

Architectural  
Structural  
Geotechnical



Materials Testing  
Forensic  
Civil/Planning

## SOIL AND GEOLOGY STUDY

**Mary Jane Ranch  
SE Corner of Falcon Hwy & JD Johnson Rd  
El Paso County, Colorado**

### PREPARED FOR:

**Robert Williams  
16975 Falcon Highway  
Peyton, CO 80831**

**JOB NO. 189461**

**January 3, 2024**

Respectfully Submitted,

RMG – Rocky Mountain Group

A handwritten signature in blue ink that reads 'Kelli Zigler'.

**Kelli Zigler  
Project Geologist**

Reviewed by,

RMG – Rocky Mountain Group

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



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# 1.0 GENERAL SITE AND PROJECT DESCRIPTION

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## 1.1 Project Location

The project lies in the NW¼ of Section 15, Township 13 South, Range 63 West of the 6<sup>th</sup> Principal Meridian in El Paso County, Colorado. The site is generally located south and east of the intersection of Falcon Highway and JD Johnson Road. The approximate location of the site is shown on the Site Vicinity Map, Figure 1.

## 1.2 Existing and Proposed Land Use

The site currently consists of one parcel (per the El Paso County Assessor's website):

- Schedule No. 3315000001, addressed 6425 JD Johnson Road, zoned A35, consists of approximately 40 acres of partially developed land.

A gravel driveway extends east from JD Johnson road to an existing garage that is to remain onsite. The garage is located near the center of the western portion of the site. A modular home was previously located near the garage, but has reportedly been removed from the site. The septic tanks, treatment field, and well are to remain and potentially be reused for a new residence.

## 1.3 Project Description

It is our understanding the 40 acres is to be subdivided into 4 lots per the plan provided by Kimley Horn. The lots are to be accessed from JD Johnson Road by means of an access easement. The lots are to range between 9.149 and 9.841 acres. The existing garage is to remain on Lot 4. Lots 1 – 3 are each to contain a new single-family residence with a well and On-site Wastewater Treatment System (OWTS). Lot 4 is also to contain a new single-family residence, but is to retain and re-use the existing treatment area if possible. The Proposed Lot Layout is presented in Figure 2.

## 1.4 Previous Investigations

A Wastewater Study was completed in conjunction with this study and is listed below:

1. *Wastewater Study, Mary Jane Ranch, SE Corner of Falcon Hwy and JD Johnson Road, El Paso County, Colorado*, RMG – Rocky Mountain Group, Job No. 189461, dated January 3, 2024.

# 2.0 QUALIFICATIONS OF PREPARERS

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This Soil and Geology Study was prepared by a professional geologist as defined by Colorado Revised Statutes section 34-1-201(3) and by a qualified geotechnical engineer as defined by policy statement 15, "Engineering in Designated Natural Hazards Areas" of the Colorado State Board of Registration for Professional Engineers and Professional Land Surveyors. (Ord. 96-74; Ord. 01-42)

The principle investigators for this study are Kelli Zigler P.G., and Tony Munger, P.E. Ms. Zigler is a Professional Geologist as defined by State Statute (C.R.S 34-1-201) with over 23 years of experience in the geological and geotechnical engineering field. Ms. Kelli Zigler holds a B.S. in Geology from the University of Tulsa. Ms. Zigler has supervised and performed numerous geological and geotechnical field investigations throughout Colorado.

Tony Munger, P.E. is a licensed professional engineer with over 23 years of experience in the construction engineering (residential) field. Mr. Munger holds a B.S. in Architectural Engineering from the University of Wyoming

## 3.0 STUDY OVERVIEW

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The purpose of this investigation is to characterize the general geotechnical, geologic site conditions and present our opinions of the potential effect of these conditions on the proposed development within the town of Peyton, El Paso County, Colorado. As such, our services exclude evaluation of the environmental and/or human, health related work products or recommendations previously prepared, by others, for this project.

Revisions to the conclusions presented in this report may be issued based upon submission of the Development Plan. This study has been prepared in accordance with the requirements outlined in the El Paso County Land Development Code (LDC) specifically Chapter 8, last updated August 27, 2019. Applicable sections include 8.4.8 and 8.4.9, and the El Paso County Engineering Criteria Manual (ECM), specifically Appendix C last updated July 9, 2019.

### 3.1 Scope and Objective

The scope of this study is to include a review of pertinent, publically available documents including, but not limited to, previous geologic and geotechnical reports, overhead and remote sensing imagery, published geology and/or hazard maps, design documents, etc.

The objectives of our study are to:

- Identify geologic conditions present on the site
- Analyze potential negative impacts of these conditions on the proposed site development
- Analyze potential negative impacts to surrounding properties and/or public services resulting from the proposed site development as it relates to existing geologic conditions
- Provide our opinion of suitable techniques that may be utilized to mitigate any potential negative impacts identified herein

This report presents the findings of the study performed by RMG-Rocky Mountain Group relating to the geologic conditions of the above-referenced site. Revisions and modifications to this report may be issued subsequently by RMG, based upon:

- Additional observations made during grading and construction which may indicate conditions that require re-evaluation of some of the criteria presented in this report
- Review of pertinent documents (development plans, plat maps, drainage reports/plans, etc.) not available at the time of this study
- Comments received from the governing jurisdiction and/or their consultants subsequent to submission of this document

### 3.2 Site Evaluation Techniques

The information included in this report has been compiled from several sources, including:

- Geologic and topographic maps
- Review of selected publicly available, pertinent engineering reports
- Exploratory test borings and test pits
- Available aerial photographs
- Geologic research and analysis

Geophysical investigations were not considered necessary for characterization of the site geology. Monitoring programs, which typically include instrumentation and/or observations for changes in groundwater, surface water flows, slope stability, subsidence, and similar conditions, are not known to exist and were not considered applicable for the scope of this report.

### **3.3 Additional Documents**

Additional documents reviewed during the performance of this study are included in Appendix A.

## **4.0 SITE CONDITIONS**

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### **4.1 Existing Site Conditions**

The site is partially developed land, located south and east of the intersection of Falcon Highway and JD Johnson Road, within El Paso County, Colorado. The site is bound to the north by Falcon Highway, to the west by JD Johnson Road, and to the south and east by developed residential parcels ranging between 5 to 40-acres. An existing garage is located near the center of the western portion of the site. The existing well, septic tanks, and septic field are to remain.

### **4.2 Topography**

Based on aerial photographs and the 2022 topographic map of the Falcon Quadrangle, the site generally slopes down to the south and east. No drainageways or natural waterways were observed to exist on the property. An apparent shallow low-lying area (intermittent pond) was observed on the proposed lot 2.

### **4.3 Vegetation**

The site vegetation primarily consists of low lying native grasses, weeds, and other prairie-type vegetation. Few deciduous trees exist near the garage.

### **4.4 Aerial Photographs and Remote-Sensing Imagery**

Personnel of RMG reviewed aerial photos available through Google Earth Pro dating back to 1985, Colorado Geological Survey (CGS) surficial geologic mapping, and historical photos by [historicaerials.com](http://historicaerials.com) dating back to 1947. Structures appeared on site prior to 2003. Since 2003, the site has remained relatively unchanged.

## 5.0 FIELD INVESTIGATION AND LABORATORY TESTING

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### 5.1 Field Exploration

The subsurface conditions within the property were explored by drilling two exploratory borings on October 24, 2023 and observing two 8-foot deep test pits on October 26, 2023. The test borings were utilized to obtain preliminary subsurface soil information for proposed new single-family residences and the test pits were to explore the subsurface soils for proposed on-site wastewater treatment systems. The Test Boring/Test Pit Location Plan is presented in Figure 3.

### 5.2 Laboratory Testing

The test borings were advanced with a power-driven, continuous-flight auger drill rig to depths of about 20 feet below the existing ground surface. Samples were obtained in general accordance with ASTM D-1586 utilizing a 2-inch OD split-barrel sampler or in general accordance with ASTM D-3550 utilizing a 2½-inch OD modified California sampler. The Explanation of Test Boring Logs is presented in Figure 4 and the Test Boring/Test Pit Logs are presented in Figures 5 and 6.

The moisture content for the recovered samples was obtained in the laboratory. Grain-size analysis, Atterberg Limits, and Denver Swell/Consolidation tests were performed on selected samples for purposes of classification and to develop pertinent engineering properties. A Summary of Laboratory Test Results is presented in Figure 7. Soil Classification Data are presented in Figure 8.

### 5.3 OWTS Visual and Tactile Evaluation

Two test pits were excavated by others and observed by RMG. The test pits were excavated to 8 feet below the existing ground surface. The RMG representative on site visually classified the soil and obtained samples for the tactile evaluation to be performed in the laboratory.

The soils were evaluated to determine the soils types and structure. Neither bedrock nor limiting layers were encountered in the test pits. The soil descriptions of the test pit evaluation are presented in Figure 6, Test Boring/Test Pit Logs. The Wastewater study is presented in Appendix B, a summary of the study is provided in section **9.0 On-site Wastewater Water Treatment Systems**.

### 5.4 Groundwater

Groundwater was not encountered in the tests pits observed by RMG. No indications of redoximorphic conditions were observed. However, groundwater was encountered in one of the test borings at 17 feet at the time of drilling. It should be noted that in granular soils and bedrock, some perched water conditions might be encountered due to the variability of the soil profile. Isolated sand and gravel layers within the soil, even those of limited thickness and width, can carry water in the subsurface. Groundwater may also flow atop the underlying bedrock. Builders and planners should be cognizant of the potential for the occurrence of subsurface water conditions during on-site construction, in order to evaluate and mitigate each individual problem as necessary.

Fluctuations in groundwater and subsurface moisture conditions may occur due to variations in rainfall and other factors not readily apparent at this time. Development of the property and adjacent properties may also affect groundwater levels.

## 6.0 SOIL, GEOLOGY, AND ENGINEERING GEOLOGY

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The site is located within the central portion of the Great Plains Physiographic Province. The site exists within the southern portion of a large structural feature known as the Denver Basin. In general, the geology at the site consists of alluvium and eolian composed of sand, silt, clay, gravel, and occasional boulders that overlie the Dawson Arkose sandstone.

### 6.1 Subsurface Soil Conditions

The subsurface materials encountered in the test borings were classified visually in the field and within the laboratory using the Unified Soil Classification System (USCS). The materials were identified as poorly graded silty sand (SP-SM), silty sand (SM), and clayey sand (SC)

Additional descriptions and the interpreted distribution (approximate depths) of the subsurface materials are presented on the Test Boring/Test Pit Logs, Figures 5 and 6. The classifications shown on the logs are based upon the visual classification of the samples at the depths indicated. Stratification lines shown on the logs represent the approximate boundaries between material types and the actual transitions may be gradual and vary with location.

### 6.2 Bedrock Conditions

In general, the bedrock (as mapped by Colorado Geologic Survey - CGS) beneath the site is considered to be part of the Dawson Formation. The bedrock was not encountered in the test borings. Overall, the on-site sands can readily be excavated with standard construction equipment such as a front-end loader, skid loader, and/or (mini) excavator.

### 6.3 U.S. Soil Conservation Service

The USDA/NRCS soil survey identified three soil types on the property:

- 8 – Blakeland loamy sand with 1 to 9 percent slopes. The Blakeland loamy sand was mapped by the USDA to encompass the majority of the eastern portion of the property. Properties of the loamy sand include somewhat excessively 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/or ponding is none, and landforms include hills and flats;
- 19 – Columbine gravelly sandy loam, 0 to 3 percent slopes. The Columbine gravelly sandy loam was mapped by the USDA to encompass the western portion of the property. Properties of the sandy loam 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/or ponding is none, and landforms include fans, floodplain and fan terraces.
- 96 – Truckton loamy sand, 0 to 3 percent slopes. The Truckton loamy sand was mapped within west of Blakeland loamy sand and encompasses half of the western portion of the property. The properties of the Truckton loamy sand include well drained soils, depth of the water table is anticipated to be greater than 6.5 feet, runoff is anticipated to low, frequency of flooding and ponding is none, and landforms include interfluves and fan remnants.

The USDA Soil Survey Map is presented in Figure 9.



## 6.4 General Geologic Conditions

Based on review of relevant geologic maps, we identified the geologic conditions (listed below) affecting the development, as shown on the Engineering and Geology Map, Figure 10.

The site generally consists of alluvium deposits of the Holocene overlying the Dawson Formation at depth. Four general geologic units were mapped at the site as:

- *Ql: Louviers Alluvium (Paleocene to Eocene)* – light brown to tan, thin gravelly deposits on terraces, poorly sorted with low clay contents. Thickness is estimated to be approximately 70 feet above streams on the plains.
- *Qp: Piney Creek Alluvium (Holocene)* - silty to gravelly hummus-rich alluvium along all valleys, poorly sorted with low clay contents. Estimated thickness was not noted on the geologic map.
- *Af – Artificial Fill* – fill associated with the previous residence, existing garage, and septic.
- *sw – seasonally wet* – area to contain surface water during heavy precipitation events

## 6.5 Engineering Geology

One engineering geology unit was mapped at the site and is shown on the Engineering and Geology Map, Figure 10.

- *2D* – Eolian deposits generally on flat to gentle slopes of upland areas.

The map unit description for the above units were provided by Charles Robinson and Associates (1977).

## 6.6 Structural Features

Structural features such as schistosity, folds, zones of contortion or crushing, joints, shear zones or faults were not observed by RMG on the site or in the surrounding area.

## 6.7 Surficial (Unconsolidated) Deposits

Lake and pond sediments, swamp accumulations, sand dunes, marine terrace deposits, talus accumulations, and creep was not observed on the site. Slump and slide debris were also not observed on the site.

## 6.8 Features of Special Significance

Features of special significance such as accelerated erosion, (advancing gully head, badlands, or cliff reentrants) were not observed on the property. Features indicating settlement or subsidence such as fissures, scarplets, and offset reference features were not observed on the study site or surrounding areas.

Features indicating creep, slump, or slide masses in bedrock and surficial deposits were not observed on the property.

## 6.9 Groundwater and Drainage of Surface Water

The overall topography of the site slopes down to the south and east. Groundwater was encountered in one of the test borings at 17 feet at the time of drilling. Indications of redox was not observed in the two 8-foot deep test pits. Redox (redoximorphic) refers to the features indicating the fluctuation of groundwater.

It should be noted that in granular soils, some subsurface water conditions might be encountered due to the variability of the soil profile. Isolated sand and gravel layers within the soil, even those of limited thickness and width, can convey subsurface water. Subsurface water may also flow atop the interface between the upper soils and the underlying bedrock. While not indicative of a "groundwater" condition, these occurrences of subsurface water migration can (especially in times of heavy rainfall or snowmelt) result in water migration into the excavation or (once construction is complete) the building envelope. Builders and planners should be cognizant of the potential for the occurrence of subsurface water conditions during on-site construction, and be prepared to evaluate and mitigate each individual occurrence as necessary.

Fluctuations in groundwater and subsurface moisture conditions may occur due to variations in rainfall and other factors not readily apparent at this time. Development of the property and adjacent properties may also affect groundwater levels.

## 6.10 Flooding and Surface Drainage

Based on our review of the Federal Emergency Management Agency (FEMA) Community Panel No. 08041C0590G and the online ArcGIS El Paso County Risk Map, the entire site lies outside of a 100-year floodplain.

Zone X is defined by FEMA as an area of minimal flood hazard that is determined to be outside the Special Flood Hazard Area and higher than the elevation of the 0.2-percent-annual-chance (or 500-year) flood. The entire site lies within Zone X. The FEMA Map is presented in Figure 11.

## 7.0 ECONOMIC MINERAL RESOURCES

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Under the provision of House Bill 1529, it was made a policy by the State of Colorado to preserve for extraction commercial mineral resources located in a populous county. Review of the *El Paso Aggregate Resource Evaluation Map, Master Plan for Mineral Extraction, Map 2* indicates the site is identified as Upland Deposits. The deposits are composed of sand, gravel with silt and clay. These deposits are remnants of older streams deposited on topographic highs or bench like features. The tract is underlain primarily by the Dawson Arkose, a sedimentary formation of Tertiary age related to uplift and erosion of the Front Range.

According to the *Evaluation of Mineral and Mineral Fuel Potential of El Paso County State Mineral Lands*, the site is mapped within the Denver Basin Coal Region. However, the area of the site has been mapped "Poor" for coal resources. In this part of the Denver coal region, coal resources are locally present within the lower part of the Laramie Formation of Upper Cretaceous age. The area contains strata that may contain coal. This area is not prospective for metallic mineral resources. No oil and gas wells are drilled in the area, or within two miles of it. Alluvial deposits are commonly mined in the region for sand and gravel. There is an active gravel pit approximately one mile to the south of the site and several within a five-mile radius of it.

## 8.0 IDENTIFICATION AND MITIGATION OF POTENTIAL GEOLOGIC CONDITIONS

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The El Paso County Engineering Criteria Manual recognizes and delineates the difference between geologic hazards and constraints. A *geologic hazard* is one of several types of adverse geologic conditions capable of causing significant damage or loss of property and life. Geologic hazards are defined in Section C.2.2 Sub-section E.1 of the ECM. A *geologic constraint* is one of several types of adverse geologic conditions capable of limiting or restricting construction on a particular site. Geologic constraints are defined in Section C.2.2 Sub-section E.2 of the ECM (1.15 Definitions of Specific Terms and Phrases). The following geologic hazards and constraints were considered in the preparation of this report and are not anticipated to pose a significant risk to the proposed development:

- Avalanches
- Debris Flow-Fans/Mudslides
- Ground Subsidence and Abandoned Mining Activity
- Landslides
- Rockfall
- Steeply Dipping Bedrock
- History of Landfill
- Valley Fill
- Downhill/Down-slope Creep
- Scour, Erosion, Accelerated Erosion Along Creek Banks and Drainageways
- Corrosive Minerals

The following sections present the geologic conditions that have been identified on (or anticipated to be on) the property:

### 8.1 Compressible Soils - constraint

Based on the test borings performed for this investigation, the sand with varying amounts of silt and clay underlies the entire site. It is anticipated that the on-site sand soils will be encountered within each building excavation. In some cases, the sands encountered in the excavations may be loose.

#### Mitigation

If loose soils are encountered beneath the proposed foundations, mitigation will be required. Mitigations are anticipated to consist of additional compaction to achieve suitable allowable bearing pressures. Fluctuations in material density may occur. In some cases, removal and recompaction of up to 2 to 3 feet of soil may be required. The removal and recompaction shall extend a minimum of the same distance beyond the building perimeter, and at least that same distance beyond the perimeter of counterfort and "T" wall footings. The use of track-mounted excavation equipment, or other low ground pressure equipment, is recommended on loose soils to reduce the likelihood of loss of stability during excavation.

The potential for settlement is directly related to saturation of the soils below the foundation areas. Therefore, good surface and subsurface drainage is critical in these areas in order to reduce the potential for saturation of the soils.

## **8.2 Potentially Expansive Soils and Bedrock – constraint**

Based on our experience with the soils and bedrock in the vicinity the upper alluvial soils generally possess low swell potential. However, seams of sandy clay may be present even where non are indicated on the test boring logs. The sandy clay generally possess low to moderate swell potential. Expansive bedrock was not encountered in our 20-foot deep test borings. It is anticipated if lenses or seams of expansive soils are encountered at the time of the site-specific excavation observation, additional mitigations will be required at the time of the Open Excavation Observation. These materials are readily mitigated with typical construction practices common to this region of El Paso County, Colorado.

### Mitigation

Sporadic areas of expansive soils are anticipated within the overlying alluvial soils and underlying Dawson Formation. If expansive soils or bedrock are encountered beneath the foundations, mitigation will be required. Overexcavation and replacement with non-expansive (on-site or imported) soils is a suitable mitigation. Floor slabs bearing directly on expansive material should be expected to experience movement. Overexcavation and replacement has also been successful in reducing slab movement. Overexcavation is not anticipated to be required but if clay seams are encountered in the excavation, overexcavation may be recommended.

Provided a site-specific subsurface soil investigation is completed for each new residence and the appropriate mitigations and/or foundation design adjustments are implemented, the presence of expansive soils or bedrock is not considered to pose a risk to the proposed structures.

## **8.3 Springs and Groundwater – constraint**

Based on the site observations, review of USGS topographic maps dating back to 1951, and review of Google Earth images dating back to 1999, springs do not appear to originate on the subject site. Groundwater was encountered at 17 feet in one of the test borings. Isolated areas of seasonal shallow groundwater may exist.

Drilling reportedly occurred in October 2023, when seasonal groundwater levels are generally anticipated to be lower. Groundwater measurements are limited to the time of year measured and are considered snapshots only.

Fluctuations in groundwater and subsurface moisture conditions may occur due to variations in rainfall and other factors not readily apparent at this time. Groundwater information obtained at the time of the preliminary investigations performed prior to any future land development may or may not be representative of the conditions present at the time of construction. Furthermore, the development processes (reshaping of the ground surface, installation of buried utilities, installation of an underdrain below the roadways, etc.) can significantly alter the depth and flow paths of the subsurface water. The construction of surrounding lots can also alter the amount and depth of subsurface groundwater below a given lot. The potential exists for high groundwater levels during high moisture periods and should structures encroach on these areas, the following mitigations should be followed.

### Mitigation

The proposed development is to be single-family residential structures. Construction is anticipated to consist of wood-framed structures atop a full or partial basement/crawlspace foundations. Based on the depth of the groundwater at the time of drilling, shallow foundations are anticipated to have a minimum 4 to 6 feet separation from the underlying seasonally fluctuating groundwater.

Foundations must have a minimum 30-inch depth for frost protection. Perimeter drains are recommended around portions of the structures which will have habitable or storage space located below the finished ground surface. Perimeter drains help reduce the risk of the intrusion of water into areas below grade.

#### **8.4 Uncontrolled/Undocumented Fill Placement- hazard**

Fill soils were not encountered in our test borings or test pits performed for this study or the wastewater study, included in Appendix C. However, fill soils may be encountered in isolated areas across the property. The fill soils (if encountered) must be considered undocumented fill, and as such are not suitable for development in its current condition for the following reasons. The degree of consolidation is unknown, material densities will vary, and pockets and seams of soft and loose material may be encountered. Uneven and differential settlement potential exists.

##### Mitigation

If fill soils are encountered below proposed foundation components, they will require removal (overexcavation) and replacement with newly placed and compacted structural fill. The zone of overexcavation shall extend to the bottom of the unsuitable fill zone and shall extend at least that same distance beyond the building perimeter (or lateral extent of the fill, if encountered first). Provided a site-specific subsurface soil investigation is completed for each new residence and the appropriate mitigations and/or foundation design adjustments are implemented, the presence of uncontrolled/undocumented fill is not considered to pose a risk to the proposed structures.

#### **8.5 Faults and Seismicity - hazard**

Based on review of the Earthquake and Late Cenozoic Fault and Fold Map Server provided by CGS located at <http://dnrwebmapgdev.state.co.us/CGSOnline/> and the recorded information dating back to November of 1900, Colorado Springs has not experienced a recorded earthquake with a magnitude greater than 1.6 during that period. The nearest recorded earthquakes over 1.6 occurred in December of 1995 in Manitou Springs, which experienced magnitudes ranging between 2.8 to 3.5. Additional earthquakes over 1.6 occurred between 1926 and 2001 in Woodland Park, which experienced magnitudes ranging from 2.7 to 3.3. Both of these locations are located near the Ute Pass Fault, which is greater than 10 miles from the subject site. Earthquakes felt at this site will most likely result from minor shifting of the granite mass within the Pikes Peak Batholith, which includes pull from minor movements along faults found in the Denver basin. It is our opinion that ground motions resulting from minor earthquakes may affect structures (and the surrounding area) at this site if minor shifting were to occur.

##### Mitigation

The Pikes Peak Regional Building Code, 2017 Edition, indicates maximum considered earthquake spectral response accelerations of 0.213g for a short period ( $S_s$ ) and 0.059g for a 1-second period ( $S_1$ ). Based on the results of our experience with similar subsurface conditions, we recommend the site be classified as Site Class B, with average shear wave velocities ranging from 2,500 to 5,000 feet per second for the materials in the upper 100 feet.

#### **8.6 Radon – constraint**

*"Radon Act 51 passed by Congress set the natural outdoor level of radon gas (0.4 pCi/L) as the target radon level for indoor radon levels".*

Northern El Paso County and the 80831 zip code in which the site is located, has an EPA assigned Radon Zone of 1. A radon Zone of 1 predicts an average indoor radon screening level greater than 0.4 pCi/L (picocuries per liter), which is above the recommended levels assigned by the EPA. *The EPA recommends corrective measures to reduce exposure to radon gas.*

All of the State of Colorado is considered EPA Zone 1 based on the information provided at [https://county-radon.info/CO/El\\_Paso.html](https://county-radon.info/CO/El_Paso.html). Elevated hazardous levels of radon from naturally occurring sources are not anticipated at this site.

### Mitigation

Radon hazards are best mitigated at the building design and construction phases. Providing increased ventilation of basements, crawlspaces, creating slightly positive pressures within structures, and sealing of joints and cracks in the foundations and below-grade walls can help mitigate radon hazards. Passive radon mitigation systems are also available.

Passive and active mitigation procedures are commonly employed in this region to effectively reduce the buildup of radon gas. Measures that can be taken after the residence is enclosed during construction include installing a blower connected to the foundation drain and sealing the joints and cracks in concrete floors and foundation walls. If the occurrence of radon is a concern, it is recommended that the residence be tested after they are enclosed and commonly utilized techniques are in place to minimize the risk.

## 9.0 ON-SITE WASTEWATER TREATMENT SYSTEMS

It is our understanding that On-site Wastewater Treatment Systems (OWTS) are proposed for Lots 1-3. Lot 4 is to retain and potentially re-use the existing septic tank and treatment area. The site was evaluated in general accordance with the El Paso Land Development Code, specifically sections 8.4.8. Two 8-foot deep test pits were performed across the site to obtain a general understanding of the soil and bedrock conditions. The Test Boring/Test Pit Logs are presented in Figures 5 and 6.

The United States Department of Agriculture (USDA) soil types encountered in our test pits consisted of sandy clay loam and sand. Limiting layers were not encountered in the test pits. The long term acceptance rates (LTAR) associated with the soils observed in the test pits ranged from 0.60 to 1.0. Signs of seasonal groundwater were not observed in the test pits.

Contamination of surface and subsurface water resources should not occur provided the OWTS sites are evaluated and installed according to the El Paso County Board of Health Guidelines and property maintained.

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;
- 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). Based on the test pit observations, the parcel has a minimum of two locations for the OWTS.

It is our opinion that if the EPCDHE physical setback requirements are met for each lot, there are no restrictions on the placement of the individual On-site Wastewater Systems.

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. R0 soils were encountered in TP-1 at 6 feet, these soils are anticipated to be encountered across the entire site at various depths. An engineered OWTS should be anticipated where the type R0 soils are encountered.

Soil and groundwater conditions at the site are suitable for individual treatment systems. It should be noted that the LTAR values stated above are for the test pit locations performed for this report only.

## 10.0 BEARING OF GEOLOGIC CONDITIONS UPON PROPOSED DEVELOPMENT

---

Geologic hazards (as described in section 8 of this report) found to be present at this site include potentially faults and seismicity. Geologic conditions (as described in section 8 of this report) found to be present at this site include potentially expansive and compressible soils, seasonally fluctuating groundwater. It is our opinion that the existing geologic and engineering conditions can be satisfactorily mitigated through proper engineering, design, and construction practices.

## 11.0 CONCLUSIONS

---

Based upon our evaluation of the geologic conditions, it is our opinion any proposed future development is feasible. The geologic conditions identified are considered typical for the Front Range region of Colorado. Mitigation of geologic conditions is most effectively accomplished by avoidance. However, where avoidance is not a practical or acceptable alternative, geologic conditions should be mitigated by implementing appropriate planning, engineering, and suitable construction practices.

In addition to the previously identified mitigation alternatives, surface and subsurface drainage systems should be considered for any future structures. Exterior, perimeter foundation drains should be installed around below-grade habitable or storage spaces. Surface water should be efficiently removed from the building area to prevent ponding and infiltration into the subsurface soil.

We believe the sand with varying amounts of silt and clay will classify as Type B material as defined by OSHA. OSHA requires that temporary excavations made in Type B materials be laid back at ratios no steeper than 1:1 (horizontal to vertical), unless the excavation is shored and braced. Excavations deeper than 20 feet, or when water is present, should always be braced or the slope designed by a professional engineer.

Long term cut slopes in the upper soil should be limited to no steeper than 3:1 (horizontal to vertical). Flatter slopes will likely be necessary should groundwater conditions occur. It is recommended that long term fill slopes be no steeper than 3:1 (horizontal to vertical).

Revisions and modifications to the conclusions and recommendations presented in this report may be issued subsequently by RMG based upon additional observations made during grading and construction, which may indicate conditions that require re-evaluation of some of the criteria presented in this report.

It is important for the Owner(s) of each lot read and understand this report, and to carefully familiarize themselves with the geologic hazards associated with construction in this area. This report only addresses the geologic constraints contained within the boundaries of the site referenced above.

## 12.0 CLOSING

---

This report has been prepared for the exclusive purpose of providing preliminary geologic and geotechnical engineering information and recommendations for development as described in this report. RMG should be retained to review the final construction documents prior to construction to verify our findings, conclusions and recommendations have been appropriately implemented.

This report has been prepared for the exclusive use by **Robert Williams** for application as an aid in the design and construction of the proposed development in accordance with generally accepted geotechnical engineering practices. The analyses and recommendations in this report are based in part upon data obtained from test borings, site observations and the information presented in referenced reports. The nature and extent of variations may not become evident until construction. If variations then become evident, RMG should be retained to review the recommendations presented in this report considering the varied condition, and either verify or modify them in writing.

Our professional services were performed using that degree of care and skill ordinarily exercised, under similar circumstances, by professionals practicing in this or similar localities. RMG does not warrant the work of regulatory agencies or other third parties supplying information which may have been used during the preparation of this report. No warranty, express or implied is made by the preparation of this report. Third parties reviewing this report should draw their own conclusions regarding site conditions and specific construction techniques to be used on this project.

The scope of services for this project does not include, either specifically or by implication, environmental assessment of the site or identification of contaminated or hazardous materials or conditions. Development of recommendations for the mitigation of environmentally related conditions, including but not limited to biological or toxicological issues, are beyond the scope of this report. If the Client desires investigation into the potential for such contamination or conditions, other studies should be undertaken.



## FIGURES



NOT TO SCALE

Architecture  
Structural  
Geotechnical



**Engineers / Architects**

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COLORADO SPRINGS, CO 80919

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SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

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Forensics  
Civil / Planning

## SITE VICINITY MAP

MARY JANE RANCH  
SE CORNER OF FALCON HWY  
AND JD JOHNSON RD  
EL PASO COUNTY, COLORADO  
ROBERT WILLIAMS

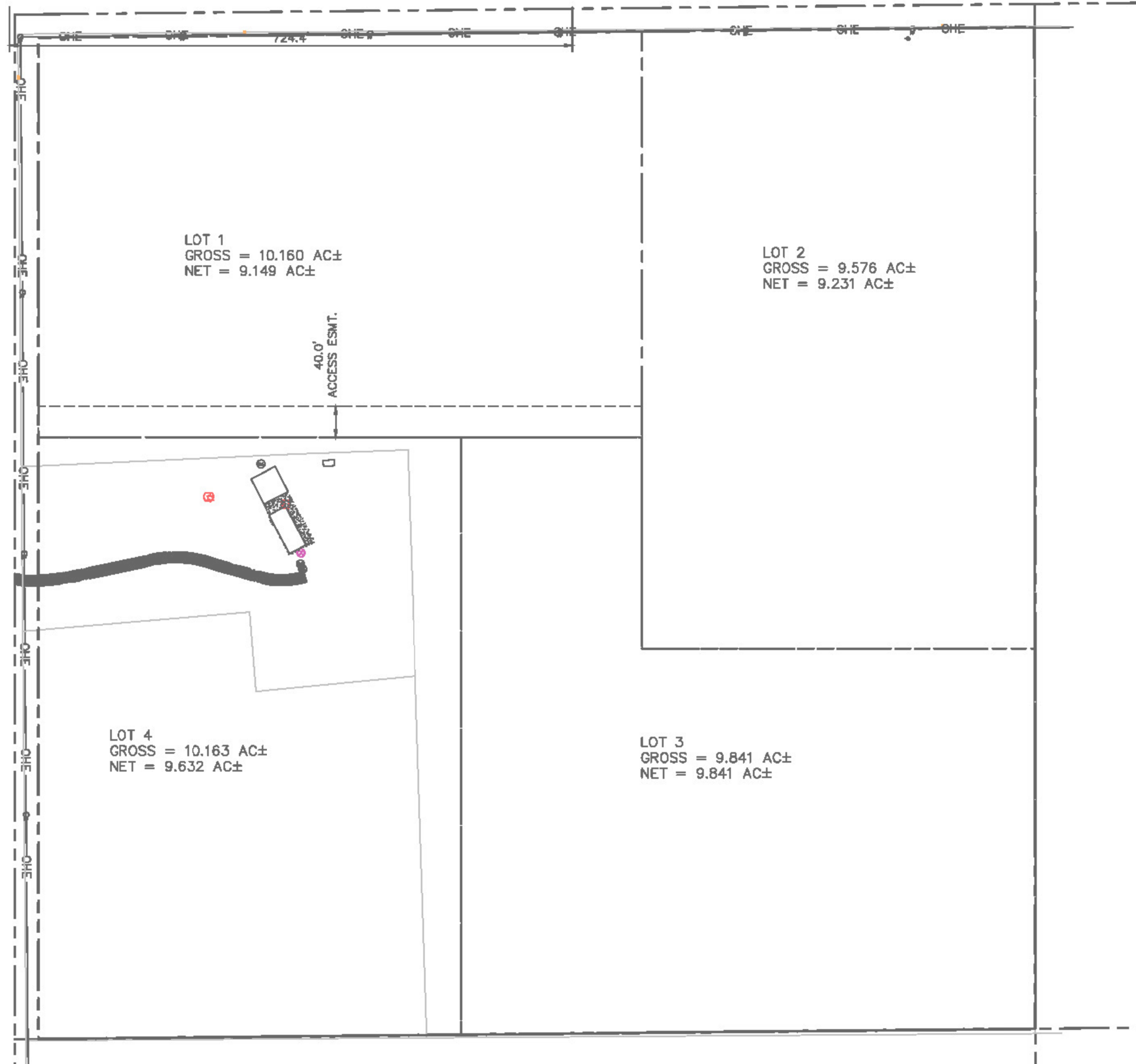
JOB No. 189461

FIG No. 1

DATE 1-3-2024

FALCON HIGHWAY

JD JOHNSON RD



LOT 1  
 GROSS = 10.160 AC±  
 NET = 9.149 AC±

LOT 2  
 GROSS = 9.576 AC±  
 NET = 9.231 AC±

LOT 4  
 GROSS = 10.163 AC±  
 NET = 9.632 AC±

LOT 3  
 GROSS = 9.841 AC±  
 NET = 9.841 AC±

40.0'  
 ACCESS ESMT.

724.4

Base map provided by Kimley Horn

JOB No. 189461

Materials Testing  
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MARY JANE RANCH  
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 AND JD JOHNSON RD

EL PASO COUNTY, COLORADO  
 ROBERT WILLIAMS

ENGINEER:	TFM
DRAWN BY:	KTZ
CHECKED BY:	TFM
ISSUED:	1-3-2024

PROPOSED LOT  
 LAYOUT

SHEET No.

FIG-2



DENOTES APPROXIMATE  
LOCATION OF TEST BORINGS



DENOTES APPROXIMATE  
LOCATION OF TEST PITS

NOT TO SCALE

Architecture  
Structural  
Geotechnical



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## TEST BORING/TEST PIT LOCATION PLAN

MARY JANE RANCH  
SE CORNER OF FALCON HWY  
AND JD JOHNSON RD  
EL PASO COUNTY, COLORADO  
ROBERT WILLIAMS

JOB No. 189461

FIG No. 3

DATE 1-3-2024

# SOILS DESCRIPTION



SILTY SAND



SILTY TO CLAYEY SAND

UNLESS NOTED OTHERWISE, ALL LABORATORY TESTS PRESENTED HEREIN WERE PERFORMED BY:  
 RMG - ROCKY MOUNTAIN GROUP  
 2910 AUSTIN BLUFFS PARKWAY  
 COLORADO SPRINGS, COLORADO

## SYMBOLS AND NOTES



XX

STANDARD PENETRATION TEST - MADE BY DRIVING A SPLIT-BARREL SAMPLER INTO THE SOIL BY DROPPING A 140 LB. HAMMER 30", IN GENERAL ACCORDANCE WITH ASTM D-1586. NUMBER INDICATES NUMBER OF HAMMER BLOWS PER FOOT (UNLESS OTHERWISE INDICATED).



XX

UNDISTURBED CALIFORNIA SAMPLE - MADE BY DRIVING A RING-LINED SAMPLER INTO THE SOIL BY DROPPING A 140 LB. HAMMER 30", IN GENERAL ACCORDANCE WITH ASTM D-3550. NUMBER INDICATES NUMBER OF HAMMER BLOWS PER FOOT (UNLESS OTHERWISE INDICATED).



FREE WATER TABLE



DEPTH AT WHICH BORING CAVED



BULK DISTURBED BULK SAMPLE



AUG AUGER "CUTTINGS"

4.5

WATER CONTENT (%)

ROCKY MOUNTAIN GROUP

Architectural  
Structural  
Forensics



Engineers / Architects

Colorado Springs: (Corporate Office)  
2910 Austin Bluffs Parkway  
Colorado Springs, CO 80918  
(719) 548-0600

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Geotechnical  
Materials Testing  
Civil, Planning

## EXPLANATION OF TEST BORING LOGS

JOB No. 189461

FIGURE No. 4

DATE Jan/03/2024

TEST BORING: 1  DATE DRILLED: 10/24/23 GROUNDWATER @ 17.0' 10/24/23	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	TEST BORING: 2  DATE DRILLED: 10/24/23 NO GROUNDWATER ON 10/24/23	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, tan, medium dense, moist	5			14	4.2	SAND, SILTY, TAN, loose, moist	5			5	3.5
SAND, SILTY TO CLAYEY, tan, medium dense to dense, moist to wet	10			15	10.3	SAND, SILTY TO CLAYEY, tan, medium dense, moist	10			8	6.3
	15			44	9.4		15			10	14.5
	20			12	39.2		20			24	17.5

ROCKY MOUNTAIN GROUP

Architectural  
Structural  
Forensics



Engineers / Architects




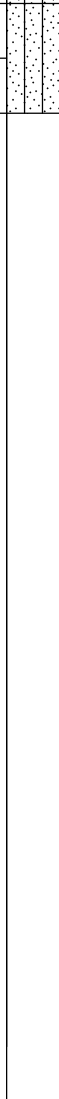
Geotechnical  
Materials Testing  
Civil, Planning

## TEST BORING/ TEST PIT LOG

JOB No. 189461

FIGURE No. 5

DATE Jan/03/2024

TEST BORING: TP-1  DATE DRILLED: 10/26/24 NO GROUNDWATER ON 10/26/23	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	TEST BORING: TP-2  DATE DRILLED: 10/26/24 NO GROUNDWATER ON 10/26/23	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SANDY, CLAY LOAM STRUCTURE-GRADE: GRANULAR STRUCTURE-SHAPE: STRONG SOIL TYPE: 3  SAND STRUCTURE-GRADE: SINGLE-GRAIN STRUCTURE-SHAPE: STRUCTURELESS SOIL TYPE 1	5	 				SAND STRUCTURE-GRADE: SINGLE-GRAIN STRUCTURE-SHAPE: STRUCTURELESS SOIL TYPE 1	5				
SAND STRUCTURE-GRADE: SINGLE-GRAIN STRUCTURE-SHAPE: STRUCTURELESS >35% PASSING 2MM SOIL TYPE R-0											

ROCKY MOUNTAIN GROUP

Architectural  
Structural  
Forensics



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## TEST BORING/ TEST PIT LOG

JOB No. 189461

FIGURE No. 6

DATE Jan/03/2024

Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	Load at Saturation (psf)	% Swell/ Collapse	USCS Classification
1	4.0	4.2								
1	9.0	10.3		NP	NP	1.0	44.2			SM
1	14.0	9.4	102.5	29	13	1.3	37.9	1,000	- 3.6	SC
1	19.0	39.2								
2	4.0	3.5		NP	NP	0.0	10.3			SP-SM
2	9.0	6.3								
2	14.0	14.5								
2	19.0	17.5				0.0	41.3			

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**Engineers / Architects**

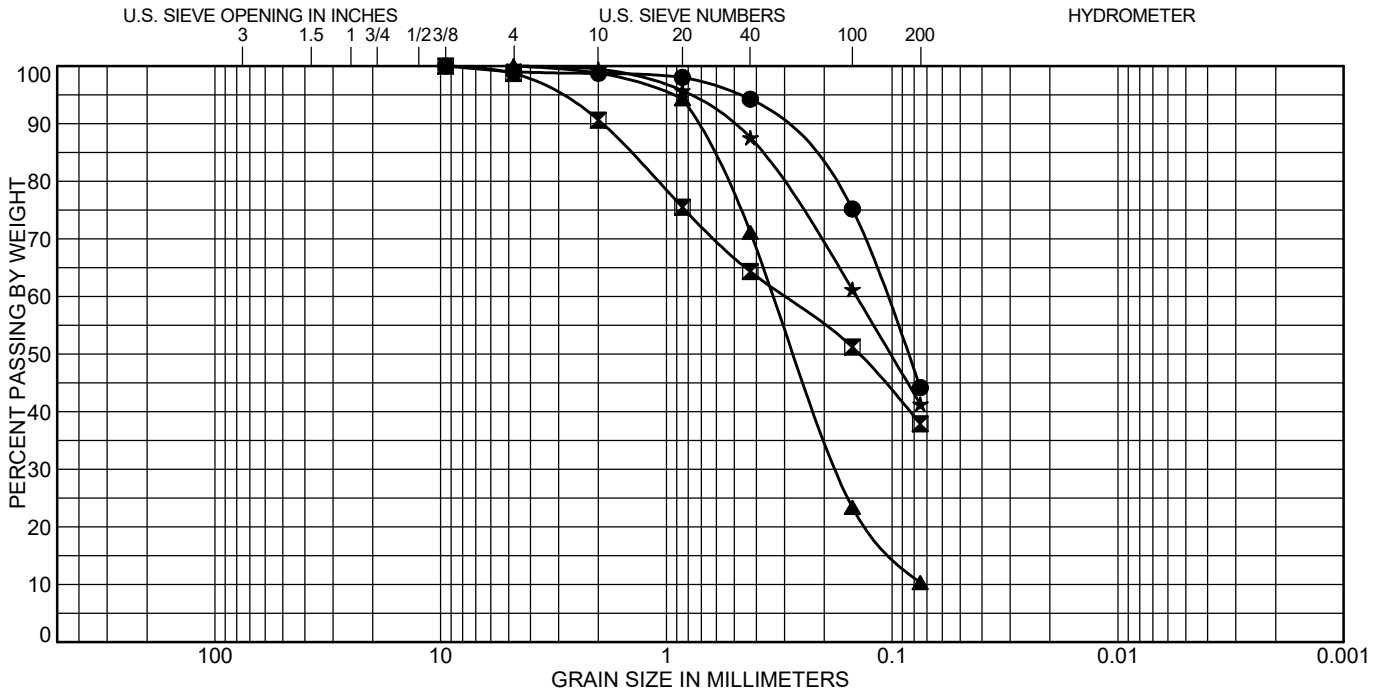
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## SUMMARY OF LABORATORY TEST RESULTS

JOB No. 189461  
 FIGURE No. 7  
 PAGE 1 OF 1  
 DATE Jan/03/2024





COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification	LL	PL	PI
● 1	9.0	SILTY SAND(SM)	NP	NP	NP
☒ 1	14.0	CLAYEY SAND(SC)	29	16	13
▲ 2	4.0	POORLY GRADED SAND with SILT(SP-SM)	NP	NP	NP
★ 2	19.0				

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 1	9.0	1.0	54.8	44.2	
☒ 1	14.0	1.3	60.8	37.9	
▲ 2	4.0	0.0	89.7	10.3	
★ 2	19.0	0.0	58.7	41.3	

ROCKY MOUNTAIN GROUP



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# SOIL CLASSIFICATION DATA

JOB No. 189461

FIGURE No. 8

DATE Jan/03/2024



- 8 - Blakeland loamy sand with 1 to 9 percent slopes
- 19 - Columbine gravelly sandy loam, 0 to 3 percent slopes
- 96 - Truckton loamy sand, 0 to 3 percent slopes



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## USDA SOIL SURVEY MAP

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ROBERT WILLIAMS

JOB No. 189461

FIG No. 9

DATE 1-3-2024



Geologic Conditions

*Ql: Louviers Alluvium (Paleocene to Eocene)* - light brown to tan, thin gravelly deposits on terraces, poorly sorted with low clay contents. Thickness is estimated to be approximately 70 feet above streams on the plains.

*Qp: Piney Creek Alluvium (Holocene)* - silty to gravelly hummus-rich alluvium along all valleys, poorly sorted with low clay contents. Estimated thickness was not noted on the geologic map.

*Af - Artificial Fill* - fill associated with the existing residence, garage, and septic.

*sw - seasonally wet* - area to contain surface water during heavy precipitation events

Engineering Conditions

*2D* - Eolian deposits generally on flat to gentle slopes of upland areas.



MARY JANE RANCH  
SE CORNER OF FALCON HWY  
AND JD JOHNSON RD

EL PASO COUNTY, COLORADO  
ROBERT WILLIAMS

ENGINEER:	TFM
DRAWN BY:	KMZ
CHECKED BY:	TFM
ISSUED:	1-3-2024

ENGINEERING AND  
GEOLOGY MAP

SHEET No.  
**FIG-10**



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Structural  
Geotechnical



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## FEMA MAP

MARY JANE RANCH  
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AND JD JOHNSON RD  
EL PASO COUNTY, COLORADO  
ROBERT WILLIAMS

JOB No. 189461

FIG No. 11

DATE 1-3-2024

# APPENDIX A

## Additional Reference Documents

1. *Proposed Lot Layout Map, Zindorf McDaniels Site, 22755 McDaniels Road, Ellicott, Colorado*, prepared by William Guman & Associates, last dated February 12, 2018.
2. *Flood Insurance Rate Map, El Paso County, Colorado and Unincorporated Areas, Community Panel No. 08041C0590G*, Federal Emergency Management Agency (FEMA), effective December 7, 2018.
3. *Geologic Map of Colorado, Ogden, 1979, U.S. Geological Survey*
4. *Generalized Surficial Geologic Map of the Pueblo 1 degree X 2 degree Quadrangle, Colorado. U.S. Geological Survey, Map MF-2388, 2002.*
5. *Geologic Map of the Pueblo 1 Degree X 2 Degrees Quadrangle, South-Central Colorado, U.S. Geological Survey.* Compiled by Scott, Taylor, Epis and Wobus, 1976.
6. *Notes on the Denver Basin Geologic Maps: Bedrock Geology, Structure, and Isopach Maps of the Upper Cretaceous to Paleogene Strata between Greeley and Colorado Springs, Colorado, Colorado Geological Survey.* Compiled by Dechesne, Raynolds, Barkmann and Johnson, 2011.
7. *Environmental and Engineering Geologic Map for Land Use*, compiled by Dale M. Cochran, Charles S. Robinson & Associates, Inc., Golden, Colorado, 1977.
8. *Pikes Peak Regional Building Department*: <https://www.pprbd.org/>.
9. El Paso County Assessor Website  
<https://property.spatalest.com/co/elpaso/#/property/3315000001>
10. *Colorado Geological Survey, USGS Geologic Map Viewer*:  
<http://coloradogeologicalsurvey.org/geologic-mapping/6347-2/>.
11. *Historical Aerials*: <https://www.historicaerials.com/viewer>, Images dated 1952, 1955, 1983, 1984, 1985, 1999, 2005, 2009, 2011, 2013, 2015, 2017, 2019, and 2021.
12. *USGS Historical Topographic Map Explorer*: <http://historicalmaps.arcgis.com/usgs/> El Paso County, Ellicott Quadrangle, 2019.
13. *Google Earth Pro*, Imagery dated 1999, 2004, 2005, 2006, 2011, 2015, 2017, 2019 and 2022.
14. Kirkham, R.M., and Ladwig, L.R., 1979, Coal resources of the Denver and Cheyenne basins, Colorado: Colorado Geological Survey Resource Series 5, 70 p., 5 plates
15. Scott, Glenn R., Taylor, R.B., Epis, R.C., and Wobus, R.A., 1978, Geologic map of the Pueblo 1 x 2 quadrangle, south-central Colorado: U.S. Geological Survey Miscellaneous Investigation Series, Map I-1022, scale 1:250,000.
16. *Evaluation of Mineral and Mineral Fuel Potential of El Paso County State Mineral Lands*
17. *El Paso Aggregate Resource Evaluation Map, Master Plan for Mineral Extraction, Map 1*
18. Generalized surficial geologic map of the Pueblo 1 degree X 2 degree quadrangle, Colorado. Moore, D.W., Straub, A.W., Berry, M.E., Baker, M.L., and Brandt, T.R

## APPENDIX B

Individual Sewage Disposal System Permit, El Paso County Department of Health  
and Environment



Prevent • Promote • Protect

Environmental Health Division

1675 W. Garden of the Gods Rd., Suite 2044  
Colorado Springs, CO 80907  
(719) 578-3199 phone  
(719) 575-8664 fax  
www.elpasocountyhealth.org

ON-SITE WASTEWATER TREATMENT SYSTEM INSPECTION FORM

ON-SITE ID: ON0031195

APN # 3315000001

DATE: 07/15/2015

APPROVED YES  NO

Environmental Health Specialist: Janet Christensen

Address: 6425 JD Johnson Rd. Owner: Melinda Murr

Residence:  #Bedrooms: 3 Commercial:  System Installer: Kunau Drilling

SEPTIC TANK: Construction Material Concrete

Capacity Gallon 1500

SOIL TREATMENT AREA:

Trench: Depth (Range):      Width:      Total Length:      Sq. Ft.:     

Bed: Depth (Range):      Width:      Total Length:      Sq. Ft.:     

Depth of Rock:      Under PVC:      Type of cover on Rock:     

SEEPAGE PITS: # of Pits:      Working Depth #1:      #2:      Size (L x W) #1      #2      Total Sq. Ft.     

CHAMBER SYSTEMS:

Type of Chamber:      #Chambers:      Sq. Ft./Chamber:      Bed:  Trench:  Depth (Range):     

Sq. Ft. Required (10-1):      Sq. Ft. Required (10-2):      Sq. Ft. Required (10-3):      Sq. Ft. Required for Diverter Valve: (10-2)/(2)

Sq. Ft. Installed:     

Engineer Design: Y  N  Engineering Firm: N/A Approval Letter Provided: Y  N

Well installed at time of OWTS inspection: Y  N  Public Water: Y  N

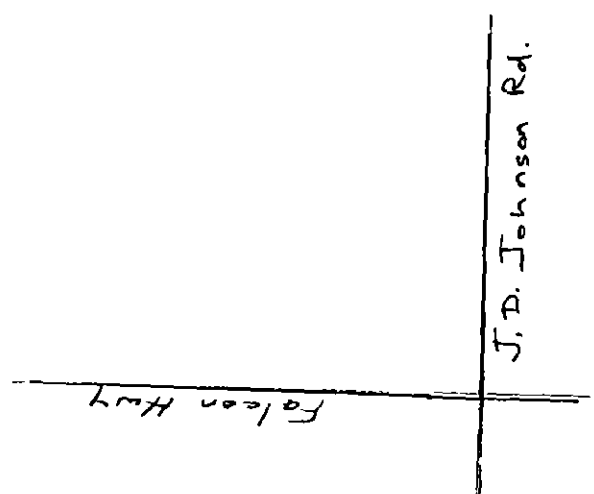
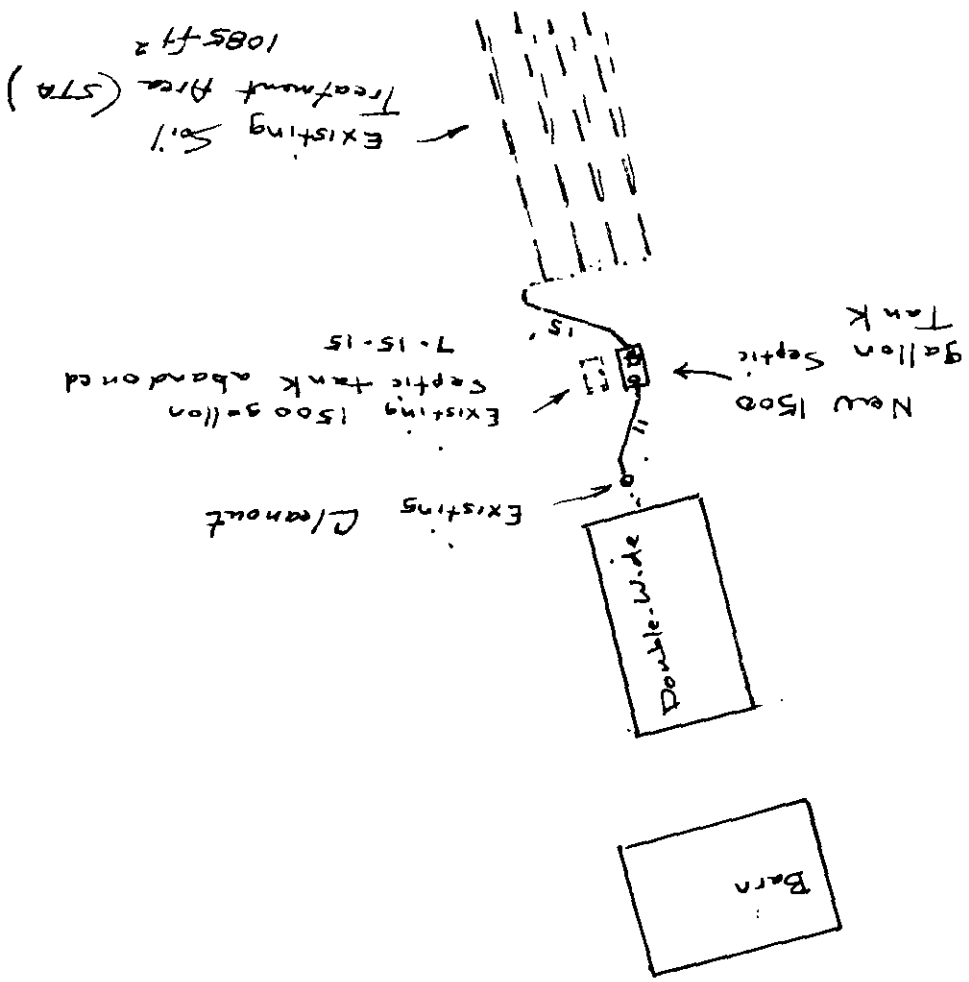
\*Approval will be revoked if in the future the well is found to be within 50 feet of the septic tank and/or 100 feet of the soil treatment area.

Notes:

The existing septic tank installed 10/05/00 has been abandoned.

New 1500 gallon septic tank with risers and effluent filter in outlet installed 7/15/15.

Could not locate a wellhead on the property. The residence was vacated at time of inspection.



N ↓

6425 JD Johnson Rd.  
 0N0031195  
 APN# 331500001  
 07/15/15



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.

Attn: MELINDA MURR  
6425 JD JOHNSON RD  
PEYTON, CO 80831-7301



**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

## MINOR REPAIR PERMIT - OWTS

Valid From 7/10/2015 To 7/10/2016

PERMITEE : **MELINDA MURR**  
**6425 JD JOHNSON RD**  
**PEYTON, CO 80831-7301**

OWNER NAME : **MELINDA MURR**

Onsite ID: ON0031185  
Tax Schedule #: 3315000001  
Permit Issue Date: 07/10/2015  
Dwelling Type: RESIDENTIAL  
# of Bedrooms (if Res): 3  
Proposed Use (if Comm):  
Designed Gallons/Day:  
Water Source: PRIVATE WELL

### System Installation Requirements:

- New permitted system shall be installed per El Paso County Board of Health Regulation Chapter 8 - OWTS - Effective April 10, 2014

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. The Onsite Wastewater Treatment System must be installed by an El Paso County Licensed System Contractor, or the property owner.

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).

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

Authorized By: Environmental Health Specialist

El Paso County, CO

# Public Health

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Environmental Health Division

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Colorado Springs, CO 80907  
(719) 578-3199 phone  
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SB0003156 AB0007140

## APPLICATION FOR AN ON-SITE WASTEWATER TREATMENT SYSTEM PERMIT

NEW PERMIT     MAJOR REPAIR PERMIT     MINOR REPAIR PERMIT

Owner Melinda Murr Daytime Phone \_\_\_\_\_

System Installer Kenan Drilling Daytime Phone 683-3720

Property Address 6425 JD Johnson Rd City and Zip Canon 80808

Legal Description NW4 NW4 15-13-63

Owners Mailing Address 2306 Warwick Ln Colorado Springs, CO 80909

Email Address mmurr76@gmail.com Fax # 683-3717

Tax Schedule # 3315000010 Lot Size 40

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

Pick up:  Fax:  Email: mmurr76@gmail.com  
kenadrilling@aol.com

### CURRENT FEES AS APPROVED BY THE EI PASO COUNTY BOARD OF HEALTH

**New Permit:** \$650.00 (EPCPH Charge) + \$147.00 (EPC Planning Dept. Surcharge) + \$23.00 (CDPHE Surcharge) = \$820.00

**Major Repair Permit:** \$515.00 (EPCPH Charge) + \$23.00 (CDPHE Surcharge) = \$538.00

**Minor Repair Permit:** \$230.00 (EPCPH Charge) + \$23.00 (CDPHE Surcharge) = \$253.00

- All Payments are due at the time of application submittal; 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 Onsite 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: Melinda Murr Date: 7/3/15

Site Insp. Date: \_\_\_\_\_ Perc. Rate: \_\_\_\_\_ Permit # 0100031195

E.H.S. Review Notes: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Date to: E.P.C. Development Services \_\_\_\_\_ Flood Plain and Enumerations \_\_\_\_\_

Permit Requirements: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Min. Septic Tank Capacity \_\_\_\_\_

Min. Absorption Area \_\_\_\_\_

E.H. Specialist \_\_\_\_\_ Date \_\_\_\_\_  Approved  Denied

**APPENDIX C**  
Wastewater Study

Job No. 189461

January 3, 2023

Robert Williams  
16975 Falcon Highway  
Peyton, CO 80831

Re: Wastewater Study  
Mary Jane Ranch  
SE Corner of Falcon Hwy & JD Johnson Rd  
El Paso County, Colorado

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 parcel included in this study is:

- Schedule No. 3315000001, addressed 6425 JD Johnson Road, zoned A35, consists of approximately 40 acres of partially developed land.

A gravel driveway extends east from JD Johnson road to an existing garage that is to remain onsite. The garage is located near the center of the western portion of the site. A modular home was previously located near the garage, but has reportedly been removed from the site. The septic tanks, treatment field, and well are to remain and potentially be re-used for a new residence.

It is our understanding the 40 acres is to be subdivided into 4 lots per the plan provided by Kimley Horn. The lots are to be accessed from JD Johnson Road by means of an access easement. The lots are to range between 9.149 and 9.841 acres. The existing garage is to remain on Lot 4. Lots 1 – 3 are each to contain a new single-family residence with a well and On-site Wastewater Treatment System (OWTS). Lot 4 is also to contain a new single-family residence, but is to retain and re-use the existing treatment area. The approximate location of the site is shown on the Site Vicinity Map, Figure 1.

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

A geologic investigation was completed in conjunction with this evaluation and is listed below:

1. *Soil and Geology Study, Mary Jane Ranch, SE corner of Falcon Hwy & JD Johnson Rd, El Paso County, Colorado*, RMG - Rocky Mountain Group, Job No. 189461, dated January 3, 2024.

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

## SITE CONDITIONS

Personnel of RMG performed a reconnaissance visit on October 26, 2023. The purpose of the reconnaissance visit was to evaluate the site surface characteristics including topography, vegetation, natural and cultural features, and current and historic land uses. Two 8-foot deep test pits were performed, during our reconnaissance visit. The Proposed Lot Layout is presented in Figure 2.

The site surface characteristics were observed to consist of low lying grasses and weeds across the entire site. Few deciduous trees are located around the existing garage; the remainder of the property is devoid of trees.

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

- A well currently **does** exist on the existing 40-acre site;
- No runoff or irrigation features anticipated to cause deleterious effects to treatment systems on the site were observed;
- No major waterways exist on the property. The entire site lies outside the designated floodway or floodplain;
- Slopes greater than 20 percent **do not** 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;

- 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). Based on the test pit observations, the parcel has a minimum of two locations for the 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 the proposed lots. Our review included a review of documented Natural Resource Conservation Service (NRCS) data provided by [websoilsurvey.nrcs.usda.gov](http://websoilsurvey.nrcs.usda.gov). The Soil Survey Descriptions are presented below. A review of FEMA Map No. 08041C0590G, 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 October 26, 2023 (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 Boring/Test Pit Location Plan is presented in Figure 3. The Test Boring/Test Pit Logs are presented in Figures 4 and 5. A Septic Suitability Map is presented in Figure 6.

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

- 8 - Blakeland loamy sand with 1 to 9 percent slopes. The Blakeland loamy sand was mapped by the USDA to encompass the majority of the eastern portion of the property. Properties of the loamy sand include somewhat excessively 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/or ponding is none, and landforms include hills and flats.
- 96 – Truckton loamy sand, 0 to 3 percent slopes. The Truckton loamy sand was mapped within west of Blakeland loamy sand and encompasses half of the western portion of the property. The properties of the Truckton loamy sand include well drained soils, depth of the water table is anticipated to be greater than 6.5 feet, runoff is anticipated to low, frequency of flooding and ponding is none, and landforms include interfluves and fan remnants.
- 19 – Columbine gravelly sandy loam, 0 to 3 percent slopes. The Columbine gravelly sandy loam was mapped by the USDA to encompass the western quarter of the property. Properties of the sandy loam 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/or ponding is none, and landforms include fans, floodplain and fan terraces.

A USDA Soil Survey Map is presented in Figure 7.

Groundwater and bedrock were not encountered in the test pits performed by RMG.

*New OWTS's are proposed for Lots 1-3 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. There are no foreseeable or stated construction related issues or land use changes proposed at this time.

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. R0 soils were encountered in TP-1 at 6 feet. These soils are anticipated to be encountered across the entire site at various depths. An engineered OWTS should be anticipated where the type R0 soils are encountered.

Soil and groundwater conditions at the site are suitable for individual treatment systems. It should be noted that the soil types and LTAR values stated on the Test Boring/Test Pit Logs are for the test pit locations performed for this report only.

## **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 for each new lot.

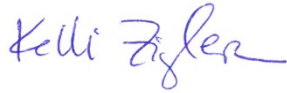
I hope this provides the information you have requested. Should you have questions, please feel free to contact our office.

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

5085 LIST DRIVE, SUITE 200,

COLORADO SPRINGS, CO 80919

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SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

Materials Testing  
Forensics  
Civil / Planning

## SITE VICINITY MAP

MARY JANE RANCH  
SE CORNER OF FALCON HWY  
AND JD JOHNSON RD  
EL PASO COUNTY, COLORADO  
ROBERT WILLIAMS

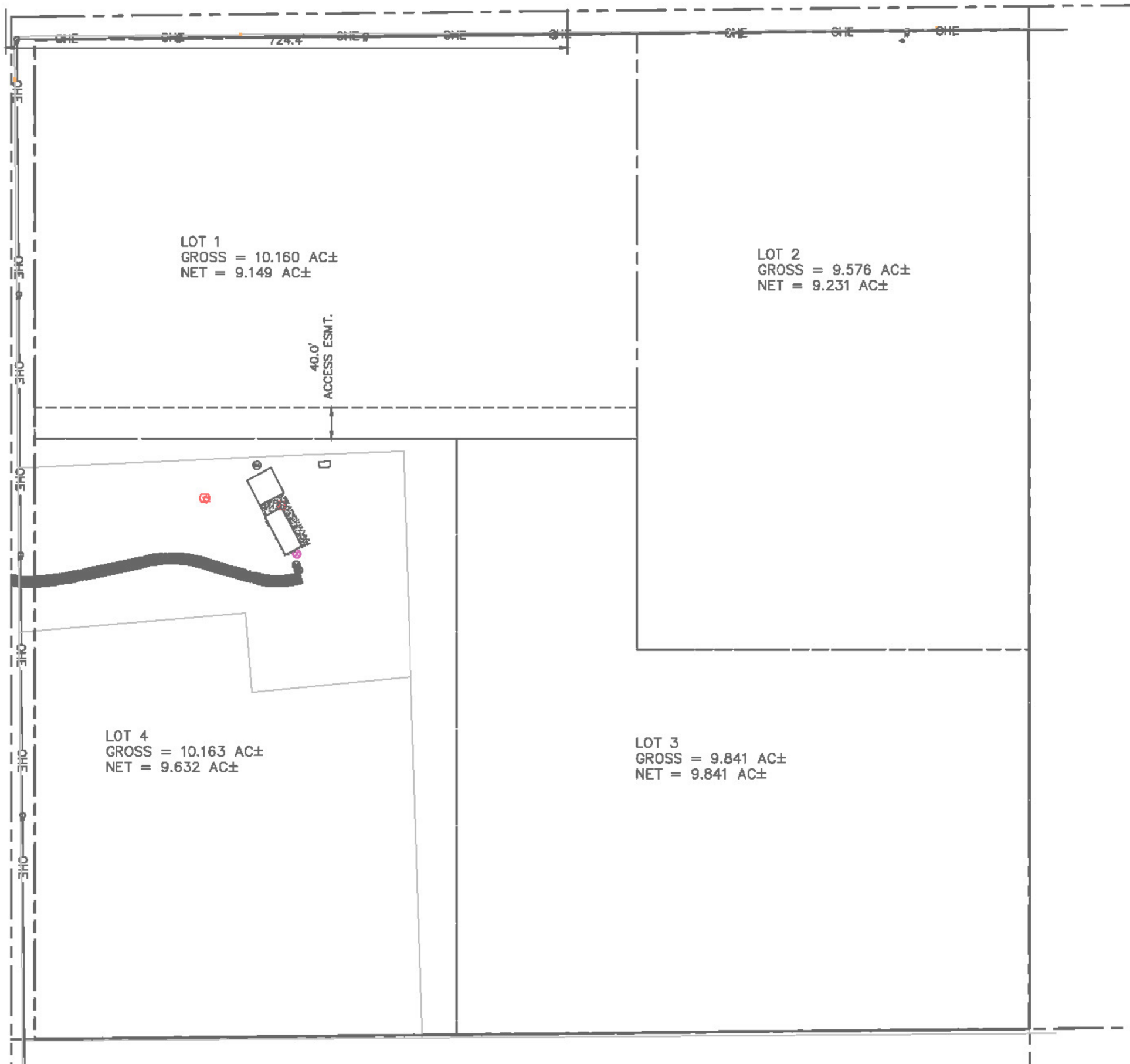
JOB No. 189461

FIG No. 1

DATE 1-3-2024

FALCON HIGHWAY

JD JOHNSON RD



LOT 1  
 GROSS = 10.160 AC±  
 NET = 9.149 AC±

LOT 2  
 GROSS = 9.576 AC±  
 NET = 9.231 AC±

LOT 4  
 GROSS = 10.163 AC±  
 NET = 9.632 AC±

LOT 3  
 GROSS = 9.841 AC±  
 NET = 9.841 AC±

40.0'  
 ACCESS ESMT.

724.4

Base map provided by Kimley Horn

JOB No. 189461

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MARY JANE RANCH  
 SE CORNER OF FALCON HWY  
 AND JD JOHNSON RD

EL PASO COUNTY, COLORADO  
 ROBERT WILLIAMS

ENGINEER:	TFM
DRAWN BY:	KTZ
CHECKED BY:	TFM
ISSUED:	1-3-2024

PROPOSED LOT  
 LAYOUT

SHEET No.  
**FIG-2**



DENOTES APPROXIMATE  
 LOCATION OF TEST BORINGS



DENOTES APPROXIMATE  
 LOCATION OF TEST PITS

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 Structural  
 Geotechnical



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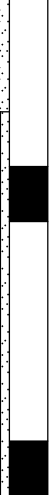


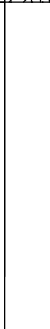

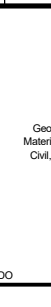
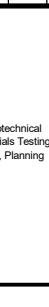


## TEST BORING/TEST PIT LOCATION PLAN

MARY JANE RANCH  
 SE CORNER OF FALCON HWY  
 AND JD JOHNSON RD  
 EL PASO COUNTY, COLORADO  
 ROBERT WILLIAMS

JOB No. 189461

FIG No. 3

DATE 1-3-2024

TEST BORING: 1  DATE DRILLED: 10/24/23 GROUNDWATER @ 17.0' 10/24/23	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	TEST BORING: 2  DATE DRILLED: 10/24/23 NO GROUNDWATER ON 10/24/23	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, tan, medium dense, moist	5			14	4.2	SAND, SILTY, TAN, loose, moist	5			5	3.5
SAND, SILTY TO CLAYEY, tan, medium dense to dense, moist to wet	10			15	10.3	SAND, SILTY TO CLAYEY, tan, medium dense, moist	10			8	6.3
	15			44	9.4		15			10	14.5
	20			12	39.2		20			24	17.5

ROCKY MOUNTAIN GROUP

Architectural  
Structural  
Forensics



Engineers / Architects



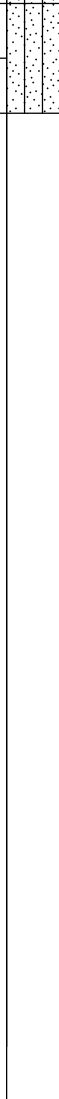
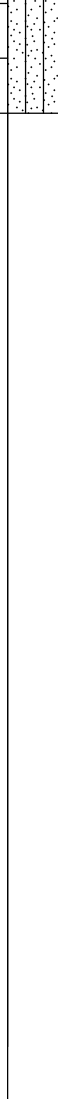
Geotechnical  
Materials Testing  
Civil, Planning

## TEST BORING/ TEST PIT LOG

JOB No. 189461

FIGURE No. 4

DATE Jan/03/2024

TEST BORING: TP-1  DATE DRILLED: 10/26/24 NO GROUNDWATER ON 10/26/23	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	TEST BORING: TP-2  DATE DRILLED: 10/26/24 NO GROUNDWATER ON 10/26/23	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SANDY, CLAY LOAM STRUCTURE-GRADE: GRANULAR STRUCTURE-SHAPE: STRONG SOIL TYPE: 3  SAND STRUCTURE-GRADE: SINGLE-GRAIN STRUCTURE-SHAPE: STRUCTURELESS SOIL TYPE 1	5					SAND STRUCTURE-GRADE: SINGLE-GRAIN STRUCTURE-SHAPE: STRUCTURELESS SOIL TYPE 1	5				
SAND STRUCTURE-GRADE: SINGLE-GRAIN STRUCTURE-SHAPE: STRUCTURELESS >35% PASSING 2MM SOIL TYPE R-0											

ROCKY MOUNTAIN GROUP

Architectural  
Structural  
Forensics



Engineers / Architects

Geotechnical  
Materials Testing  
Civil, Planning

## TEST BORING/ TEST PIT LOG

JOB No. 189461

FIGURE No. 5

DATE Jan/03/2024

Materials Testing  
Forensics  
Civil / Planning

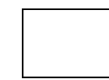


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Denotes random location of residence for visual presentation



Denotes random location of OWTs for visual presentation. Each lot has sufficient acreage for a primary and alternate OWTs locations



NOT TO SCALE

MARY JANE RANCH  
SE CORNER OF FALCON HWY  
AND JD JOHNSON RD

EL PASO COUNTY, COLORADO  
ROBERT WILLIAMS

ENGINEER:	TPM
DRAWN BY:	KMZ
CHECKED BY:	TPM
ISSUED:	1-3-2024

SEPTIC SUITABILITY  
MAP

SHEET No.

FIG-6



- 8 - Blakeland loamy sand with 1 to 9 percent slopes
- 19 - Columbine gravelly sandy loam, 0 to 3 percent slopes
- 96 - Truckton loamy sand, 0 to 3 percent slopes



NOT TO SCALE

## USDA SOIL SURVEY MAP

MARY JANE RANCH  
 SE CORNER OF FALCON HWY  
 AND JD JOHNSON RD  
 EL PASO COUNTY, COLORADO  
 ROBERT WILLIAMS

JOB No. 189461

FIG No. 7

DATE 1-3-2024

Architecture  
 Structural  
 Geotechnical



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