

Please submit the final draft of this report.

Job No. 195873

November XX, 2024

James Hull
3405 Hay Creek Road
Colorado Springs, CO 80921

Re: Wastewater Study
Hay Creek Rd
Lots 1-6
El Paso County, Colorado

Dear Mr. Hull:

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 parcel included in this study is:

- EPC Schedule No. 7133007025, labeled as Hay Creek Rd, which consists of 35.05 acres and is zoned "RR-5" – Residential Rural.

It is our understanding the 35.05-acre parcel is to be subdivided into 6 lots. The existing home, well, and On-site Wastewater Treatment System (OWTS) are to remain on an approximately 5.16-acre lot, zoned "RR-5". The five additional lots are to range between 3.86 to 5.23 acres, and are each eventually to contain a single family residence, well, and OWTS. The lots are to be accessed from a new private access road extending south from a private drive off of Hay Creek Road, near the northeastern property corner. Four of the new lots are to be located south of Hay Creek. The existing residence will maintain its current access from the private access road extending south from Hay Creek Road. The Proposed Lot Layout is presented in Figure 2.

This letter is to provide information for the 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 available for our review and are listed below:

1. *Soil and Geology Study, Hay Creek, Lots 1-6, El Paso County, Colorado*, prepared by RMG – Rocky Mountain Group, Job No. 195873, dated **November XX, 2024**.

The findings, conclusions and recommendations contained in these reports were considered during the preparation of this report.

SITE CONDITIONS

Personnel of RMG performed a reconnaissance visit on April 17, 2024. 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. Two 8-foot deep test pits were performed across the site during our reconnaissance visit. The Test Boring/Test Pit Location Plan is presented in Figure 3.

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. If this does not apply, enter the site surface characteristics observed

The following conditions were observed with regard to the 35.05-acre parcel:

- A well currently **does** exist on the existing 35.05-acre site;
- No runoff or irrigation features anticipated to cause deleterious effects to treatment systems on the site were observed;
- Hay Creek and its floodway exists on the property. A portion of the site lies within the designated floodway or floodplain;
- Slopes greater than 20 percent **do** exist on the site; and
- 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, 2018;
- 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. A scaled site plan and engineered design will also be required prior to obtaining a building permit;
- Comply with any physical setback requirements of Table 7-1 of the El Paso County Department of Health and Environment (EPCDHE);
- Treatment areas are to be located a minimum 100 feet from any well (existing or proposed), including those located on adjacent properties per Table 7-2 per the EPCDHE;

See page 10.

- Treatment areas must also be located a minimum 50 feet from any spring, lake, water course, 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, floodways). Based on the test pit observations, the parcel has a minimum of two locations for each 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 above referenced site plan. We have identified the soil conditions anticipated to be encountered during construction of the proposed OWTS for each proposed lot. Our review included 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. 08041C0267G, effective December 7, 2018 indicates that the proposed treatment areas are not located within an identified floodplain.

SOIL EVALUATION

Personnel of RMG performed a soil evaluation to include two 8-foot deep test pits, on April 17, 2024 (Test Pit TP-1 and TP-2), 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 construction. The Test Pit Logs are presented in Figure 4.

The soil conditions as indicated by the USDS data are anticipated to consist of:

- 38 – Jarre-Tecolote complex with 8 to 65 percent slopes. The Jarre-Tecolote complex was mapped by the USDA to encompass the southern third of the property, south of the creek. Properties of the Jarre-Tecolote complex include well drained soils, depth of the water table is anticipated to be greater than 80 inches, runoff is anticipated to be medium, frequency of flooding and/or ponding is none, and landforms include alluvial fans.
- 68 – Peyton-Pring complex, 3 to 8 percent slopes. The Peyton-Pring complex was mapped by the USDA to encompass the remainder of the property. Properties of the Peyton-Pring complex include, well-drained soils, depth of the water table is anticipated to be greater than 6.5 feet, runoff is anticipated to be low, frequency of flooding and ponding is none, and landforms include hills.

The USDA map is included below. The bold orange line indicates the boundary between the soil conditions.



Groundwater was not encountered in the test pits observed by RMG April 17, 2024 or within the test borings performed April 4, 2024.

An OWTS is proposed for each lot and should conform to the recommendations of a future OWTS site evaluation, performed in accordance with the applicable health department codes prior to construction. This report may require additional test pits in the vicinity of the proposed treatment field. 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 the test pits.

CONCLUSIONS

In summary, it is our opinion the site is suitable for individual on-site wastewater treatment systems within the cited limitations. A Septic Suitability Map is presented in Figure 5. It is recommended the areas labeled *fw* - floodway, indicating the FEMA Floodway and *ss* - steep slopes be avoided during the planning and placement of the OWTS. The lots have sufficient acreage to locate each OWTS (and alternate locations) within the EPCDHE physical setback requirements.

Bedrock was not encountered in the two 8-foot deep test pits. Soil and groundwater conditions at the site are suitable for individual treatment systems. However, the on-site soils exhibited:

- a high clay content (an LTAR less than 0.35) and/or;
- excessive rock content (an LTAR greater than 0.80).

One or both of these soil conditions are expected for each lot within the subdivision. The treatment systems will likely require the use of "engineered systems". It should be noted that the LTAR values stated here are for the test pit locations performed for this *Wastewater Study* only. The LTAR values may change throughout the site. If an LTAR value of less than 0.35 (soil types 3A to 5) or greater than 0.80 (soil type 0) is encountered at the time of the site specific OWTS evaluation, an "engineered system" will be required.

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.

I hope this provides the information you have requested. Should you have questions, please feel free to contact our office.

Cordially,

Reviewed by,

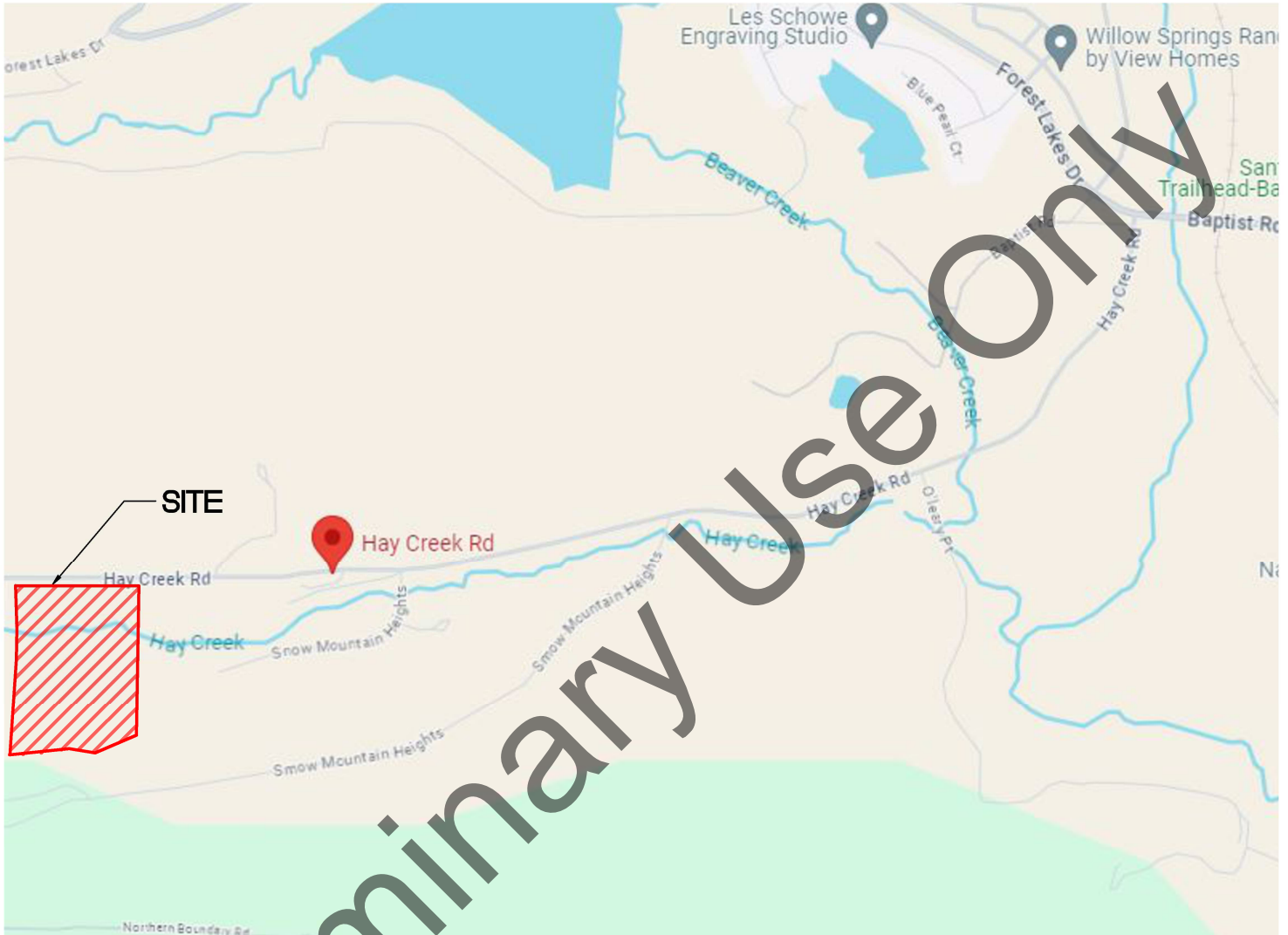
RMG – Rocky Mountain Group

RMG – Rocky Mountain Group

Kelli Zigler
Project Geologist

Tony Munger, P.E.
Sr. Geotechnical Project Manager





NOT TO SCALE

Architecture
Structural
Geotechnical



Engineers / Architects

SOUTHERN COLORADO OFFICE
2910 AUSTIN BLUFFS PKWY, SUITE 100,
COLORADO SPRINGS, CO 80918
(719) 548-0600 ~ WWW.RMGENGINEERS.COM

SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

Materials Testing
Forensics
Civil / Planning

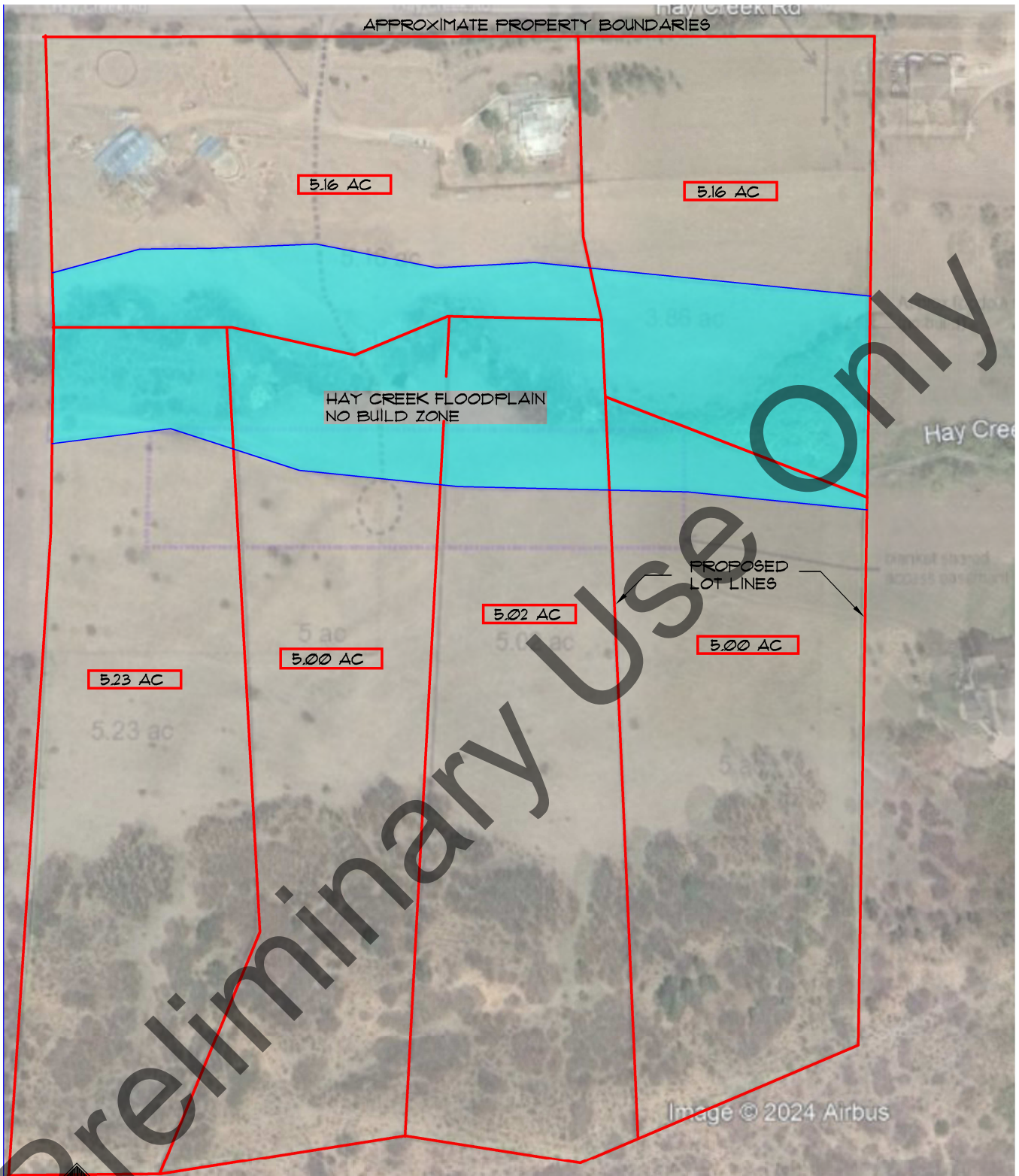
SITE VICINITY MAP

HAY CREEK ROAD
MINOR SUBDIVISION
EL PASO COUNTY, CO
JAMES HULL

JOB No. 195873

FIG No. 1

DATE 7-2-2024



NOT TO SCALE

Architecture
Structural
Geotechnical



Engineers / Architects

SOUTHERN COLORADO OFFICE
2910 AUSTIN BLUFFS PKWY, SUITE 100,
COLORADO SPRINGS, CO 80918
(719) 548-0600 ~ WWW.RMGENGINEERS.COM

SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

Materials Testing
Forensics
Civil / Planning

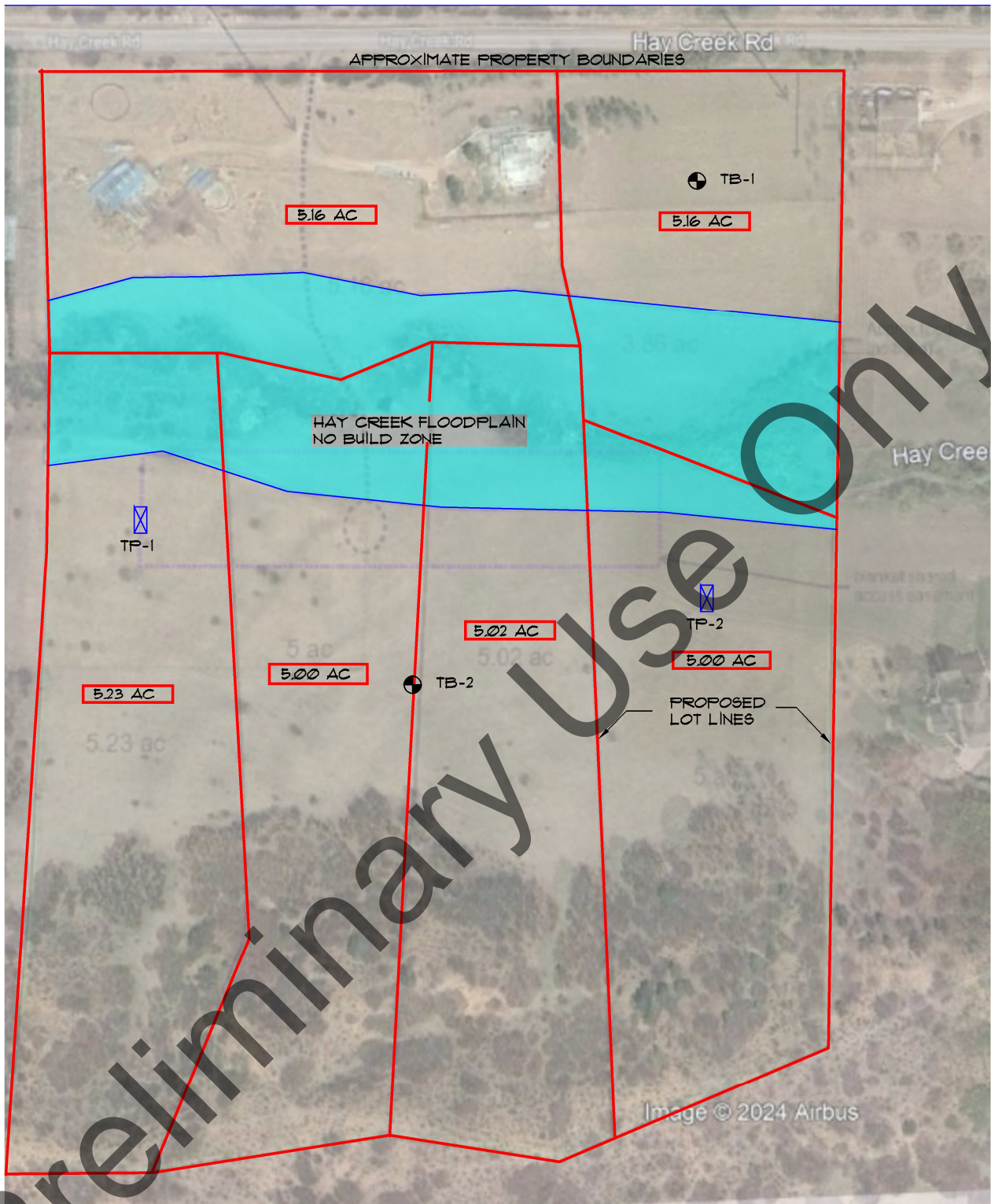
PROPOSED LOT LAYOUT

HAY CREEK ROAD
MINOR SUBDIVISION
EL PASO COUNTY, CO
JAMES HULL

JOB No. 195873

FIG No. 2

DATE 7-2-2024




 NOT TO SCALE

 DENOTES APPROXIMATE LOCATION OF TEST PITS

 DENOTES APPROXIMATE LOCATION OF TEST BORINGS

Architecture
Structural
Geotechnical



Engineers / Architects

SOUTHERN COLORADO OFFICE
 2910 AUSTIN BLUFFS PKWY, SUITE 100,
 COLORADO SPRINGS, CO 80918
 (719) 548-0600 ~ WWW.RMGENGINEERS.COM

SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

Materials Testing
Forensics
Civil / Planning



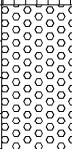

TEST BORING / TEST PIT LOCATION PLAN



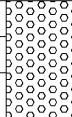
HAY CREEK ROAD
 MINOR SUBDIVISION
 EL PASO COUNTY, CO
 JAMES HULL

JOB No. 195873





FIG No. 3

DATE 7-2-2024

TEST PIT TP-1			
DATE OBSERVED: 4/17/24			
SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 2.0 FT LOAMY SAND (STRUCTURELESS, SINGLE-GRAINED)	2ft		1
2.0 TO 5.0 FT SANDY CLAY (MODERATE, BLOCKY)	4ft		4
5.0 - 8.0 FT (>35% ROCK >2mm)	6ft		R-0
	8ft		R-0

TEST PIT TP-2			
DATE OBSERVED: 4/17/24			
SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 2.0 FT LOAMY SAND (STRUCTURELESS, SINGLE-GRAINED)	2ft		1
1 - 7 FT SAND, SINGLE GRAIN (STRUCTURELESS)	4ft		3
7.0 - 8.0 FT (>35% ROCK >2mm)	8ft		R-0

SOIL DESCRIPTIONS

-  LOAMY SAND
-  SANDY CLAY
-  SAND
-  35% ROCK

TEST PIT LOGS

HAY CREEK ROAD
6-LOT MINOR SUBDIVISION
EL PASO COUNTY, COLORADO
JAMES HULL

JOB No. 195873

FIG No. 4

DATE 7-2-2024

SHEET 1 of 1

Architecture
Structural
Geotechnical



Engineers / Architects

SOUTHERN COLORADO OFFICE
2910 AUSTIN BLUFFS PKWY, SUITE 100,
COLORADO SPRINGS, CO 80918

(719) 548-0600 ~ WWW.RMGENGINEERS.COM

SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

Materials Testing
Forensics
Civil / Planning

APPROXIMATE PROPERTY BOUNDARIES

Access to be provided for additional lots

approximate location of existing septic (to remain)

5.16 AC

5.16 AC

fw / HAY CREEK FLOODPLAIN / TA NO BUILD ZONE

PROPOSED LOT LINES

5.23 AC

5.00 AC

5.02 AC

5.00 AC

SS

SS



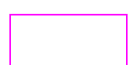
Image © 2024 Airbus

This septic site appears to be located in or close proximity to the access road easement.
Please review/clarify it is out of the easement.

LEGEND

OWTS CONDITIONS

- *ss* - steep slopes - moderate to steep slopes with slopes ranging between 12-24 percent. Area to be avoided during the planning and placement of the individual OWTS.
- *fw* - floodway - Zone A per FEMA, area currently does not contain Base Flood Elevations. This area is to be considered a No Build Zone until further investigation is completed to determine feasibility of future development. At no point shall construction or the OWTS encroach the floodway.

-  Area mapped within the FEMA Floodway
-  Proposed locations for the OWTS
-  Proposed location for the house

Note: The chosen OWTS and home locations are for illustration only. If the El Paso County Health Department physical setback requirements are met for each lot, steep slopes and the floodway are avoided there are no restrictions on the OWTS placement.



NOT TO SCALE

Materials Testing
Forensics
Civil / Planning



Engineers / Architects

SOUTHERN COLORADO OFFICE
2910 AUSTIN BLUFFS PKWY, SUITE 100,
COLORADO SPRINGS, CO 80918
(719) 548-0600 ~ WWW.RMGENGINEERS.COM

Architecture
Structural
Geotechnical

SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

HAY CREEK ROAD
MINOR SUBDIVISION
EL PASO COUNTY, CO
JAMES HULL

ENGINEER: TM
DRAWN BY: KZ
CHECKED BY: TM
ISSUED: 1-02-2024

SEPTIC
SUITABILITY MAP

SHEET No.
FIG-5