEALTH AND ENVIRONMENT

301 South Union Blvd. • Colorado Springs, Colorado • 578-3125

Water Supply WELL

Permit

9777

PERMIT

TO CONSTRUCT, ALTER, REPAIR OR MODIFY ANY INDIVIDUAL SEWAGE DISPOSAL SYSTEM

Receipt No.

151900

Issued to JERRY AND NANCY MANLEY

Date

1-03-96

Address of Property 14810 JONES ROAD, SW4, SEC: 22-13-64

DAUGHTER: SHARON EAXTER
Phone 603 10000

(Permit valid at this address only)

Sewage-Disposal System work to be performed by FIREBAUGH

LIC. 22

Phone 596-1469

This Permit is issued in accordance with 25-10-106 Colorado Revised Statutes 1973, as amended. PERMIT EXPIRES upon completion of installation of sewage-disposal system or at the end of twelve (12) months from date of issue—whichever occurs first—(unless work is in progress). This permit is revokable if all stated requirements are not met.

-THIS PERMIT DOES NOT DENOTE APPROVAL OF ZONING AND ACREAGE REQUIREMENTS-

PERMIT FEE (NOT REFUNDABLE)

DIRECTOR, DEPARTMENT OF HEALTH AND ENVIRONMENT

1-03-97

Jerry Schaal 575-8638

DATE OF EXPIRATION

ENVIRONMENTALIST

NOTE: LEAVE ENTIRE SEWAGE-DISPOSAL SYSTEM UNCOVERED FOR FINAL INSPECTION. 48 HOUR ADVANCE NOTICE REQUIRED.

SEPTIC TANK:

TRENCH SYSTEM:

BED SYSTEM:
SEEPAGE PIT SYSTEM:

total square feet	331	total square feet	
gallons		ft. of trench	
		ft. of trench	
		inches wide	
		inches wide	
		total square feet	
		rings or	diam.x w/d

NOTES:

INSTALL LEACH FIELD IN AREA AND DEPTH (36 INCHES) OF PERC. TEST. STRONGLY RECOMMEND AN INCREASE OF 60 PER CENT IN LEACH FIELD AREA (OR NOT TAKING THE REDUCTION IF CHAMBERS ARE

USED) IF CLOTHES WASHER AND GARBAGE DISPOSAL WILL BE INSTALLED IN HOME. BE SURE TO MAINTAIN MINIMUM DISTANCES FROM WATER COURSES. PERMIT 6491 IS VOID.

The Health Office shall assume no responsibility in case of failure or inadequacy of a sewage-disposal system, beyond consulting in good faith with the property owner or representative. Free access to the property shall be authorized at reasonable time for the purpose of making such inspections as are necessary to determine compliance with requirements of this law.

501 North Fogle Avenue
Colorado Springs, CO 80909-4593
(303) 578-3125

New

APPLICATION FOR A PERMIT TO CONSTRUCT, REMODEL, OR INSTALL A SEWAGE DISPOSAL SYSTEM

NAME OF OWNER JERRY AND Nancy MANLEY HOME PHONE 719-683-2173 WORK PHONE Nancy 634-1129
ADDRESS OF PROPERTY 14810 Jones Rd. 4645 N. Curtis Rd. Peyton, CO 80831 DATE 5-6-92
LEGAL DESCRIPTION OF PROPERTY SW 1/4, SW 1/4, SEC 22-13-64
TAX SCHEDULE NUMBER 43220-00-009 SYSTEM CONTRACTOR D&B Trenching PHONE 683-2400
OWNER'S ADDRESS IF DIFFERENT
TYPE OF HOUSE CONSTRUCTION Mobile Home SOURCE AND TYPE OF WATER SUPPLY Well
SIZE OF LOT 48 acres MAXIMUM POTENTIAL NUMBER OF BEDROOMS 3 EASEMENT (yes or no) No
PERCOLATION TEST RESULTS ATTACHED (yes or no) yes

A plot plan and accompanying information are essential; it may be drawn on the back of this application or be attached. Please include by measured distance the location of wells including neighbors' wells, springs, water supply lines, cisterns, buildings, proposed structures, property lines, property dimensions, subsoil drains, tiles, ponds, water courses, streams, and dry gulches. Please show the location of the proposed septic system by directions and distances from actual and/or proposed dwellings, structures, or fixed reference objects. Give complete directions to the property from major highways. (ANSWER QUESTIONS ON BACK OF FORM).

Applicant acknowledges that the completeness of the application is conditional upon such further mandatory and additional tests and reports as may be required by the department to be made and furnished by the applicant for purposes of evaluation of the application; and issuance of the permit is subject to such terms and conditions as deemed necessary to ensure compliance with rules and regulations adopted under Article 10, Title 25, C.R.S. 1973 as amended. The undersigned hereby certifies that all statements made, information and reports submitted by the applicant are or will be represented to be true and correct to the best of my knowledge and belief and are designed to be relied on by the El Paso County Health Dept. in evaluating the same for purposes of issuing the permit applied for herein. I further understand that any falsification or misrepresentation may result in the denial of the application or revocation of any permit granted based upon said application and in legal action for perjury as provided by law.

Permit # 9777
1/5/96
1-3-96
9777

SIGNATURE Jerry L. Manley
Nancy M. Manley
HEALTH DEPARTMENT USE ONLY

1250 gal 331 ft² Jerry School 15250 Jones Rd - 1-3-96

Install leach field in area and depth (36") of percolation test. Strongly recommend an increase of 60% in leach field area (or not taking the reduction if chambers are used) if a clothes washer and garbage disposal will be installed in home. Be sure to maintain minimum distances from water courses.

ANSWER THE FOLLOWING ITEMS AND/OR INCLUDE ON PLOT PLAN.

SEE ATTACHED

PROPERTY LINES _____

PROPERTY DIMENSIONS _____

LOCATION OF PROPOSED SEPTIC SYSTEM _____

LOCATION OF WELL _____

LOCATION OF ADJACENT WELLS _____

BUILDINGS _____

PROPOSED BUILDINGS _____

WATER SUPPLY LINE _____

CISTERNS _____

SPRINGS _____

LAKES _____

PONDS _____

WATER COURSES _____

STREAMS _____

DRY GULCHES _____

SUBSOIL DRAINS _____

DIRECTIONS TO PROPERTY FROM MAIN HIGHWAYS:

Hwy. 94 east from Peterson Road to Curtis Road (mile marker 8)

Turn left to go north on Curtis Rd. , approximately 4 miles to the North-East corner of Curtis and Jones Roads.

Hwy. 24 east from Peterson Rd. to Garrett Rd. turn right and stay on pavement to Dead End (Stop Sign) on Garrett and Curtis Roads about 5-6 miles. Turn south on Curtis Rd. (right) and travel just over 1 mile to the North-East corner of Curtis and Jones R

Attn: JOCELYN STREBIG
14920 JONES RD
PEYTON, CO 80831

Notify Environmental Health of any change of ownership, type of business activity, business name, or billing address by calling (719) 578-3199. Failure to notify Environmental Health may result in late penalties, Permit/License denial or revocation, and business closure. PERMITS/LICENSES TO OPERATE AND ANNUAL FEE PAYMENTS ARE NOT TRANSFERABLE. Permits become void on change of ownership. New owners must apply and pay for a new Permit(s)/License(s) prior to beginning operation.



EL PASO COUNTY PUBLIC HEALTH
ENVIRONMENTAL HEALTH DIVISION
1675 W. GARDEN OF THE GODS ROAD, SUITE 2044
COLORADO SPRINGS, CO 80907
PHONE: (719) 578-3199 FAX: (719) 578-3188
www.elpasocountyhealth.org

MAJOR REPAIR PERMIT - OWTS

Valid From 8/28/2013 To 8/28/2014

PERMITEE:

JOCELYN STREBIG
14920 JONES RD
PEYTON, CO 80831

Onsite ID: OM0033085

Tax Schedule #: 4322005004

Permit Issue Date: 08/28/2013

Dwelling Type: RESIDENTIAL

of Bedrooms (if Res): 3

Proposed Use (if Comm):

Designed Gallons/Day:

Water Source: PRIVATE WELL

OWNER NAME:

JOCELYN STREBIG

System Installation Requirements:

1. Install STA in area of percolation test that was performed on April 29, 1992 with a maximum cover over chambers of 36 inches.
2. If existing system is completely abandoned, then an absorption area of 571 sq ft is required.
3. If the existing system continues to be used, then an absorption area of 286 sq ft is required on the new side along with a diverter valve and no reduction will be given.
4. A trench system is preferred but if a bed system is installed, it shall not exceed a maximum width of 12 ft.

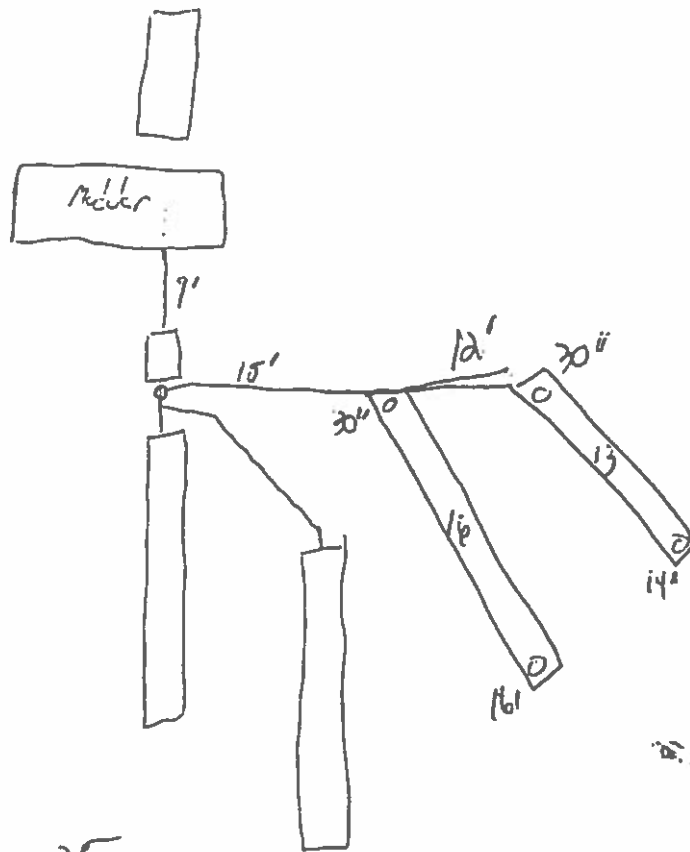
Septic Tank Capacity Required: 1250 (Gallons) Soil Treatment Area Required: 286 (SQ. Feet)

The Health Officer shall assume no responsibility in case of failure or inadequacy of an Onsite Wastewater Treatment System, beyond consulting in good faith with the property owner or representative. Access to the property shall be authorized at reasonable time for the purpose of making such inspections as are necessary to determine compliance with the requirements of this law (permit).

Installer inspection request line: Call (719) 575-8699 before 8:30 a.m. of the day that the inspection is requested
Weekends & Holidays excluded.

This permit is issued in accordance with 25-10-106 Colorado Revised Statutes. The PERMIT EXPIRES upon completion/installation of the Onsite Wastewater Treatment System, or at the end of twelve (12) months from date of issue, whichever occurs first. If both a Building Permit and an Onsite Wastewater Treatment System Permit are issued for the same property and construction has not commenced prior to the expiration date of the Building Permit, the Onsite Wastewater Permit shall expire at the same time as the Building Permit. This permit is revocable if all stated requirements are not met. Onsite Wastewater Treatment System to be installed by an El Paso County Licensed System Contractor, or the property owner.

Neil May 8/28/13
Authorized By: Environmental Health Specialist



335

29'

Quick 4 Plus SDD
1.55

El Paso County, CO

Public Health

Prevent • Promote • Protect

Environmental Health Division

1675 W. Garden of the Gods Rd., Suite 2044
 Colorado Springs, CO 80907
 (719) 578-3199 phone
 (719) 575-3188 fax
 www.elpasocountyhealth.org

APPLICATION FOR AN ON-SITE WASTEWATER TREATMENT SYSTEM PERMIT
☐ NEW PERMIT ☒ MAJOR REPAIR PERMIT ☐ MINOR REPAIR PERMIT

Owner JOCELYN STEPH Daytime Phone 683-8805
 Contractor TRIPLETEX Daytime Phone 749-2881
 Property Address 15260 JONES RD. Lot Size 4.75 ACRES
 Owners Mailing Address same
 Email Address tridetext@tridetext.com Fax # 749-2881
 Tax Schedule # 4322005004
 Site Located Inside City Limits ☐ Yes ☒ No Primary Contact ☐ Owner ☒ Contractor
 Proposed Use: ☒ Single Family ☐ Multi-Family ☐ Commercial
 Water Supply: ☒ Well ☐ Cistern ☐ Municipal Number of Bedrooms 3
☐ ☐ ☒ triple + exc.

CURRENT FEES AS APPROVED BY THE EL PASO COUNTY BOARD OF HEALTH

New Permit: \$440.00 (EPCPH Charge) + \$147.00 (EPC Planning Dept. Surcharge) + \$23.00 (CDPHE Surcharge) = \$610.00

Major Repair Permit: \$494.00 (EPCPH Charge) + \$23.00 (CDPHE Surcharge) = \$517.00

Minor Repair Permit: \$188.00 (EPCPH Charge) + \$23.00 (CDPHE Surcharge) = \$211.00

- All Payments are due at the time of application submitted by cash, check or major credit card (Visa / MC)
- This permit will expire one year from the date of issuance

I certify that the information provided on this application is in compliance with Section 8.3, Chapter 8 of the On-site Wastewater System (OWS) Regulations of the El Paso County Board of Health. I also authorize the assigned representative of El Paso County Public Health to enter onto this property in order to obtain information necessary for the issuance of a permit.

Applicants Signature: Van SantDate: 8/26/13Site Insp. Date: 8/27/13Perc. Rate: 7Permit # DN0032005

E.H.S. Review Notes:

Date to: E.P.C. Development Services N/AFlood Plain and Enumerations N/A

Permit Requirements:

Min. Septic Tank Capacity 1290Min. Absorption Area 286E.H. Specialist Neil MayDate 8/28/13☒ Approved ☐ DeniedNM
PS