ENTECH
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SOILS AND GEOLOGY STUDY
LOT 1, STERLING RECYCLING FACILITY
PARCEL NO. 53000-00-743
COLORADO SPRINGS, COLORADO

Prepared for:
Rhetoric LLC
20 Boulder Crescent
Colorado Springs, CO 80903

Attn: Chaz Collins

August 17, 2023

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Logan L. Langford, P.G.
Geologist

LLL

Reviewed by:

COLORADO REGISTERED
JOSEPH COLLIN GOODE JR.
23725
8-17-2023
PROFESSIONAL ENGINEER

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

Table of Contents

1 SUMMARY

Project Location

The project lies in a portion of the NE¼ of Section 5, Township 13 South, Range 65 West of the 6th Principal Meridian in El Paso County, Colorado. The site is located north of the Colorado Springs, Colorado city limits.

Project Description

The Sterling Recycling Facility site is approximately 32.62 acres, with two lots proposed for the filing. The proposed development is to consist of commercial/industrial lots, which will be serviced by Sterling Ranch Metropolitan District.

Scope of Report

This report presents the results of our geologic evaluation and treatment of engineering geologic hazard study.

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 areas of artificial fill, potentially expansive soils, potential seasonally shallow groundwater areas, and ponded water. Based on the proposed development plan, it appears that these areas will have some impact 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.

2 GENERAL SITE CONDITIONS AND PROJECT DESCRIPTION

The site is located in portions of the NE¼ of Section 5, Township 13 South, Range 65 West of the 6th Principal Meridian in El Paso County, Colorado. The site is located north of the Colorado Springs, Colorado city limits, at the southwest corner of Marksheffel Road and Sterling Ranch Road. The location of the site is as shown on the Vicinity Map, Figure 1.

The topography of the site is generally gradually sloping to the south. The site was previously part of a sand and gravel quarry, and is currently being used as an asphalt and concrete recycling facility. No drainages were observed on the site, however, an area of ponded water was observed in the northeastern portion of the site. The site boundaries are indicated on the USGS Map, Figure 2. The site contains primarily field grasses, and weeds. Site photographs, taken August 11, 2023, are included in Appendix A.

The Sterling Recycling Facility site is approximately 32.62 acres, and two lots proposed. Planned use for Lot 1 is a mini warehouse (self-storage facility), and Lot 2 will remain the Sterling Recycling Facility. A drainage tract is proposed in the southeastern portion of the site. Final grading plans were not available at the time of this report. The Lot Plan/Test Boring Location Map is presented in Figure 3.

3 SCOPE OF THE REPORT

The scope of the report will include a general geologic analysis utilizing published geologic data. Detailed site-specific mapping will be conducted to obtain general information in respect to major geographic and geologic features, geologic descriptions and their effects on the development of the property.

4 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 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 performed by personnel of Entech Engineering, Inc. (Entech) on August 11, 2023.

A Preliminary Subsurface Soil Investigation was previously performed by Entech for the site, dated May 3, 2022 (Reference 4). Information from the report was used in evaluating the site. Geologic Hazard Studies were previously performed by Entech for the adjacent Sterling Ranch

development, October 31, 2006 (Reference 5) and January 20, 2009 (Reference 6). Information from these reports was used in evaluating the site.

Three additional Test Borings were drilled as part of this investigation to determine general soil and bedrock characteristics. The locations of the test borings are indicated on the Development Plan/Test Boring Location Map, Figure 3. The Test Boring Logs are presented in Appendix B, and Summarized on Table B-1. 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, Atterberg Limits ASTM D-4318, volume change testing using Swell/Consolidation test. Sulfate testing was performed on select samples to evaluate potential for below grade concrete degradation due to sulfate attack. Results of the laboratory testing are included in Appendix C. A Summary of Laboratory Test Results is presented in Table C-1. The Laboratory Testing Summary and Test Boring Logs from the previous Preliminary Subsurface Soil Investigation (Reference 4) is presented in Appendix D.

5 SOIL, GEOLOGY, AND ENGINEERING GEOLOGY

5.1 General Geology

Physiographically, the site lies in the western portion of the Great Plains Physiographic Province. Approximately 11¼ miles to the west 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 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 northeasterly direction (Reference 1). The rocks in the area of the site are sedimentary in nature and typically Upper Cretaceous in age. The bedrock underlying the site consists of the Dawson Formation. Overlying this formation are unconsolidated deposits of fill soils and alluvial soils of Quaternary Age. The alluvial soils were deposited by water on site and as stream terraces along Sand Creek and the drainages located on the site. Man-made soils exist as fill piles and fill placed across 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, the soils classify as coarse sandy loam. The soils are described as follows:

Type	Description
8	Blakeland Loamy Sand, 1 to 9% slopes
19	Columbine Gravelly Sandy Loam, 0 to 3% slopes

Complete descriptions of each soil type are presented in Appendix E. The soils have generally been described to have moderate to moderately rapid permeabilities. Possible hazards with soil erosion are present on the site. The erosion potential can be controlled with vegetation. The majority of the soils have been described to have moderate erosion hazards

5.3 Site Stratigraphy

The Falcon NW Quadrangle Geology Map showing the site is presented in Figure 5 (Reference 7). The Geology Map prepared for the site is presented in Figure 6. One mappable unit was identified on this site which are described as follows:

Qaf **Artificial Fill of Quaternary Age:** These recent man-made deposits associated with past quarry operations and fill dumped across the site, in addition to the asphalt, concrete, and soil piles associated with the Sterling Recycling Facility. The fill should be mitigated during site grading.

The bedrock underlying the site consists of the Dawson Formation of Tertiary to Cretaceous Age. The Dawson Formation typically consists of arkosic sandstone with interbedded fine-grained sandstone, siltstone and claystone. Overlying this formation are variable layers of eolian sands, alluvial deposits, and residual soil. The residual soils were derived from the in-situ weathering of the bedrock materials on-site. These soils consisted of silty to clayey sands and sandy clays.

The soils listed above were mapped from site-specific mapping, the *Geologic Map of the Falcon NW Quadrangle* distributed by the Colorado Geological Survey in 2003 (Reference 7), the *Geologic Map of the Colorado Springs-Castle Rock Area*, distributed by the US Geological Survey in 1978 (Reference 8), and the *Geologic Map of the Pueblo 1^0 x 2^0 Quadrangle*, distributed by the

US Geological Survey in 1981 (Reference 9). The Test Borings were also used in evaluating the site and are included in Appendix B. The Geology Map prepared for the site is presented in Figure 6.

5.4 Soil Conditions

The soils encountered in the Test Borings can be grouped into three general soil types. The soils were classified using the Unified Soil Classification System (USCS).

Soil Type 1 classified as sand with silt, and silty sand (SW-SM, SM). The sand was encountered in the test borings at the ground surface extending to depths ranging from 3 to 5 feet bgs. The sand fill was encountered at loose to dense states. The majority of the samples indicated medium dense states.

Soil Type 2 classified as silty sand, and silty sand with gravel (SM, SW-SM). The sand was encountered in the test borings at 3 to 5 feet bgs extending to depths ranging from 8 to 14 feet bgs. The sand was encountered at loose to medium dense states. The majority of the samples indicated medium dense states.

Soil Type 3 classified as sandy clay and clay with sand (CL). The clay was encountered in TB-2 and TB-3 at 8 to 9 feet bgs extending to depths of 11 to 15 feet bgs. The clay was encountered at stiff to hard consistencies. Swell/Consolidation Testing on samples of the clay resulted in a volume changes of 0.8 to 1.2 percent, which indicates a low expansion potential.

Soil Type 4 classified as sandstone with silt and silty sandstone (SM-SW, SM). The sandstone was encountered in TB-3 at 14 feet bgs extending to the termination of the boring (20 feet). The sandstone was encountered at very dense states.

Soil Type 5 classified as claystone (CL). The claystone was encountered in TB-1 and TB-2 at 11 to 15 feet bgs extending to the termination of the test borings (20 feet). The claystone was encountered at hard consistencies. The claystone is typically moderately to high expansive in the area.

The Test Boring 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 encountered in TB-1 and TB-2 at depths of 4 to 5 feet. TB-3 which was drilled to 20 feetwas dry. Fluctuation in groundwater conditions may occur due to variations in rainfall and other factors not readily apparent at this time. It should be noted that in the sandy materials on-site, 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. Builders and planners should be cognizant of the potential for the occurrence of such subsurface water features during construction on-site and deal with each individual problem as necessary at the time of construction.

6 ENGINEERING GEOLOGY – IDENTIFICATION AND MITIGATION OF GEOLOGIC HAZARDS

Geologic mapping has been performed on this site to produce an Engineering Geology Map Figure 7. This map shows the location of various geologic conditions of which the developers should be cognizant during the planning, design and construction stages of the project. These hazards and the recommended mitigation techniques are as follows:

Artificial Fill – Constraint

These are areas of man-made fill associated with past quarry operations and fill dumped across the site, in addition to the asphalt, concrete, and soil piles associated with the Sterling Recycling Facility. Fill was encountered in the test borings at depths of 3 to 5 feet. Fill depths are variable across the site and test pits and or additional test borings in the building areas are recommended once development plans are finalized.

Mitigation: The fill on this site is considered uncontrolled for construction purposes. Any uncontrolled fill encountered beneath foundations will require removal and recompaction at a minimum of 95% of its maximum Modified Procter Dry Density, ASTM D-1557.

Collapsible Soils – Constraint

The majority of the soils encountered on-site do not exhibit collapsible characteristics, however, areas of loose soils were encountered in the test borings drilled on site. Additionally, areas mapped as Qes (eolian sand) have the potential for hydrocompation (Reference 7, Figure 5).

Mitigation: Should loose or collapsible soils be encountered beneath foundations, recompaction and moisture conditioning of the upper 2 feet of soil at 95% of its maximum Modified Proctor Dry

Density ASTM D-1557 will be required. Exterior flatwork and parking areas may also experience movement. Proofrolling and recompaction of soft areas should be performed during site work.

Expansive Soils – Constraint

Expansive soils were encountered in the test borings at depths of 11 to 15 feet. These occurrences are typically sporadic; therefore, none have been indicated on the maps. The clays and claystone, if encountered at foundation grade, can cause differential movement in structures. These occurrences should be identified and dealt with on an individual basis.

Mitigation Should expansive soils be encountered beneath foundations; mitigation will be necessary. Mitigation of expansive soils will require special foundation design. Overexcavation 3 to 5 feet 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. The use of structural floors should be considered for basement construction on highly expansive clays. Final recommendations should be determined after additional investigation of each building site.

Shallow Bedrock – Constraint

Areas of shallow bedrock were encountered (TB-3 previously completed on the site encountered bedrock at a depth of 1 foot, Reference 4, Appendix D). A Summary of the Depth to Bedrock is included in Table B-1. Shallow bedrock will be encountered in some areas of this site. Where claystone or sandstone are encountered, excavation/grading may be difficult requiring track-mounted excavators. Bedrock will likely be encountered cuts for utility excavations.

Groundwater and Floodplain Areas – Constraint

The site is not mapped within floodplain zones according to the FEMA Map No. 08041CO533G, Figure 8 (Reference 7). No drainages were observed on the site, however, an area of ponded water was observed in the northeastern portion of the site. These areas are discussed as follows:

Potential Seasonally Shallow Groundwater Area – Constraint

In these areas, we would anticipate the potential for periodically high subsurface moisture conditions, frost heave potential and highly organic soils. These areas are primarily located in the eastern half of the site where groundwater was encountered at depths of 4 to 5 feet in the test borings. Preliminary grading plans available at the time of this investigation, indicate that this area is to be filled during site grading. A minimum separation of 3 feet between foundation components and groundwater levels are recommended.

Mitigation: Foundations must have a minimum 30-inch depth for frost protection. In areas where high subsurface moisture conditions are anticipated periodically, subsurface perimeter drains are recommended to help prevent the intrusion of water into areas below grade. Fill added to these areas further raise foundations above groundwater levels. Foundations should be kept as high as possible. Areas may experience higher groundwater levels during period of higher precipitation where water can flow through permeable sands on top of less permeable bedrock materials. Subsurface perimeter drains may be necessary to prevent the intrusion of water into areas below grade. Typical drain details are presented in Figure 8. Where shallow groundwater is encountered, underslab drains or interceptor drains may be necessary. Typical drain details are presented in Figures 9 and 10. It is anticipated that the shallow water areas will be mitigated with site grading and the installation of sewer underdrains. Specific recommendations should be made after additional investigation and site grading has been completed.

Radon – Hazard

Radon levels for the area have been reported by the Colorado Geologic Survey in the open file, Report No. 91-4 (Reference 12). Average Radon levels for the 80908-zip code is 3.40 pCi/l. The following is a table of radon levels in this area:

	80908
0 < 4 pCi/l	50.00%
4 < 10 pCi/l	50.00%
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.

6.1 Relevance of Geologic Conditions to Land Use Planning

We understand that the development will be commercial/industrial lots. Below grade areas are not anticipated for the anticipated uses. It is our opinion that the existing geologic and engineering geologic conditions will impose some constraints on the proposed development and construction. The constraints affecting development will be those associated with the artificial fill, potentially expansive soils, potential seasonally shallow groundwater areas, and ponded water on the site

that can be satisfactorily mitigated through proper engineering design and construction practices or avoidance.

Fill associated with past quarry operations and fill dumped across the site, in addition to the asphalt, concrete, and soil piles associated with the Sterling Recycling Facility. Fill was encountered in the test borings at depths of 3 to 5 feet. Fill depths are variable across the site, test pits and or additional test borings in the building areas are recommended once building locations and development plans are finalized. Fill in areas of proposed structures will require mitigation.

The upper materials were at loose to dense states with the majority at medium dense to dense states. The granular soils encountered in the upper soil profiles of the test borings should provide good support for foundations. Loose soils if encountered at foundation depth will require mitigation. Foundations anticipated for the site are standard spread footings possibly in conjunction with overexcavation in areas of expansive soils or recompaction in areas of loose soils. Excavation is anticipated to be moderate with rubber-tired equipment for the site sand materials, and will require track mounted equipment for the dense sandstone. Expansive layers may also be encountered in the soil and bedrock on this site. Areas of expansive soils encountered on site are sporadic; therefore, none have been indicated on the maps. Expansive soils, if encountered, will require special foundation design and/or overexcavation. These soils will not prohibit development.

No drainages were observed on the site, however, an area of ponded water was observed in the northeastern portion of the site. Areas of potential seasonally shallow groundwater were observed on site. These areas are primarily located in the eastern half of the site where groundwater was encountered at depths of 4 to 5 feet in the test borings. Grading plans available at the time of this investigation, indicate that this area is to be filled during site grading. A minimum separation of 3 feet between foundation components and groundwater levels are recommended. Drains may be necessary for structures adjacent to these areas to help prevent the intrusion of water into areas below grade. Typical drain details are presented in Figure 9. The site does not lie within any floodplain zones according to the FEMA Map No. 08041CO533G, dated December 7, 2108 (Figure 8, Reference 8). Exact locations of floodplain and specific drainage studies are beyond the scope of this report.

In areas where high subsurface moisture conditions are anticipated periodically, subsurface perimeter drains may be recommended to help prevent the intrusion of water into areas below grade. Fill added to these areas further raise foundations above groundwater levels. Foundations should be kept as high as possible. Areas may experience higher groundwater levels during period of higher precipitation where water can flow through permeable sands on top of less permeable bedrock materials. Subsurface perimeter drains may be necessary to prevent the intrusion of water into areas below grade. Typical drain details are presented in Figure 8. Where shallow groundwater is encountered, underslab drains or interceptor drains may be necessary. Typical drain details are presented in Figures 9 and 10. It is anticipated that the shallow water areas will be mitigated with site grading and the installation of sewer underdrains. Specific recommendations should be made after additional investigation and site grading has been completed.

In summary, development of the site can be achieved if the items mentioned above are mitigated. These items can be mitigated through proper design and construction or through avoidance. Investigation on each lot is recommended prior to construction.

7 ECONOMIC MINERAL RESOURCES

Some of the sandy materials on-site could be considered a low-grade sand resource. According to the *El Paso County Aggregate Resource Evaluation Map* (Reference 13), the area is not mapped with any aggregate deposits. According to the *Atlas of Sand, Gravel and Quarry Aggregate Resources, Colorado Front Range Counties* distributed by the Colorado Geological Survey (Reference 14), areas of the site are not mapped with any resources. According to the *Evaluation of Mineral and Mineral Fuel Potential* (Reference 15), the area of the site has been mapped as “Fair” for industrial minerals. However, considering these have been previously quarried from the site and abundance of similar materials through the region and the close proximity to developed land, they would be considered to have little significance as an economic resource.

According to *the Evaluation of Mineral and Mineral Fuel Potential of El Paso County State Mineral Lands* (Reference 15), 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-site (Reference 15).

The site has been mapped as “Fair” for oil and gas resources (Reference 15). 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.

8 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 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.

9 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 drainages and low-lying areas. If excavations encroach on the groundwater level unstable soil conditions may be encountered. Excavation of saturated soils 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% of optimum moisture content and compacted to a minimum of 95% of its maximum Modified Proctor Dry Density, ASTM D-1557, prior to placing new fill. Areas receiving fill may require stabilization with rock or fabric if 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% of its maximum Modified Proctor Dry Density, ASTM D-1557. 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.

10 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 building 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 Rhetoric LLC. 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.

11 BIBLIOGRAPHY

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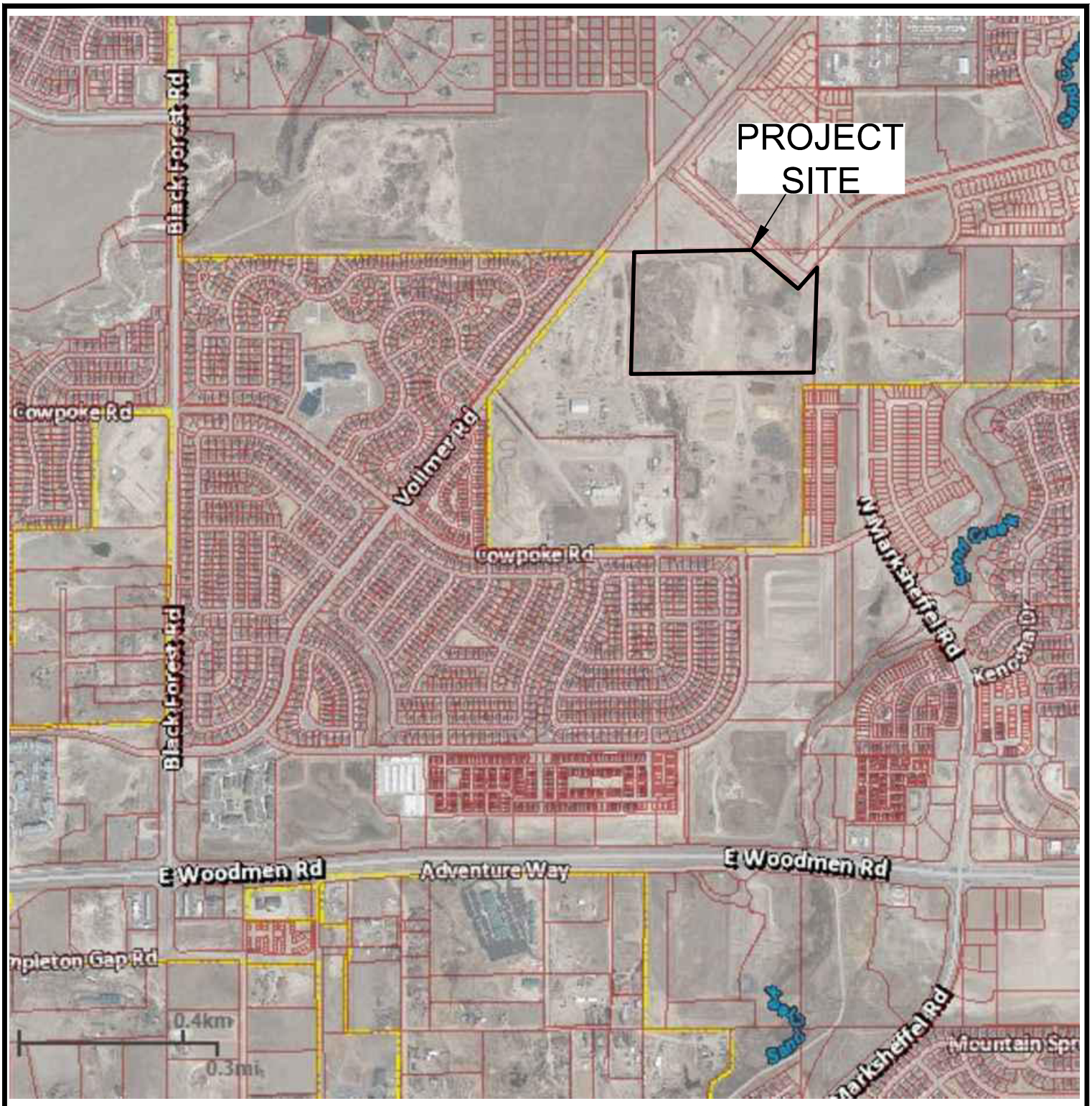
FIGURES



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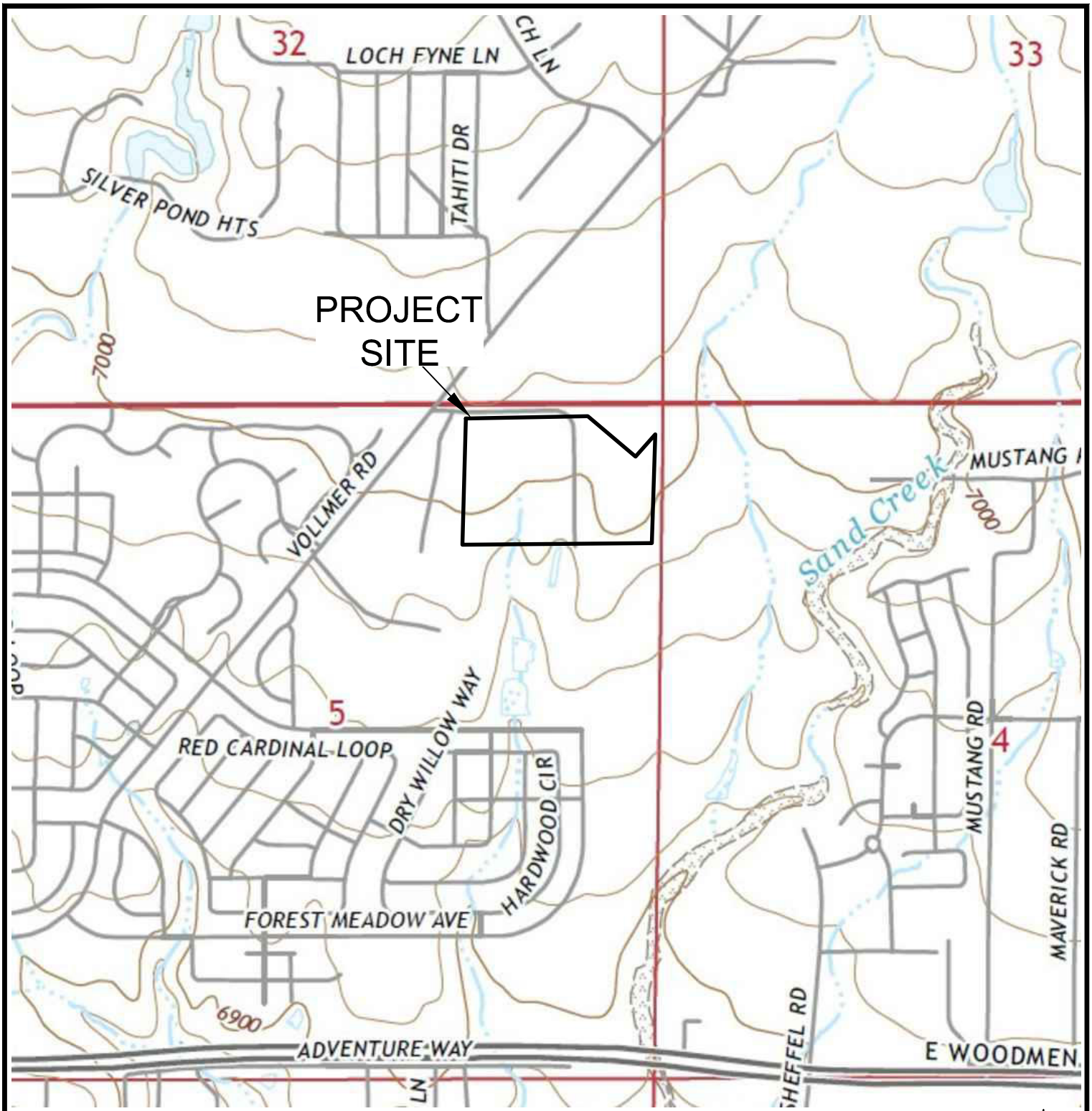
ENTECH ENGINEERING, INC.

VICINITY MAP
LOT 1, STERLING RECYCLING FACILITY
EL PASO COUNTY, COLORADO
RHETORIC LLC

JOB NO.
231252

FIG. 1



ENTECH ENGINEERING, INC.

USGS TOPOGRAPHY MAP
LOT 1, STERLING RECYCLING FACILITY
EL PASO COUNTY, COLORADO
RHETORIC LLC

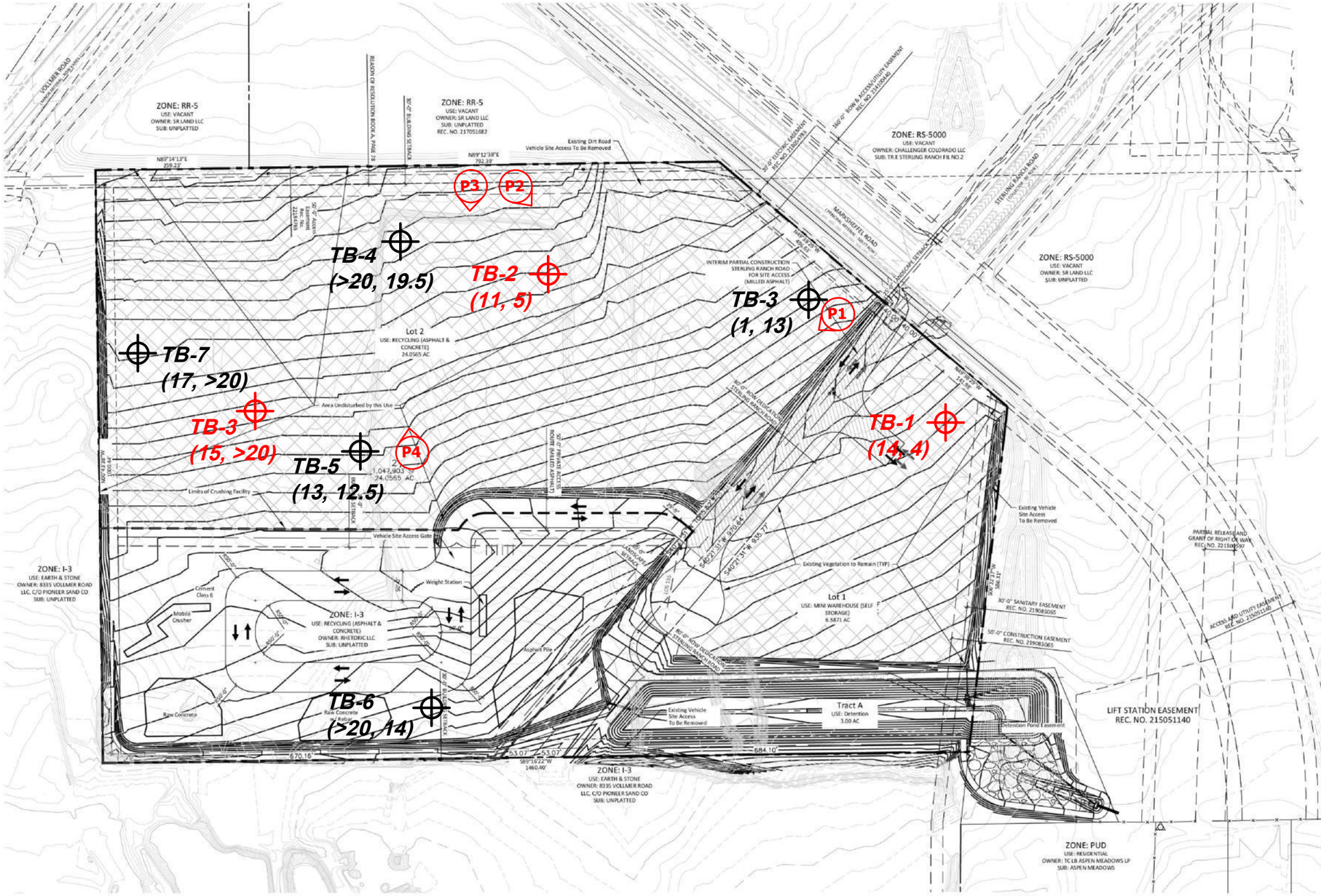
JOB NO.
231252

FIG. 2

LOT 1, STERLING RECYCLING FACILITY

SECTION 5 IN TOWNSHIP 12 SOUTH RANGE 65 WEST OF THE 6TH PRINCIPAL MERIDIAN EL PASO COUNTY, CO

SITE DEVELOPMENT PLAN



- APPROXIMATE TEST BORING LOCATION AND NUMBER (BEDROCK, GROUNDWATER DEPTHS FT.) EEI JOB NO. 231252
- APPROXIMATE TEST BORING LOCATION AND NUMBER (BEDROCK, GROUNDWATER DEPTHS FT.) EEI JOB NO. 220402
- APPROXIMATE PHOTOGRAPH LOCATION AND NUMBER

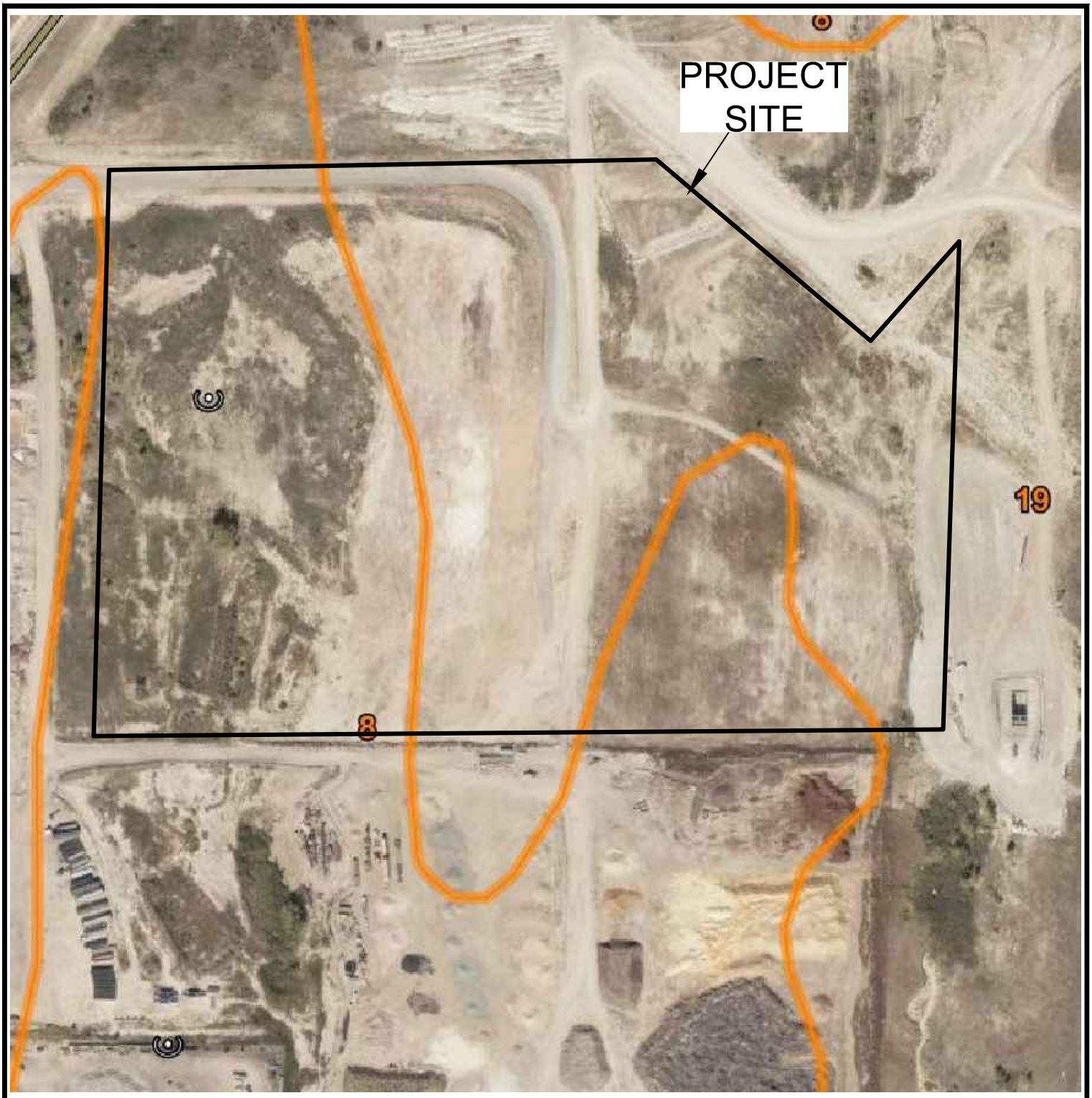
REVISION	BY

ENTECH ENGINEERING, INC.

SITE PLAN/TESTING LOCATION MAP
LOT 1, STERLING RECYCLING FACILITY
EL PASO COUNTY, COLORADO
RHETORIC LLC

JOB NO. 231252

FIG. 3



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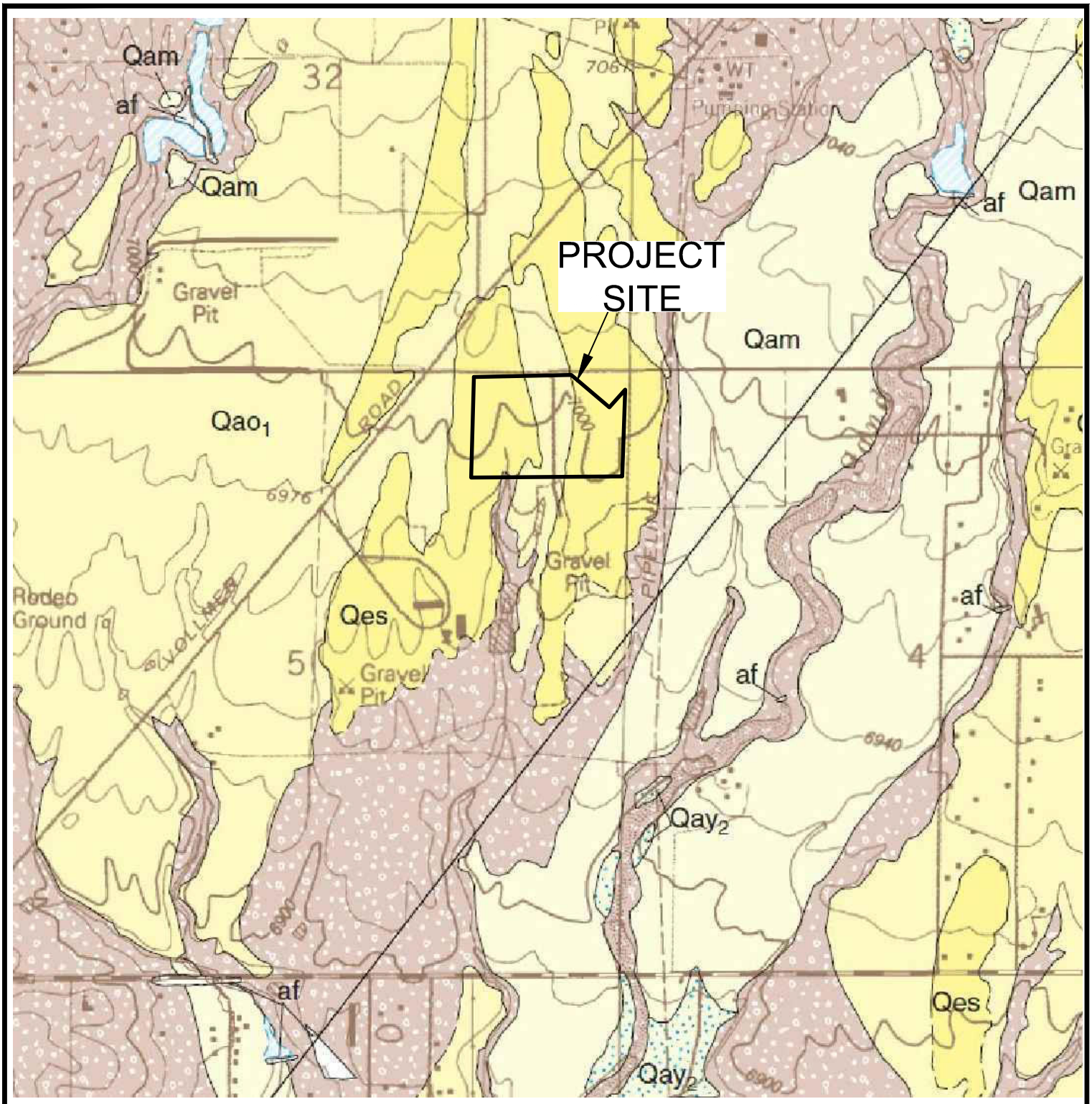
ENTECH
ENGINEERING, INC.

SOIL SURVEY MAP
LOT 1, STERLING RECYCLING FACILITY
EL PASO COUNTY, COLORADO
RHETORIC LLC

JOB NO.
231252

FIG. 4



ENTECH ENGINEERING, INC.

FALCON NW QUADRANGLE GEOLOGIC MAP
LOT 1, STERLING RECYCLING FACILITY
EL PASO COUNTY, COLORADO
RHETORIC LLC

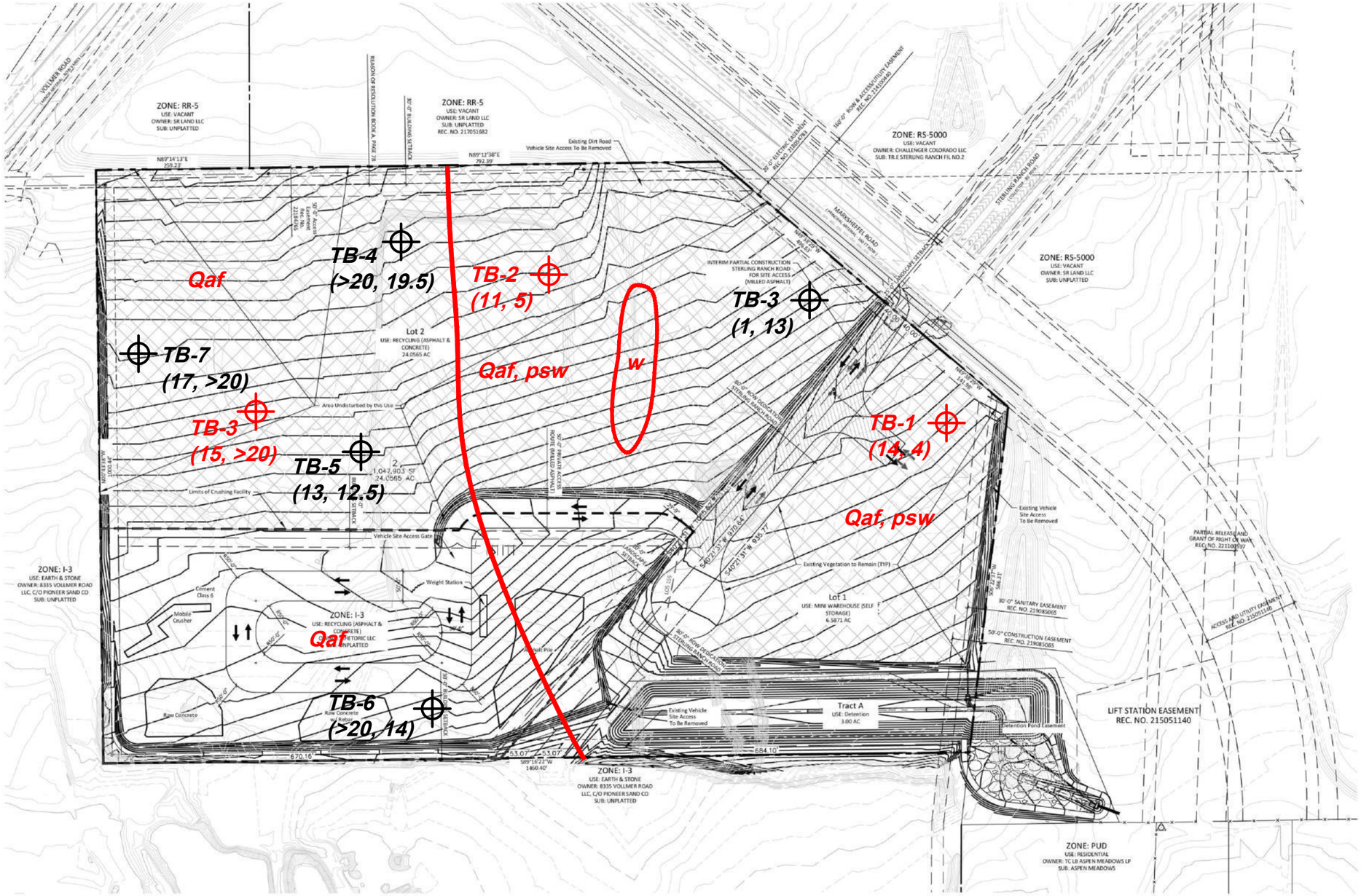
JOB NO. 231252

FIG. 5

LOT 1, STERLING RECYCLING FACILITY

SECTION 5 IN TOWNSHIP 12 SOUTH RANGE 65 WEST OF THE 6TH PRINCIPAL MERIDIAN EL PASO COUNTY, CO

SITE DEVELOPMENT PLAN



Legend:

Qaf - Artificial Fill of Holocene Age:
man-mad fill deposits associated with existing erosion berms

psw - potential seasonally shallow groundwater

w - standing water

REVISION	BY

ENTECH ENGINEERING, INC.

GEOLOGY/ENGINEERING MAP
LOT 1, STERLING RECYCLING FACILITY
EL PASO COUNTY, COLORADO
RHETORIC LLC

JOB NO.
231252

FIG. 6

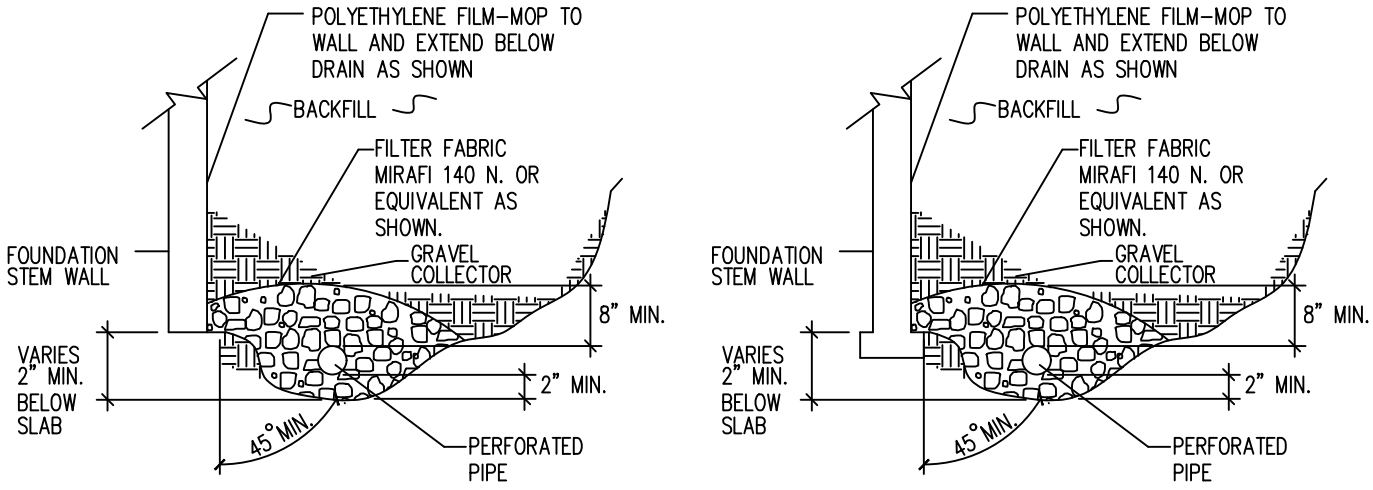
N

ENTECH ENGINEERING, INC.

FEMA FLOODPLAIN MAP
LOT 1, STERLING RECYCLING FACILITY
EL PASO COUNTY, COLORADO
RHETORIC LLC

JOB NO. 231252

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.

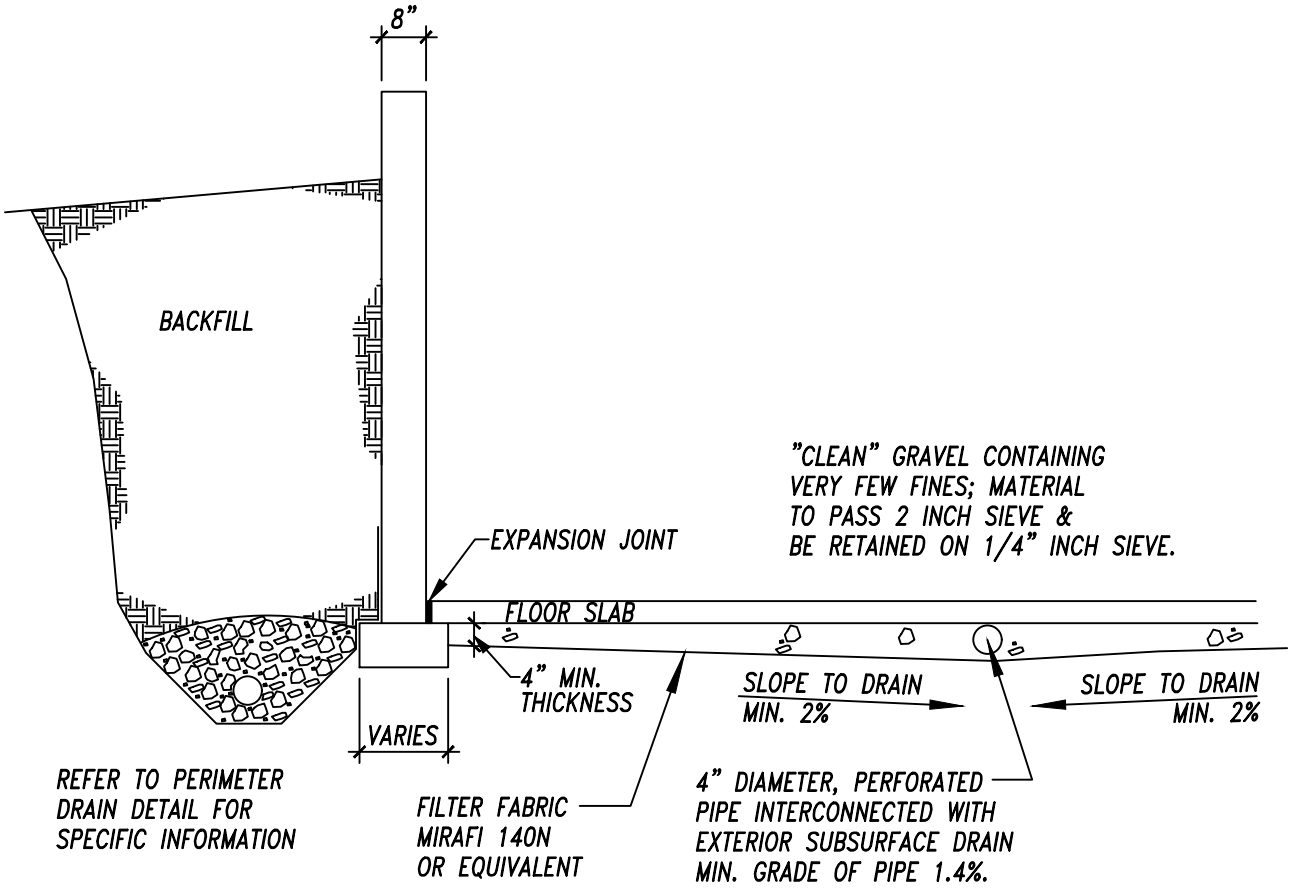
–DRAIN TO BE PROVIDED WITH A FREE GRAVITY OUTFALL, IF POSSIBLE. A SUMP AND PUMP MAY BE USED IF GRAVITY OUT FALL IS NOT AVAILABLE.

ENTECH ENGINEERING, INC.

PERIMETER DRAIN DETAIL
LOT 1, STERLING RECYCLING FACILITY
EL PASO COUNTY, COLORADO
RHETORIC LLC

JOB NO. 231252

FIG. 8



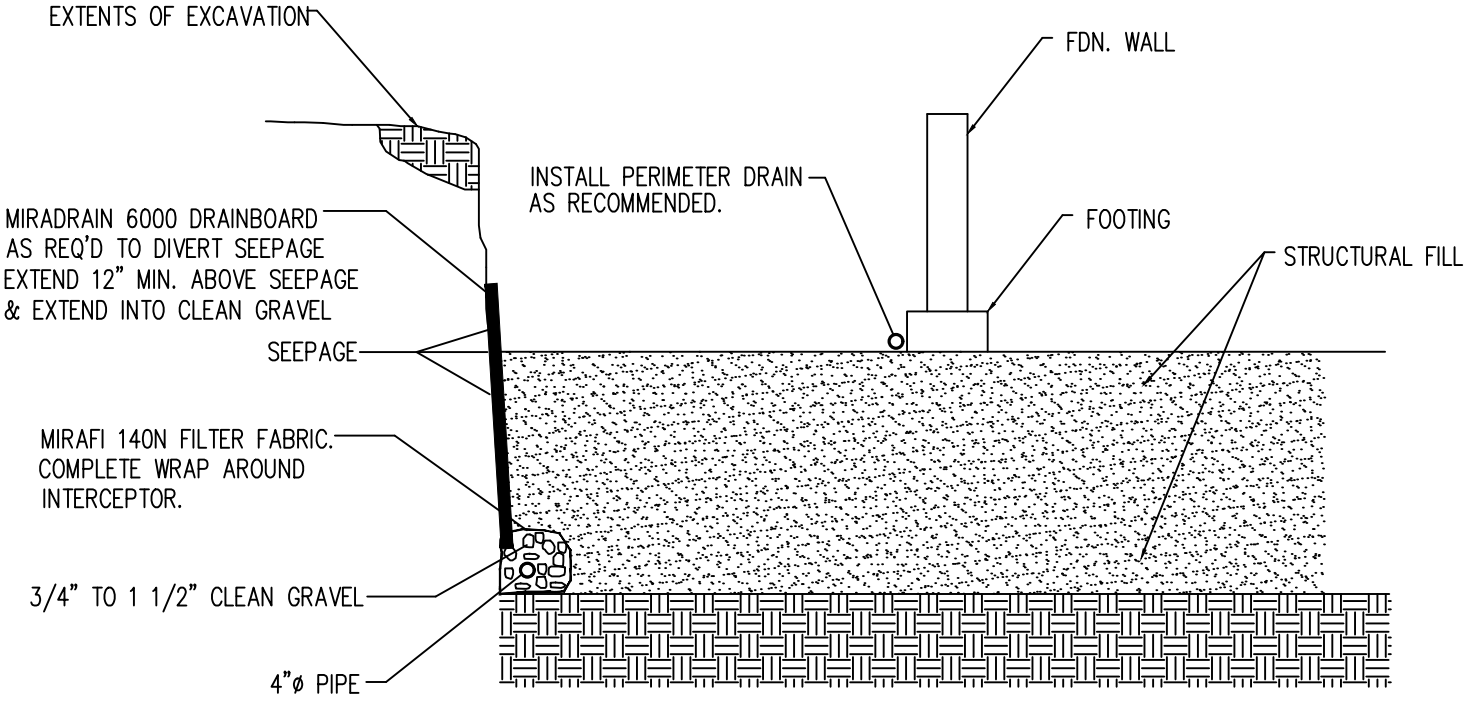
ENTECH ENGINEERING, INC.

TYP. UNDERSLAB DRAINAGE LAYER (CAPILLARY BREAK)

LOT 1, STERLING RECYCLING FACILITY
EL PASO COUNTY, COLORADO
RHETORIC LLC

JOB NO.
231252

FIG. 9



NOTE:
EXTEND INTERCEPTOR DRAIN TO UNDERDRAIN OR TO SUMP.
BENCH DRAIN INTO NATIVE SOILS 12 INCHES MINIMUM.

INTERCEPTOR DRAIN DETAIL

N.T.S.

ENTECH ENGINEERING, INC.

INTERCEPTOR DRAIN DETAIL
LOT 1, STERLING RECYCLING FACILITY
EL PASO COUNTY, COLORADO
RHETORIC LLC

JOB NO. 231252

FIG. 10

APPENDIX A: Site Photographs

1

Looking west from the northeastern portion of the site.

August 11, 2023

2

Looking southeast from the northern portion of the site.

August 11, 2023

Job No. 231252

3

Looking southwest from the northern portion of the site.

August 11, 2023

4

Looking north from the western portion of the site.

August 11, 2023

Job No. 231252

APPENDIX B: Test Boring Logs

TABLE B-1

DEPTH TO BEDROCK

TEST BORING	DEPTH TO BEDROCK (ft.)	DEPTH TO GROUNDWATER (ft.)
1	14	4
2	11	5
3	15	>20

TEST BORING 1

DATE DRILLED 8/3/2023

REMARKS

WATER @ 4', 8/11/23

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	Description
			26	4.5	1	FILL 0-3', SAND, SILTY WITH GRAVEL, TAN, MEDIUM DENSE, MOIST
5			16	13.1	2	SAND, SILTY WITH GRAVEL, TAN, MEDIUM DENSE to LOOSE, MOIST
10			9	16.7	2	
15			50/6"	10.3	5	CLAYSTONE, WEAK, GRAY, HIGHLY WEATHERED. (CLAY, SANDY, HARD, VERY MOIST)
20			50/4"	11.9	5	

TEST BORING 2

DATE DRILLED 8/4/2023

REMARKS

WATER @ 5', 8/11/23

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	Description
			37	6.5	1	FILL 0-5', SAND, WITH SILT and GRAVEL, TAN, DENSE, MOIST
5			42	11.6	1	SAND, SILTY, BROWN
					2	
10			34	13.7	3	CLAY, SANDY, GRAY, HARD, MOIST
15			50/7"	10.4	5	CLAYSTONE, VERY WEAK, GRAY, SLIGHTLY WEATHERED. (CLAY, SANDY, HARD, MOIST)
20			50/5"	10.6	5	

ENTECH ENGINEERING, INC.

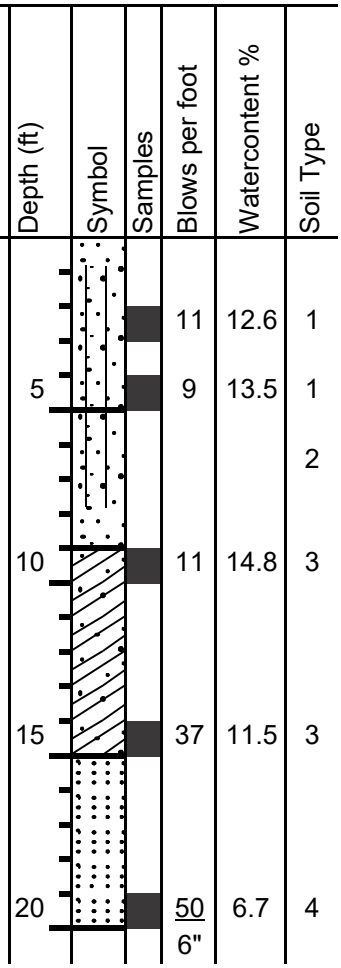
TEST BORING LOGS

STERLING RECYCLING FACILITY
RHETORIC, LLC

JOB NO. 231252

FIG. B-1

TEST BORING 3
DATE DRILLED 8/4/2023



ENTECH ENGINEERING, INC.

TEST BORING LOGS

STERLING RECYCLING FACILITY
RHETORIC, LLC

JOB NO. 231252

FIG. B-2

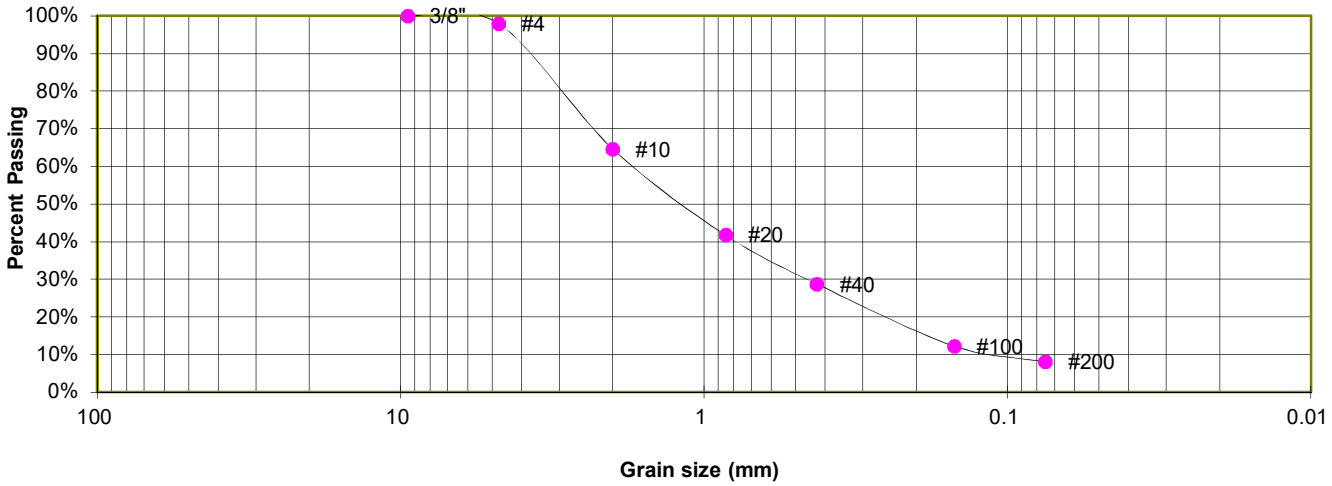
APPENDIX C: Laboratory Test Results

TABLE C-1
SUMMARY OF LABORATORY TEST RESULTS

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	WATER (%)	DRY DENSITY (PCF)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTIC INDEX	SULFATE (WT %)	FHA SWELL (PSF)	SWELL/ CONSOL (%)	USCS	SOIL DESCRIPTION
1	2	5			8.1							SW-SM	FILL, SAND, WITH SILT
3	2	10	14.3	111.0	62.3						0.8	CL	CLAY, SANDY
3	3	10	14.6	110.0	71.8						1.2	CL	CLAY, WITH SAND
4	3	20			14.9							SM	SANDSTONE, (SAND, SILTY)
5	1	15			52.1							CL	CLAYSTONE, (CLAY, SANDY)

Project: Sterling Recycling Facility
Client: Rhetoric, LLC
Job No: 231252

TEST BORING	2	SOIL DESCRIPTION	FILL, SAND, WITH SILT
DEPTH (FT)	5	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.9%
10	64.6%
20	41.8%
40	28.8%
100	12.3%
200	8.1%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SW-SM

ENTECH ENGINEERING, INC.

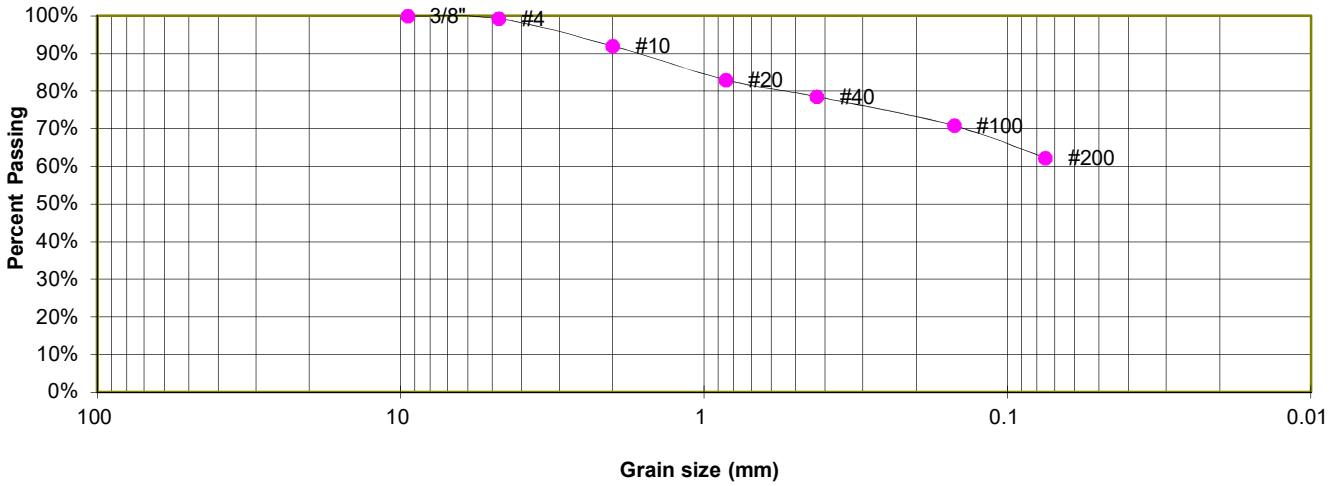
LABORATORY TEST RESULTS

STERLING RECYCLING FACILITY
RHETORIC, LLC

JOB NO. 231252

FIG. C-1

TEST BORING	2	SOIL DESCRIPTION	CLAY, SANDY
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	99.3%
10	92.0%
20	83.0%
40	78.6%
100	70.8%
200	62.3%

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL

ENTECH ENGINEERING, INC.

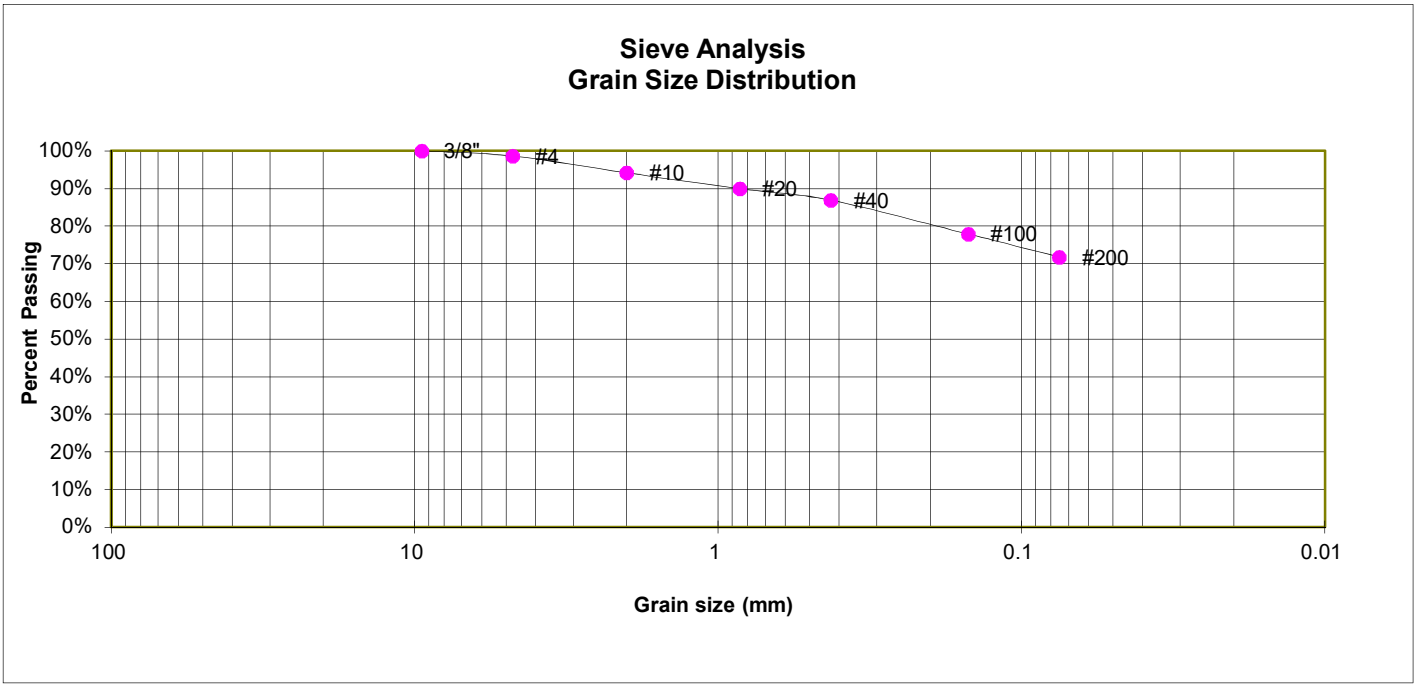
LABORATORY TEST RESULTS

STERLING RECYCLING FACILITY
RHETORIC, LLC

JOB NO. 231252

FIG. C-2

TEST BORING	3	SOIL DESCRIPTION	CLAY, WITH SAND
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	98.6%
10	94.2%
20	89.9%
40	86.9%
100	77.9%
200	71.8%

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL

ENTECH ENGINEERING, INC.

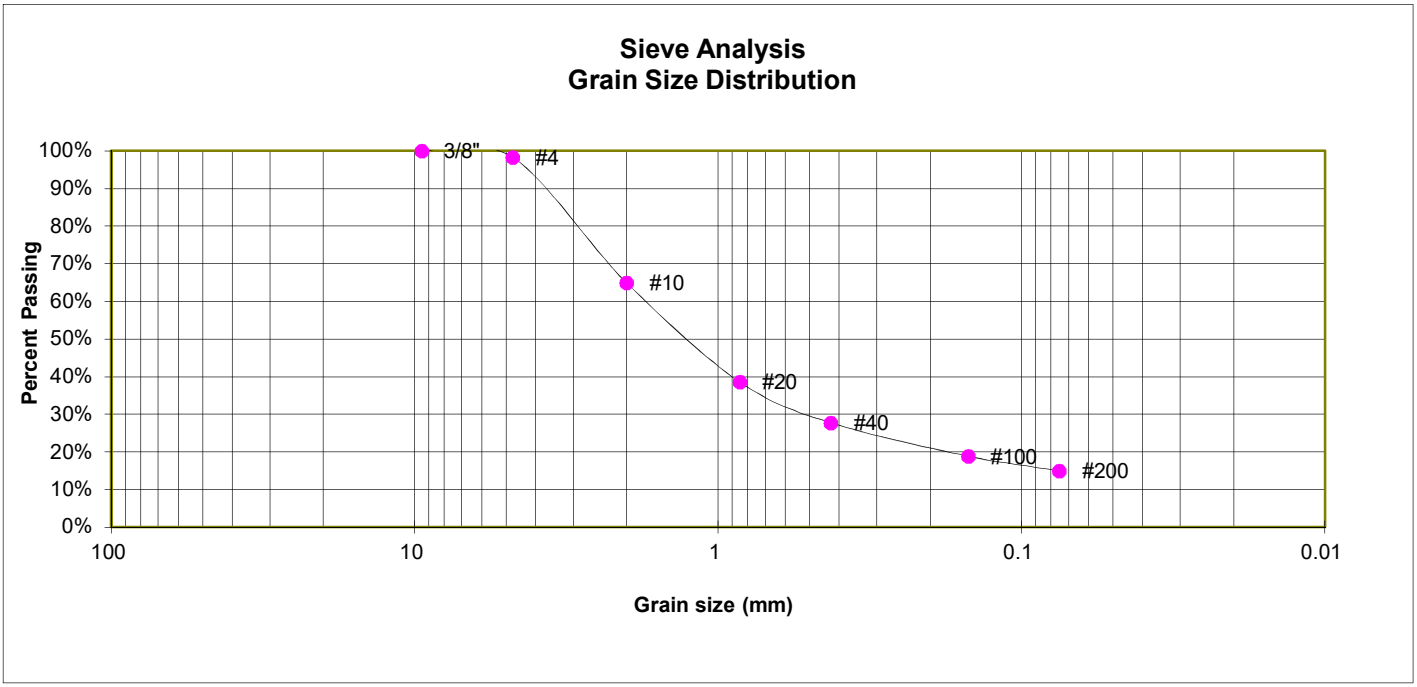
LABORATORY TEST RESULTS

STERLING RECYCLING FACILITY
RHETORIC, LLC

JOB NO. 231252

FIG. C-3

TEST BORING	3	SOIL DESCRIPTION	SANDSTONE, (SAND, SILTY)
DEPTH (FT)	20	SOIL TYPE	4



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	98.3%
10	64.9%
20	38.6%
40	27.8%
100	18.9%
200	14.9%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

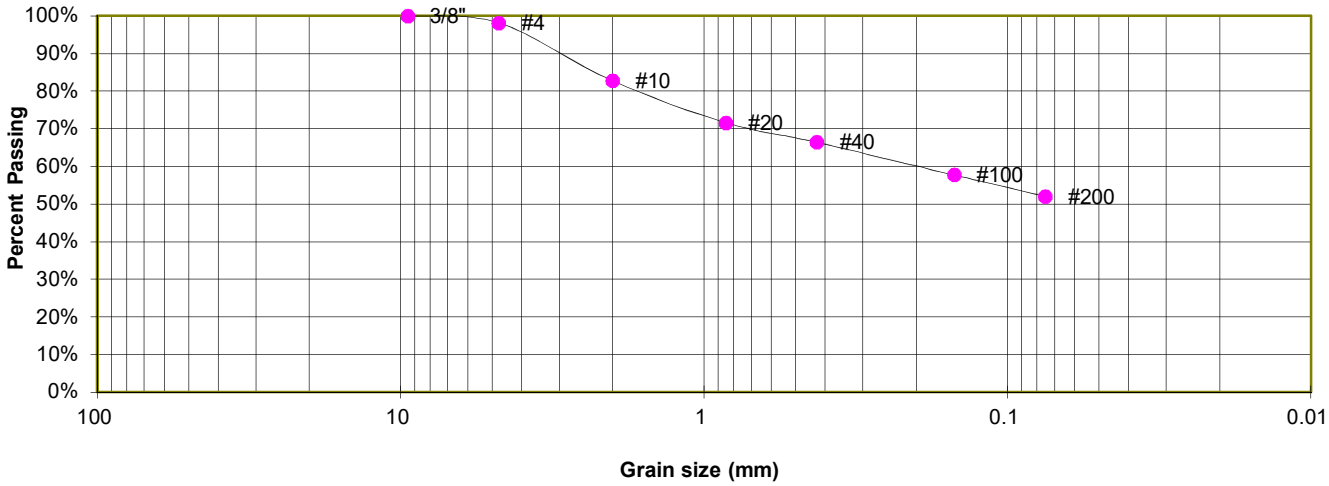
LABORATORY TEST RESULTS

STERLING RECYCLING FACILITY
RHETORIC, LLC

JOB NO. 231252

FIG. C-4

TEST BORING	1	SOIL DESCRIPTION	CLAYSTONE, (CLAY, SANDY)
DEPTH (FT)	15	SOIL TYPE	5



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	98.2%
10	82.7%
20	71.6%
40	66.4%
100	57.7%
200	52.1%

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL

ENTECH ENGINEERING, INC.

LABORATORY TEST RESULTS

STERLING RECYCLING FACILITY
RHETORIC, LLC

JOB NO. 231252

FIG. C-5

TEST BORING	2	SOIL DESCRIPTION	CLAY, SANDY
DEPTH (FT)	10	SOIL TYPE	3

SWELL/CONSOLIDATION TEST RESULTS

NATURAL UNIT DRY WEIGHT (PCF): 111
NATURAL MOISTURE CONTENT: 14.3%
SWELL/CONSOLIDATION (%): 0.8%

ENTECH ENGINEERING, INC.

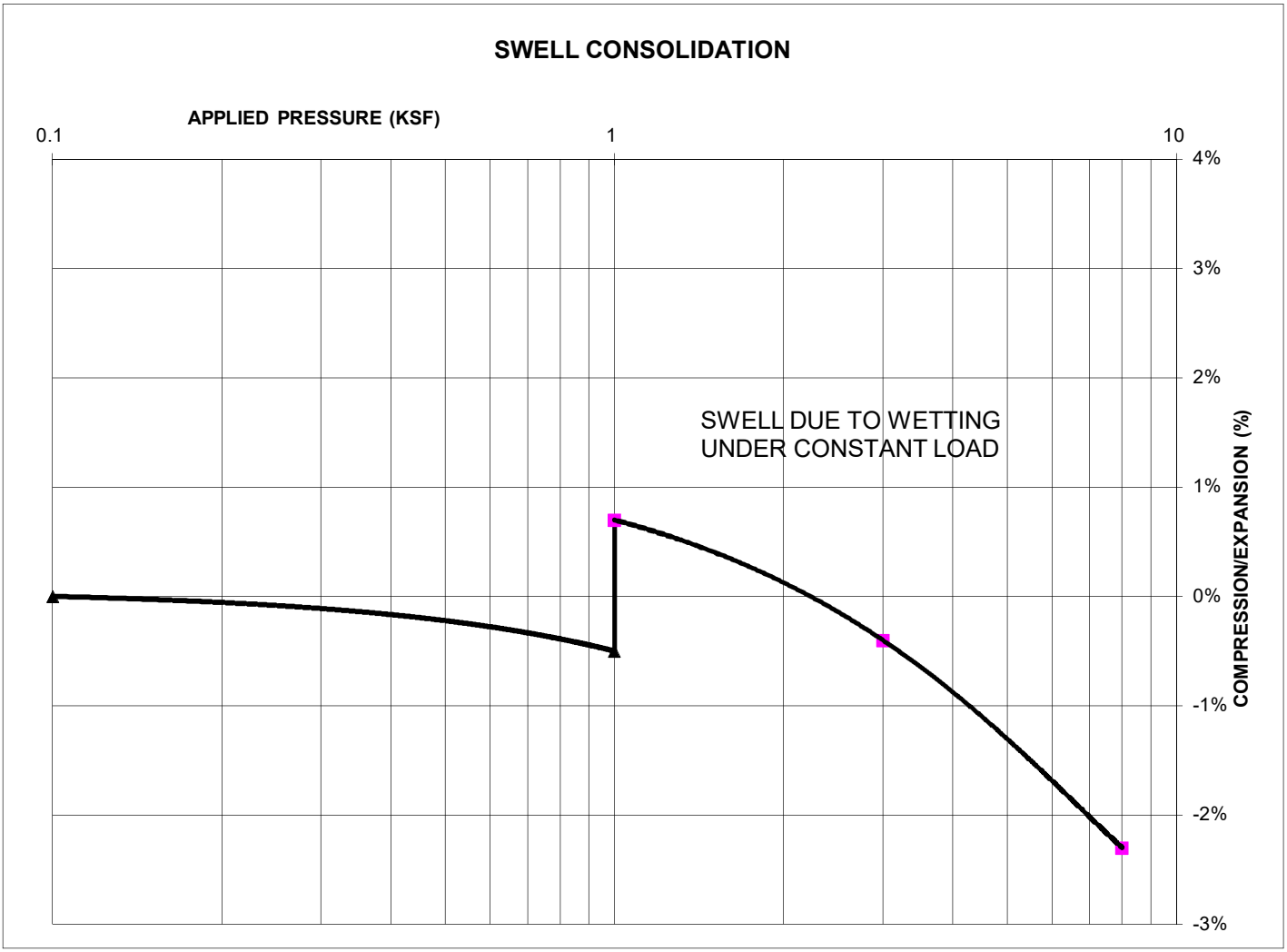
SWELL/CONSOLIDATION TEST RESULTS

STERLING RECYCLING FACILITY
RHETORIC, LLC

JOB NO. 231252

FIG. C-6

TEST BORING	3	SOIL DESCRIPTION	CLAY, WITH SAND
DEPTH (FT)	10	SOIL TYPE	3



SWELL/CONSOLIDATION TEST RESULTS

NATURAL UNIT DRY WEIGHT (PCF): 110
NATURAL MOISTURE CONTENT: 14.6%
SWELL/CONSOLIDATION (%): 1.2%

ENTECH ENGINEERING, INC.

SWELL/CONSOLIDATION TEST RESULTS

STERLING RECYCLING FACILITY
RHETORIC, LLC

JOB NO. 231252

FIG. C-7

APPENDIX D: Laboratory Testing Summary, Test Boring Location Map, and Test Boring Logs from Entech Job No. 220402

TABLE 1

SUMMARY OF LABORATORY TEST RESULTS

CLIENT RHETORIC
PROJECT MARKSHEFFEL & VOLLMER
JOB NO. 220402

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	WATER (%)	DRY DENSITY (PCF)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT (%)	PLASTIC INDEX (%)	SULFATE (WT %)	FHA SWELL (PSF)	SWELL/ CONSOL (%)	UNIFIED CLASSIFICATION	SOIL DESCRIPTION
1	1	2-3			39.4	37	17	0.00			SC	FILL, SAND, VERY CLAYEY
1	7	5			50.4						CL-SC	FILL, CLAY-SAND
2	2	10			19.1	NV	NP	<0.01			SM	SAND, SILTY
2	6	2-3			11.3						SM-SW	SAND, SLIGHTLY SILTY
3	4	10			63.5	57	36	<0.01			CH	CLAY, SANDY
3	5	5	42.4	77.6	65.1					-0.1	CL	CLAY, SANDY
4	3	15			49.7	NV	NP	0.01			SM	SANDSTONE, VERY SILTY
4	3	10							20		SM	SANDSTONE, SILTY

REVISION	BY

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

TEST BORING LOCATION MAP
MARSHEFFEL RD. & VOLLMER RD.
COLORADO SPRINGS, CO
FOR: RHETORIC, LLC.

DRAWN	JAC
CHECKED	DS
DATE	3/23/22
SCALE	1:200
JOB NO.	220402
FIGURE No.	2

N

VOLLMER ROAD
(MINOR ARTERIAL - ROW VARIES)

TB-1

RETAIL
62,000 SF

Commercial
8.1 AC

LOADING AREA

FUEL STATION

FUEL PUMPS

TB-2

RTN/R OUT

MARKSHEFFEL ROAD
(PRINCIPAL ARTERIAL - 150 FT ROW)

STERLING RANCH ROAD
(COLLECTOR - 80' ROW)

RESTAURANT
7,000 SF

STREET NAME TBD
(LOCAL - 60 FT ROW)

TB-4

TB-3

Multi-Family
16.7 AC
3-Story
Approx.
304 Units

TB-7

TB-5

175 FT Industrial/Residential Setback

ZONE: I-3
USE: EARTH & STONE
OWNER: 8335 VOLLMER ROAD LLC, C/O PIONEER SAND CO
SUB: UNPLATTED

STERLING RANCH ROAD
(COLLECTOR - 80' ROW)

175 FT Industrial/Residential Setback

Crushing Site
6.8 AC

175 FT Industrial / Residential Setback

Storage Unit Site
6.4 AC

TB-6

Detention
3.0 AC

Lift Station
1.5 AC

ZONE: I-3
USE: EARTH & STONE
OWNER: 8335 VOLLMER ROAD LLC, C/O PIONEER SAND CO
SUB: UNPLATTED

50 0 100 200 400
1:200

TB- APPROXIMATE TEST BORING LOCATION AND NUMBER

TEST BORING NO. 1
DATE DRILLED 3/2/2022
Job # 220402

REMARKS

DRY TO 19', 3/4/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			50/11"	5.9	1
5			16	10.8	1
10			20	13.2	1
15			50/10"	8.1	4
20			50/6"	10.1	4

FILL 0-11', SAND, VERY CLAYEY WITH GRAVEL, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST

FILL, SAND, CLAYEY, FINE TO COARSE GRAINED, BROWN, MEDIUM DENSE, MOIST

SANDSTONE, SILTY, FINE TO COARSE GRAINED, GRAY BROWN, VERY DENSE, MOIST

TEST BORING NO. 2
DATE DRILLED 3/2/2022
CLIENT RHETORIC
LOCATION MARKSHEFFEL & VOLLMER

REMARKS

DRY TO 19.5', 3/4/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			17	5.0	1
5			22	10.2	1
10			43	7.4	2
15			50	8.6	4
20			50/6"	10.3	4

FILL 0-9', SAND, SILTY, FINE TO COARSE GRAINED, BROWN, MEDIUM DENSE, MOIST

DARK BROWN, TRACE ORGANICS

SAND, SILTY, FINE TO COARSE GRAINED, GRAY BROWN, DENSE, MOIST

SANDSTONE, SILTY, FINE TO COARSE GRAINED, GRAY BROWN, VERY DENSE, MOIST

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED: SW	DATE: 3-14-22

JOB NO.: 220402
FIG NO.: A- 1

TEST BORING NO. 3
DATE DRILLED 3/2/2022
Job # 220402

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
WATER @ 13', 3/4/22						
SAND, SILTY, TAN						2
SANDSTONE, VERY SILTY, FINE TO COARSE GRAINED, TAN TO GRAY BROWN, DENSE TO VERY DENSE, MOIST				46	9.1	4
	5			45	10.0	4
TO CLAYEY	10			50/10"	10.7	4
	15			50/9"	19.4	4
	20			50/8"	16.5	4

TEST BORING NO. 4
DATE DRILLED 3/2/2022
CLIENT RHETORIC
LOCATION MARKSHEFFEL & VOLLMER

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
WATER @ 19.5', 3/4/22						
FILL 0-8', SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, LOOSE, MOIST				6	5.9	1
	5			5	5.7	1
CLAY, SANDY WITH SEAMS OF FINE TO COARSE GRAINED SAND, GRAY BROWN, SOFT TO STIFF, WET	10			5	26.4	3
	15			7	29.1	3
	20			15	15.5	3

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED: SW	DATE: 5-29-22

JOB NO.: 220402
FIG NO.: A- 2

TEST BORING NO. 5
DATE DRILLED 3/2/2022
Job # 220402

REMARKS

WATER @ 12.5', 3/4/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			20	10.2	1
5			3	43.5	3
10			5	20.6	3
15			29	11.0	4
20			50/9"	8.7	4

FILL 0-4', SAND, SILTY, FINE TO COARSE GRAINED, BROWN, MEDIUM DENSE, MOIST

CLAY, SANDY, GRAY BROWN, VERY SOFT TO SOFT, WET

WEATHERED TO FORMATIONAL SANDSTONE, SILTY, FINE TO COARSE GRAINED, GRAY BROWN, MEDIUM DENSE TO VERY DENSE, MOIST

TEST BORING NO. 6
DATE DRILLED 3/2/2022
CLIENT RHETORIC
LOCATION MARKSHEFFEL & VOLLMER

REMARKS

WATER @ 14', 3/4/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			17	3.5	2
5			13	2.9	2
10			23	3.6	2
15			15	11.4	2
20			*	7.4	2

SAND, SLIGHTLY SILTY TO SILTY, FINE TO COARSE GRAINED, BROWN TO TAN, MEDIUM DENSE, MOIST

* - BULK SAMPLE TAKEN

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED: SW	DATE: 3-11-22

JOB NO: 220402
FIG NO: A- 3

TEST BORING NO. 7
DATE DRILLED 3/2/2022
Job # 220402

TEST BORING NO.
DATE DRILLED
CLIENT RHETORIC
LOCATION MARKSHEFFEL & VOLLMER

REMARKS

DRY TO 20', 3/2/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	Description
			8	7.9	1	FILL 0-7', CLAY-SAND, BROWN, FIRM TO STIFF, MOIST
5			22	12.6	1	
						SAND, SILTY, FINE TO COARSE GRAINED, TAN, LOOSE TO MEDIUM DENSE, MOIST
10			6	5.8	2	
15			25	21.9	2	
						SANDSTONE, SILTY, FINE TO COARSE GRAINED, GRAY BROWN, VERY DENSE, MOIST
20			50/7"	8.7	4	

REMARKS

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
5					
10					
15					
20					

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
		SW	3-11-22

JOB NO.: 220402
FIG NO.: A- 4

APPENDIX E: Soil Survey Descriptions

El Paso County Area, Colorado

8—Blakeland loamy sand, 1 to 9 percent slopes

Map Unit Setting

National map unit symbol: 369v
Elevation: 4,600 to 5,800 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Blakeland and similar soils: 98 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blakeland

Setting

Landform: Flats, hills
Landform position (three-dimensional): Side slope, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock and/or eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 11 inches: loamy sand
AC - 11 to 27 inches: loamy sand
C - 27 to 60 inches: sand

Properties and qualities

Slope: 1 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 1 percent
Hydric soil rating: No

Pleasant

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 20, Sep 2, 2022

El Paso County Area, Colorado

19—Columbine gravelly sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 367p
Elevation: 6,500 to 7,300 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Columbine and similar soils: 97 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Columbine

Setting

Landform: Fans, fan terraces, flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 14 inches: gravelly sandy loam
C - 14 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XY214CO - Gravelly Foothill
Hydric soil rating: No

Minor Components

Fluvaquentic haplaquolls

Percent of map unit: 1 percent

Landform: Swales
Hydric soil rating: Yes

Other soils
Percent of map unit: 1 percent
Hydric soil rating: No

Pleasant
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 20, Sep 2, 2022