

Architecture
Structural
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Materials Testing
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**ROCKY MOUNTAIN GROUP
EMPLOYEE OWNED**

Job No. 180213

April 14, 2021

Robert Williams
4075 Golf Club Drive
Colorado Springs, CO 80922

Re: Preliminary Wastewater Study
16975 Falcon Highway
Peerless Farms
El Paso County, Colorado

Ref: *Soil and Geology Report*, prepared by RMG – Rocky Mountain Group, Job No. 180213, last dated April 14, 2021.

Dear Mr. Williams:

As requested, personnel of RMG – Rocky Mountain Group has performed a preliminary investigation and site reconnaissance at the above referenced address. It is our understanding the parcels included in this study are:

- EPC Schedule No. 431300001: currently addressed as 16975 Falcon Highway, which consists of 40.01 acres and is zoned RR-5, “*Residential Rural*”.

It is our understanding the 40-acre parcel is to be subdivided into seven lots ranging in size from 5.1 to 6.3 acres. An existing residence, well, and septic are to remain on proposed Lot 3. Each other lot is to contain a new single-family residence, well and on-site wastewater treatment system. The Proposed Lot Layout is presented in Figure 1.

This letter provides information for an on-site wastewater report per the On-Site Wastewater Treatment Systems (OWTS) Regulations of the El Paso County Board of Health, pursuant to Chapter 8.

The following are also excluded from the scope of this report including (but not limited to) foundation recommendations, site grading/surface drainage recommendations, subsurface drainage recommendations, geologic, natural and environmental hazards such as landslides, unstable slopes, seismicity, snow avalanches, water flooding, corrosive soils, erosion, radon, wild fire protection, hazardous waste and natural resources.

Previous Studies and Field Investigation

Reports of previous geotechnical engineering/geologic investigations for this site were not available for our review.

SITE CONDITIONS

Personnel of RMG performed a reconnaissance visit on February 26, 2021. The purpose of the reconnaissance visit was to evaluate the site surface characteristics including landscape position, topography, vegetation, natural and cultural features, and current and historic land uses. Three 8-foot deep test pits were performed across the property. A Test Pit Location Plan is presented in Figure 2.

The site surface characteristics were observed to consist of low lying grasses and weeds across the entire site. No deciduous trees are located on the property except around the existing residence.

The following conditions were observed with regard to the 40-acre parcel:

- A well currently **does** exist on the existing 40-acre site and is to remain on proposed Lot 3.
- Three ponds are located on the western portion of the site; these features will need to be avoided when placing the treatment systems. However, these features are not anticipated to cause deleterious effects to treatment systems on the site.
- A Regulatory floodway traverses the western portion from north to south; the drainageways will need to be avoided when placing the treatment areas.
- Slopes greater than 20 percent **do not** exist on the site.
- Significant man-made cuts **do not** exist on the site.

Treatment Areas

Treatment areas at a minimum must achieve the following:

- The treatment areas must be 4 feet above groundwater or bedrock as defined by the Definitions 8.3.4 of the Regulations of the El Paso County Board of Health, Chapter 8, *OWTS Regulations*, effective July 7, 201.
- Prior to construction of an OWTS, an OWTS design prepared per *the Regulations of the El Paso County Board of Health, Chapter 8, OWTS Regulations* will need to be completed for each proposed lot. A scaled site plan and engineered design will also be required prior to obtaining a building permit.
- OWTS placement must comply with any physical setback requirements of Table 7-1 of the El Paso County Department of Health and Environment (EPCHDE).
- Treatment areas are to be located a minimum 100 feet from any existing or proposed well, including those located on adjacent properties per Table 7-2 per the EPCHDE.
- Treatment areas must be located a minimum 50 feet from any spring, lake, watercourse, irrigation ditch, stream or wetland, and 25 feet from dry gulches.
- Other setbacks include the treatment area to be located a minimum 10 feet from property lines, cut banks, and fill areas (from the crest).
- The new lots shall be laid out to ensure that the proposed OWTS does not fall within any restricted areas, e.g., utility easements, right of ways, etc. Based on the test pit observations, each proposed lot has a minimum of two locations for an OWTS.

Contamination of surface and subsurface water resources should not occur if the treatment areas are evaluated and installed according to El Paso County Health Department and State Guidelines in conjunction with proper maintenance.

DOCUMENT REVIEW

RMG has reviewed the proposed lot layout plan, identified the soil conditions anticipated to be encountered during construction of the proposed OWTS for the six new lots, including a review of documented Natural Resource Conservation Service - NRCS data provided by websoilsurvey.nrcs.usda.gov. The Soil Survey Descriptions are presented below. A review of FEMA Map No. 08041C0567G, effective December 7, 2018, indicates proposed treatment areas should not be located within an identified floodplain.

SOIL EVALUATION

Personnel of RMG performed a soil evaluation to include three 8-foot deep test pits, on February 26, 2021 (TP-1, TP-2, and TP-3), utilizing the visual and tactile method for the evaluation of the site soils. The test pits were excavated in areas that appeared most likely to be used for residential OWTS placement. Test Pit Logs are presented in Figures 3 and 4. A Septic Suitability map is presented in Figure 5.

The U.S. Soil Conservation Service along with USDA has identified the soils on the property as:

- 8 – *Blakeland loamy sand, (1 to 9 percent slopes)*, the Blakeland loamy sand was mapped by the USDA to encompass the north central portion of the site. The Blakeland loamy sand encompasses approximately less than 20 percent of the property. Properties of the Blakeland loamy sand include, somewhat excessively drained soil, depth of the water table is anticipated to be more than 80 inches, runoff is anticipated to be low, frequency of flooding and ponding is none. Landforms include hills and flats. The Blakeland loamy sand is anticipated in the area of Lot 2.
- 9 – *Blakeland Fluvaquentic Haplaquolis - Blakeland Fluvaquentic Haplaquolis* was mapped by the USDA to encompass approximately 40 percent of the property. Properties of the Blakeland Fluvaquentic Haplaquolis include, somewhat excessively drained soils, depth of the water table is anticipated to be greater than 80 inches, frequency of flooding and ponding is none, and landforms include hills and flats.
- 9 – *Truckton loamy sand, 1 to 9 percent slopes*. Truckton loamy sand was mapped by the USDA to encompass approximately 40 percent of the property. Properties of the Truckton loamy sand include, well-drained soils, depth of the water table is anticipated to be greater than 80 inches, frequency of flooding and ponding is none, and landforms include hills and flats.

A USDA Soil Survey Map and USDA Full Map Unit Descriptions are attached in Figures 6 and 7.

Groundwater was encountered in TP-2 at 6-foot depth as observed by RMG. Bedrock was not encountered in any of the test pits.

An OWTS is proposed for each new lot with the Peerless Farms Subdivision. Design should conform to the recommendations of future site-specific OWTS evaluation, performed in accordance with the applicable health department codes prior to construction. These reports may require additional test pits near proposed treatment areas. A minimum separation of 4 feet shall be maintained from groundwater and bedrock to the infiltrative surface.

Redoximorphic features indicating the fluctuation of groundwater or higher ground water levels were not observed in TP-1 and TP-3.

CONCLUSIONS

In summary, it is our opinion the 40-acre site is suitable for individual on-site wastewater treatment systems within the cited limitations. There are no foreseeable or stated construction related issues or land use changes proposed at this time that would preclude OWTS development.

LIMITATIONS

The information provided in this report is based upon the subsurface conditions observed in the profile pit excavations and accepted engineering procedures. The subsurface conditions encountered in the excavation for the treatment area may vary from those encountered in the test pit excavations. Therefore, depth to limiting or restrictive conditions, bedrock, and groundwater may be different from the results reported in this letter.

An OWTS site evaluation will need to be performed in accordance with the applicable health department codes prior to construction.

We trust this provides information that will allow you to make informed decisions. Should you have questions, please feel free to contact our office.

Cordially,

RMG – Rocky Mountain Group

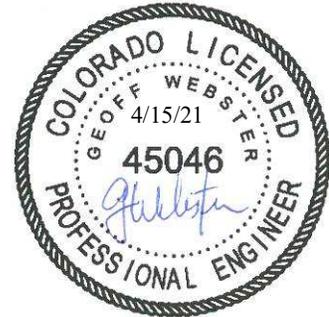


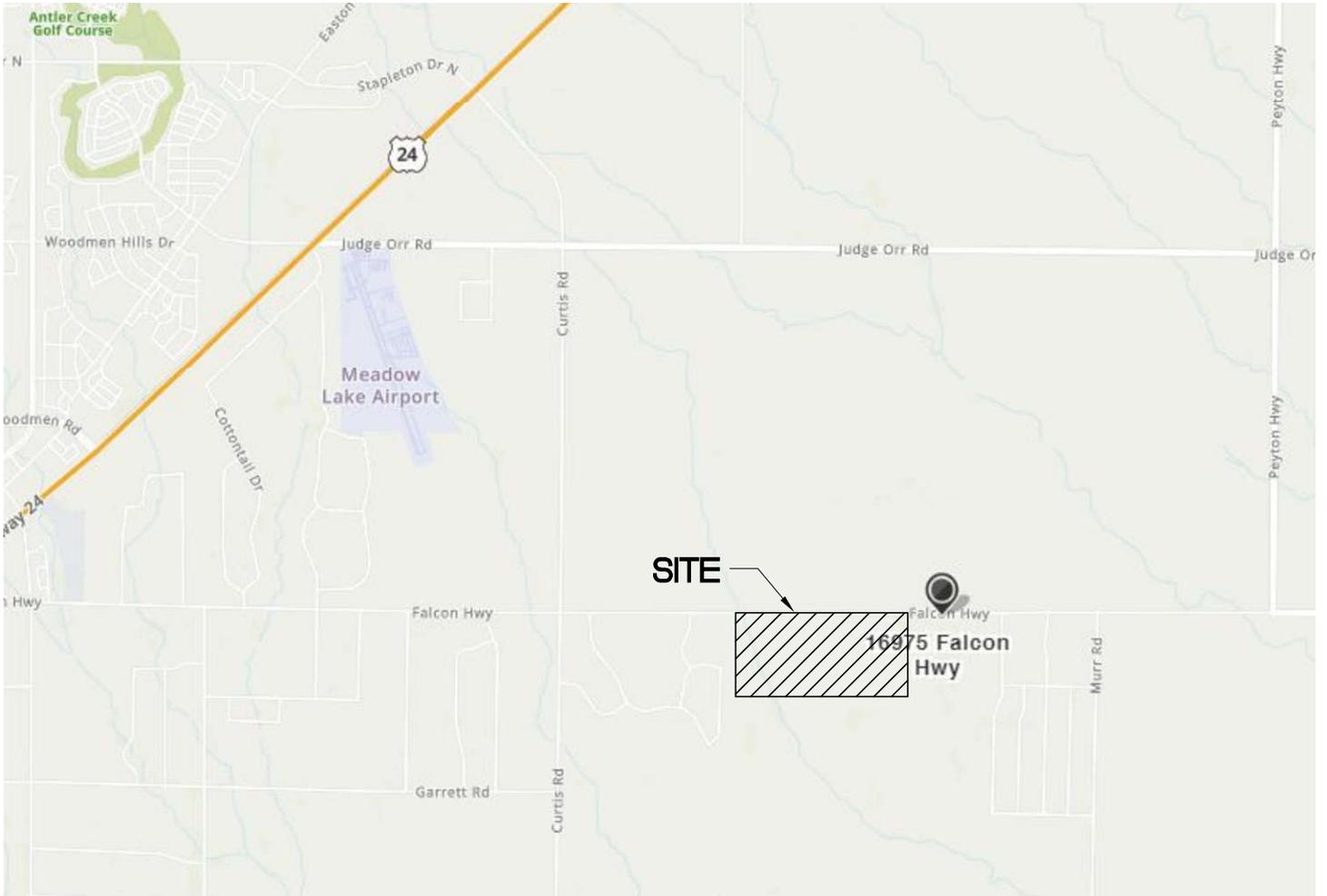
Kelli Zigler
Project Geologist

Reviewed by,

RMG – Rocky Mountain Group

Geoff Webster, P.E.
Sr. Geotechnical Project Engineer





NOT TO SCALE
 BASE MAP PROVIDED BY MAPQUEST



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Central Office:
 Englewood, CO 80112
 (303) 688-9475
Northern Office:
 Greeley / Evans, CO 80620
 (970) 330-1071

SITE VICINITY MAP

PEERLESS FARMS
 EL PASO COUNTY, CO
 ROBERT WILLIAMS

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FIG No. 1

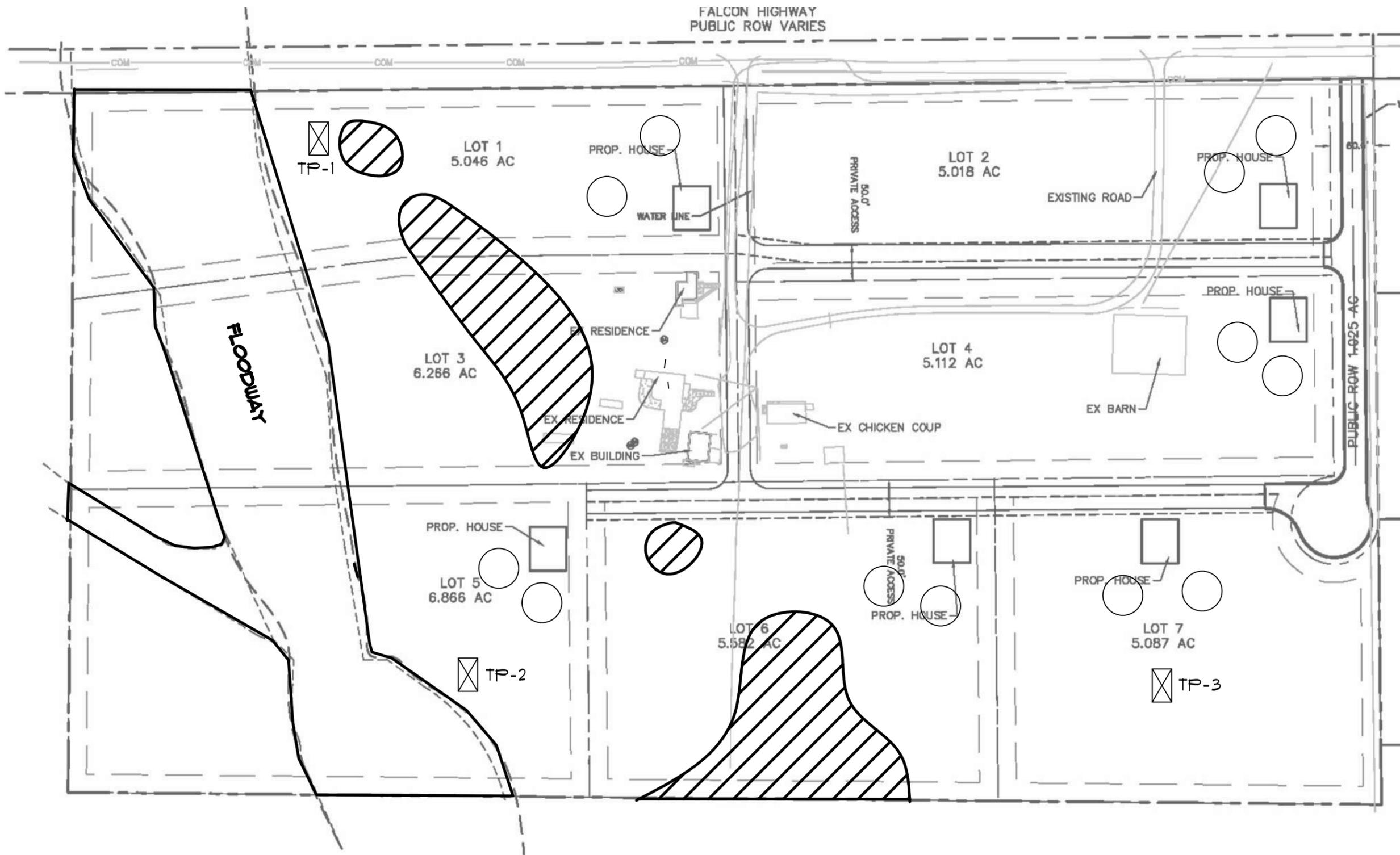
DATE 4-14-2021



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FALCON HIGHWAY
 PUBLIC ROW VARIES



PEERLESS FARMS
 EL PASO COUNTY, CO
 ROBERT WILLIAMS

ENGINEER:	GW
DRAWN BY:	KZ
CHECKED BY:	GW
ISSUED:	4-14-2021
REVISION:	DATE:
	JOB #:

TEST PIT
 LOCATIONS

SHEET No.
FIG-2



NOT TO SCALE
 BASE MAP PROVIDED BY KIMLEY HORN

TEST BORING: TP-1 DATE DRILLED: 2/26/21 NO GROUNDWATER ON 2/26/21	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	TEST BORING: TP-2 DATE DRILLED: 2/26/21 GROUNDWATER @ 6.0 ' 2/26/21	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
USDA Soil Texture: Sand USDA Soil Type: 1 USDA Structure Shape: Structureless USDA Structure Grade: Single Grain LTAR: 0.80	5					USDA Soil Texture: Sand USDA Soil Type: 1 USDA Structure Shape: Structureless USDA Structure Grade: Single Grain LTAR: 0.80	5				

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SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

TEST BORING LOG

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FIGURE No. 3

DATE Apr/15/2021

TEST BORING: TP-3 DATE DRILLED: 2/26/21 NO GROUNDWATER ON 2/26/21	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
USDA Soil Texture: Sandy Clay Loam USDA Soil Type: 3 USDA Structure Shape: Moderate USDA Structure Grade: Blocky LTAR: 0.035 USDA Soil Texture: Sandy Clay Loam USDA Soil Type: 4 USDA Structure Shape: Moderate USDA Structure Grade: Blocky LTAR: 0.040	5				

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SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

TEST BORING LOG

JOB No. 180213

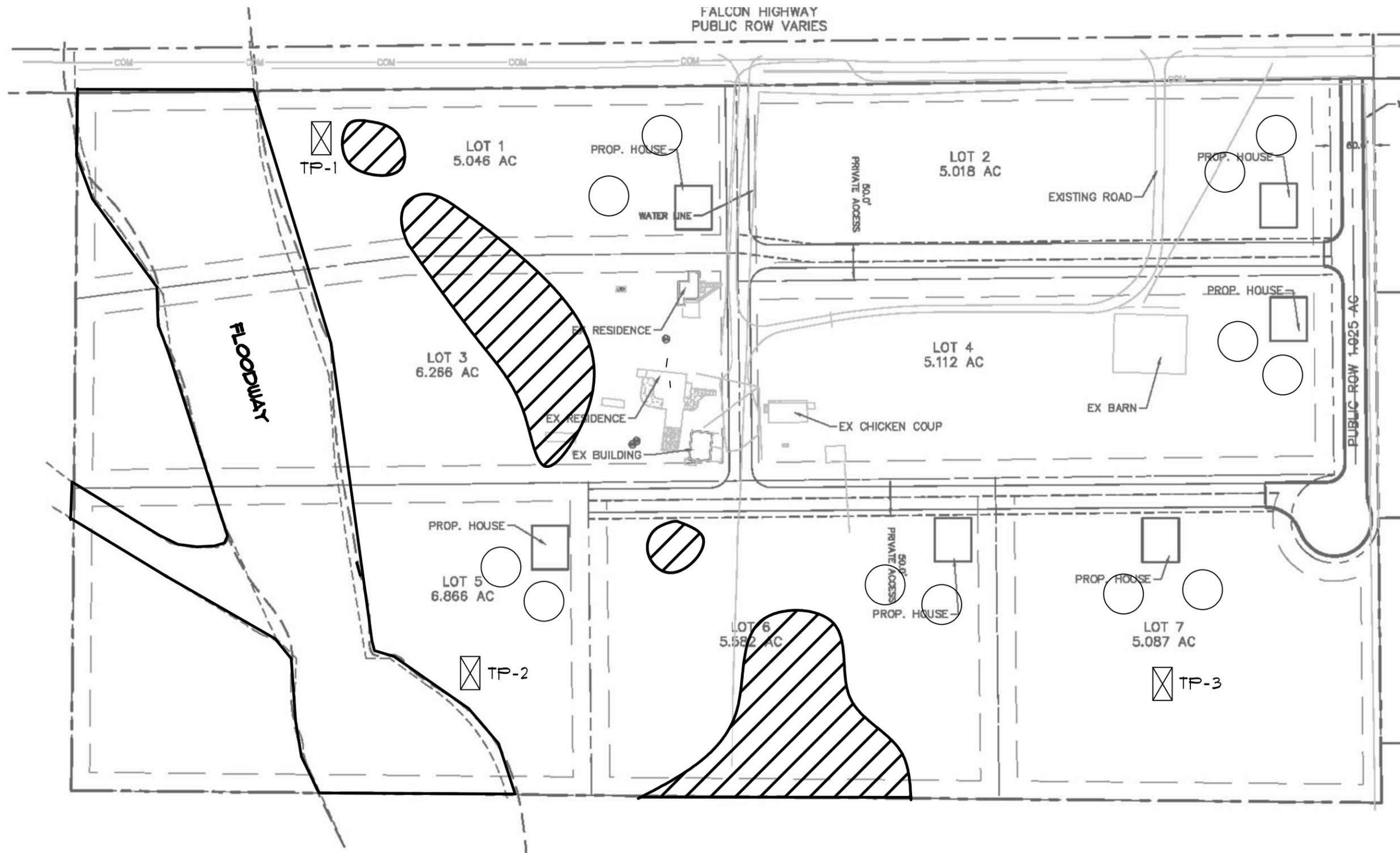
FIGURE No. 4

DATE Apr/15/2021



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○ SELECTED AREAS THAT ARE SUITABLE FOR THE LOCATION OF A NEW ON-SITE WASTEWATER TREATMENT SYSTEM (OWTS)

▨ AREAS TO AVOID WITH THE PLACEMENT OF A NEW OWTS



NOT TO SCALE
 BASE MAP PROVIDED BY KIMLEY HORN

NOTE, IF THE EL PASO COUNTY DEPARTMENT PHYSICAL SETBACK REQUIREMENTS ARE MET FOR EACH LOT, THERE ARE MULTIPLE LOCATIONS SUITABLE FOR THE OWTS

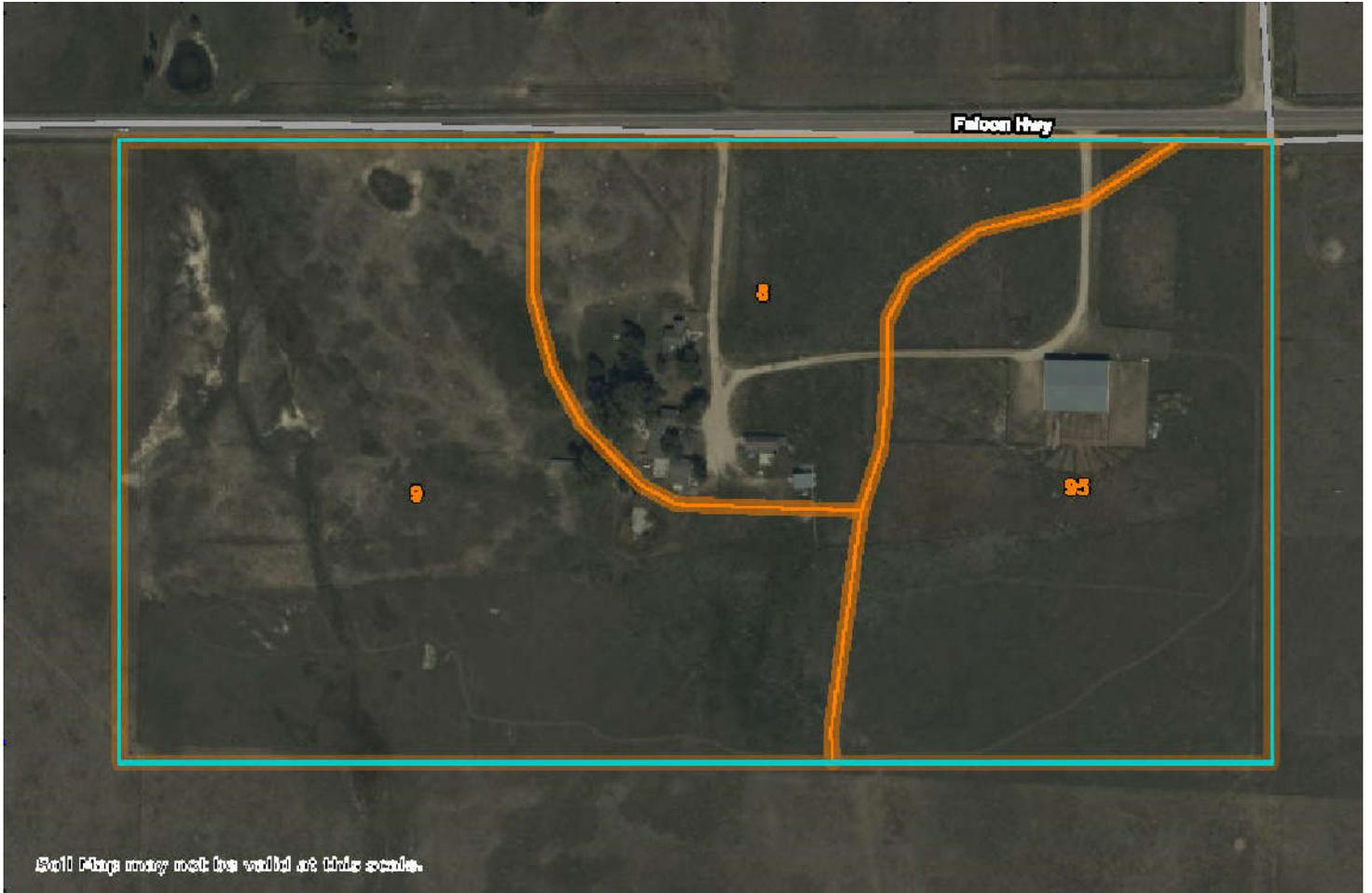
PEERLESS FARMS
 EL PASO COUNTY, CO
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ENGINEER:	GW
DRAWN BY:	KZ
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SEPTIC SUITABILITY
 MAP

SHEET No.

FIG-5



- 8 - Blakeland loamy sand, (1 to 9 percent slopes)
- 9 - Blakeland Fluvaquentic Haplaquolis
- 95 - Truckton loamy sand, 1 to 9 percent slopes



NOT TO SCALE
BASE MAP PROVIDED BY USDA

PROPERTY BOUNDARIES ARE NOT ACCURATE, LINES
DRAWN FOR VISUAL LOT PLACEMENT ONLY



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USDA MAP
PEERLESS FARMS
EL PASO COUNTY, CO
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FIG No. 6

DATE 4-14-2021



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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

9—Blakeland-Fluvaqueptic Haplaquolls

Map Unit Setting

National map unit symbol: 36b6
Elevation: 3,500 to 5,800 feet
Mean annual precipitation: 13 to 17 inches
Mean annual air temperature: 46 to 55 degrees F
Frost-free period: 110 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Blakeland and similar soils: 60 percent
Fluvaqueptic haplaquolls and similar soils: 38 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: Sandy alluvium derived from arkose and/or eolian deposits derived from arkose

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

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

PEERLESS FARMS

EL PASO COUNTY, CO
 ROBERT WILLIAMS

ENGINEER:	GW
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USDA FULL
 MAP DESCRIPTIONS