ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO 80907
PHONE (719) 531-5599

July 16, 2024

David Knecht
12425 Meridian Road
Elbert, Colorado 80106

Re: Soils and Geology Study
Knecht 5-Lot Subdivision
12425 Meridian Road
Parcel Nos. 42180-00-002, 42180-00-004, and 42180-00-023
El Paso County, Colorado

Dear Mr. Knecht:

The project consists of subdividing approximately 21 acres. Five rural residential lots are proposed. Existing houses and structures on Lots 1 – 3 will remain, with two new Lots 4 and 5 proposed. The site is located southeast of the intersection of Meridian Road and Latigo Boulevard, in El Paso County, Colorado.

GENERAL SITE CONDITIONS AND PROJECT DESCRIPTION

The site is located in a portion of the NW¼ of the NW¼ of Section 18, Township 12 South, Range 64 West of the 6th Principal Meridian in El Paso County, Colorado. The location of the site is as shown on the Vicinity Map, Figure 1.

The topography of the site is gradually sloping to the northeast with moderate to steep slopes along Upper Black Squirrel Creek along the southern and eastern sides of the site that flows in an easterly direction. Water was observed flowing in the creek at the time of this investigation. The site boundaries are indicated on the USGS Map, Figure 2. Previous land uses have included agricultural and a rural residential development. The site contains Ponderosa Pines, Junipers, field grasses, and weeds. Site photographs, taken May 22, 2024, are included in Appendix A.

Total acreage involved in the proposed subdivision is approximately 21 acres. Five rural residential lots and the construction of a private road are proposed as part of the replat. The proposed lot sizes range from approximately one to 5 acres. The existing residences and structures will remain on Lots 1 – 3. The two new lots will be serviced by individual wells and on-site wastewater treatment systems. The Site and Exploration Plan with the proposed replat is presented in Figure 3.

LAND USE AND ENGINEERING GEOLOGY

This site was found to be suitable for the proposed development. Areas were encountered where the geologic conditions will impose some constraints on development and land use. These include artificial fill, potentially expansive soils, potentially unstable slopes, shallow bedrock, flowing water, and a floodplain. Based on the proposed development plan, it appears that these areas will have some minor impacts on the development. These conditions will be discussed in greater detail in the report.

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

SCOPE OF THE REPORT

The scope of the report will include a general geologic analysis utilizing published geologic data. 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.

FIELD INVESTIGATION

Our field investigation consisted of the preparation of a geologic map of any bedrock features and significant surficial deposits. The Natural Resource Conservation Service (NRCS), previously the Soil Conservation Service (SCS) survey was also reviewed to evaluate the site. The position of mappable units within the subject property are shown on the Geologic Map. Our mapping procedures involved both field reconnaissance and measurements, and aerial photo reconnaissance and interpretation. The same mapping procedures have also been utilized to produce the Geology/Engineering Geology Map which identified pertinent geologic conditions affecting development. The field mapping was performed by personnel of Entech Engineering, Inc. on May 22, 2024.

Two test borings were drilled to determine soil conditions and two test pits were also excavated on the site to determine general suitability for the use of on-site wastewater treatment systems and general soil characteristics. The location of the test borings and test pits are indicated on the Site Plan/Test Pit Location Map, Figure 3. The Test Boring and Test Pit Logs are presented in Appendix B. Results of this testing will be discussed later in this report.

Laboratory testing was also performed on some of the soils to classify and determine the soils engineering characteristics. Laboratory tests included grain-size analysis, ASTM D-422, and Atterberg Limits, ASTM D-4318. Results of the laboratory testing are included in Appendix C.

SOIL AND GEOLOGIC CONDITIONS

Soil Survey

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

Soil Type	Description
40	Kettle gravelly loamy sand, 3 – 8% Slopes
41	Kettle gravelly loamy sand, 8 – 40% Slopes

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

Soils

The soils encountered in the test borings and test pits consisted of a layer of silty sand to sand with silt overlying weathered silty sandstone. Bedrock was encountered at depths ranging from one to 4 feet. The upper sands were encountered at loose to medium dense states and moist conditions, and the sandstone was encountered at very dense states and moderate moisture conditions. Expansive soils were not encountered in the borings, however, highly expansive claystone and siltstone lenses are commonly interbedded in the Dawson Formation. Test Boring and Test Pit Logs are included in Appendix B and Laboratory testing results are included in Appendix C.

Groundwater

Groundwater or signs of seasonally occurring water were not encountered in the test borings or test pits, which were drilled to depths of 10 to 16 feet, and excavated to depths of 6 to 8 feet respectively. It is anticipated groundwater will not affect shallow foundations on the site. Groundwater was observed flowing in Upper Black Squirrel Creek along the southern and eastern sides of the site. This area is located within a mapped floodplain and will be avoided by future development on the site. Fluctuations in groundwater conditions may occur due to variations in rainfall or other factors not readily apparent at this time. Isolated sand layers within the soil profile can carry water in the subsurface. Contractors should be cognizant of the potential for the occurrence of subsurface water features during construction.

Geology

Approximately 12 miles west of the site is a major structural feature known as the Rampart Range Fault. This fault marks the boundary between the Great Plains Physiographic Province and the Southern Rocky Mountain Province. The site exists within a large structural feature known as the Denver Basin. Bedrock in the area is typically gently dipping in a northerly direction (Reference 3). The bedrock underlying the site consists of the Dawson Formation of Cretaceous Age. The Dawson Formation typically consists of fine to coarse-grained arkosic sandstone with interbedded claystone or siltstone. Overlying the Dawson Formation are alluvial deposits of Holocene to late Pleistocene Age.

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

Qaf **Artificial Fill of Holocene Age:** These man-placed fill associated with the existing erosion protection/slope stabilization on the slope north of the existing residence on Lot 1 along Upper Black Squirrel Creek.

Qal **Recent Alluvium of Holocene Age:** These are recent water deposited sands and gravels along the active Upper Black Squirrel Creek drainage channel in the southern and eastern portions of the site.

Qa_3 **Alluvium three of late Pleistocene Age:** These materials consist of lower stream terrace deposits. The Alluvium three typically consists of silty to clayey gravelly sands. This deposit is usually highly stratified and may contain lenses of silt, clay or

cobbles. Alluvium three is correlative with the Broadway Alluvium in the Denver Area (Reference 4).

Tkd **Dawson Formation of Tertiary to Cretaceous Age:** The materials consist of colluvial or residual soils overlying the bedrock materials on-site. The colluvial soils were deposited by the action of sheetwash and gravity. The residual soils were derived from the in-situ weathering of the bedrock on site. These materials typically consist of silty to clayey sand with potential areas of sandy clays. The bedrock consists of 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 Eastonville Quadrangle* distributed by the Colorado Geologic Survey in 2012 (Reference 4, Figure 5), 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 Pueblo 1° x 2° Quadrangle,* distributed by the US Geological Survey in 1978 (Reference 6). The test borings and test pits were used in evaluating the site and is included in Appendix B. The Geology Map prepared for the site is presented in Figure 6.

ENGINEERING GEOLOGIC HAZARDS

Mapping has been performed on this site to identify areas where various geologic conditions exist of which developers should be cognizant during the planning, design and construction stages where new construction is proposed. The engineering geologic constraints/hazards identified on this site include artificial fill, potentially expansive soils, potentially unstable slopes, shallow bedrock, flowing water, and a floodplain. These hazards and recommended mitigation techniques are discussed as follows:

Artificial Fill – Constraint
Man-place fill associated with existing erosion protection/slope stabilization on the slope north of the existing residence on Lot 1 along Upper Black Squirrel Creek in the southwestern portion of the site. Other areas of significant fill were not observed on the site.
Mitigation: If uncontrolled fill is encountered beneath foundations, mitigation will be necessary. Mitigation typically involves removal and recompaction at 95% of its maximum Modified Proctor Dry Density, ASTM D-1557.

Expansive Soils – Constraint
Expansive soils were not encountered in the test borings, however, highly expansive claystone and siltstone are commonly interbedded in the sandstone of the Dawson Formation. These clays or claystone, if encountered beneath foundations, can cause differential movement in the structure foundation.
Mitigation: Should expansive soils be encountered beneath the foundation; mitigation will be necessary. Mitigation of expansive soils will require special foundation design. Overexcavation and replacement with non-expansive soils at a minimum of 95% of its maximum Modified Proctor Dry Density, ASTM D-1557 is a suitable mitigation, which is common in the area. Floor

slabs on expansive soils should be expected to experience movement. Overexcavation and replacement has been successful in minimizing slab movements.

Landslide Hazard and Slope Stability

The topography of the site is generally gradual to the northeast with moderate to steep slopes along Upper Black Squirrel Creek in the southern portion of the site. Portions of these slopes have been mapped as potentially unstable and are further discussed below. No signs of slope failures or unstable slopes were not observed on the site at the time of our site reconnaissance.

Potentially Unstable Slope - Hazard

The areas identified with this hazard are the moderate to steep slopes along sections of Upper Black Squirrel Creek in the southern portion of the site. These slopes are considered stable in their present state, however, considerable care must be exercised in these areas not to create a condition which would tend to activate instability. No construction is proposed in these areas and these areas will be avoided.

Mitigation: Building should be avoided in these areas. Proper control of drainage at both the surface and the subsurface is extremely important. Areas of ponded water at the surface should be avoided. Utility trenches, basement excavations and other subsurface features should not be permitted to become water traps which may promote saturation of the subsurface materials. Drainage should not be permitted over the potentially unstable slope but directed in a non-erosive manner away from the slope.

Drainage and Floodplain – Hazard

Upper Black Squirrel Creek located in the southern portion of the site is a mapped floodplain according to the FEMA Map No. 08041CO340G, dated December 7, 2018 (Figure 7, Reference 7). Water was observed in any of the creek at the time of our site investigation. This area will be avoided by development on Lots 4 and 5. Groundwater was not encountered in the test borings or test pits on the site. Typical subsurface perimeter drain details are presented in Figure 8. **Specific drainage studies are beyond the scope of this report.**

Shallow Bedrock – Constraint

Bedrock was encountered in the test borings at depths ranging from the one to three feet. Where shallow bedrock is encountered, excavation/grading may be difficult requiring track-mounted excavators with ripper attachments. Bedrock will likely be encountered in the proposed building excavations. Groundwater or signs of seasonal groundwater were not encountered in the test borings and test pits on the site. However, in areas of shallow bedrock, the potential for perched groundwater conditions exist. If perched groundwater is encountered, underslab drains or interceptor drains may be necessary Figures 9 and 10.

Faults – Hazard

The closest fault is the Rampart Range Fault, located approximately 16 miles west of the site (Reference 3). No faults are mapped in the site itself. Previously, Colorado was mapped entirely within Seismic Zone 1, a very low seismic risk. Additionally, the International Residential Code (IRC), 2003, currently places this area in Seismic Design Category B, also a low seismic risk. According to a report by the Colorado Geological Survey by Kirkman and Rogers, Bulletin 43

(1981) (Reference 8), this area should be designed for Zone 2 due to more recent data on the potential for movement in this area and any resultant earthquakes.

Radon – Hazard

Radon is a colorless, tasteless radioactive gas with a United States Environmental Protection Agency (EPA) specified action level of 4.0 picocuries per liter (pCi/L) of air. Radon gas has a very short half-life of 3.8 days. Radon levels for the area have been reported by the Colorado Geologic Survey in the open file, Report No. 91-4 (Reference 9). Average Radon levels for the 80106-zip code is 3.40 pCi/l. The following is a table of radon levels in this area:

Average Radon Levels for the 80919 Zip Code	
0 < 4 pCi/L	66.67%
4 < 10 pCi/L	33.33%
10 < 20 pCi/L	0.00%
> 20 pCi/L	0.00%

Mitigation:

The potential for high radon levels is present for the site. Build-up of radon gas can usually be mitigated by providing increased ventilation of basement and crawlspace and sealing joints. **Specific requirements for mitigation should be based on site specific testing.**

RELEVANCE OF GEOLOGIC CONDITIONS TO LAND USE PLANNING

The proposed development will be rural-residential utilizing individual on-site wastewater treatment systems and water wells. Total acreage involved in the proposed subdivision is approximately 21 acres. Five rural residential lots and the construction of a private road are proposed as part of the replat. The proposed lot sizes range from approximately one to 5 acres. The existing residences and structures will remain on Lots 1 – 3. The two new lots will be serviced by individual wells and on-site wastewater treatment systems. The existing geologic and engineering geologic conditions will impose minor constraints on development and construction. These geologic conditions on the site include artificial fill, potentially expansive soils, potentially unstable slopes, shallow bedrock, and floodplain, which can be satisfactorily mitigated through avoidance or proper engineering design and construction practices.

The upper granular soils encountered in the test borings and test pits on the site were encountered at loose medium dense states, the sandstone was encountered at dense to very dense states. Expansive soils were not encountered in the test borings, however, highly expansive claystone and siltstone are commonly interbedded in the sandstone of the Dawson Formation. Mitigation of expansive soils if encountered will require special foundation design. Overexcavation and replacement with non-expansive soils at a minimum of 95% of its maximum Modified Proctor Dry Density, ASTM D-1557 is a suitable mitigation, which is common in the area. Floor slabs on expansive soils should be expected to experience movement. Overexcavation and replacement has been successful in minimizing slab movements. These

soils will not prohibit development. Additional investigation of the building sites on Lots 4 and 5 are recommended once building locations and site plans are finalized.

Man-place fill associated with existing erosion protection/slope stabilization on the slope north of the existing residence on Lot 1 along Upper Black Squirrel Creek in the southwestern portion of the site. This area is not located near any new construction proposed. Periodic observations and repair of the existing mitigation measures is recommeneded as needed.

The topography of the site is generally gradual to the northeast with moderate to steep slopes along Upper Black Squirrel Creek in the southern portion of the site. Portions of these slopes have been mapped as potentially unstable. No signs of slope failures or unstable slopes were not observed on the site at the time of our site reconnaissance. The areas identified with this hazard are the moderate to steep slopes along sections of Upper Black Squirrel Creek in the southern portion of the site. These slopes are considered stable in their present state, however, considerable care must be exercised in these areas not to create a condition which would tend to activate instability. No construction is proposed in these areas and these areas will be avoided.

Upper Black Squirrel Creek located in the southern portion of the site is a mapped floodplain according to the FEMA Map No. 08041CO340G, dated December 7, 2018 (Figure 7, Reference 7). Water was observed in any of the creek at the time of our site investigation. This area will be avoided by development on Lots 4 and 5. Groundwater was not encountered in the test borings or test pits on the site. Typical subsurface perimeter drain details are presented in Figure 8. **Specific drainage studies are beyond the scope of this report.**

Bedrock was encountered in the test borings at depths ranging from the one to three feet. Where shallow bedrock is encountered, excavation/grading may be difficult requiring track-mounted excavators with ripper attachments. Bedrock will likely be encountered in the proposed building excavations. Groundwater or signs of seasonal groundwater were not encountered in the test borings and test pits on the site. However, in areas of shallow bedrock, the potential for perched groundwater conditions exist. If perched groundwater is encountered, underslab drains or interceptor drains may be necessary Figures 9 and 10.

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

ROADWAY AND EMBANKMENT CONSTRUCTION RECOMMENDATIONS

In general, the site soils are suitable for the proposed roadways and embankments. Groundwater should be expected to be encountered in deeper cuts and along or adjacent to drainage areas. If excavations encroach on the groundwater level unstable soil conditions may be encountered. Excavation of saturated soils, if encountered, will be difficult with rubber-tired equipment. Stabilization using shot rock or geogrids may be necessary.

Any areas to receive fill should have all topsoil, organic material or debris removed. Prior to fill placement Entech should observe the subgrade. Fill must be properly benched and compacted

to minimize potentially unstable conditions in slope areas. Fill slopes should be 3:1. The subgrade should be scarified and moisture conditioned to within 2 percent of optimum moisture content and compacted to a minimum of 95 percent of its maximum Standard Proctor Dry Density ASTM D-698 (cohesive soils) or 95 percent of its Modified Proctor Dry Density ASTM D-1557 (granular soils). prior to placing new fill. Areas receiving fill may require stabilization with rock or fabric if soft soils or shallow groundwater conditions are encountered.

New fill should be placed in thin lifts not to exceed 6 inches after compaction while maintaining at least 95 percent of its maximum Modified Proctor Dry Density, ASTM D-1557 for sandy soils, and a minimum of 95 percent of its maximum Standard Proctor Dry Density, ASTM D-698 for clay soils. These materials should be placed at a moisture content conducive to compaction, usually 0 to ±2% of Proctor optimum moisture content. The placement and compaction of fill should be observed and tested by Entech during construction. Entech should approve any import materials prior to placing or hauling them to the site. Additional investigation will be required for pavement designs once roadway grading is completed and utilities are installed.

ECONOMIC MINERAL RESOURCES

Some of the sandy materials on-site could be considered a sand resource. According to the *El Paso County Aggregate Resource Evaluation Map* (Reference 10), of the area of the site is not mapped with any resources. According to the *Atlas of Sand, Gravel and Quarry Aggregate Resources, Colorado Front Range Counties* distributed by the Colorado Geological Survey (Reference 11), the site is mapped with U3 (upland deposits) an F3 (floodplain deposits) potential fine aggregate resources. According to the *Evaluation of Mineral and Mineral Fuel Potential* (Reference 12), the area of the site has been mapped as “good” for industrial minerals.

According to *the Evaluation of Mineral and Mineral Fuel Potential of El Paso County State Mineral Lands* (Reference 12), the site is mapped within the Denver Basin Coal Region. However, the area of the site has been mapped as “Poor” for coal resources. No active or inactive mines have been mapped in the area of the site. No metallic mineral resources have been mapped on the site (Reference 12).

The site has been mapped as “Fair” for oil and gas resources (Reference 12). No oil or gas fields have been discovered in the area of the site. The sedimentary rocks in the area may lack the geologic structure for trapping oil or gas; therefore, it may not be considered a significant resource. Hydraulic fracturing is a new method that is being used to extract oil and gas from rocks. It utilizes pressurized fluid to extract oil and gas from rocks that would not normally be productive. The area of the site has not been explored to determine if the rocks underlying the site would be commercially viable utilizing hydraulic fracturing. The practice of hydraulic fracturing has come under review due to concerns about environmental impacts, health and safety.

EROSION CONTROL

The soil types observed on the site are mildly to highly susceptible to wind erosion, and moderately to highly susceptible to water erosion. A minor wind erosion and dust problem may be created for a short time during and immediately after construction. Should the problem be considered severe enough during this time, watering of the cut areas or the use of chemical palliative may be required to control dust. However, once construction has been completed and vegetation re-established, the potential for wind erosion should be considerably reduced.

With regard to water erosion, loosely compacted soils will be the most susceptible to water erosion, residually weathered soils and weathered bedrock materials become increasingly less susceptible to water erosion. For the typical soils observed on site, allowable velocities or unvegetated and unlined earth channels would be on the order of 3 to 4 feet/second, depending upon the sediment load carried by the water. Permissible velocities may be increased through the use of vegetation to something on the order of 4 to 7 feet/second, depending upon the type of vegetation established. Should the anticipated velocities exceed these values, some form of channel lining material may be required to reduce erosion potential. These might consist of some of the synthetic channel lining materials on the market or conventional riprap. In cases where ditch-lining materials are still insufficient to control erosion, small check dams or sediment traps may be required. The check dams will serve to reduce flow velocities, as well as provide small traps for containing sediment. The determination of the amount, location and placement of ditch linings, check dams and of the special erosion control features should be performed by or in conjunction with the drainage engineer who is more familiar with the flow quantities and velocities.

Cut and fill slope areas will be subjected primarily to sheetwash and rill erosion. Unchecked rill erosion can eventually lead to concentrated flows of water and gully erosion. The best means to combat this type of erosion is, where possible, the adequate re-vegetation of cut and fill slopes. Cut and fill slopes having gradients more than three (3) horizontal to one (1) vertical become increasingly more difficult to revegetate successfully. Therefore, recommendations pertaining to the vegetation of the cut and fill slopes may require input from a qualified landscape architect and/or the Soil Conservation Service.

CLOSURE

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

It should be pointed out that because of the nature of data obtained by random sampling of such variable and non-homogeneous materials as soil and rock, it is important that we be informed of any differences observed between surface and subsurface conditions encountered in construction and those assumed in the body of this report. **Individual investigations for new building sites and septic systems will be required prior to construction.** Construction and

design personnel should be made familiar with the contents of this report. Reporting such discrepancies to Entech Engineering, Inc. soon after they are discovered would be greatly appreciated and could possibly help avoid construction and development problems.

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

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

Respectfully Submitted,

ENTECH ENGINEERING, INC.

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

Reviewed by:

COLORADO LICENSED
JOSEPH COLLIN GOODE
23725
PROFESSIONAL ENGINEER

Digitally signed by Joseph C. Goode Jr.
Date: 07/16/24

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

LLL/JG

Encl.

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REFERENCES

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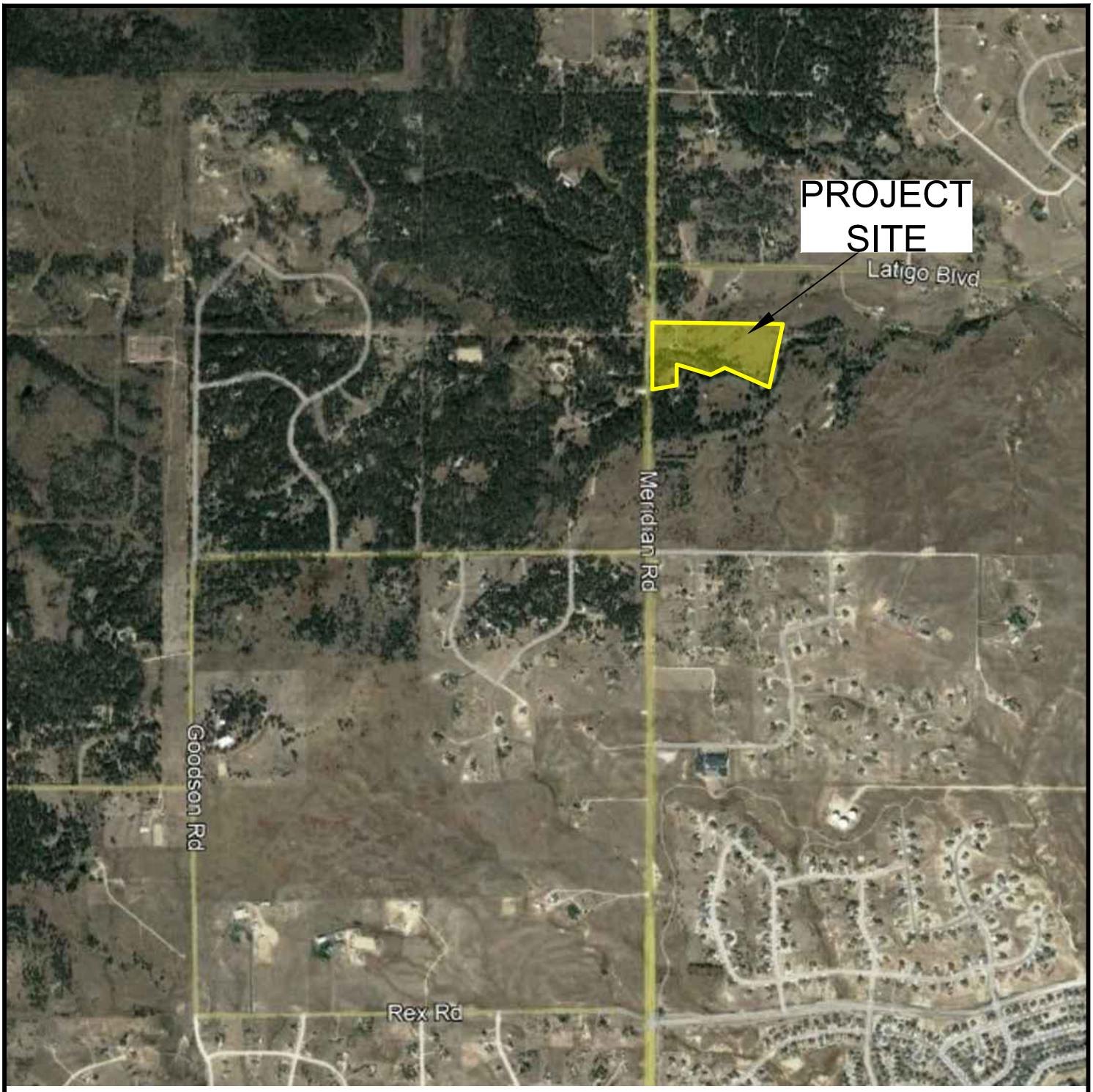
FIGURES



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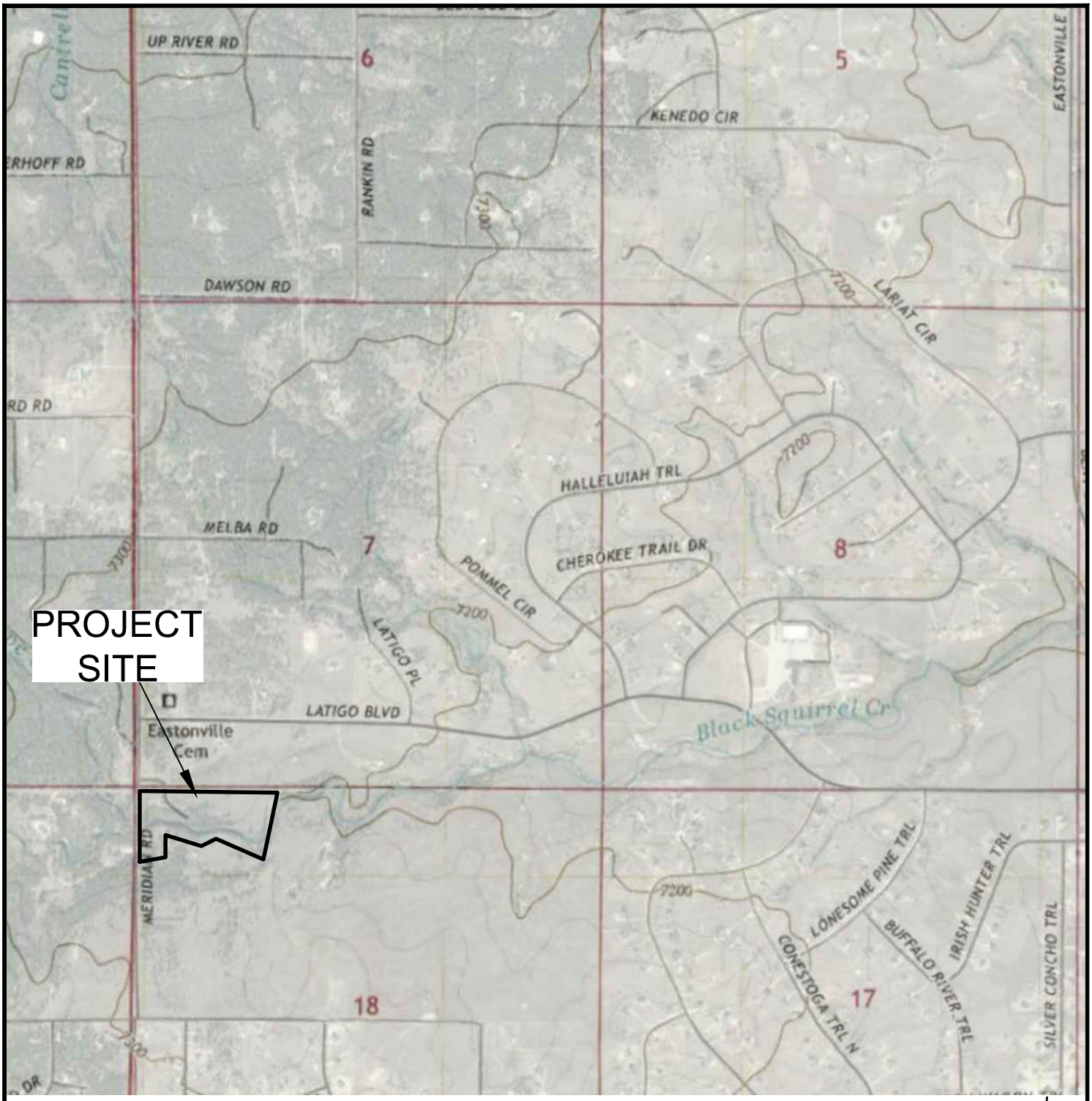
ENTECH ENGINEERING, INC.

VICINITY MAP

12425 MERIDIAN ROAD
DAVID KNECHT

JOB NO.
240813

FIG. 1



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ENTECH ENGINEERING, INC.

USGS TOPOGRAPHY MAP

12425 MERIDIAN ROAD
DAVID KNECHT

JOB NO.
240813

FIG. 2

PROP. PRIVATE ACCESS ASPHALT ROAD
PROP. ℄
750.0'
EXISTING PROPERTY LINE
PROP. 60.0' ACCESS ESMT.
14.0'
28.0'
50.0'
16.0'
26.0'
10.0'
CONCEPTUAL LOT LINE (TYP.)
20.0'
SETBACK LINE (TYP.)
EXISTING PROPERTY LINE
PROPOSED GRAVEL DRIVEWAY (TYP.)
LOT 2
±4.75 AC
9.3% IMPERVIOUS AREA
LOT 3
±5.01 AC
12.4% IMPERVIOUS AREA
LOT 4
±5.05 AC
12.5% IMPERVIOUS AREA
LOT 5
±5.16 AC
6.6% IMPERVIOUS AREA
EXISTING ACCESSORY BUILDING
±1,245 SQ FT
25.0' SETBACK
EXISTING ACCESSORY BUILDING
±1,119 SQ FT
EXISTING SINGLE FAMILY BUILDING
±1,572 SQ FT
EXISTING SINGLE FAMILY BUILDING
±1,111 SQ FT
EXISTING LOT LINE (TYP.)
EXISTING PROPERTY LI
MERIDIAN ROAD (30' PUBLIC ROW)
UPPER BLACK SQUIRREL CREEK
EXISTING PROPERTY LINE
EXISTING FLOODPLAIN
LOT 1
±1.05 AC
EXISTING SINGLE FAMILY BUILDING
±1,733 SQ FT
EXISTING DRIVEWAY
EXISTING PROPERTY LINE
TP-1
TP-2
TB-1
TB-2
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10

Kimley»Horn

2 NORTH NEVADA AVENUE, SUITE 900
COLORADO SPRINGS, COLORADO 80903 (719) 453-0180

GRAPHIC SCALE IN FEET
0 30 60 120

NORTH

SECTION 2 - PUBLIC IMPROVEMENTS *						
ROADWAY IMPROVEMENTS						
Aggregate Base Course (6" thick)	534	CY	$ 66.00		$	35,244.00
Asphalt Pavement (4" thick)	3,205	SY	$ 25.00		$	80,125.00
			TOTAL	=	$	115,369.00

TB- APPROXIMATE TEST BORING LOCATION AND NUMBER

P2 - APPROXIMATE PHOTOGRAPH LOCATION AND DIRECTION

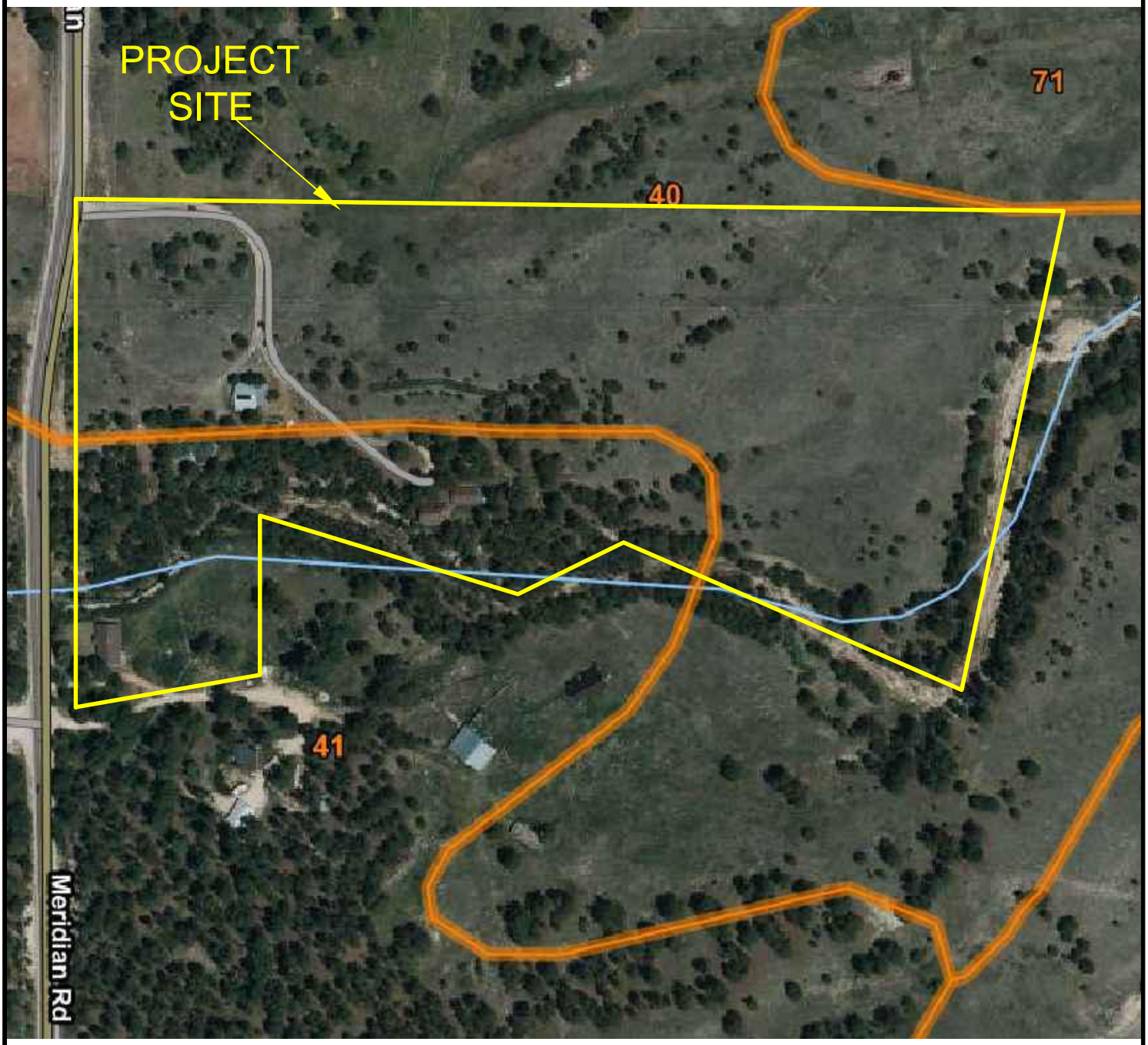
ENTECH ENGINEERING, INC.

SITE AND EXPLORATION PLAN

12425 MERIDIAN ROAD
DAVID KNECHT

JOB NO. 240813

FIG. 3



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ENTECH
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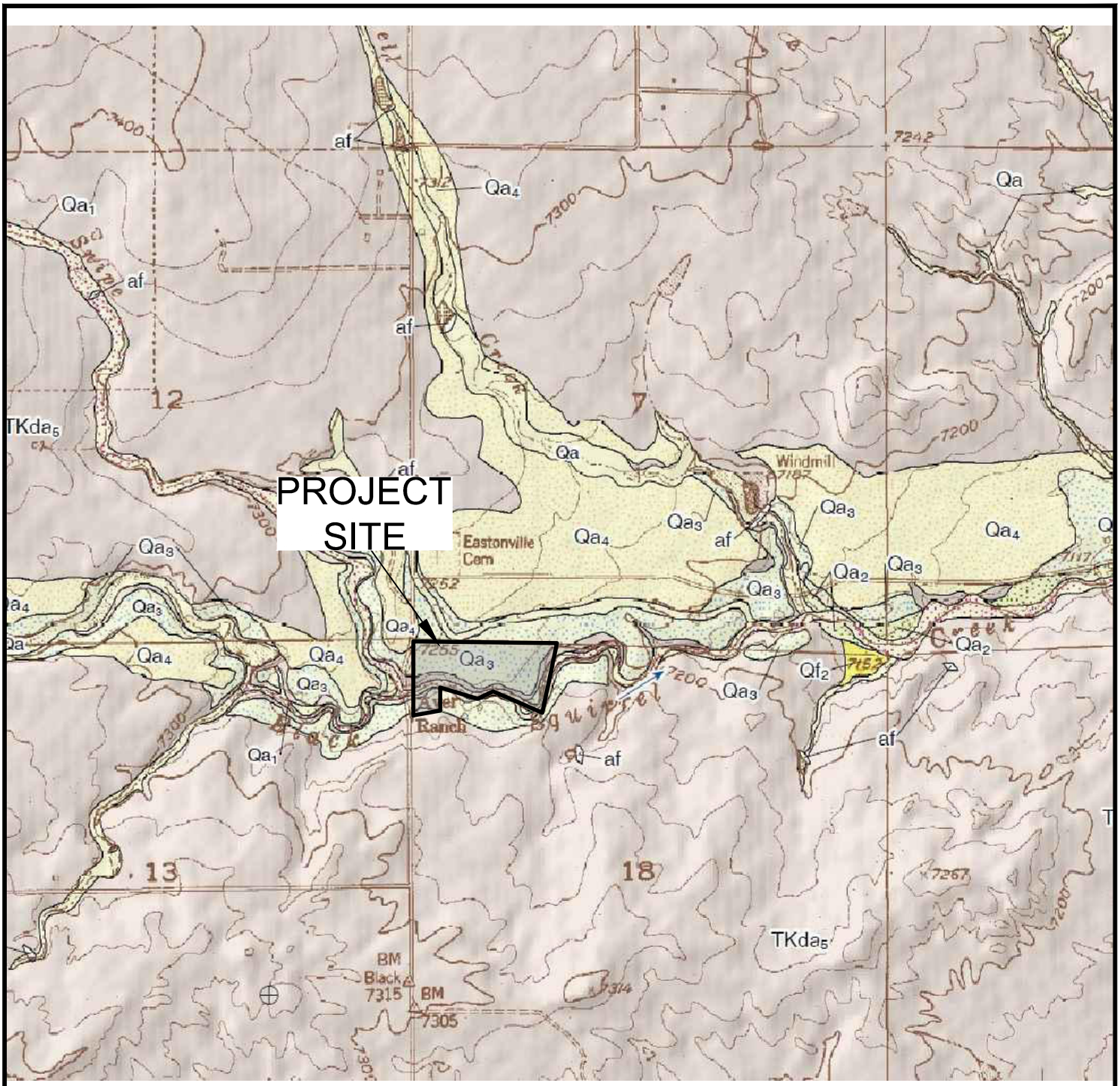
SOIL SURVEY MAP

12425 MERIDIAN ROAD
DAVID KNECHT

JOB NO.
240813

FIG. 4



ENTECH ENGINEERING, INC.

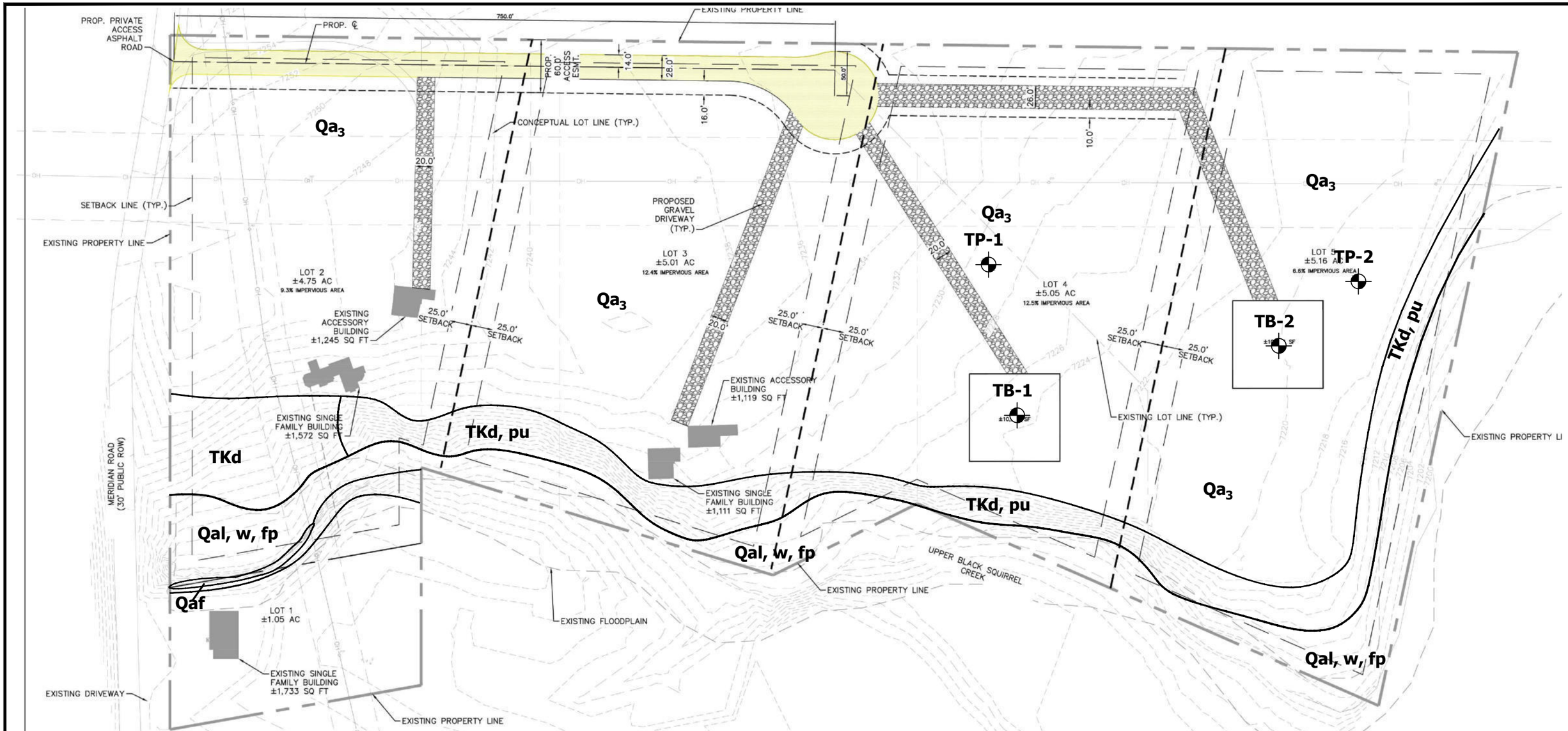
GEOLOGIC MAP OF THE EASTONVILLE QUADRANGLE

12425 MERIDIAN ROAD

DAIVD KNECHT

JOB NO. 240813

FIG. 5



Legend:

Qaf -	Artificial Fill of Holocene Age: man-place fill deposits associated existing stream bank stabilization
Qal -	Recent Alluvium of Holocene Age: stream deposited sands and gravel along Upper Black Squirrel Creek
Qa_3 -	Alluvium three of late Pleistocene Age: stream terrace deposited sands and gravel
Tkd -	Dawson Formation of Tertiary to Cretaceous Age: arkosic sandstone with interbedded claystone and siltstone
fp -	floodplain
w -	seasonally shallow groundwater area

Kimley»Horn

2 NORTH NEVADA AVENUE, SUITE 900
COLORADO SPRINGS, COLORADO 80903 (719) 453-0180

GRAPHIC SCALE IN FEET
0 30 60 120

NORTH

SECTION 2 - PUBLIC IMPROVEMENTS *					
ROADWAY IMPROVEMENTS					
Aggregate Base Course (6" thick)	534	CY	$ 66.00		$ 35,244.00
Asphalt Pavement (4" thick)	3,205	SY	$ 25.00		$ 80,125.00
			TOTAL	=	$ 115,369.00

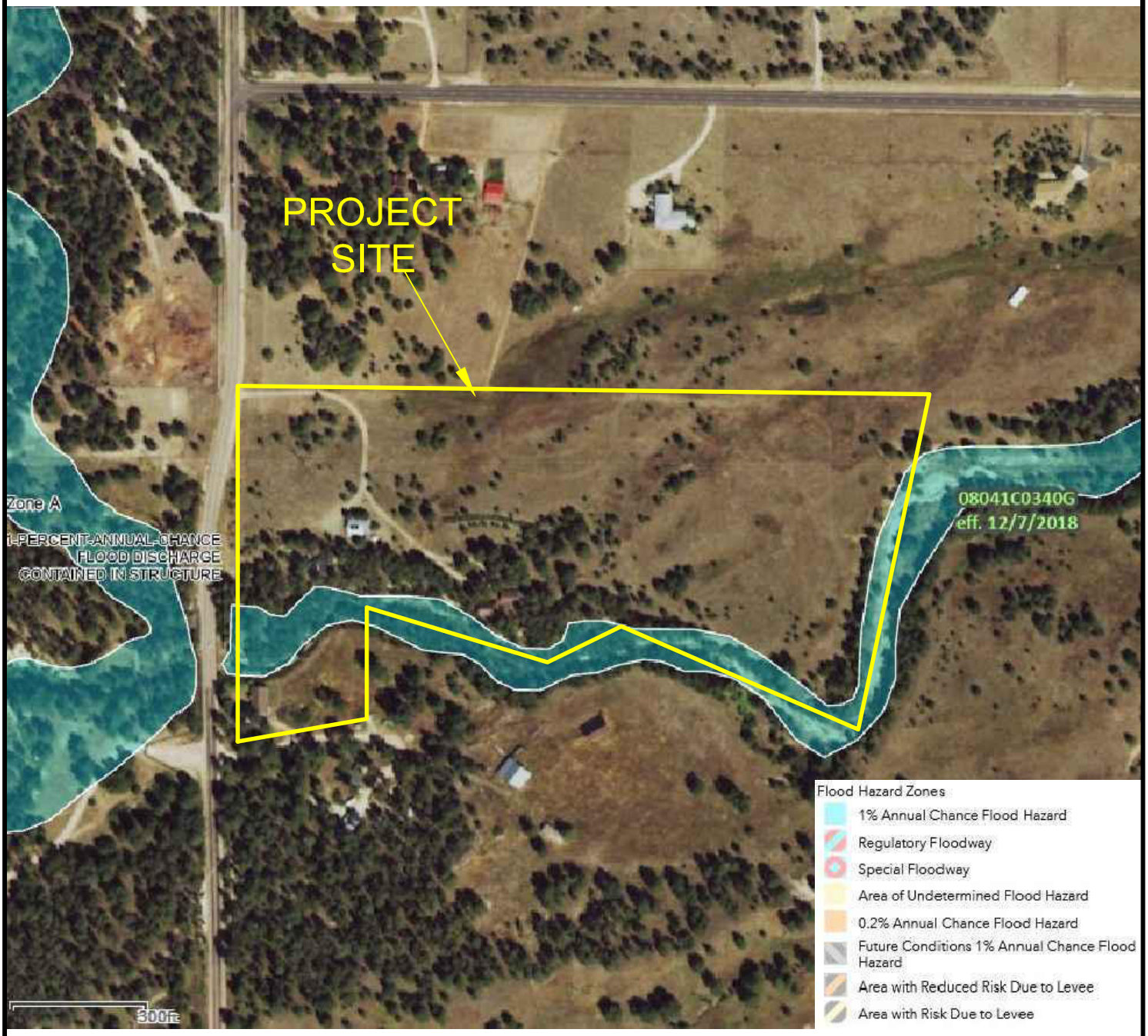
ENTECH ENGINEERING, INC.

GEOLOGY / ENGINEERING MAP

12425 MERIDIAN ROAD
DAVID KNECHT

JOB NO. 240813

FIG. 6



N

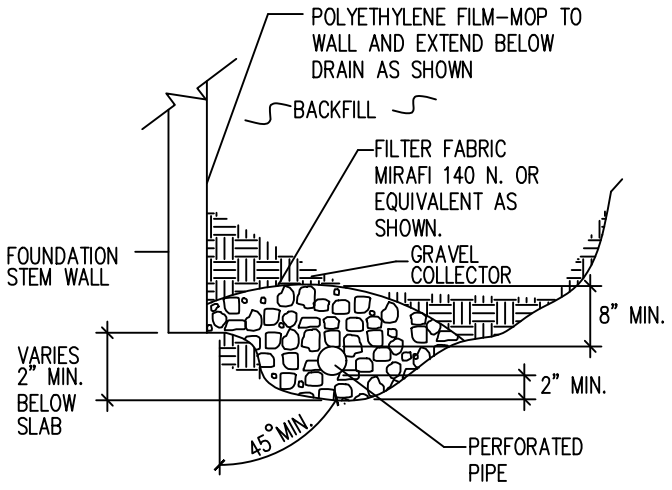
ENTECH ENGINEERING, INC.

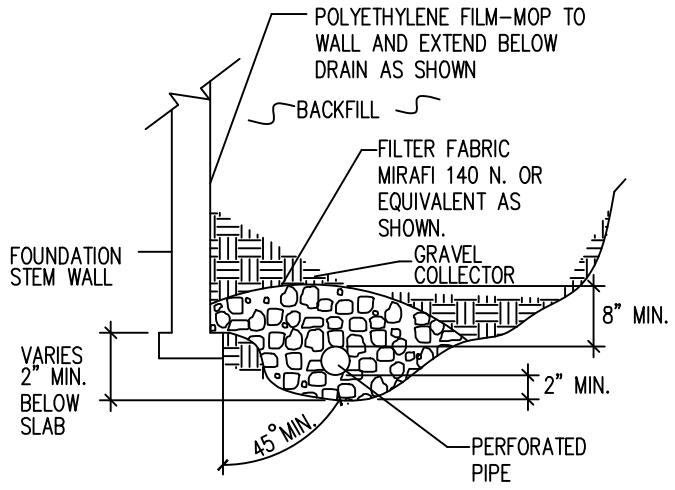
FEMA FLOODPLAIN MAP

12425 MERIDIAN ROAD
DAVID KNECHT

JOB NO.
240813

FIG. 7





NOTES:

-GRAVEL SIZE IS RELATED TO DIAMETER OF PIPE PERFORATIONS-85% GRAVEL GREATER THAN 2x PERFORATION DIAMETER.

-PIPE DIAMETER DEPENDS UPON EXPECTED SEEPAGE. 4-INCH DIAMETER IS MOST OFTEN USED.

-ALL PIPE SHALL BE PERFORATED PLASTIC. THE DISCHARGE PORTION OF THE PIPE SHOULD BE NON-PERFORATED PIPE.

-FLEXIBLE PIPE MAY BE USED UP TO 8 FEET IN DEPTH, IF SUCH PIPE IS DESIGNED TO WITHSTAND THE PRESSURES. RIGID PLASTIC PIPE WOULD OTHERWISE BE REQUIRED.

-MINIMUM GRADE FOR DRAIN PIPE TO BE 1% OR 3 INCHES OF FALL IN 25 FEET.

-DRAIN TO BE PROVIDED WITH A FREE GRAVITY OUTFALL, IF POSSIBLE. A SUMP AND PUMP MAY BE USED IF GRAVITY OUT FALL IS NOT AVAILABLE.

ENTECH ENGINEERING, INC.

PERIMETER DRAIN DETAIL

12425 MERIDIAN ROAD
DAVID KNECHT

JOB NO.
240813

FIG. 8

APPENDIX A: Site Photographs

1

Looking northeast from the southwest side of the site.

May 22, 2024

2

Looking northwest form the western portion of the site towards outbuilding on Lot 2.

May 22, 2024

Job No. 240813

3

Looking east from the existing gravel drive in the northwest portion of the site.

May 22, 2024

4

Looking east the central portion of the site.

May 22, 2024

Job No. 240813

5

Looking west from the eastern portion of the site.

May 22, 2024

6

Looking southwest towards slope stabilization along Lot 1.

May 22, 2024

Job No. 240813

7

Looking west along Black Squirrel Creek southeast side of Lot 2.

May 22, 2024

8

Looking east along crest of potentially unstable slope on Lot 4.

May 22, 2024

Job No. 240813

9

Looking west along Upper Black Squirrel Creek in the southeastern portion of the site.

May 22, 2024

10

Looking east from the southeast portion of Lot 5.

May 22, 2024

Job No. 240813

APPENDIX B: Test Boring and Test Pit Logs

TEST BORING 1
DATE DRILLED 6/6/2024

REMARKS

LOT 4

DRY TO 16', 6/7/24

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %
	6" TOPSOIL			
	SAND, SILTY, TAN			
	SANDSTONE, VERY WEAK, TAN to OLIVE, COMPLETELY WEATHERED (SAND, SILTY, VERY DENSE, MOIST)		50/11"	3.3
5			50/7"	9.2
10			50/5"	6.3
15			50/7"	4.5
	AUGER REFUSAL AT 16'			
20				

TEST BORING 2
DATE DRILLED 6/6/2024

REMARKS

LOT 5

DRY TO 10', 6/7/24

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %
	6" TOPSOIL			
	SAND, SILTY, BROWN, LOOSE, MOIST		9	4.1
	SANDSTONE, VERY WEAK, TAN to OLIVE, COMPLETELY WEATHERED (SAND, SILTY, VERY DENSE, MOIST)			
5			50/6"	8.0
10			50/4"	9.4
	AUGER REFUSAL AT 10'			
15				
20				

ENTECH ENGINEERING, INC.

TEST BORING LOGS

12425 MERIDIAN ROAD
DAVID KNECHT

JOB NO.
240813

FIG. B-1

TEST PIT 1
DATE EXCAVATED 6/7/2024

REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
0-2' topsoil,sandy loam, dark brown, moist	1					
sandy loam, fine to coarse grained, light brown, moist	2			g	w	2A
	3					
	4					
sandstone (Dawson Formation), gravelly sandy clay loam, fine to coarse grained, light brown, moist	5			g	ma	3A
	6					
	7					
	8					
	9					
	10					

TEST PIT 2
DATE EXCAVATED 6/7/2024

REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
0-2' topsoil,sandy loam, dark brown, moist	1					
	2			g	w	2A
	3					
sandy loam, fine to coarse grained, light brown, moist	4					
	5					
	6					
	7			g	w	2A
	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

ENTECH ENGINEERING, INC.

TEST PIT LOGS

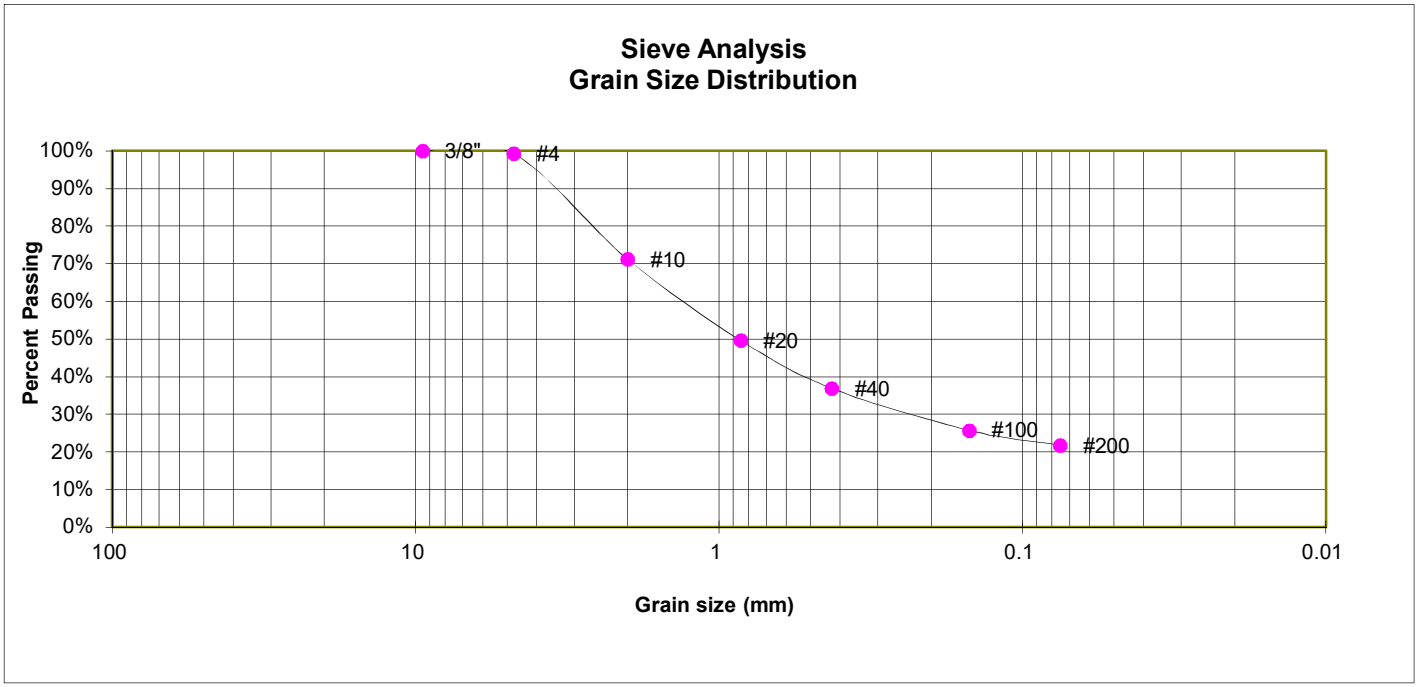
12425 MERIDIAN ROAD
DAVID KNECHT

JOB NO.
240813

FIG. B-2

APPENDIX C: Laboratory Testing Results

TEST BORING	1	SOIL DESCRIPTION	SANDSTONE (SAND, SILTY)
DEPTH (FT)	10		



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.2%
10	71.2%
20	49.7%
40	36.9%
100	25.7%
200	21.8%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

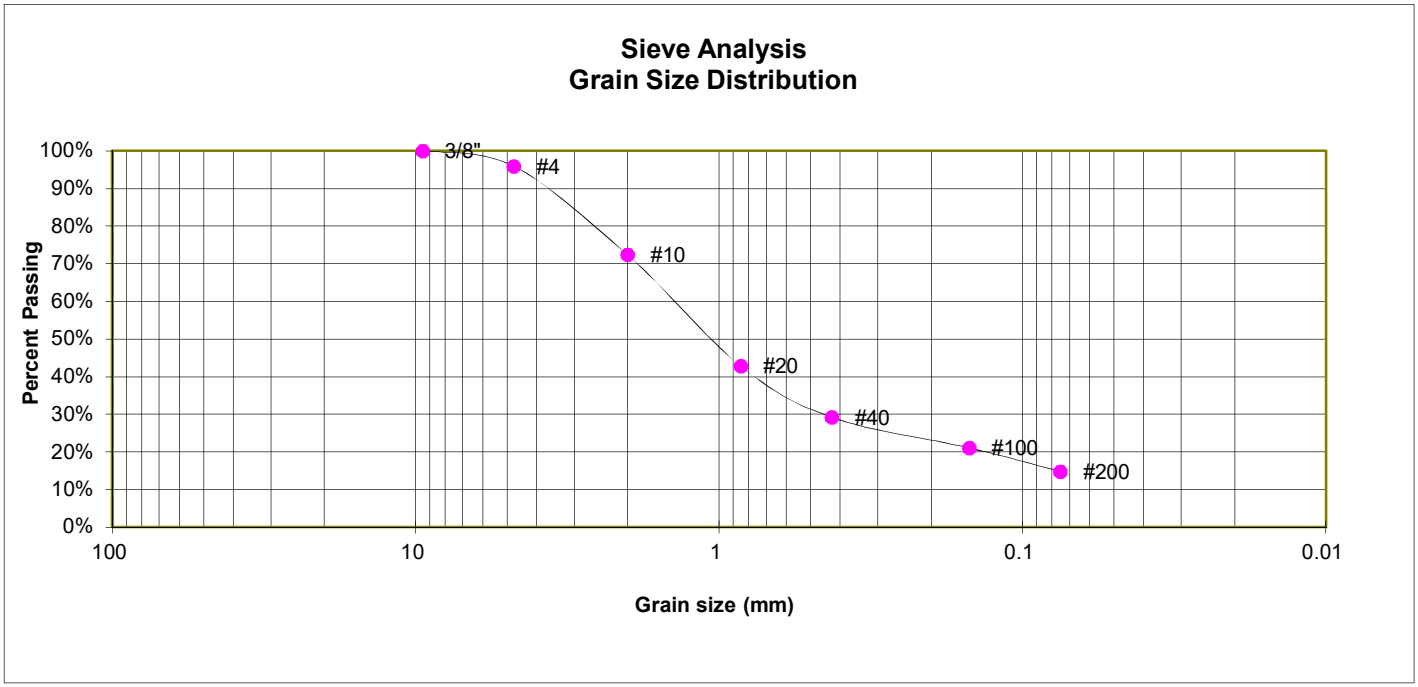
LABORATORY TEST RESULTS

12425 MERIDIAN ROAD
DAVID KNECHT

JOB NO.
240813

FIG. C-1

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



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	95.9%
10	72.3%
20	42.9%
40	29.2%
100	21.1%
200	14.8%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

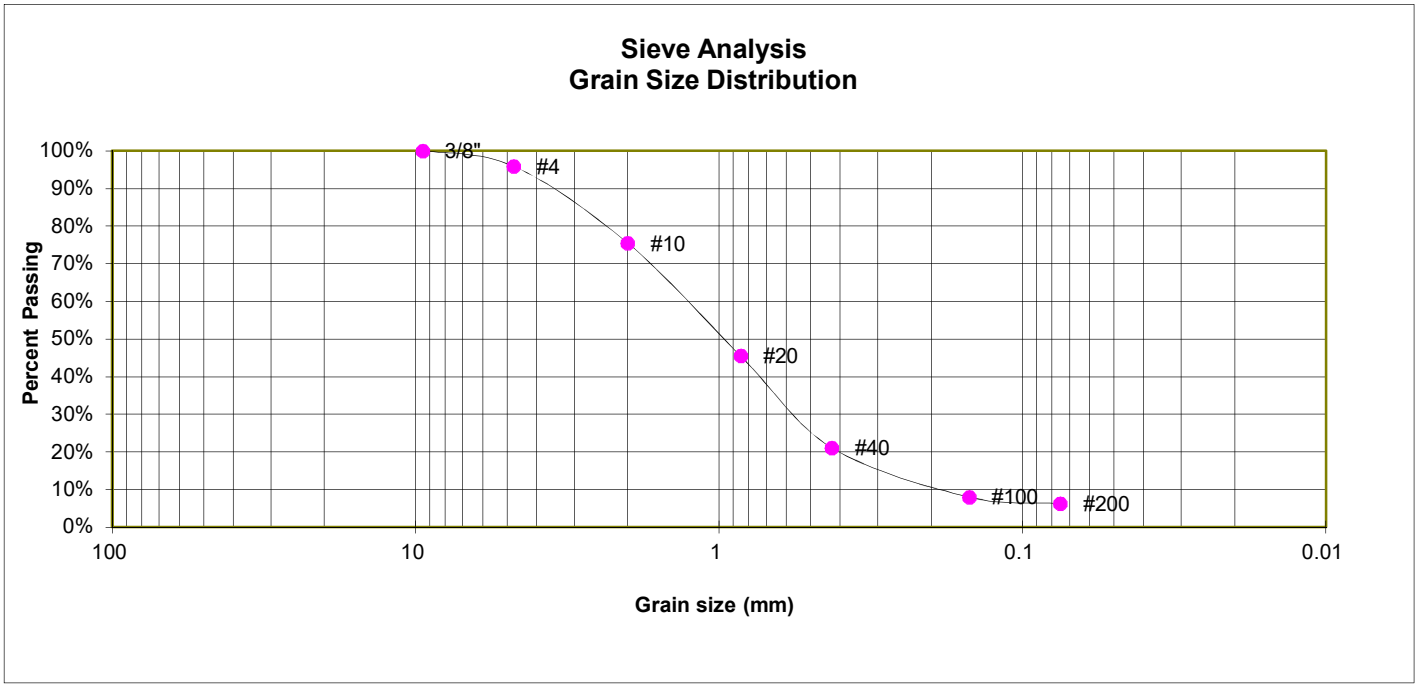
LABORATORY TEST RESULTS

12425 MERIDIAN ROAD
DAVID KNECHT

JOB NO.
240813

FIG. C-2

TEST PIT	TP-1	SOIL DESCRIPTION	SAND, WITH SILT
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	95.9%
10	75.5%
20	45.5%
40	21.1%
100	8.0%
200	6.3%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SW-SM

ENTECH ENGINEERING, INC.

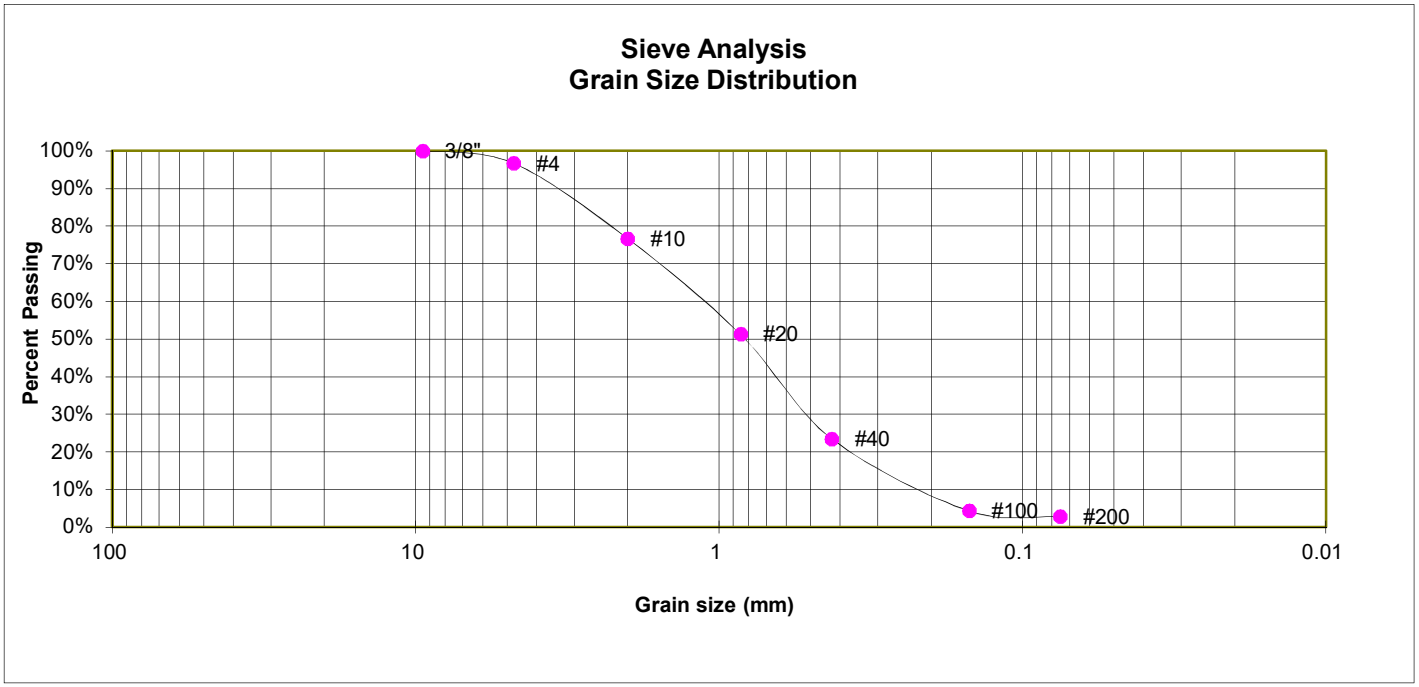
LABORATORY TEST RESULTS

12425 MERIDIAN ROAD
DAVID KNECHT

JOB NO.
240813

FIG. C-3

TEST PIT	TP-2	SOIL DESCRIPTION	SAND, SLIGHTLY SILTY
DEPTH (FT)	7-8	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	96.7%
10	76.7%
20	51.3%
40	23.5%
100	4.3%
200	2.8%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SW

ENTECH ENGINEERING, INC.

LABORATORY TEST RESULTS

12425 MERIDIAN ROAD
DAVID KNECHT

JOB NO.
240813

FIG. C-4

APPENDIX D: USDA Soil Survey Descriptions

El Paso County Area, Colorado

40—Kettle gravelly loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 368g
Elevation: 7,000 to 7,700 feet
Farmland classification: Not prime farmland

Map Unit Composition

Kettle and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kettle

Setting

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

Typical profile

E - 0 to 16 inches: gravelly loamy sand
Bt - 16 to 40 inches: gravelly sandy loam
C - 40 to 60 inches: extremely gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (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 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F048AY908CO - Mixed Conifer
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit:
Hydric soil rating: No

Pleasant

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

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 21, Aug 24, 2023

El Paso County Area, Colorado

41—Kettle gravelly loamy sand, 8 to 40 percent slopes

Map Unit Setting

National map unit symbol: 368h
Elevation: 7,000 to 7,700 feet
Farmland classification: Not prime farmland

Map Unit Composition

Kettle and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kettle

Setting

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

Typical profile

E - 0 to 16 inches: gravelly loamy sand
Bt - 16 to 40 inches: gravelly sandy loam
C - 40 to 60 inches: extremely gravelly loamy sand

Properties and qualities

Slope: 8 to 40 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Medium
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 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F048AY908CO - Mixed Conifer
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit:
Hydric soil rating: No

Pleasant

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

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 21, Aug 24, 2023

APPENDIX E: El Paso County Environmental Health Department, Septic Records

El Paso County, CO
Public Health
Prevent • Promote • Protect

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

ON-SITE WASTEWATER TREATMENT SYSTEM
OWTS RECORD CORRECTION

Internal Use

PROPERTY INFORMATION *Current Record Information*			
ON#	ON0003735	Tax schedule#:	4218000001
Property Address	12425 Meridian Rd		
City, State, Zip	Elbert CO 80106		
Structure Type:	☒ Main Residence ☐ Secondary Living Structure ☐ Auxiliary Structure ☐ Commercial Structure		
Main = Primary living structure, **Secondary** = Mother in law, additional living quarters in separate structure **Auxiliary** = has wastewater disposal but no living space, **Commercial** = nonresidential use			

PERMIT INACTIVIATION			
☐	Permit Expired System Not Installed	Permit Holder Notified: ☐ Phone Call: ☐ Email: ☐ Final Letter: Date ON inactivated:	
	Inactive System Never Installed	Reason:	Date ON Inactivated:
	Inactive Permit: Other	Reason:	Date ON Inactivated:
	Inactive System Abandon/Not Located	Reason:	Date ON Inactivated:
Specialist:		**Date Reviewed and Approved:**	

ADMINISTRATIVE RECORD CORRECTION			
☑	Property Re-enumeration	New Property Address: 12475 N Meridian Rd	New Tax Schedule #: 4218000004
		Reason: Parcel split	

4218000001

EL PASO COUNTY HEALTH DEPARTMENT
COLORADO SPRINGS, COLORADO

ONB

PERMIT [redacted] 5735

SEWAGE DISPOSAL INSPECTION FORM

DATE 1/13/86

APPROVAL:
YES ✓ NO _____

ENVIRONMENTALIST Julie Tobiassen

LOCATION (street number) 12425 Meridian Rd. OCCUPANT Mark Ware

LEGAL DESCRIPTION Lengthy - see attached

TYPE OF CONSTRUCTION frame NO. OF BEDROOMS 2

SYSTEM INSTALLED BY Tom Beneze

COMMERCIAL MFG. yes SIZE 1000

TYPE OF MATERIAL pre cast concrete NO. COMPARTMENTS 2

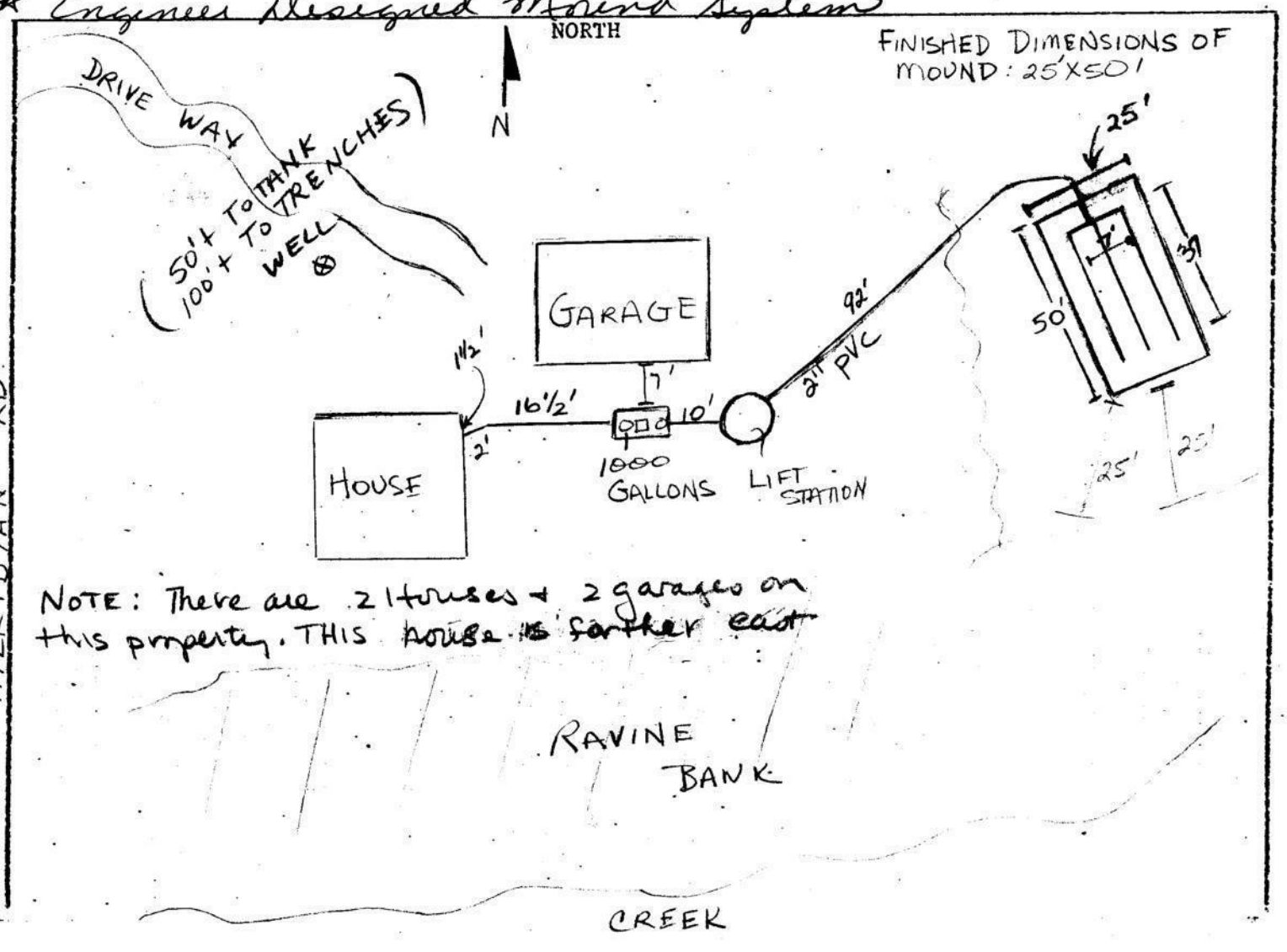
WIDTH _____ LENGTH _____ DEPTH (total) _____ LIQ. CAP. _____

DISPOSAL FIELD* BED OR TRENCH DEPTH _____ WIDTH 11' LENGTH 41' SQ. FT. 451 □'

DISTANCE BETWEEN LINES _____ ROCK _____ DEPTH _____ UNDER _____ OVER _____

LEACHING PITS (NO.) _____ LINING MATERIAL _____ CAPACITY SQ. FT. _____

* Engineer designed mound system



Acres 6.917

EL PASO COUNTY • COUNTY HEALTH DEPARTMENT
501 North Foote Avenue • Colorado Springs, Colorado • 578-3125

Permit 3735

Water Supply Well

Receipt No. 0207

PERMIT

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

Issued To Mark A. Ware Date 1/7/86

Address of Property 12425 Meridian Road, CO. EAST, CO. Phone 636-3714
(Permit valid at this address only)

Sewage-Disposal System work to be performed by R & R Ditching Phone

This Permit is issued in accordance with 25-10-106 Colorado Revised Statutes 1973, as amended. PERMIT EXPIRES upon completion-installation of sewage-disposal system or at the end of six (6) months from date of issue—whichever occurs first—(unless work is in progress). This permit is revokable if all stated requirements are not met.

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

$150.00
PERMIT FEE (NOT REFUNDABLE)

DIRECTOR, COUNTY HEALTH DEPARTMENT

July 7, 1986
DATE OF EXPIRATION

ENVIRONMENTALIST

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

SEPTIC TANK:	TRENCH SYSTEM:	BED SYSTEM:	SEEPAGE PIT SYSTEM:
	total square feet ____	10'X38'	total square feet ____
	____ ft. of trench ____ inches wide		
1000 gallons	____ ft. of trench ____ inches wide	total square feet 375	____ rings or ____ diam.x ____ w/d

NOTES:

Engineer designed mound system to be installed per MVE design specs dated 1/6/86.
One (1) ft. sandfill needed below rock, 1½ ft. minimum sandfill needed above rock.
Designing engineer and County Health must inspect system.

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

El Paso County Health Department
501 North Foote Avenue
Colorado Springs, CO 80909-4598
(303) 578-3125

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

NAME OF OWNER MARK A. WARE HOME PHONE 495-4540 WORK PHONE * 636-3714 636-3711

ADDRESS OF PROPERTY 12425 MERIDIAN RD. DATE SEPT. 23, 1985

LEGAL DESCRIPTION OF PROPERTY ATTACHED TO PLOT PLAN --

TAX SCHEDULE NUMBER 42000-00-189 SYSTEM CONTRACTOR R&R DITCHING PHONE 495-3274

OWNER'S ADDRESS IF DIFFERENT 12337 MERIDIAN RD. Russ

TYPE OF HOUSE CONSTRUCTION FRAME SOURCE AND TYPE OF WATER SUPPLY WELL - DAWSON FORM.

SIZE OF LOT 6.917 AC. MAXIMUM POTENTIAL NUMBER OF BEDROOMS 2 BASEMENT (yes or no) YES

PERCOLATION TEST RESULTS ATTACHED (yes or no) YES

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

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

Perc test needs to be done in clearing where trenches will be dug.

SIGNATURE Mark A. Ware

HEALTH DEPARTMENT USE ONLY

PERMIT NUMBER 3735 RECEIPT NUMBER Paid 11/6/86 Receipt # 0207 DATE TO LAND USE DEPARTMENT Unzoned

ABSORPTION AREA TANK CAPACITY ~~1000~~ DATE OF SITE INSPECTION 9/26/85

REMARKS: Keep trenches away from the bank a distance equal to 4x the height of the bank. Well to be 50' from tank, 100' from trenches. Engineer report shows 3'-8' sandstone - need engineer designed system or new location. * Land use issue must be resolved - see attached

APPLICATION IS APPROVED ( ) DENIED ( ) DATE ENVIRONMENTALIST (Willie Zabrasien

(land use states - that parcel was illegally created.)
* OK per land use - see attached

GO EAST ON HWY 24 TO THE TOWN OF FALCON - TURN NORTH
CROSS RAILROAD TRACKS - BEAR RIGHT TO MERIDIAN RD.
OR - TAKE WOODMEN RD. EAST TO MERIDIAN RD.

GO NORTH ON MERIDIAN - 5 MILES - TAKE SECOND DRIVEWAY ON THE RIGHT AFTER YOU ENTER THE TREES

DRIVEWAY IS DIRECTLY UNDER POWER LINES WHICH CROSS MERIDIAN RD. - IF YOU PASS THE EASTONVILLE CEMETARY, YOU HAVE GONE TOO FAR - GO BACK 1/4 MILE.

PROPOSED RESIDENCE IS APPROX 1/4 MILE EAST OF MERIDIAN RD. - BEHIND EXISTING BARN - MAY NOT BE VISIBLE FROM MERIDIAN -

IF YOU GET LOST, STOP AT 1ST HOUSE IN THE TREES ON MERIDIAN - WARE RESIDENCE - THE LADY KNOWS DIRECTIONS.

THANKS

Mark

El Paso County Health Department
501 North Foote Avenue
Colorado Springs, CO 80909-4598
(303) 578-3125

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

NAME OF OWNER MARK A. WARE HOME PHONE 495-4540 WORK PHONE 636-3711

ADDRESS OF PROPERTY 12425 MERIDIAN RD. DATE SEPT. 23, 1985

LEGAL DESCRIPTION OF PROPERTY ATTACHED TO PLOT PLAN --

TAX SCHEDULE NUMBER 42000-00-189 SYSTEM CONTRACTOR R&R DITCHING PHONE 495-3274

OWNER'S ADDRESS IF DIFFERENT 12337 MERIDIAN RD.

TYPE OF HOUSE CONSTRUCTION FRAME SOURCE AND TYPE OF WATER SUPPLY WELL - DAWSON FORM.

SIZE OF LOT 6.917 AC. MAXIMUM POTENTIAL NUMBER OF BEDROOMS 2 BASEMENT (yes or no) YES

PERCOLATION TEST RESULTS ATTACHED (yes or no) YES

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

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

16.04 AC RECEIVED By
18-12-L4 / SEP 24 1985

SIGNATURE Mark A. Ware

HEALTH DEPARTMENT USE ONLY

PERMIT NUMBER El Paso County Planning Department RECEIPT NUMBER DATE TO LAND USE DEPARTMENT 9/24/85

ABSORPTION AREA TANK CAPACITY DATE OF SITE INSPECTION

REMARKS:

Appears to have been illegaly Created.
PARCEL WAS Created in 1981.
See attached revised statement
IS OK. JAT 10/22/85

APPLICATION IS APPROVED ( ) DENIED ( ) DATE ENVIRONMENTALIST

MVE, Inc.

January 13, 1986

Beal Construction
7101 Berglind Drive
Colorado Springs, Colorado 80918

Attn: Mr. Bob Beal

Re: 12425 Meridian Road
Project No. 1372

Dear Mr. Beal:

Authorized representatives of the OWNER, CONTRACTOR, EL PASO COUNTY HEALTH DEPARTMENT and ENGINEER (M.V.E., INC.) have inspected the above referenced septic tank and mound system, installed at 12425 Meridian Road. The work was found to be in substantial compliance with the Contract Documents, which include M.V.E., Inc. Drawing No. 2372 and the El Paso County Individual Sewage Disposal System Regulations, 1980 and Colorado State Department of Health Guidelines On Individual Sewage Disposal Systems, 1979.

Should you have any questions, please contact our office.

Very truly yours,

M.V.E., INC.

Eugene J. Braun, P.E.

Eugene J. Braun, P.E. No. 22415

EJB:jdg

cc: El Paso County Health Department - Ms. Julie Tobiassen

Engineering • Planning • Surveying
P.O. Box 25026 • Colorado Springs, Colorado 80936 • Phone 303-635-5736

M.V.E., Inc.

April 7, 1986

Beal Construction
7101 Berglind Drive
Colorado Springs, Colorado 80918

Attn: Mr. Bob Beal

Re: 12425 Meridian Road
Project No. 1372

Dear Mr. Beal:

Authorized representatives of the ENGINEER (M.V.E., Inc.) have inspected the above referenced septic tank and mound system, installed at 12425 Meridian Road. Inspection occurred on March 12, 1986. Final Grading was complete.

The work was found to be in substantial compliance with the Contract Documents, which include M.V.E., Inc. Drawing No. 2372 and the El Paso County Individual Sewage Disposal System Regulations, 1980 and Colorado State Department of Health Guidelines On Individual Sewage Disposal Systems, 1979.

Should you have any questions, please contact our office.

Very truly yours,

M.V.E., Inc.

COLORADO REGISTERED EUGENE J. BRAUN 22415 PROFESSIONAL ENGINEER

Eugene J. Braun, P.E.

Eugene J. Braun, P.E. No. 22415

EJB:jdg

cc: El Paso County Health Department - Ms. Julie Tobiassen

Engineering • Planning • Surveying
P.O. Box 25026 • Colorado Springs, Colorado 80936 • Phone 303-635-5736

MVE, Inc.

January 24, 1986

Beal Construction
7101 Berglind Drive
Colorado Springs, CO 80918 (monument)

Attn: Mr. Bob Beal

Re: 12425 Meridian Road
Project No. 1372

Dear Mr. Beal:

On January 24, 1986, M.V.E., Inc. personnel inspected the wastewater treatment system (mound system) for the above referenced project. At the time of this inspection it was observed that the side slopes on the mound system were not graded to three to one (3:1), horizontal to vertical, as specified by M.V.E., Inc. DWG. No. 2372. Side slopes were found to be approximately two to one (2:1). Also, the grading on all surfaces of the mound was irregular and careless.

It is suggested that the side slopes be carefully regraded to three to one (3:1), horizontal to vertical.

Very truly yours,

M.V.E., INC.

Eugene J. Braun, P.E.

Eugene J. Braun, P.E.

EJB/ts

cc: El Paso County Health Department - Ms. Julie Tobiassen

Engineering • Planning • Surveying
P.O. Box 25026 • Colorado Springs, Colorado 80936 • Phone 303-635-5736

Lincoln DeVore, Inc.
Geotechnical Consultants
1000 West Fillmore St.
Colorado Springs, CO 80907
(303) 632-3593

July 9, 1985

Beal Construction
7101 Berglind Lane
Colorado Springs, CO 80918

Re: 12425 Meridian Road

Gentlemen:

At your request, Lincoln-DeVore personnel have recently completed a geotechnical exploratory program at the above referenced address. Two shallow test borings were placed within the building lot to determine as closely as possible, the soil types which exist beneath the proposed structure. The following are our conclusions and recommendations for this site.

Soil Classification: The soils on the site were found to consist of a thin veneer of low density, well graded, silty sand overlying medium to high density, slightly clayey, weathered sandstone, as shown on the attached drilling logs. Average bearing values of the soil are 4000 psf maximum and 500 psf minimum.

Man-made fill: Soils appear to be native to the site. All building foundations must penetrate any man-made fills which are present at the site at this time, as well as any fills which result from the excavation process. Careful examination of the open excavation will be necessary to determine the presence or absence of man-made fills. The open excavation must be examined prior to the placement of concrete to establish that materials of the proper design bearing capacity have been encountered and that no soft spots or debris are present in the foundation area. A 24 hour notice is required for all field examinations to enable Lincoln-DeVore to schedule personnel and provide service when needed.

Moisture conditions at time of examination: Moderate.

Foundation type recommended: A properly designed shallow foundation system, based upon the above soil engineering values would be appropriate for use on this site. Lincoln-DeVore has prepared a foundation design on the basis of this preliminary soils analysis; a copy of which is attached. This design must be considered preliminary until completion of the open excavation examination. At that time, the foundation design will either be reissued in

its present format or modified as conditions dictate. The foundation system must be constructed in close compliance with our foundation design with no alterations or deviations allowed, unless prior approval from this office is obtained. Due to the mild expansive nature of the soils on this site, some magnitude of floor slab movement should be expected.

Voids beneath foundation walls: Voids are required - see design.

Reinforcing: The foundation should be reinforced as shown on the foundation design.

Drainage and Grading: Surface grading should be constructed in such a manner that all runoff moisture is removed from the vicinity of the structure as quickly as possible. Roof drains should be carried across backfilled areas and allowed to discharge well away from the building. Water should not be allowed to stand or pond in areas of backfill.

Surface drainage must be improved to remove water from building area. It is recommended that a peripheral drain be constructed around the living area of this structure. See detail sheet.

To aid in keeping water from reaching beneath the building, all backfill around the building and in utility trenches leading to the building, should be mechanically compacted to 85% of the maximum Proctor density, ASTM D-1557. All fill should be composed of the native soils and no fill should be soaked, jetted or ponded.

Cement type: Type II Cement should be used in contact with the ground. Calcium Chloride should not be added to concrete containing a Type II Cement.

Remarks: The soil design parameters and foundation recommendations contained herein are based upon the assumption and our recommendation that the thin veneer of low density, silty sand encountered at the top of the soil profile on this site be completely penetrated by the proposed shallow foundation system such that it bears on the underlying weathered sandstone only.

VA Individual Test Holes Observation: Based upon the results of an exploratory boring drilled on the subject site, it is felt that a properly designed shallow foundation is suitable. The foundation system should conform to recommendations contained in the soils and foundation report attached (Job No. 57300). No water was encountered to a depth of approximately 15 feet below the present ground surface.

Senate Bill 13 discussion: This particular residence is being constructed on foundation soils which possess a "significant potential for expansion." Therefore, in compliance with Senate Bill 13, we recommend that you provide the owner with the following:

1) a copy of this summary report of our analysis and recommendations;
2) a copy of Special Publication 11, "Home Construction on Shrinking and Swelling Soils";
3) a copy of Special Publication 14, "Home Landscaping and Maintenance on Swelling Soils".

Both Special Publications are available through the local branch of the Home Builders Association or directly through the Colorado Geological Survey.

Respectfully submitted,

LINCOLN-DeVORE, INC.

By: (Mr.) Robin R. Kidder, P.E.
Geotechnical Engineer

COLORADO REGISTERED ROBIN R. KIDDER 22813 PROFESSIONAL ENGINEER

Reviewed by: George D. Morris, P.E.

RRK/sc
LD Job No. 57300

ON #4218000001 E 1/13/86

SOIL PERCOLATION TESTS FIELD DATA SHEET

CLIENT Beal Construction TEST NO. 57300

TEST LOCATION 12425 Meridian Road DATE 7/8/85

TRIAL NO.	DEPTH START, IN	START TIME	DEPTH FINISH, IN	FINISH TIME	TOTAL DROP INCHES	TOTAL DROP TIME, MIN.	MINUTES TO DROP 1 INCH
1	24-2/16	11:23	24	11:53	2/16	30	240.0
2	25-2/16	9:56	23-14/16	10:26	1-4/16	30	24.0
3	26-6/16	10:59	23	11:29	3-6/16	30	8.9
4							
5							

SOIL LOG

Avg. (2 + 3) = 16.4

FROM	TO	SOIL CLASSIFICATION	MOISTURE
0'	10'	Silty Sand	low

FHA - 1103 - 7.3
LEACHING FIELD
REQUIRED AREA OF TRENCH BOTTOM
PER BEDROOM 200 SQ. FT.

FHA - 1103 - 8.5
SEEPAGE PIT
REQUIRED SIDEWALL AREA
PER BEDROOM _____ SQ. FT.

REMARKS: All percolation test borings drilled to a depth of 30 inches below present ground surface.

DATE HOLE SATURATED 7/1/85 TIME 10:00 a.m.

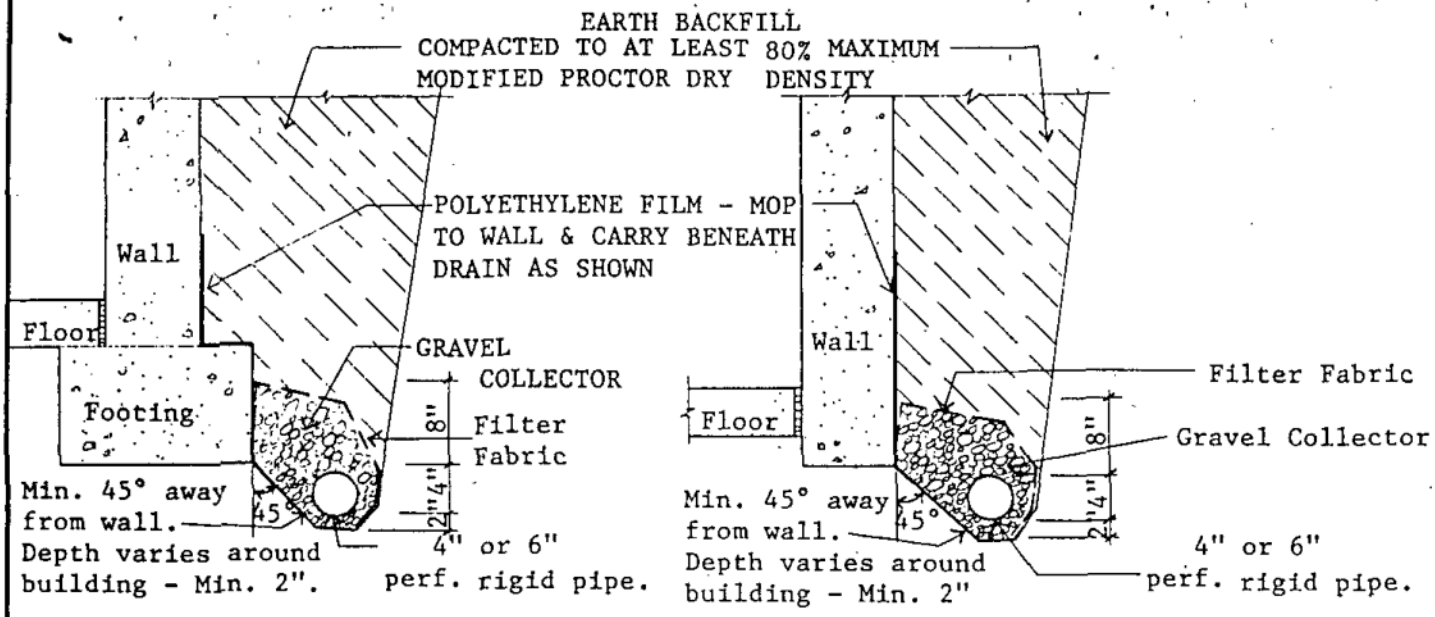
DATE PERCOLATION TEST MADE 7-2-85 TIME 10:00 a.m.

LINCOLN DEVORE TESTING LAB
George D. Morris, P. E.

R.J.M.
OBSERVER

BY _____

LINCOLN-DeVORE TESTING LABORATORY
COLORADO SPRINGS, PUEBLO, COLORADO—ROCK SPRINGS, WYOMING



SPREAD FOOTING TYPE

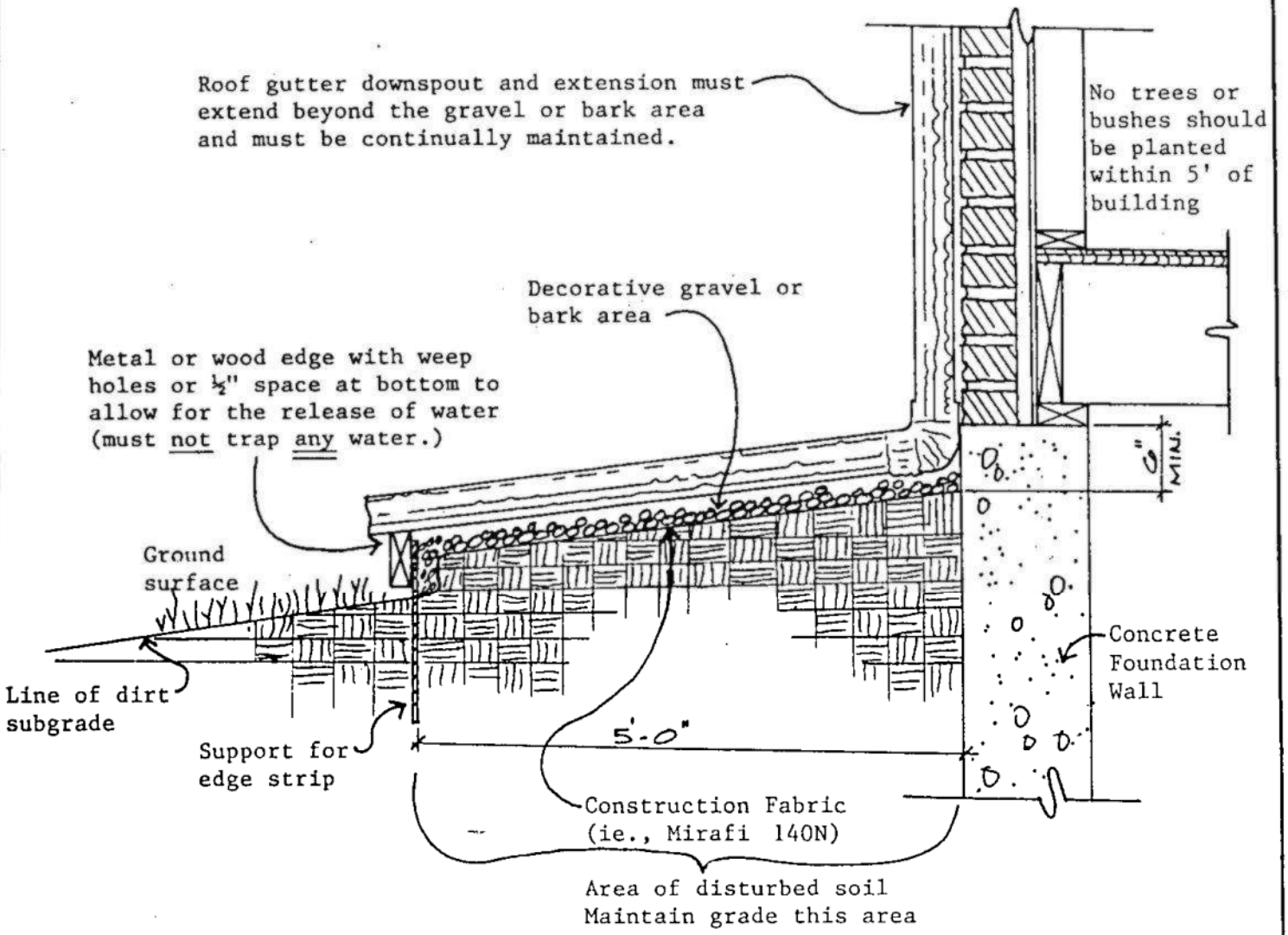
WALL-ON-GRADE TYPE

NOTES:

- Diameter of perforated pipe varies with amount of seepage expected. 4" diameter is most common.
- The required size of drain components should be determined by Lincoln-DeVore, Inc. personnel.
- Gravel size depends on size of pipe perforations: 85% gravel 2 x diameter of perforation.
- All pipe to be perforated VCP or PVC.
- 4" flexible pipe may be used to depth of 4 feet, but must be carefully graded. Discharge portion of all drain pipes should be solid, non-perforated.
- Rigid pipe only to be used below backfill depths greater than 4 ft.
- All pipe to be laid at a minimum grade of 1.0% around building foundations.
- Outfall to be free, gravity outfall if at all possible. Use sump and pump only if no gravity outfall exists.
- Filter fabric may be any type, equivalent to Celanese Corp. Mirafi 140N.
- Lincoln-DeVore personnel should examine the drain system after it is installed and prior to backfilling.

TYPICAL SECTIONS PERIMETER FOUNDATION DRAIN	LINCOLN DeVORE ENGINEERS GEOLOGISTS	COLORADO: COLORADO SPRINGS GRAND JUNCTION, PUEBLO, GLENWOOD SPRINGS

Provide a minimum 8 inch slope in first 5 feet and a minimum slope of 12 inches in the first 10 feet out from the house.

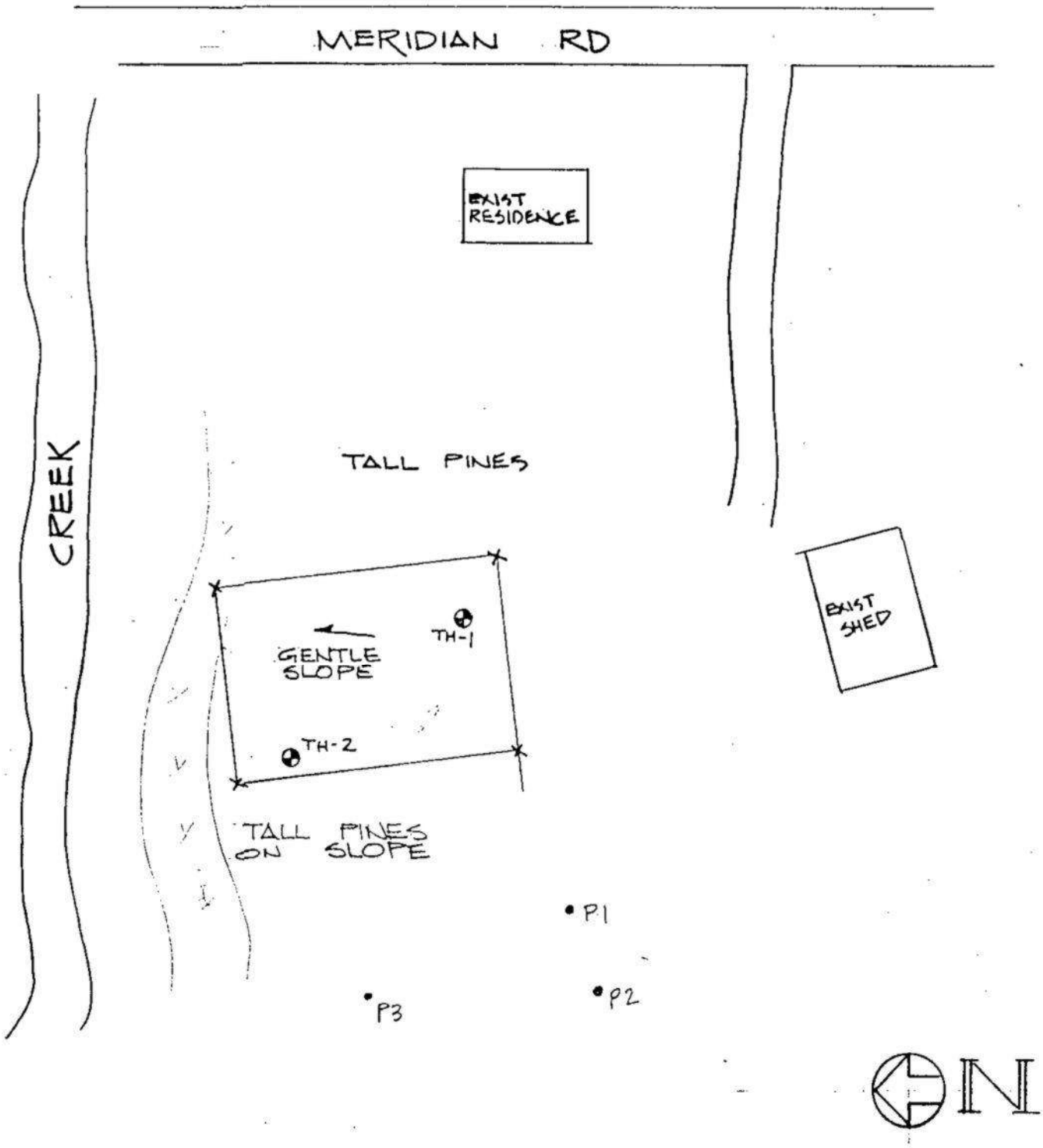


NOTES:

1) Do not change grade of yard so as to IMPEDE rapid runoff of surface water.
2) Maintain all swales to prevent ponding and/or erosion.

DATED 10/1/84

PREFERRED METHOD DECORATIVE GRAVEL OR BARK AROUND PERIMETER OF HOUSE	LINCOLN DeVORE ENGINEERS GEOLOGISTS	COLORADO: COLORADO SPRINGS GRAND JUNCTION, PUEBLO, GLENWOOD SPRINGS



NO SCALE

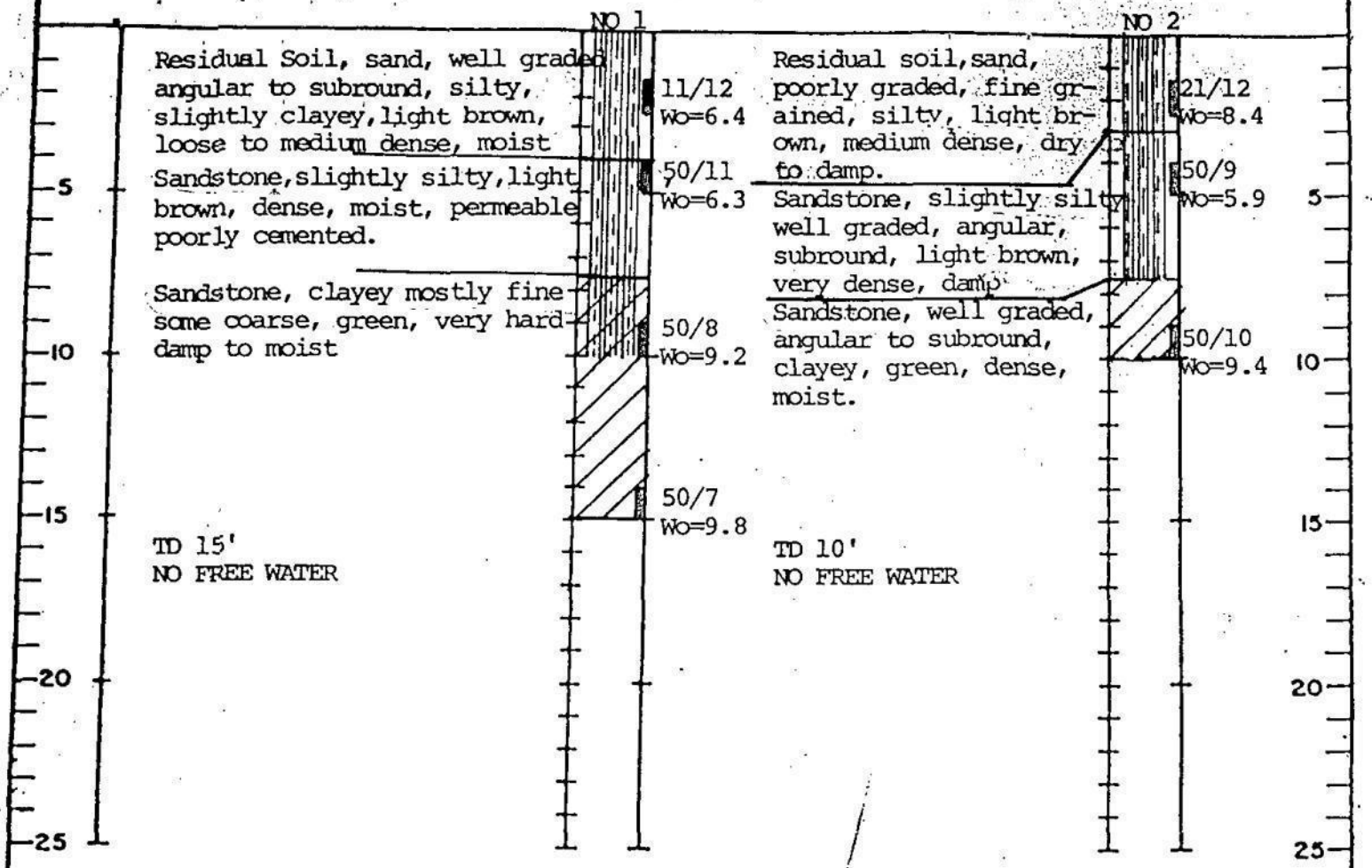
BEAL CONSTRUCTION
12425 MERIDIAN ROAD
BORING LOCATION DIAGRAM

8 JULY 85
LD 57300

LINCOLN DeVORE
ENGINEERS
GEOLOGISTS

COLORADO: COLORADO SPRINGS
GRAND JUNCTION, PUEBLO,
GLENWOOD SPRINGS

TEST HOLE No.



DATE DRILLED 7/1/85

TEST HOLE LOCATION DIAGRAM AND DRILLING LOGS LD 57300

LINCOLN DeVORE ENGINEERS · GEOLOGISTS

COLORADO: COLORADO SPRINGS, PUEBLO

SOIL EXPANSION TEST

SAMPLE	1 @ 15'			
INITIAL MOISTURE (%)	10.8			
FINAL MOISTURE (%)	18.4			
INITIAL DENSITY (PCF)	106.3			
CHANGE IN HEIGHT (%)	.24			
CONFINING PRESSURE (PSF)	504			

SAMPLE				
INITIAL MOISTURE (%)				
FINAL MOISTURE (%)				
INITIAL DENSITY (PCF)				
CHANGE IN HEIGHT (%)				
CONFINING PRESSURE (PSF)				

4218000004 [illegible] - North of Creek, closer to Road

3 houses, 3 septic systems on property

CITY-COUNTY HEALTH DEPARTMENT
COLORADO SPRINGS, COLORADO

File #5264

SEWAGE DISPOSAL INSPECTION FORM

APPROVAL:
YES ✓ NO ____

DATE 7/11/79

C. East ENVIRONMENTALIST Krueger

LOCATION (street number) 12425 Meridian Rd. OCCUPANT Linda Ware

LEGAL DESCRIPTION ____

TYPE OF CONSTRUCTION Dwelling NO. OF BEDROOMS 2

SYSTEM INSTALLED BY Russ Palmer

COMMERCIAL MFG. YES SIZE 750

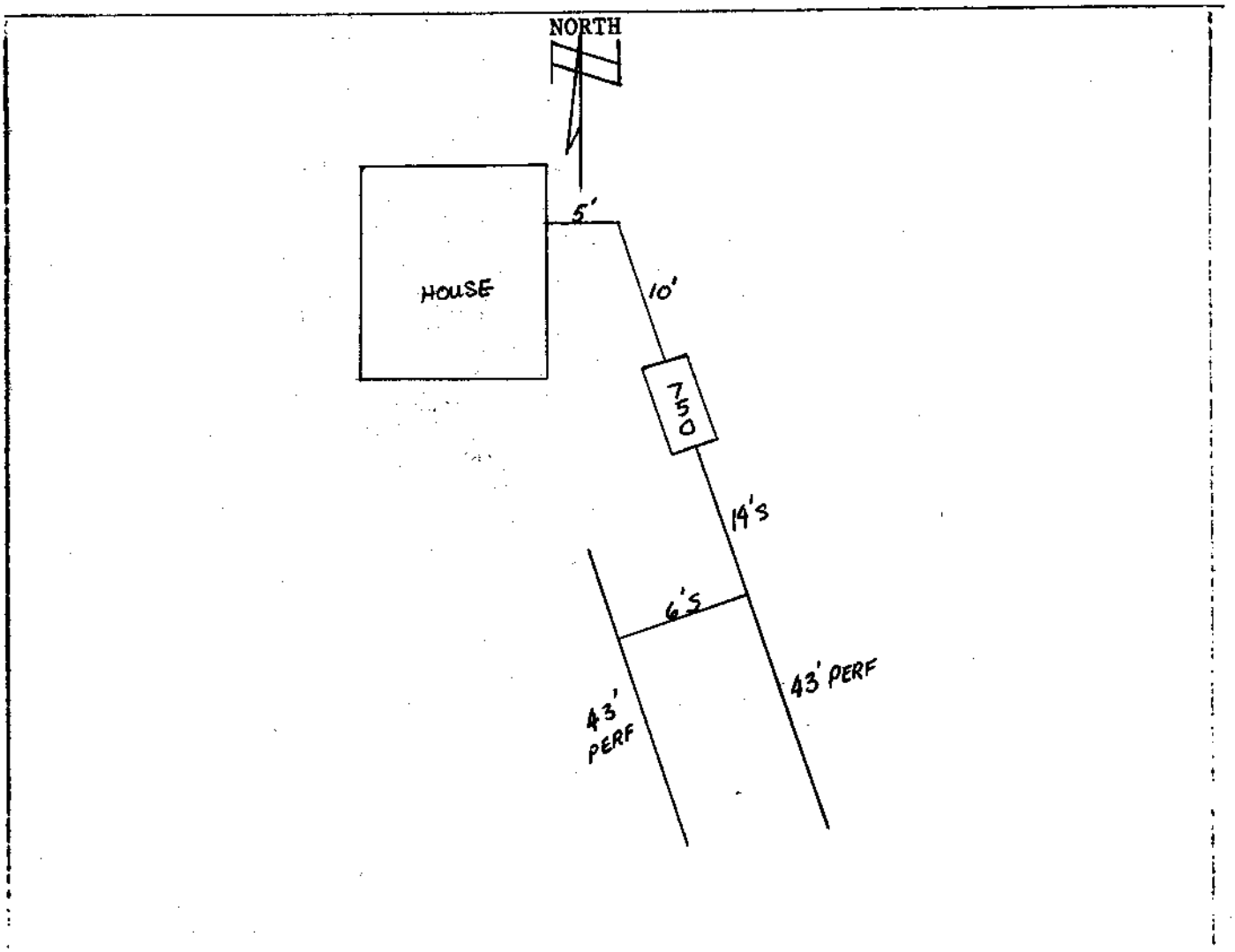
TYPE OF MATERIAL CONCRETE NO. COMPARTMENTS 2

WIDTH ____ LENGTH ____ DEPTH (total) ____ LIQ. CAP. ____

DISPOSAL FIELD: BED OR TRENCH DEPTH ____ WIDTH 36' LENGTH 86' SQ. FT. ____

DISTANCE BETWEEN LINES 6' ROCK river DEPTH 12" UNDER 6" OVER 2"

LEACHING PITS(NO.) ____ LINING MATERIAL ____ CAPACITY SQ. FT. ____



Acre 5

Water Supply well

EL PASO COUNTY . CITY-COUNTY HEALTH DEPARTMENT
501 North Foote Avenue . Colorado Springs, Colorado - 475-8240

N 05264

PERMIT

Receipt No. 95

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

Issued To Linda Ware Date 5/22/78

Address of Property 12425 Meridan Rd. C.S.
(Permit valid at this address only)

Builder - Contractor - Owner Address _____ Phone _____

Sewage-Disposal System work to be performed by _____ Phone _____

This Permit is issued in accordance with Regulation XII and Article 2 of Chapter 66, Colorado Revised Statutes 1963, as amended by the addition of a new Section 66-2-16. (H.B. 1205, 7-1-65). PERMIT EXPIRES upon completion-installation of sewage-disposal system or at the end of six (6) months from date of issue - whichever occurs first - (unless work is in progress).

- This Permit does not denote approval of zoning and acreage requirements. -

Permit Fee $50.00

Date of Expiration November 22 - 1978

Director, City-County Health Department Dr. Charles Bowling Jr.

Environmentalist

NOTE: LEAVE ENTIRE SEWAGE-DISPOSAL SYSTEM UNCOVERED FOR FINAL INSPECTION.

250 Sq. Ft.

24-HOUR ADVANCE NOTICE REQUIRED

Septic tank 750 gals. Field 125 Feet of trench 24 inches wide

OR. Field 84 Feet of trench 36 inches wide

Seepage bed _____ ft. long _____ ft. wide. Seepage pit _____ sq. ft. _____ diam. _____ w/d

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

EL PASO ~~CITY~~-COUNTY HEALTH DEPARTMENT
501 NORTH FOOTE AVENUE
COLORADO SPRINGS, COLORADO
475-8240 EXT. 220

Application for permit to construct, Remodel, or Install a Sewage Disposal System

Name of Owner Linda Ware Phone 495-4909

Address of Property 12425 Meridian Rd.

Legal Description of Property

Owner's Address (if different) Phone

Systems Contractor Address

Type of Construction Home Source and Type of Water Supply well.

Size of Lot 5.

The construction of the Sewage Disposal System will comply with all applicable Laws, Ordinances, Standards or Resolutions.

HEALTH DEPARTMENT USE ONLY

Permit Number Receipt Number

Number of Bedrooms 2 Tank Capacity 750 min. gallons Absorption area 250 Sq. Ft.

REMARKS 125 lin ft 24" trench creek on property
84 lin ft 36" trench leach ≥ 25' from ~~creek~~ dry wash

APPLICATION IS (✓) APPROVED ( ) DENIED

ENVIRONMENTALIST [signature] DATE 4/26 19 78

PLOT PLAN WILL INCLUDE THE FOLLOWING

Plot plan may be drawn on the back of this sheet or on a seperate sheet.

1. Streams, Lakes, Ponds, Irrigation Ditches and other Water Courses
2. North Direction
3. Location of Property Line
4. Buildings
5. Wells
6. Location of Proposed Septic System
7. Location of percolation test
8. Geographical features
9. Other Information as required

EHS - 6/9/76 - SEWAGE

Just South of Latigo Blvd. on east side North of Creek.

DEEM-CHAPELON LOCOMOTIVES LTD.
R. R. DEEM - CONSULTING ENGINEERS
Box 546, Monument, Colorado 80132

General Engineering
Steel Mills, Railways
Railway Locomotives

1 May, 1978

Re: Percolation Tests for Residence of Linda Ware, Rt. 1. Box 171, Colorado Springs, El Paso County, Colorado 80908

M. Linda Ware
Rt. 1. Box 171
Colorado Springs, Colorado 80908

Dear Miss Ware:

This is to inform you that Percolation Tests were conducted on the 28th April, 1978, on the subject property by T-C Excavating Inc., 6430 Burrows Road, Colorado Springs, Colorado, in association with us, and, the results of the same are shown in the table below:

HOLE NO.	DEPTH OF SAMPLE	SOIL TYPE	PERCOLATION RATE (Minutes per Inch)
1	35"	Fine Sand	5
2	32"	Fine Sand	3.33
3	34"	Fine Sand	6
			Average 5 MPI

4 - PROFILE OF HOLE. 8 feet deep. Dry

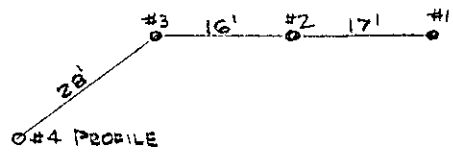
0 -	2"	Top Soil
2" -	60"	Fine Sand
60"-	96"	Coarse Sand w/ small amount of Clay

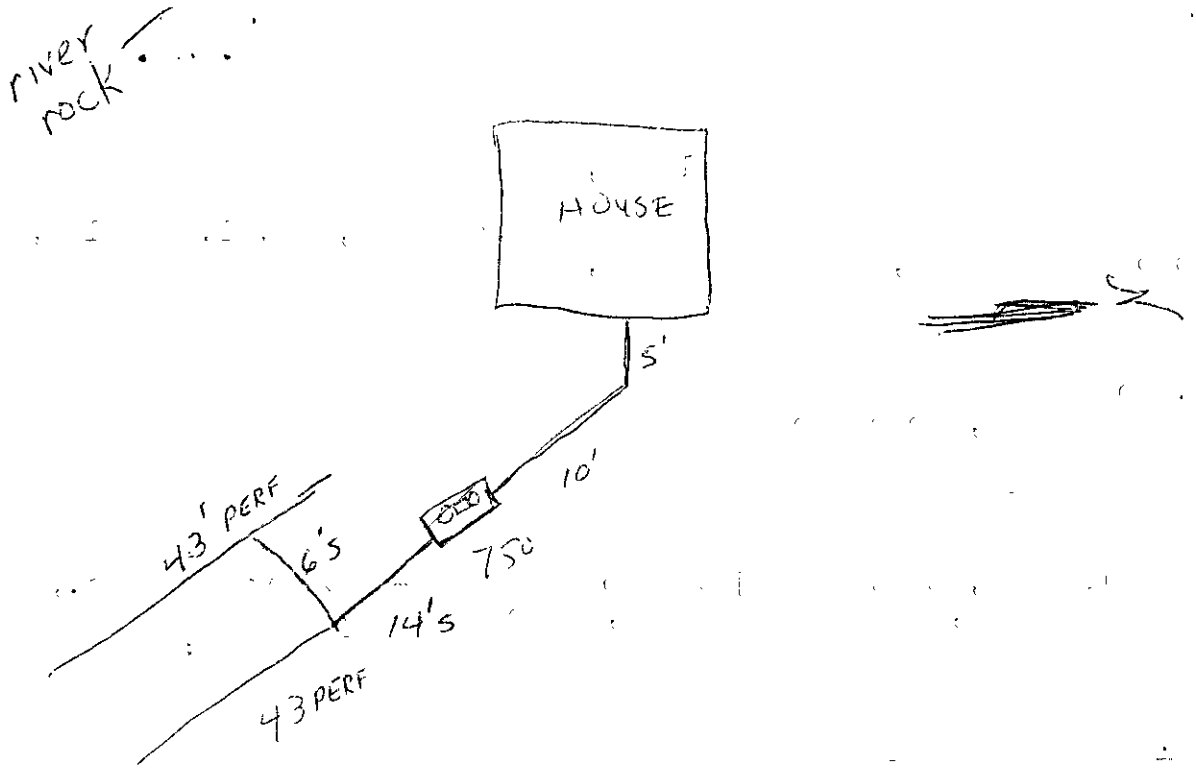
PROFILE FOR LEACH LINE

Test Hole #1 to Test Hole #2- 17 feet; Test Hole #2 to Test Hole #3- 16 feet; Test Hole #3 to Test Hole #4- 28 feet. Total distance 61 feet. All on approximately 30% slope to South. No bedrock or, ground water. Water Supply - Well. Area of Tract Involved 5 Acres.

R. R. DEEM - CONSULTING ENGINEERS

R. Riley Deem, P.E., Owner




river rock
HOUSE
5'
10'
750
43' PERF
6's
14's
43 PERF