INFORMATIONAL COMMENT:
El Paso County Health will review this report. Comments are forthcoming.

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WASTEWATER STUDY
HODGEN ROAD 7-LOT SUBDIVISION
PARCEL NO. 61250-01-003
EL PASO COUNTY, COLORADO

Prepared for:
Matt and Bill Dunston
1320 Scarsbrook Court
Monument, Colorado 8013

March 20, 2025

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Logan L. Langford, P.G.
Sr. Geologist

Reviewed by:

COLORADO LICENSED JOSEPH COLLIN GOODE 23725 PROFESSIONAL ENGINEER

Digitally signed by Joseph C Goode Jr.
Date: 03/20/25

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

LLL

PCD No.

Entech Job No. 250183

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Table of Contents

1 SUMMARY..... 1

2 GENERAL SITE CONDITIONS AND PROJECT DESCRIPTION..... 1

3 SCOPE OF THE REPORT..... 2

4 FIELD INVESTIGATION..... 2

5 SOIL, GEOLOGY, AND ENGINEERING GEOLOGY..... 3

5.1 General Geology..... 3

5.2 Soil Conservation Survey..... 4

5.3 Site Stratigraphy..... 4

5.4 Soil Conditions..... 5

5.5 Groundwater..... 5

6 ON-SITE WASTEWATER TREATMENT..... 7

7 CLOSURE..... 8

8 REFERENCES.....10

FIGURES

Figure 1: Vicinity Map
Figure 2: USGS Map
Figure 3: Site and Exploration Plan
Figure 4: Soil Survey Map
Figure 5: Black Forest and Monument Quadrangles Geology Maps
Figure 6: Geology/Engineering Geology Map
Figure 7: Floodplain Map
Figure 8: USFWS Wetlands Map
Figure 9: OWTS Suitability

APPENDIX A: Site Photographs
APPENDIX B: Test Boring and Test Pit Logs
APPENDIX C: Laboratory Test Results
APPENDIX D: Soil Survey Descriptions

1 SUMMARY

Project Location

The project is located in the NE¼ of Section 25, Township 11 South, Range 66 West of the 6th Principal Meridian in El Paso County, Colorado. The site is located approximately 4 miles southwest of Monument, Colorado.

Project Description

A seven lot rural residential subdivision is proposed for the existing 19.5-acre parcel. The proposed site development will include single-family rural residential lots ranging in size from 2.5 to 4.8 acres with the existing residence located on Lot 5 to remain. The proposed new lots will utilize individual water wells and onsite wastewater treatment systems (OWTS).

Scope of Report

This report presents the results of our geologic evaluation and treatment of engineering geologic hazard study with respect to OWTS proposed for the subdivision.

Land Use and Engineering Geology

This site was found to be suitable for the proposed development; however, geologic conditions in certain areas will impose some constraints on development and land use. These include areas of artificial fill, potentially expansive soils, seasonally shallow groundwater areas, and areas of ponded water. Based on the proposed development plan, it appears that these areas will have some impact on the development. These conditions are discussed in greater detail in this report.

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

2 GENERAL SITE CONDITIONS AND PROJECT DESCRIPTION

The project is located in the NE¼ of Section 25, Township 11 South, Range 66 West of the 6th Principal Meridian in El Paso County, Colorado. The site is located approximately 4 miles southwest of Monument, Colorado, southeast of Hodgen Road and Farrar Road. The location of the site is as shown on the Vicinity Map (Figure 1).

The topography of the site varies from gently to moderately sloping, generally to the east and southeast, along drainages in the northeastern and southern portions of the site. An earthen dam is located in the southern portion of the site and erosion control berms are in the eastern and southern portions of the site. The drainages on site generally flow in southeasterly, and easterly directions across the site. Water was not observed flowing in the drainages at the time of this investigation; however, an area of ponded water was observed on the eastern side earthen dam. Additionally, saturated conditions and minor amounts of water were observed in the minor drainage swales and along the uphill side of the erosion berms. The site boundaries are indicated on the USGS Map (Figure 2). Previous land uses have included rural residential, storage and material stockpiling, and grazing and pastureland. The site primarily contains field grasses, weeds, cacti, and with areas of ponderosa pines in the southern portion of the site. Site photographs taken February 17, 2025 are included in Appendix A.

The proposed site development will consist of seven single-family rural residential lots ranging in size from 2.5 to 4.8 acres with the existing residence located on Lot 5 to remain. The proposed new lots will utilize individual water wells and OWTS. The proposed lot configuration is shown on the Site and Exploration Plan (Figure 4). Grading plans were not available at the time of this investigation. Site grading will be limited to access easements for Lot 2 – 7.

3 SCOPE OF THE REPORT

The scope of this report is to evaluate the site for the use of individual on-site wastewater treatment systems. Detailed site-specific mapping was conducted to obtain general information with respect to major geographic and geologic features, geologic descriptions, and their effects on the development of the property in accordance with the El Paso Land Development Code.

4 FIELD INVESTIGATION

Our field investigation consisted of the preparation of a geologic map of any bedrock features and significant surficial deposits. The site was also evaluated using the Web Soil Survey from the Natural Resource Conservation Service (NRCS), formerly known as the Soil Conservation Service (SCS). The position of mappable units within the subject property is shown on the Geologic Map. Our mapping procedures involved both field reconnaissance and measurements and air photo reconnaissance and interpretation. The same mapping procedures have also been utilized to produce the Engineering Geology Map, which identified pertinent geologic conditions

affecting development. The field mapping was completed on February 17, 2025. Site photographs are included in Appendix A.

Three (3) test borings were drilled and three (3) test pits were excavated across the project site to determine the classification and engineering characteristics of the soils. The borings were drilled to depths of 20 feet using a truck-mounted, continuous flight auger drilling rig supplied and operated by Entech, and the test pits were excavated to depths of 8 feet.

The locations of the test borings and test pits are indicated on the Site and Exploration Plan (Figure 4). The Test Boring and Test Pit Logs are included in Appendix B, and Laboratory Test Results are included in Appendix C. The results of the testing will be discussed later in this report.

Laboratory testing was performed to classify and determine the engineering characteristics of the soils. Laboratory tests included moisture content testing (ASTM D2216), grain-size analysis (ASTM D422), and Atterberg Limits testing (ASTM D4318). Swell testing included both FHA Swell Tests and Swell/Consolidation Tests. Results of the laboratory testing are included in Appendix C.

5 SOIL, GEOLOGY, AND ENGINEERING GEOLOGY

5.1 General Geology

The site lies in the western portion of the Great Plains Physiographic Province. A major structural feature known as the Rampart Range Fault lies approximately 11 miles to the west. This fault marks the boundary between the Great Plains Physiographic Province and the Southern Rocky Mountain Province. The site exists within the southeastern edge of a large structural feature known as the Denver Basin. Bedrock in the area tends to be very gently dipping in a northerly direction (Reference 1). The rocks in the area of the site are sedimentary in nature and typically Tertiary to Cretaceous in age. The bedrock underlying the site consists of the Dawson Arkose Formation. Overlying this formation are unconsolidated deposits of residual and colluvial soils of the Quaternary Age. The residual soils are produced by the in-situ action of weathering of the bedrock on site and the colluvial soils deposited by gravity and sheetwash. Man-placed soils exist as earthen dams and erosion berms, and temporary stockpiles in the northwestern portion of the site. The site's stratigraphy will be discussed in more detail in Section 5.3.

5.2 Soil Conservation Survey

The Natural Resource Conservation Service (Reference 2), previously the Soil Conservation Service (Reference 3), has mapped two soil types on the site (Figure 4). In general, they vary from sandy loam to loam and sandy loam with subsoils of clay loam. The soils are described as follows:

Type	Description
67	Peyton sandy loam, 5 to 9% slopes
68	Peyton-Pring complex, 3 to 8% slopes

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

5.3 Site Stratigraphy

The Black Forest Quadrangle Geology Map showing the site is presented in Figure 5 (Reference 4). The Geology Map prepared for the site is presented in Figures 8 and 9. Three mappable units were identified on this site that are described as follows:

Qaf **Artificial Fill of Quaternary Age:** These are man-made fill deposits associated with erosion berms and earthen dams on the site, and areas of stockpiles located in the northwestern portion of the site (Lots 1 and 2) Other areas of fill may exist on the site other than those mapped.

Qc/Tkd **Colluvium of Quaternary Age overlying Dawson Arkose of Tertiary to Cretaceous Age:** These materials consist of silty to clayey sands, cobbles and boulders deposited by the action of sheetwash and gravity. Some alluvial soils deposited by water and residual soil from in-situ weathering exist in this mapping. These soils are overlying the Dawson Formation. The Dawson Formation typically consists of coarse-grained, arkosic sandstone with interbedded lenses of fine-grained sandstone, siltstone and claystone.

The soils listed above were mapped from site-specific mapping, the *Geologic Map of the Black Forest Quadrangle* distributed by the Colorado Geological Survey in 2003 (Reference 4), the *Geologic Map of the Colorado Springs-Castle Rock Area*, distributed by the US Geological Survey in 1979 (Reference 5), and the *Geologic Map of the Denver 1^0 x 2^0 Quadrangle*, distributed by the US Geological Survey in 1981 (Reference 6). The Test Borings and Test Pit Logs used in evaluating the site are included in Appendix B. The Geology/Engineering Geology Map prepared for the site is presented in Figure 6.

5.4 Soil Conditions

The soils encountered in the test pits can be grouped into one general soil type. The soils were classified using the USDA textural soil classification.

Sandy Clay and Gravelly Sandy Clay (Soil Type 4 and 4A) The sandy clay and gravelly sandy clay were encountered in the test pits at the existing surface grade to the termination of the test pits (8 Feet). The clay was encountered at medium stiff to very stiff consistencies and moist conditions.

The Test Pit Logs are presented in Appendix B. Laboratory Test Results are presented in Appendix C, and a Summary of Laboratory Test Results is presented in Table C-1.

5.5 Groundwater

Groundwater was not encountered in any of the test borings that were drilled to 20 feet, and no signs of redoximorphic features observed in the test pits which were excavated to depths of 8 feet. Areas of seasonally shallow groundwater, and ponded water have been mapped in the drainages and some low-lying areas on the site. Water and saturated conditions were observed along low-lying areas, portions of the minor drainage swales, and the uphill side of the erosion berms. The saturated surface conditions are attributed to recent snow melt collecting in the low-lying areas and uphill sides of the erosion berms. These areas are discussed in the following section. Fluctuation in groundwater conditions may occur due to variations in rainfall and other factors including development of the site and surrounding areas.

For the sandy materials on site, it should be noted that some groundwater conditions might be encountered due to the variability in the soil profile. Isolated sand and gravel layers within the soils, sometimes only a few feet in thickness and width, can carry water in the subsurface. Groundwater may also flow on top of the underlying bedrock or clays. Builders and planners

should monitor potential occurrences of such subsurface water features during construction on-site and mitigate as necessary at the time of construction.

Drainage and Floodplain Areas

The site is not located within any mapped floodplains according to the FEMA Map No. 08041CO305G, dated December 7, 2018 (Figure 7, Reference 8). The topography of the site varies from gently to moderately sloping, generally to the east and southeast, along drainages in the northeastern and southern portions of the site. An earthen dam is located in the southern portion of the site and erosion control berms are in the eastern and southern portions of the site. The drainages on site generally flow in southeasterly, and easterly directions across the site. Water was not observed flowing in the drainages at the time of this investigation; however, an area of ponded water was observed on the eastern side earthen dam. Additionally, saturated conditions and minor amounts of water were observed in the minor drainage swales and along the uphill side of the erosion berms. The drainages and minor drainages observed across the site have been indicated as seasonal shallow areas on the Geology/Engineering Geology Map (Figure 6). The major drainages are anticipated to be located in "open space" and drainage easements.

Portions of the drainages and pond in the southern portion of the site have been included in the National Wetland Inventory as Freshwater Emergent Wetland habitats classified as **PABFh** (Palustrine – P, Aquatic Bed – AB, Semi Permanently Flooded – F, Diked/Impounded – h), and **R4SBC** (Riverine – R, Intermittent – 4, Stream Bed – SB, Seasonally Flooded – C) (Figure 8, Reference 9). These areas will impact the proposed construction of access for Lots 3, 4, and 7 and are further discussed below.

Seasonal Shallow Groundwater Area – Constraint

In these areas, we would anticipate periodic high subsurface moisture conditions and frost heave potential on a seasonal basis. Several drainages originating off of the property flow on to the lots on the western and southern portions of the site. Due to the frozen ground and recent snow melt areas of saturated and ponded/flowing water were observed in the drainages, minor drainage swales, and on the uphill sides of the erosion berms located across the site. These areas lie within defined drainages and minor drainage swales in the northeastern and southern portions of the site. Additional, highly organic soils could be encountered in these areas. It is anticipated they can be avoided by development. Any structures in or adjacent to these areas should follow the mitigation discussed below.

Mitigation: Foundations must have a minimum 30-inch depth for frost protection. Buildings should be a minimum of 3 feet above groundwater levels. Subsurface perimeter drains are recommended

for any usable below-grade areas including crawlspaces. Should groundwater be encountered within 3 feet of foundation grade, additional drains that could include but are not limited to interceptor drains, underslab drains (capillary break), and overexcavation drains may be needed. Typical drain details are presented in Figures 9 to 12. Any grading in these areas should be done to direct surface flow around construction to avoid areas of ponded water. Structures should not block drainages. All organic material should be completely removed prior to any fill placement. Septic fields should not be placed in areas where there is the potential for shallow groundwater.

Areas of Ponded Water – Constraint

These are areas of standing water behind the eastern side of the earthen dam on site. We would not expect development in these areas. Either the dams can be avoided by construction, or the areas may be completely regraded. Should complete regrading of the site be considered, all organic matter and soft, wet soils should be completely removed before filling. Any drainage into these areas should be rerouted in a non-erosive manner off the site to prevent areas of ponded water around proposed structures.

6 ON-SITE WASTEWATER TREATMENT

The site was evaluated for individual on-site wastewater treatment systems in accordance with El Paso Land Development Code. Test pits were located in potential locations of future soil treatment areas on three of the proposed lots. The approximate locations of the Test Pits are indicated on the Site and Exploration Plan (Figure 3), the Geology/Engineering Geology Map (Figure 6), and the OWTS Suitability Map, Figure 9. Test Pit Logs are included in Appendix B, and Laboratory Test Results in Appendix C. Records for the existing OWTS on Lot 5 are included in Appendix E.

The Natural Resource Conservation Service (Reference 2), previously the Soil Conservation Service (Reference 3) has been mapped with three soil descriptions. The Soil Survey Map (Reference 2) is presented in Figure 4, and the Soil Survey Descriptions are presented in Appendix D. The soils are described as having slow to rapid percolation rates. The majority of the soils have been described with moderate permeabilities.

Soils encountered in the tactile test pits consisted of sandy clay, and gravelly sandy clay. Signs of seasonal occurring groundwater were not observed in in the test pits. The limiting layers encountered in the test pits are sandy clay (Soil Type 4A), and the gravelly sandy clay (R-1). The soil types correspond to LTAR values ranging from 0.50 to 0.15 gallons per day per square foot.

Additional investigation may identify areas where suitable conventional systems could be used on the lots, however, the lots will likely require engineered systems.

On-site Wastewater Systems are to be evaluated on a per lot basis at the time of building permit. The systems are to meet County Chapter 8 OWTS criteria and State CDPHE criteria including any required mitigation to accommodate respective leach fields and infrastructure including, but not limited to earthwork grading, berming and diversion swale implementation, installation of secondary sand filters or any other higher treatment levels and dosing as required on a per lot basis and determined by test pit results and site topography. There are no identified geologic hazards on the site that are prohibitive to future OWTS design at this time

In summary, it is our opinion that the 2.5+ acre lots are suitable individual on-site wastewater treatment systems (OWTS) and that contamination of surface and subsurface water resources should not occur provided the OWTS sites are evaluated and installed according to El Paso County and State Guidelines and properly maintained. Based on the testing performed as part of this investigation designed systems will likely be required for the majority of the lots. An OWTS Suitability Map is presented in Figure 9. OWTS sites should not be located within defined drainages. Individual soil testing is required on the lots prior to construction. Absorption fields must be located a minimum of 100 feet from any well, including those on adjacent properties. Absorption fields must also be located a minimum of 50 feet from any drainages, floodplains or ponded areas and 25 feet from dry gulches.

7 CLOSURE

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

It should be pointed out that because of the nature of data obtained by random sampling of such variable and non-homogeneous materials as soil and rock, it is important that we be informed of any differences observed between surface and subsurface conditions encountered in construction and those assumed in the body of this report. Individual investigations for soil treatment areas / sites will be required prior to construction. Construction and design personnel should be made familiar with the contents of this report. Reporting such discrepancies to Entech

Engineering, Inc. soon after they are discovered would be greatly appreciated and could possibly help avoid construction and development problems.

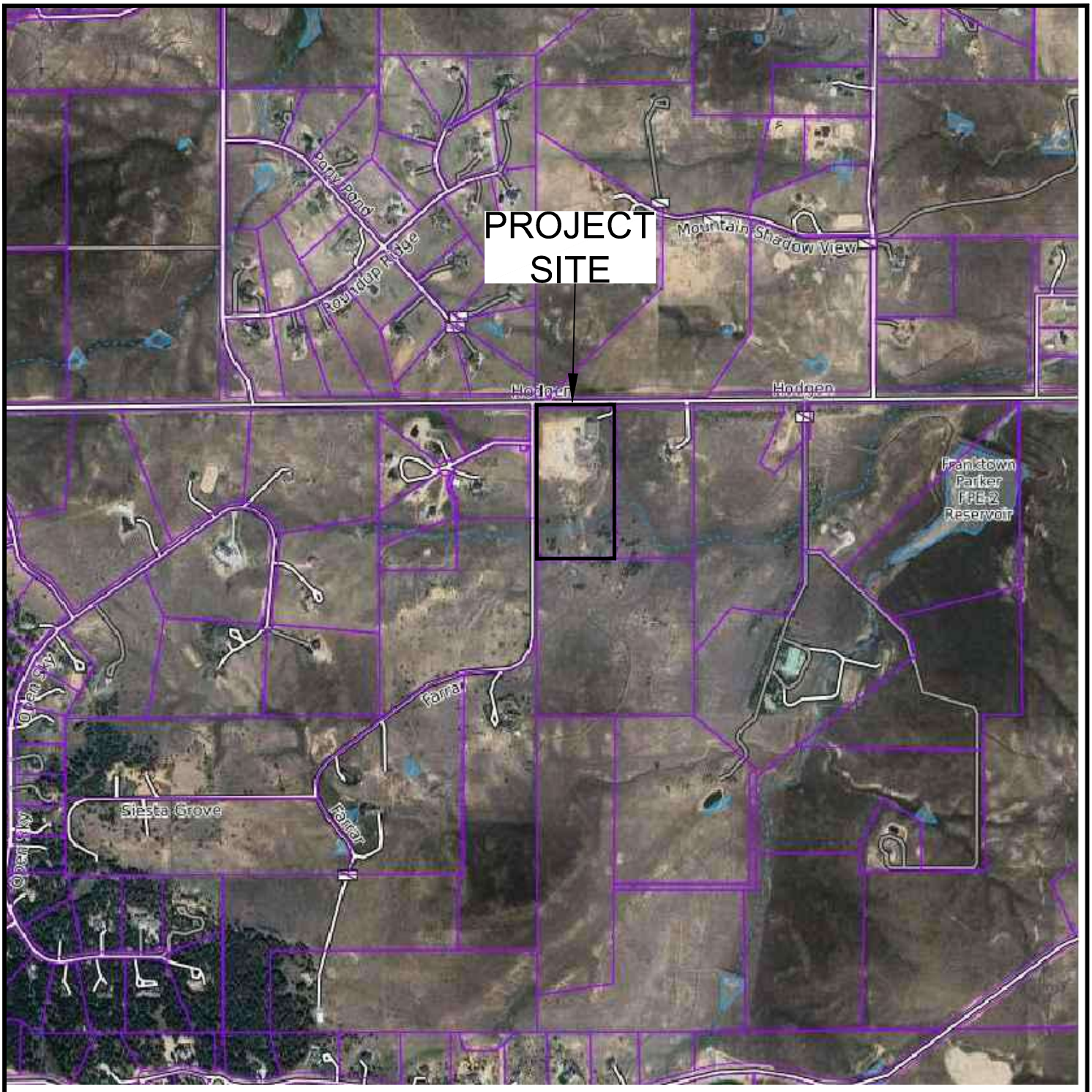
This report has been prepared for Matt and Bill Dunston for application to the proposed project in accordance with generally accepted geologic soil and engineering practices. No other warranty expressed or implied is made.

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

8 REFERENCES

1. Bryant, Bruce; McGrew, Laura W. and Wobus, Reinhard A. 1981. *Geologic Structure Map of the Denver 1° x 2° Quadrangle, North-Central Colorado*. U.S. Geologic Survey. Map 1-1163.
2. Natural Resource Conservation *Service,* June 20, 2007. *Web Soil Survey.* United States Department Agriculture, hhtp://web soil survey.nrcs.usda.gov.
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7. Hart, Stephen S. 1974. *Potentially Swelling Soil and Rock in the Front Range Urban Corridor, Colorado*. Colorado Springs-Castle Rock Map. Colorado Geological Survey. Environmental Geology 7.
8. Federal Emergency Management Agency. December 7, 2018. *Flood Insurance Rate Maps for the City of Colorado Springs, Colorado.* Map Numbers 08041CO305G, and 08041CO315G.
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FIGURES



N

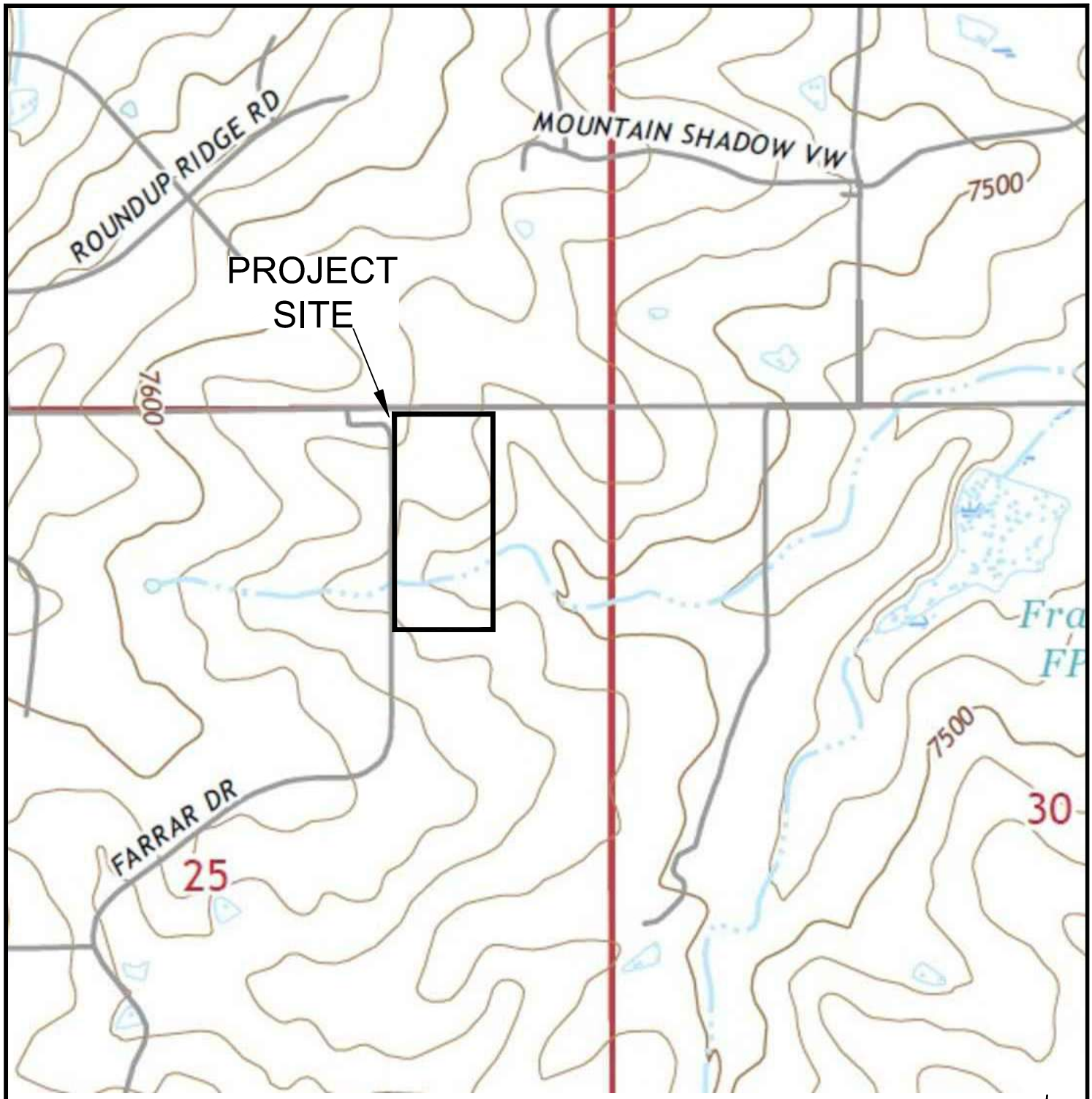
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VICINITY MAP

HODGEN ROAD, 7-LOT SUBDIVISION
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FIG. 1



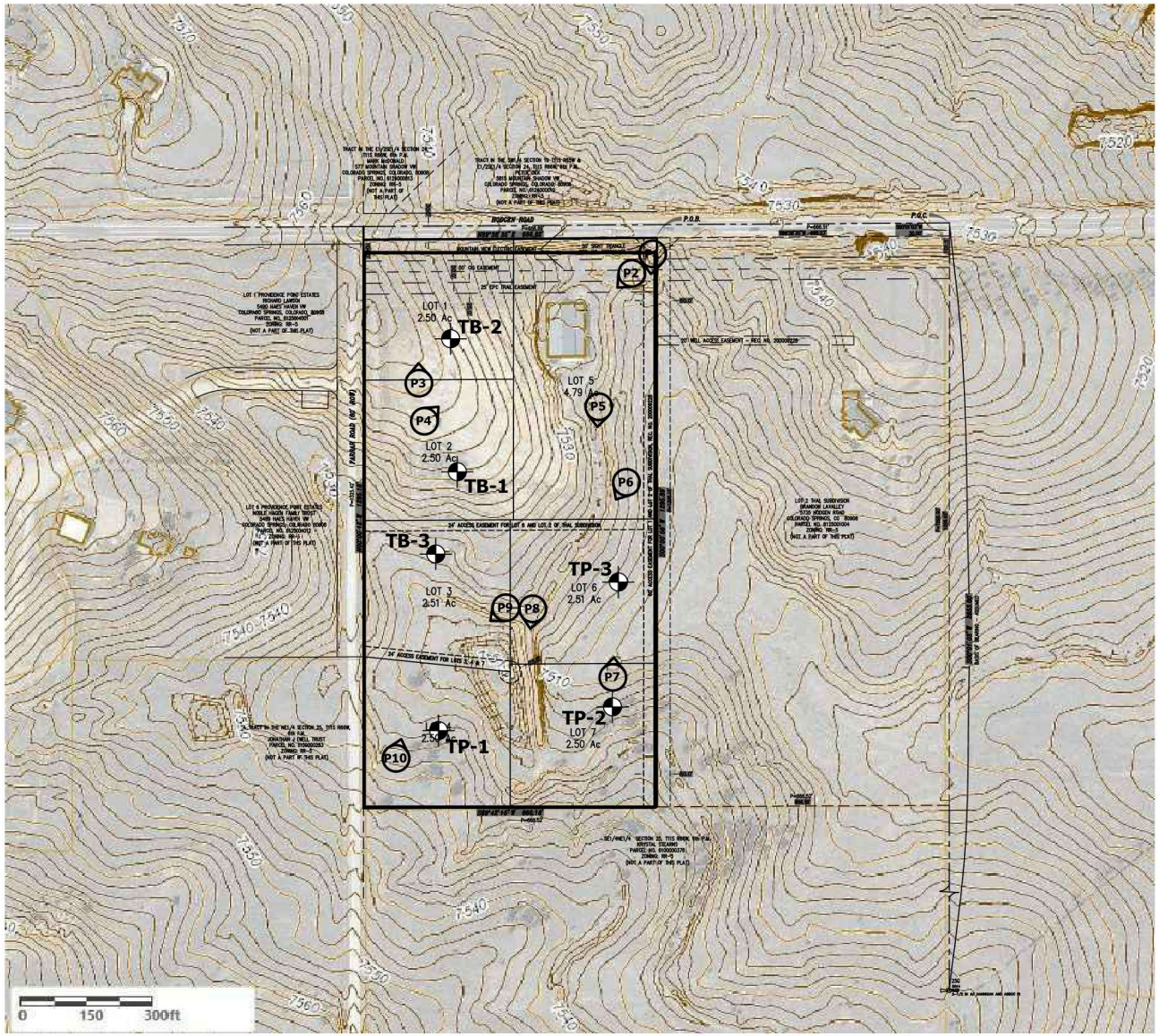
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USGS TOPOGRAPHY MAP

HODGEN ROAD, 7-LOT SUBDIVISION
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FIG. 2



N

TB- APPROXIMATE TEST BORING LOCATION AND NUMBER

P2 - APPROXIMATE PHOTOGRAPH LOCATION AND DIRECTION

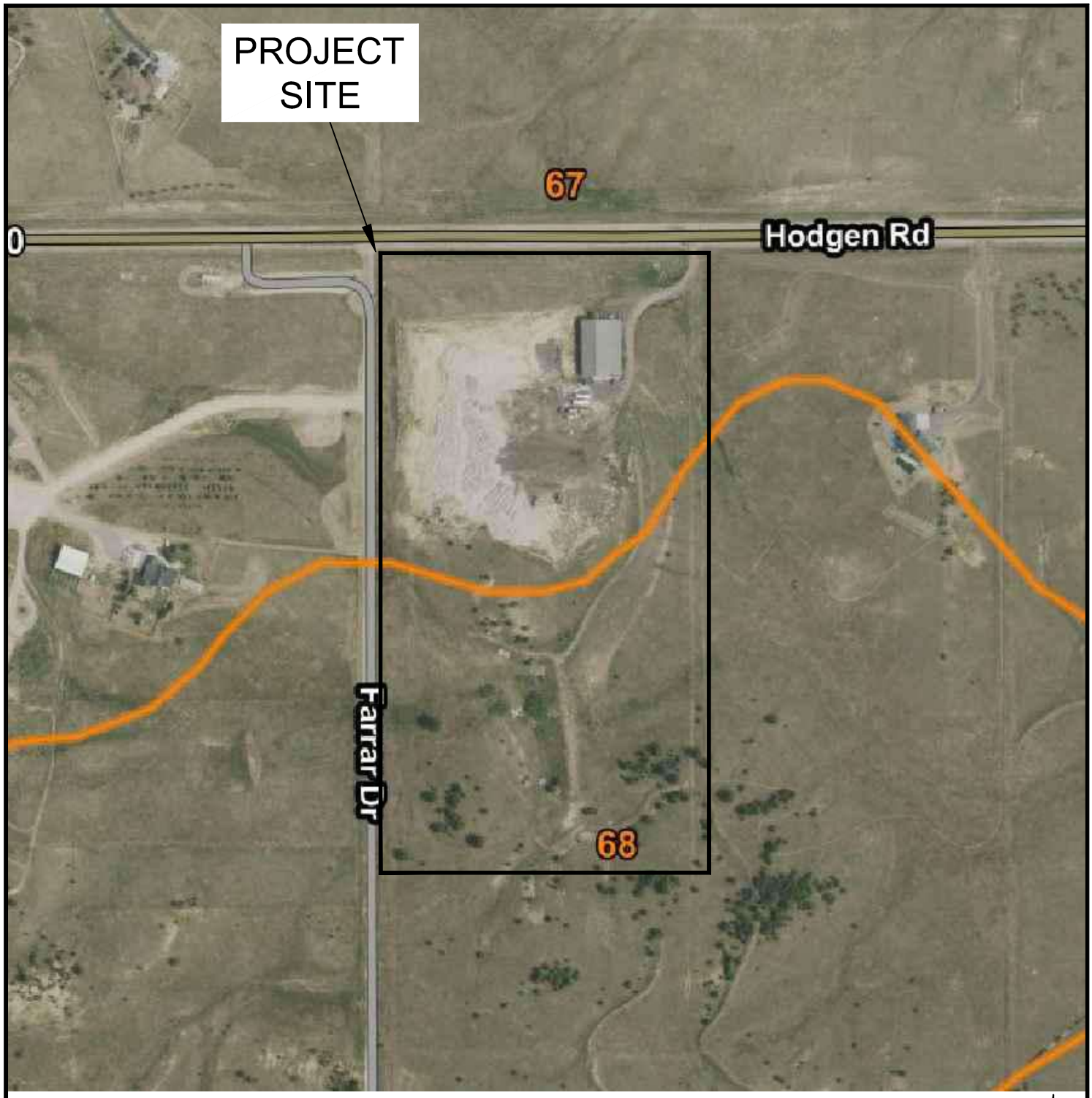
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SITE AND EXPLORATION PLAN

HODGEN ROAD, 7-LOT SUBDIVISION
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FIG. 3



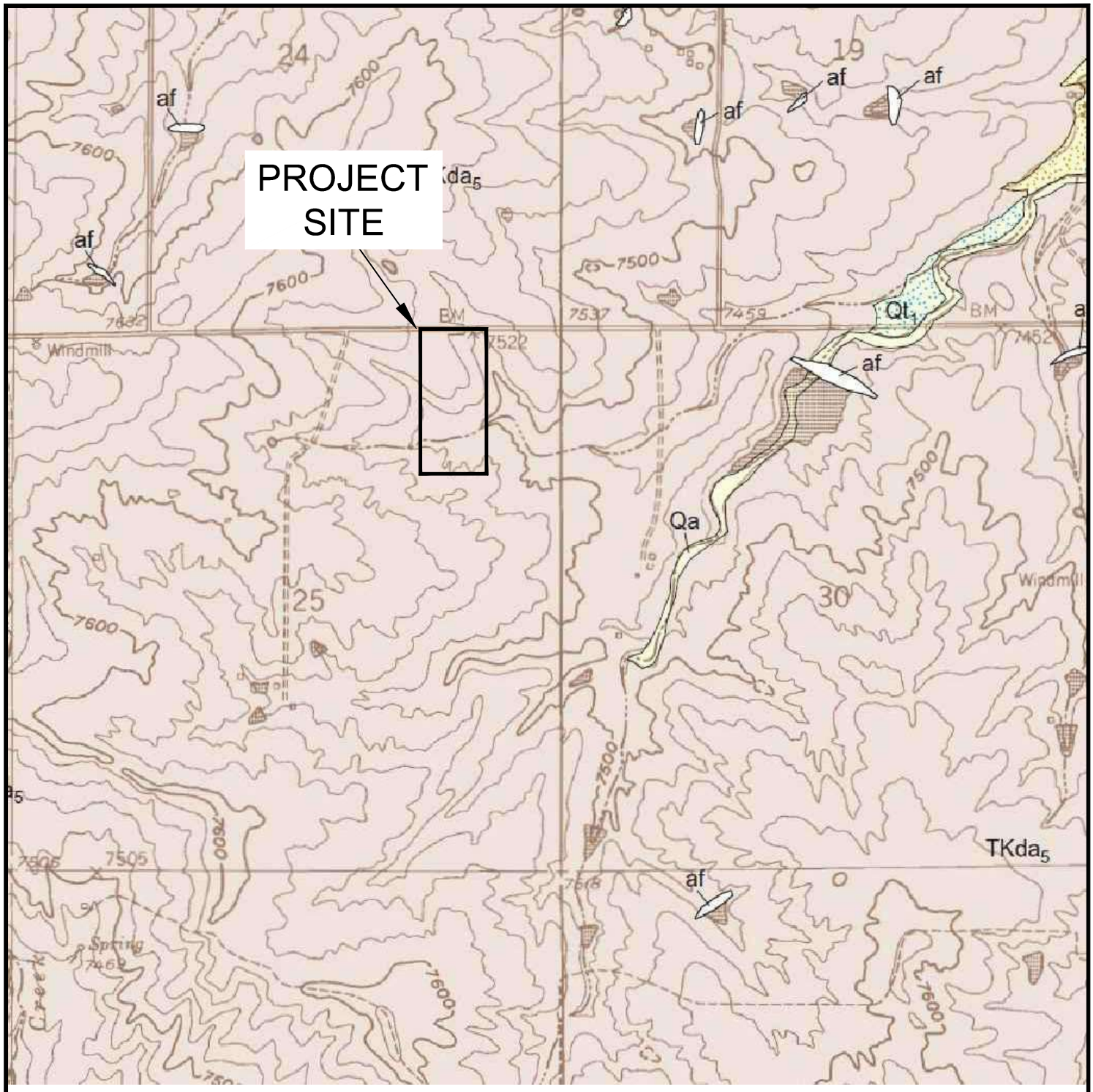
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SOIL SURVEY MAP

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FIG. 4



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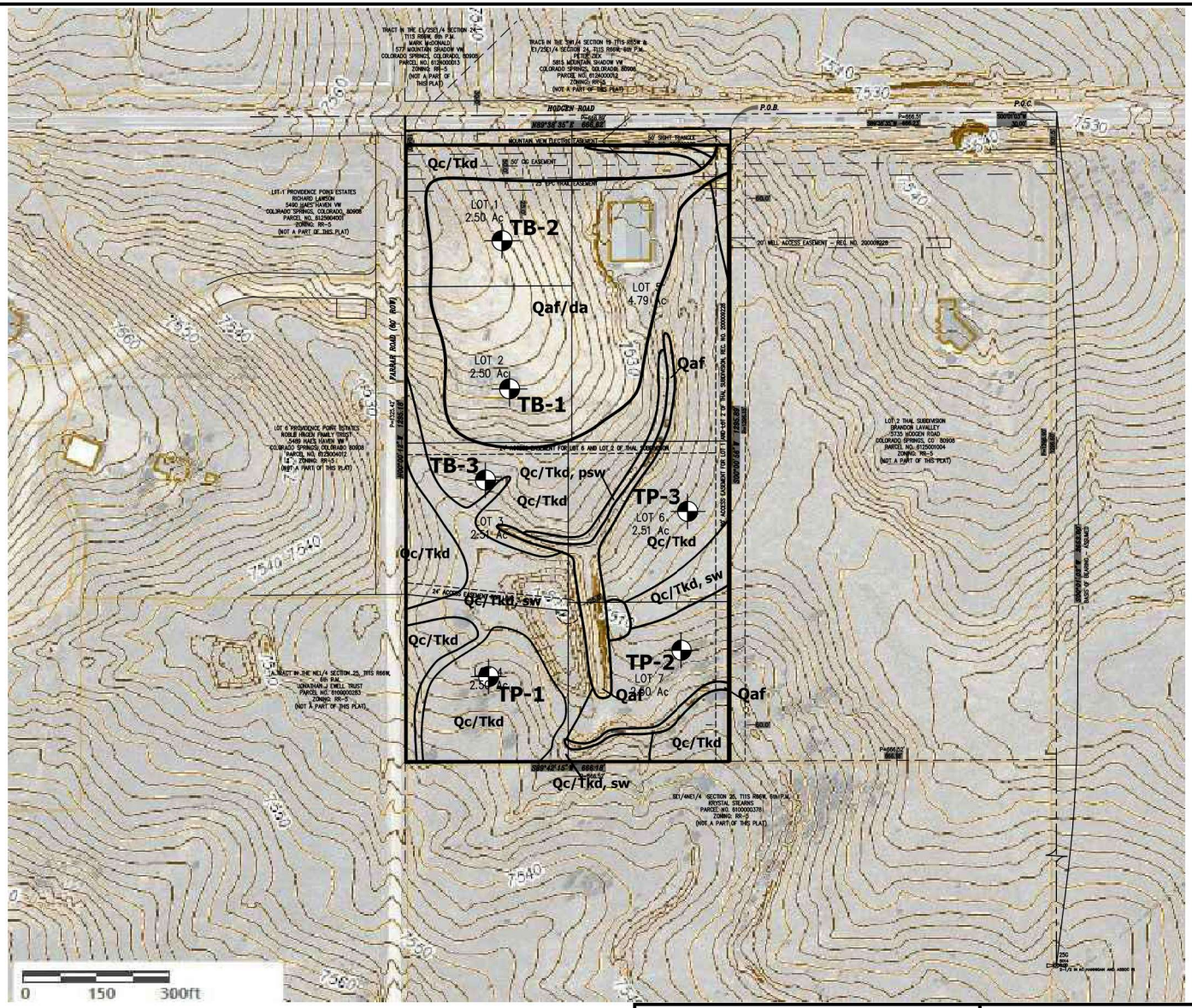
GEOLOGIC MAP OF THE BLACK FOREST QUADRANGLE

HODGEN ROAD, 7-LOT SUBDIVISION

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FIG. 5



Legend:

Qaf - Artificial Fill of Hclocene Age:
man placed fill deposits

Qc/Tkd - Colluvium of Quaternary Age overlying the Dawson Formation of Tertiary to Cretaceous Age:
sheetwash and residual soil deposits overlying arkosic sandstone with interbedded claystone and siltstone

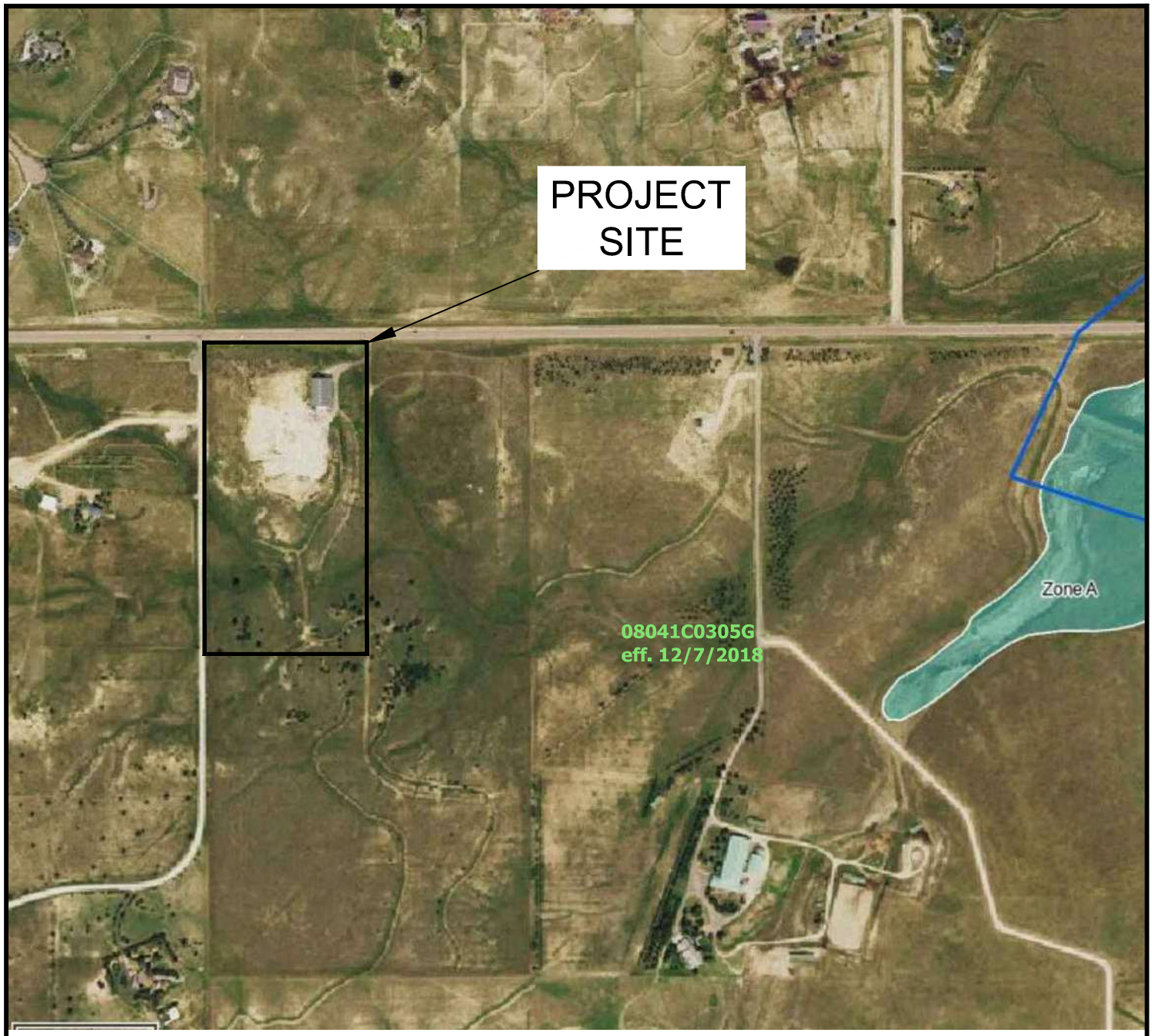
da - disturbed area
psw - potential seasonally shallow groundwater area
sw - seasonally shallow groundwater area

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GEOLOGY / ENGINEERING GEOLOGY MAP
HODGEN ROAD, 7-LOT SUBDIVISION
MATT AND BILL DUNSTON

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FIG. 6



N

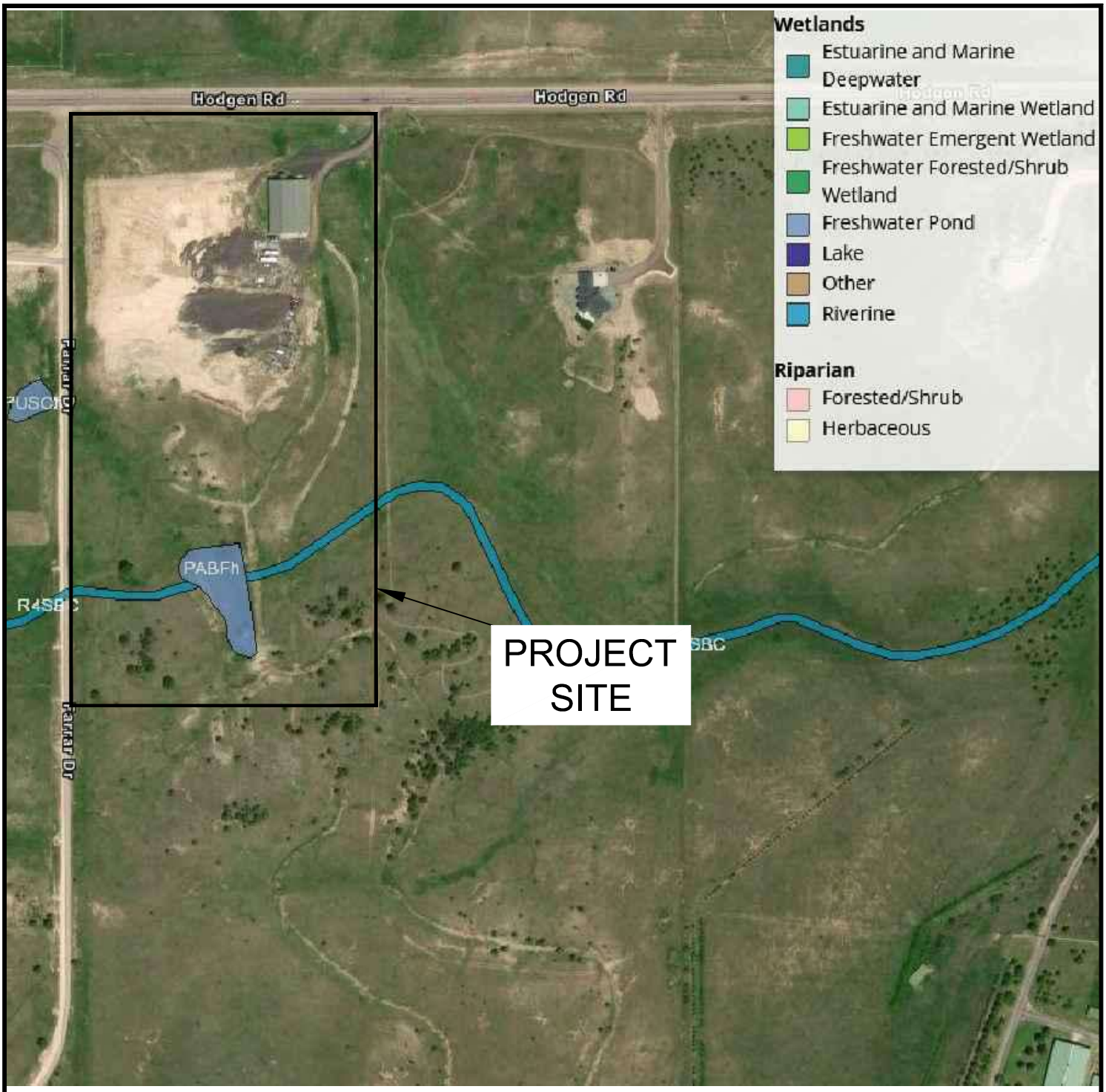
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FEMA FLOODPLAIN MAP

HODGEN ROAD, 7-LOT SUBDIVISON
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FIG. 7



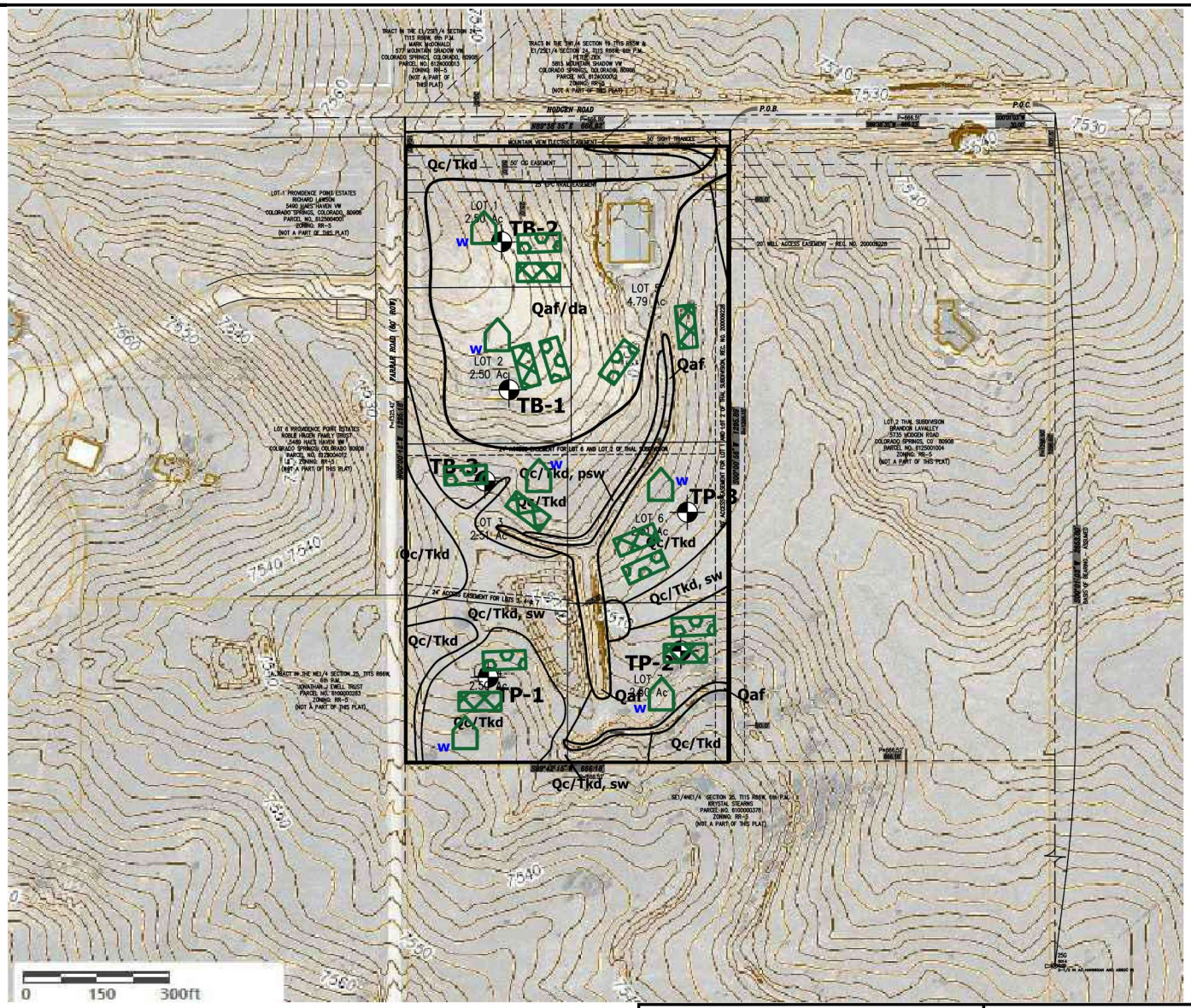
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USFWS WETLANDS MAP

HODGEN ROAD, 7-LOT SUBDIVISON
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FIG. 8



LEGEND:

- POSSIBLE OWTS LOCATIONS
- POSSIBLE OWTS ALTERNATE LOCATION
- POSSIBLE HOUSE LOCATIONS

W *- WATER WELLS MUST BE A MINIMUM OF 100 FT FROM OWTS ABSORPTION FIELDS

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OWTS SUITABILITY MAP

HODGEN ROAD, 7-LOT SUBDIVISON
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FIG. 9

APPENDIX A: Site Photographs



1

Looking south from the northeastern side of the site.

February 17, 2025



2

Looking southwest from the northeastern side of the site.

February 17, 2025

Job No. 250183



3

Looking north from the western side of the site.

February 17, 2025



4

Looking northeast from the western side of the site.

February 17, 2025

Job No. 250183



5

Looking south from then eastern side of the site.

February 17, 2025



6

Looking southwest from the eastern side of the site.

February 17, 2025

Job No. 250183



7

Looking north from the southeastern side of the site.

February 17, 2025



8

Looking south from the northern side of the earthen dam.

February 17, 2025

Job No. 250183



9

Looking southwest from the northern side of the earthen dam.

February 17, 2025



10

Looking northeast from the southwestern side of the site.

February 17, 2025

Job No. 250183

APPENDIX B: Test Boring and Test Pit Logs

TEST BORING 1
DATE DRILLED 2/24/2025

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 20', 2/24/25						
FILL 0-3', SAND, SILTY, BROWN, LOOSE, MOIST				6	12.9	1
SAND, SILTY, TAN, MEDIUM DENSE, MOIST	5			20	13.4	2
SANDSTONE, VERY WEAK, TAN, MODERATELY WEATHERED (SAND, SILTY, VERY DENSE, MOIST)	10			50/8"	10.8	3
	15			50/6"	10.3	3
	20			50/6"	9.7	3

TEST BORING 2
DATE DRILLED 3/3/2025

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 20', 3/3/25						
SAND, SILTY, TAN						2
SANDSTONE, VERY WEAK, TAN to LIGHT BROWN, HIGHLY WEATHERED (SAND, SILTY, VERY DENSE to MEDIUM DENSE, MOIST)				50/11"	11.6	3
	5			50/2"	7.0	3
	10			50/10"	8.7	3
	15			27	11.5	3
	20			50/11"	11.9	3

ENTECH ENGINEERING, INC.

TEST BORING LOGS

5525 HODGEN ROAD
MATT & BILL DUNSTON

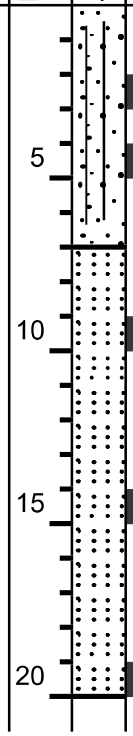
JOB NO. 250183

FIG. B-1

TEST BORING 3
DATE DRILLED 3/3/2025

REMARKS

DRY TO 20', 3/3/25



Depth (ft)	Samples	Blows per foot	Watercontent %	Soil Type
		15	10.9	2
5		17	8.9	2
10		50/10"	11.4	3
15		50/10"	7.5	3
20		50/10"	12.2	3

12" TOPSOIL

SAND, SILTY, LIGHT BROWN, MEDIUM DENSE, MOIST

SANDSTONE, VERY WEAK, LIGHT BROWN, HIGHLY WEATHERED (SAND, SILTY, VERY DENSE, MOIST)

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TEST BORING LOGS

5525 HODGEN ROAD
MATT & BILL DUNSTON

JOB NO. 250183

FIG. B-2

TEST PIT 1
DATE EXCAVATED 2/27/2025

REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
topsoil, sandy clay, dark brown, moist	1					
	2					
sandy clay, fine grained, light brown, moist	3			ma	sl	4A
	4					
gravelly sandy clay, fine to coarse, moist	5			gr	w	4A R-1
	6					
	7					
	8					
	9					
	10					

TEST PIT 2
DATE EXCAVATED 2/27/2025

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

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

Soil Structure Grade
weak - w
moderate - m
strong - s
loose - l
structureless - sl

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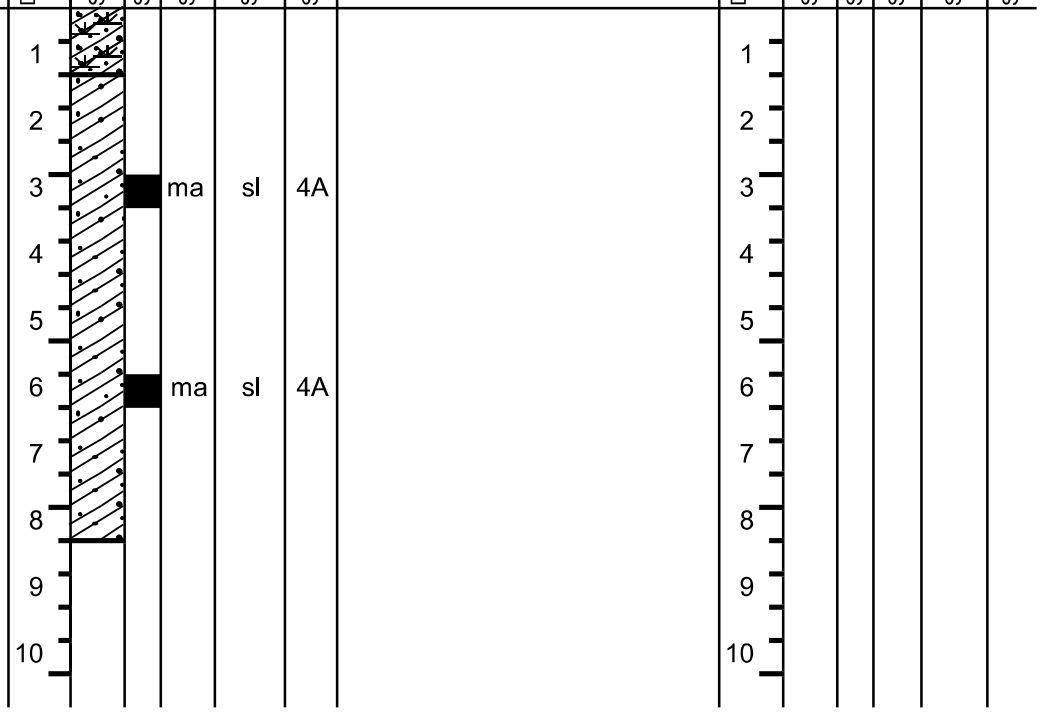
TEST PIT LOGS

5525 HODGEN ROAD
MATT & BILL DUNSTON

JOB NO. 250183

FIG. B-3

TEST PIT 3
DATE EXCAVATED 2/27/2025
REMARKS



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

Soil Structure Grade
weak - w
moderate - m
strong - s
loose - l

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TEST PIT LOGS

5525 HODGEN ROAD
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JOB NO. 250183

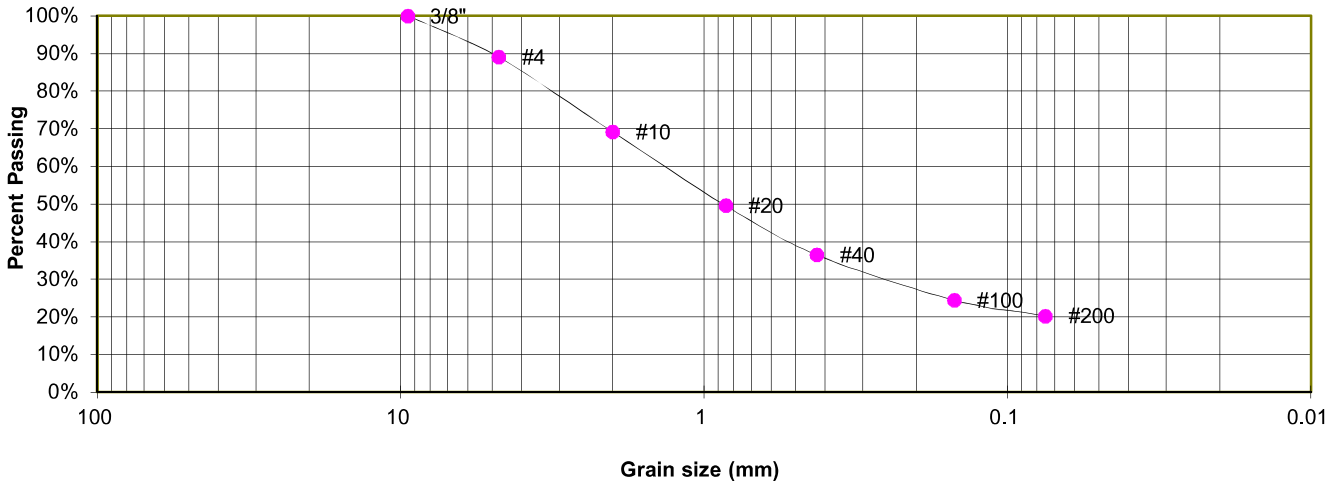
FIG. B-4

APPENDIX C: Laboratory Test Results

TABLE C-1
SUMMARY OF LABORATORY TEST RESULTS

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	PASSING NO. 200 SIEVE (%)	FHA SWELL (PSF)	USCS	SOIL DESCRIPTION
1	1	2-3	20.3		SM	FILL, SAND, SILTY
2	1	5	42.4		SM	SAND, SILTY
2	3	5	17.5	270	SM	SAND, SILTY
3	1	15	20.5		SM	SANDSTONE (SAND, SILTY)
3	2	10	17.5		SM	SANDSTONE (SAND, SILTY)

TEST BORING	1	SOIL DESCRIPTION	FILL, SAND, SILTY
DEPTH (FT)	2-3	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	89.0%
10	69.1%
20	49.6%
40	36.5%
100	24.5%
200	20.3%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

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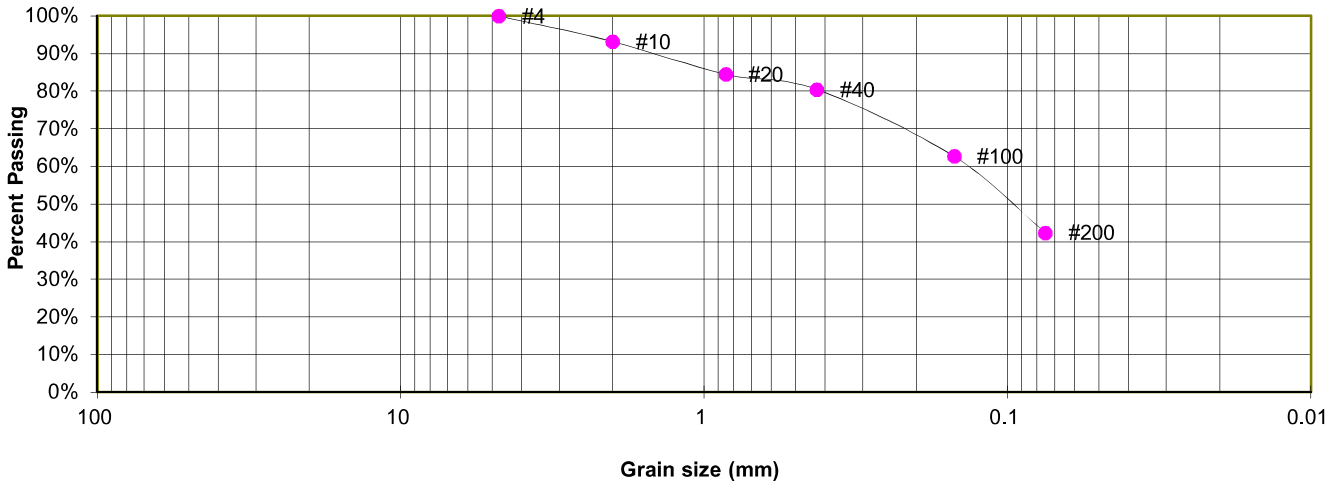
LABORATORY TEST RESULTS

5525 HODGEN ROAD
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JOB NO. 250183

FIG. C-1

TEST BORING	1	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	5	SOIL TYPE	2



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	93.2%
20	84.5%
40	80.5%
100	62.7%
200	42.4%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

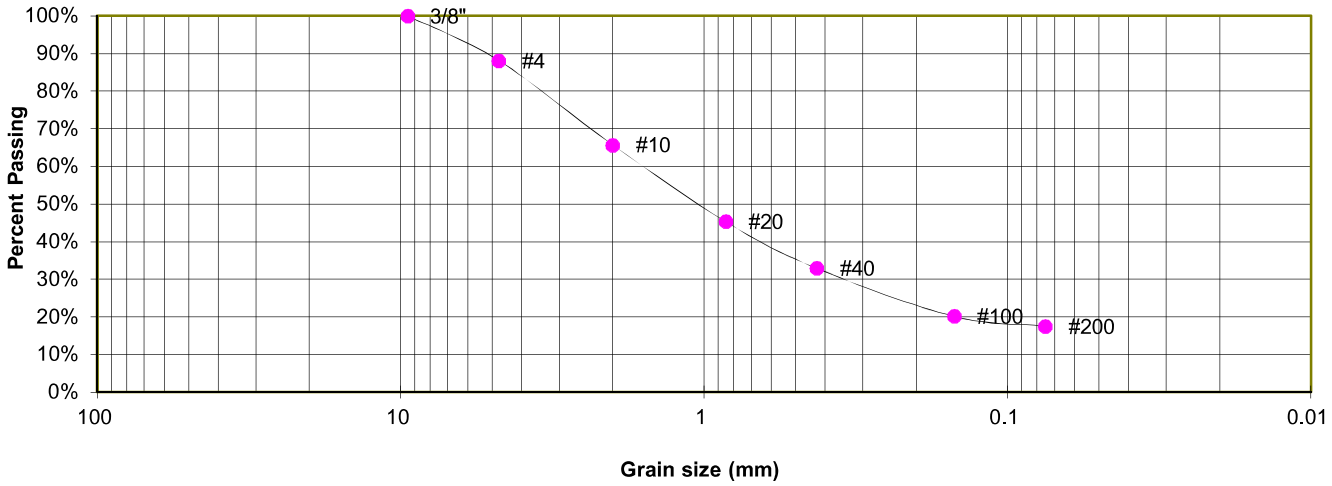
LABORATORY TEST RESULTS

5525 HODGEN ROAD
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FIG. C-2

TEST BORING	3	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	5	SOIL TYPE	2



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	88.1%
10	65.7%
20	45.4%
40	32.9%
100	20.1%
200	17.5%

FHA SWELL

Moisture at start	13.8%
Moisture at finish	19.7%
Moisture increase	5.9%
Initial dry density (pcf)	104
Swell (psf)	270

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

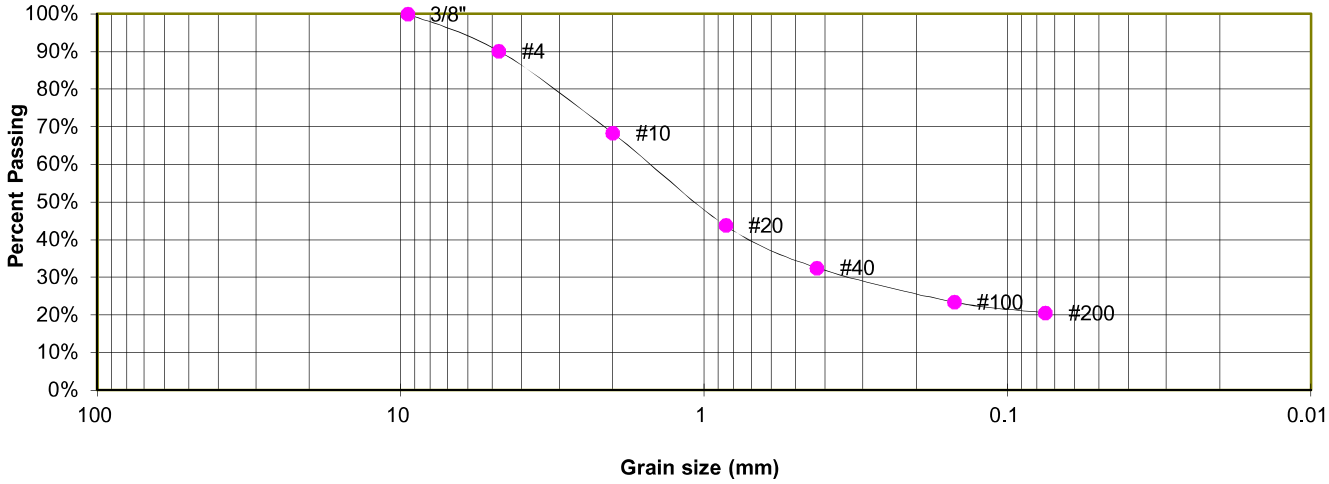
LABORATORY TEST RESULTS

5525 HODGEN ROAD
MATT & BILL DUNSTON

JOB NO. 250183

FIG. C-3

TEST BORING	1	SOIL DESCRIPTION	SANDSTONE (SAND, SILTY)
DEPTH (FT)	15	SOIL TYPE	3



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	90.2%
10	68.3%
20	43.8%
40	32.5%
100	23.4%
200	20.5%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

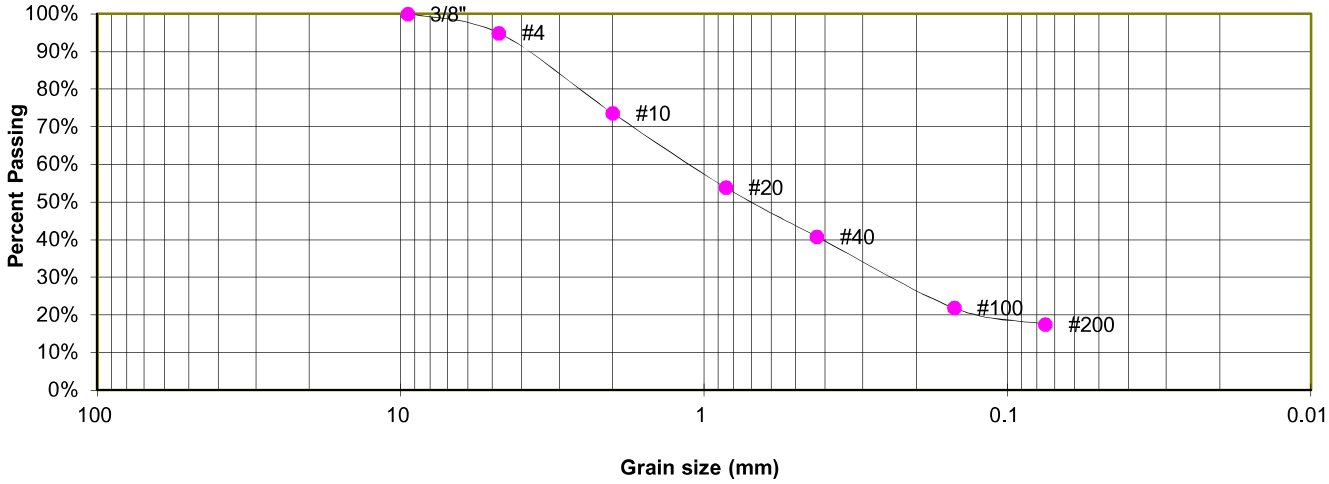
LABORATORY TEST RESULTS

5525 HODGEN ROAD
MATT & BILL DUNSTON

JOB NO. 250183

FIG. C-4

TEST BORING	2	SOIL DESCRIPTION	SANDSTONE (SAND, SILTY)
DEPTH (FT)	10	SOIL TYPE	3



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	95.0%
10	73.6%
20	53.9%
40	40.8%
100	21.9%
200	17.5%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

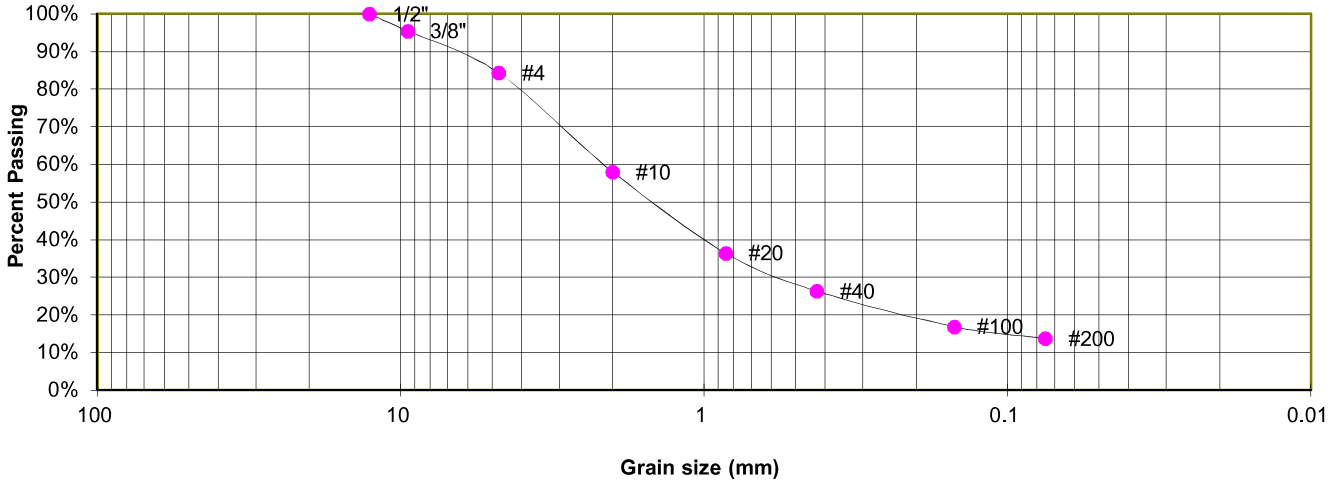
LABORATORY TEST RESULTS

5525 HODGEN ROAD
MATT & BILL DUNSTON

JOB NO. 250183

FIG. C-5

TEST BORING	TP-1	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	6.5	USDA SOIL TYPE #	R-1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	95.5%
4	84.3%
10	58.0%
20	36.4%
40	26.3%
100	16.9%
200	13.8%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

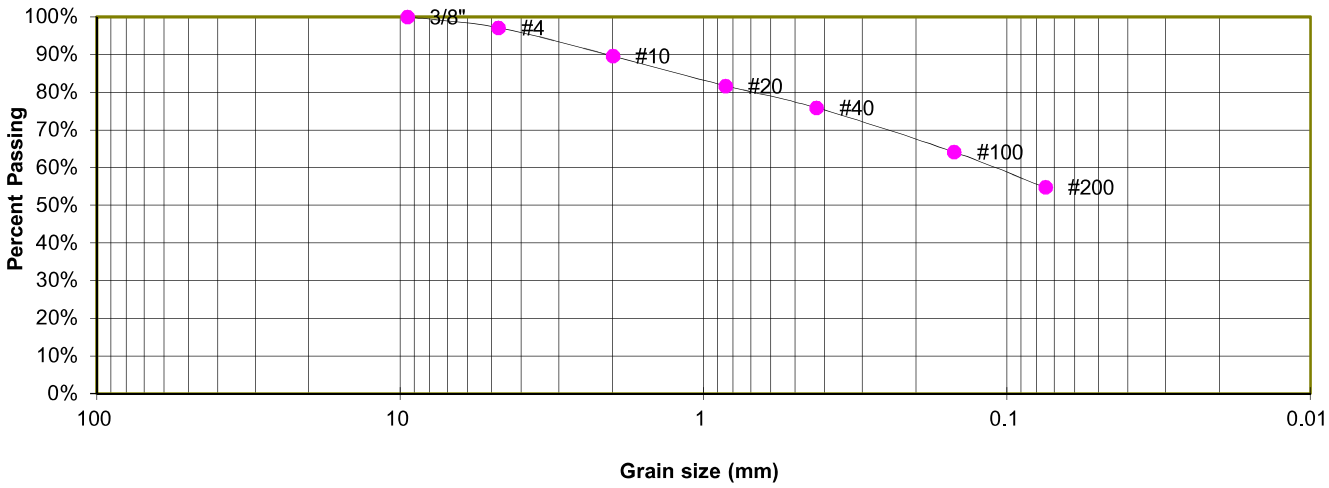
LABORATORY TEST RESULTS

5525 HODGEN ROAD
MATT & BILL DUNSTON

JOB NO. 250183

FIG. C-6

TEST PIT	TP-2	SOIL DESCRIPTION	CLAY, SANDY
DEPTH (FT)	2.5	USDA SOIL TYPE #	4



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.2%
10	89.7%
20	81.7%
40	75.9%
100	64.2%
200	54.7%

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL

ENTECH ENGINEERING, INC.

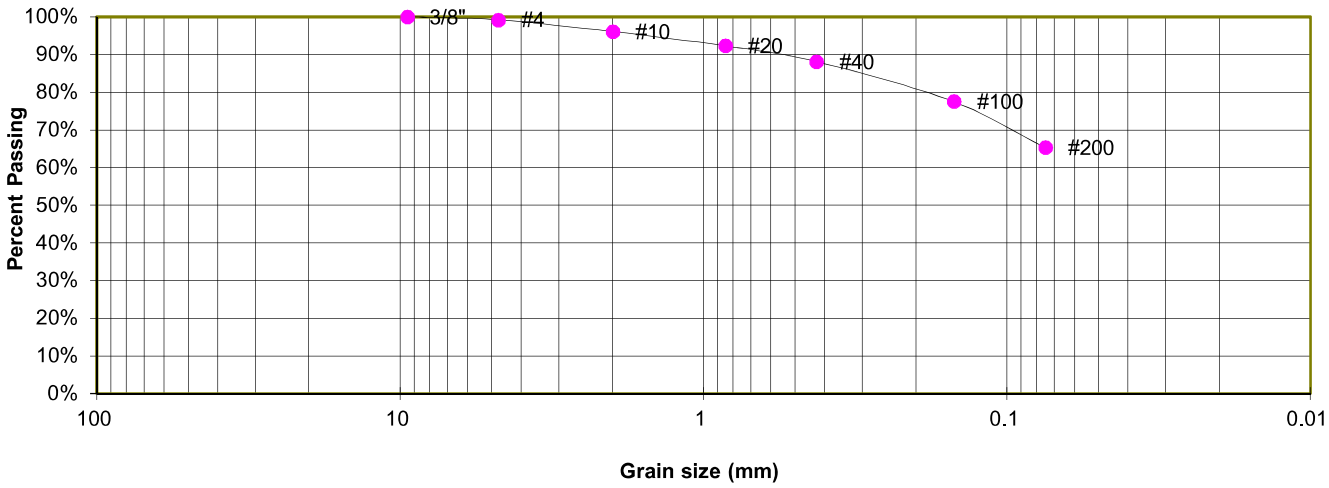
LABORATORY TEST RESULTS

5525 HODGEN ROAD
MATT & BILL DUNSTON

JOB NO. 250183

FIG. C-7

TEST PIT	TP-3	SOIL DESCRIPTION	CLAY, SANDY
DEPTH (FT)	6.5	USDA SOIL TYPE #	4



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.2%
10	96.1%
20	92.3%
40	88.2%
100	77.5%
200	65.3%

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL

ENTECH ENGINEERING, INC.

LABORATORY TEST RESULTS

5525 HODGEN ROAD
MATT & BILL DUNSTON

JOB NO. 250183

FIG. C-8

APPENDIX D: USDA Soil Survey Descriptions

El Paso County Area, Colorado

67—Peyton sandy loam, 5 to 9 percent slopes

Map Unit Setting

National map unit symbol: 369d
Elevation: 6,800 to 7,600 feet
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 115 to 125 days
Farmland classification: Not prime farmland

Map Unit Composition

Peyton and similar soils: 85 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Peyton

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
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 12 inches: sandy loam
Bt - 12 to 25 inches: sandy clay loam
BC - 25 to 35 inches: sandy loam
C - 35 to 60 inches: sandy loam

Properties and qualities

Slope: 5 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: R049XY216CO - Sandy Divide
Hydric soil rating: No

Minor Components

Pleasant

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Other soils

Percent of map unit:
Hydric soil rating: No

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 22, Sep 3, 2024

El Paso County Area, Colorado

68—Peyton-Pring complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 369f
Elevation: 6,800 to 7,600 feet
Farmland classification: Not prime farmland

Map Unit Composition

Peyton and similar soils: 40 percent
Pring and similar soils: 30 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Peyton

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
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 12 inches: sandy loam
Bt - 12 to 25 inches: sandy clay loam
BC - 25 to 35 inches: sandy loam
C - 35 to 60 inches: sandy loam

Properties and qualities

Slope: 3 to 5 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): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: R049XY216CO - Sandy Divide
Hydric soil rating: No

Description of Pring

Setting

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

Typical profile

A - 0 to 14 inches: coarse sandy loam
C - 14 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R048AY222CO - Loamy Park
Hydric soil rating: No

Minor Components

Pleasant

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Other soils

Percent of map unit:
Hydric soil rating: No

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 22, Sep 3, 2024

APPENDIX E: Existing El Paso County Health Department Septic Records