PRELIMINARY GEOTECHNICAL ENGINEERING REPORT

PROPOSED ELEMENTARY SCHOOL SITE
WELD COUNTY ROADS 74 AND 39
EATON, COLORADO

NORTHERN COLORADO GEOTECH
PROJECT NO. 042-18
April 12, 2018

Prepared for:
Eaton School District
211 1st Street
Eaton, Colorado 80615
Attn: Randy Miller

Northern Colorado Geotech
2956 29th Street, Unit 21
Greeley, Colorado 80631
Phone: (970) 506-9244
Fax: (970) 506-9242
April 12, 2018

Eaton School District
211 1st Street
Eaton, Colorado 80615

Attn: Randy Miller

Re: Preliminary Geotechnical Engineering Report
Proposed Elementary School Site - WCR 74 & 39
Northern Colorado Geotech Project No. 042-18

Northern Colorado Geotech has completed a preliminary geotechnical engineering exploration for the proposed elementary school and future structures to be located at the northwest corner of Weld County Roads 74 and 39 in Eaton, Colorado.

The subsurface soils at the site consisted of varying layers of sandy lean clay and silty clayey sand to depths of approximately 5 to 10 feet. Groundwater was encountered on the property at depths of approximately 6 to 12 feet. The results of our field exploration and laboratory testing indicate that the soils and bedrock have low to moderate expansive potential. The soils have low load bearing capabilities and the bedrock has moderate load bearing capabilities.

Based on the anticipated construction and the results of our preliminary engineering exploration, it is our opinion that the proposed structures should be supported by drilled pier foundations. Slab on grade may be utilized for the interior floor system provided that care is taken in the placement and compaction of the subgrade soil.

If you have any questions concerning this report or any of our consulting services, please do not hesitate to contact us.

Sincerely,

NORTHERN COLORADO GEOTECH

Prepared by:

Doug Leafgren, P.G.
President

Reviewed by:

Gary G. Weeks, P.E.
Vice President

Copies to: Addressee (3)
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<td></td>
<td>Logs of Borings</td>
</tr>
<tr>
<td></td>
<td>Laboratory Test Results</td>
</tr>
</tbody>
</table>
SCOPE

This report contains the results of our preliminary geotechnical engineering exploration for the proposed elementary school site to be located at the northwest corner of Weld County Roads 74 and 39 in Eaton, Colorado.

This report includes descriptions of, and geotechnical engineering recommendations relative to:

- subsurface soil and bedrock conditions
- groundwater conditions
- foundation design and construction
- drainage
- floor slab design and construction
- earthwork

The recommendations contained in this report are based upon the results of field and laboratory testing, engineering analyses, and experience with similar soil conditions, structures and our understanding of the proposed project.

SITE CONDITIONS

The site is currently an agricultural field that was unvegetated at the time of our exploration. Overall surface drainage is poor to the southeast. The property is bordered to the north by the Eaton Commons residential subdivision. Weld County Roads 39 and 74 are located to the east and south, respectively. An existing farm house, barn and yard are located northwest of the property and pasture ground and a commercial storage yard were observed to the west.

PROPOSED CONSTRUCTION

As we understand it, a new elementary school is envisioned for the northern portion of the site with a future building(s) being placed on the southern portion. We anticipate that the elementary school will have a finished first floor elevation that is slightly above existing site grade.
SITE EXPLORATION

A total of six test borings were drilled on March 1, 2018. The borings were drilled to approximate depths of 15 to 35 feet at the locations shown on the Site Plan, Figure 1. All borings were advanced with a truck-mounted drilling rig, utilizing 4-inch diameter solid stem augers.

The borings were located in the field by pacing from property lines and/or existing site features. The accuracy of boring locations should only be assumed to the level implied by the methods used.

Lithologic logs of each boring were recorded by an engineering geologist during the drilling operations. At selected intervals, samples of the subsurface materials were taken by driving split-spoon and/or ring samplers. Standard penetration measurements were recorded while driving a split-spoon and/or ring sampler into the subsurface materials. The standard penetration test is a useful index in estimating the density of the materials encountered.

Groundwater conditions were evaluated in each boring at the time of subsurface exploration, and one day after the drilling.

Laboratory Testing

The samples retrieved during the subsurface exploration were returned to our laboratory for observation by the project manager. The soils were classified in general accordance with the Unified Soil Classification System. At that time, the field descriptions were confirmed or modified and an applicable laboratory testing program was formulated. Boring logs were prepared and are attached with this report.

Laboratory tests were conducted on selected samples and are presented on the boring logs and attached laboratory test sheets. The test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations.

Selected samples were tested for the following engineering properties:

- Water Content
- Dry Density
- Consolidation
- Compressive Strength
- Atterberg Limits
- Percent Fines
- Expansion
SUBSURFACE CONDITIONS

Geology

The proposed area is located within the Great Plains physiographic province. The Colorado Piedmont is located near the western border of the Great Plains province and was formed during Late Tertiary and Early Quaternary time (approximately 2,000,000 years ago). The Colorado Piedmont is a broad, erosional trench which separates the Southern Rocky Mountains from the High Plains. Structurally, the site lies along the western flank of the Denver Basin. During the mountain building of the Laramide Orogeny (approximately 70,000,000 years ago), intense tectonic activity occurred, causing the uplifting of the Front Range and associated downwarping of the Denver Basin to the east. Due to the erosional action of wind and streams, relatively flat uplands and broad valleys characterize the present-day topography of the Colorado Piedmont in this region.

Due to the relatively flat nature of the site, geologic hazards at the site are anticipated to be low. Seismic activity in the area is anticipated to be low; and from a structural standpoint, the property should be relatively stable. With proper site grading around proposed structures, erosional problems at the site should be minimal.

Soil and Bedrock Conditions

Soils at the site generally consisted of varying layers of sandy lean clay and silty clayey sand to depths of approximately 5 to 10 feet. Interbedded siltstone, claystone and sandstone bedrock were encountered below the soils and extended beyond the depths explored, 35 feet. Summary boring logs are attached with this report.

Groundwater Conditions

Groundwater was encountered in two test bores at an approximate depth of 20 feet at the time of field exploration. When checked one day after the drilling, groundwater was measured in all of the test borings at approximate depths of 6 to 12 feet. These observations represent groundwater conditions at the time of the field exploration, and may not be indicative of other times, or at other locations. Groundwater levels can be expected to fluctuate with varying seasonal and weather conditions.

Due to the impermeable nature of the bedrock materials, areas of perched and/or trapped groundwater may occur at times in the subsurface soils overlying bedrock. The location and amount of perched water is dependent upon several factors, including hydrologic conditions, type of site
development, irrigation demands on or adjacent to the site, fluctuations in water features, seasonal and weather conditions.

**Field Test Results**

Field test results indicate that the clay soils are medium stiff in consistency. The sand soils are loose in relative density. The bedrock varies from soft to hard in hardness. Two test bores encountered densely cemented sandstone that ranged from several inches thick to several feet in thickness.

**Laboratory Test Results**

Laboratory test results indicate that the soils have low expansive potential and the bedrock has low to moderate expansive potential.

**DESIGN RECOMMENDATIONS**

**Foundation Design**

Based on the results of our preliminary subsurface exploration and the results of the laboratory testing, it is our opinion that a drilled pier foundation system should be used for support of the proposed structure(s). The piers should be drilled into the existing bedrock encountered at the site. Potentially expansive bedrock and relatively shallow groundwater will require particular attention in the design and construction.

Preliminary design and construction recommendations for foundation systems and other earth connected phases of the project are outlined below.

**Drilled Piers**

Based on the variable soils profile encountered and the proximity of the expansive bedrock to the foundation, it is our opinion that a drilled pier foundation system be used for support of the proposed elementary school structure.

Drilling to design depth should be possible with conventional single flight power augers on the majority of the site. However, areas of sandstone bedrock may be encountered where specialized drilling equipment may be required. Groundwater conditions indicate that temporary steel casing will likely be required to properly drill and clean piers prior to concrete placement. Groundwater should be removed from each pier hole prior to concrete placement. Pier concrete should be placed immediately after completion of drilling and cleaning. If pier concrete cannot be placed in dry conditions, a tremie should
be used for concrete placement. Due to potential sloughing and raveling, foundation concrete quantities may exceed calculated geometric volumes.

If casing is used for pier construction, it should be withdrawn in a slow continuous manner maintaining a sufficient head of concrete to prevent infiltration of water or the creation of voids in pier concrete. Pier concrete should have relatively high fluidity when placed in cased pier holes or through a tremie. Pier concrete with slump in the range of 5 to 7 inches is recommended.

Surface Drainage

Positive drainage should be provided during construction and maintained throughout the life of the proposed project. Infiltration of water into utility or foundation excavations must be prevented during construction. Planters and other surface features which could retain water in areas adjacent to the building or pavements should be sealed or eliminated. In areas where sidewalks or paving do not immediately adjoin the structure, we recommend that protective slopes be provided with a minimum grade of approximately 10 percent for at least 10 feet from perimeter walls. Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration.

Downspouts, roof drains or scuppers should discharge into splash blocks or extensions when the ground surface beneath such features is not protected by exterior slabs or paving. Sprinkler systems should not be installed within 5 feet of foundation walls. Landscaped irrigation adjacent to the foundation system should be minimized or eliminated.

Floor Slab Design and Construction

Some differential movement of slab-on-grade floor systems is possible should the subgrade soils become elevated in moisture content. We recommend that a minimum separation of 5 feet be maintained between all concrete slabs and the potentially expansive bedrock encountered on the site. To reduce potential slab movements, the subgrade soils should be prepared as outlined in the earthwork section of this report.

Additional floor slab design and construction recommendations are as follows:

- Positive separations and/or isolation joints should be provided between slabs and all foundations, columns or utility lines to allow independent movement.
- Control joints should be provided in slabs to control the location and extent of cracking.
• Interior trench backfill placed beneath slabs should be compacted in accordance with recommended specifications outlined below.

• In areas subjected to normal loading, a minimum 4-inch layer of sand, clean-graded gravel or aggregate base course should be placed beneath interior slabs.

• If moisture sensitive floor coverings are used on interior slabs, consideration should be given to the use of barriers to minimize potential vapor rise through the slab.

• Floor slabs should not be constructed on frozen subgrade.

• Other design and construction considerations, as outlined in the ACI Design Manual, Section 302.1R are recommended.

Exterior slabs-on-grade, exterior architectural features, and utilities founded on, or in backfill may experience some movement due to the volume change of the backfill. Potential movement could be reduced by:

- minimizing moisture increases in the backfill
- controlling moisture-density during placement of backfill
- using designs which allow vertical movement between the exterior features and adjoining structural elements
- placing effective control joints on relatively close centers

**General Earthwork**

All earthwork on the project should be observed and evaluated by Northern Colorado Geotech. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project.

**Site Preparation**

Strip and remove existing vegetation, debris, and other deleterious materials from proposed building and pavement areas. All exposed surfaces should be free of mounds and depressions which could prevent uniform compaction.
Stripped materials consisting of vegetation and organic materials should be wasted from the site, or used to revegetate landscaped areas or exposed slopes after completion of grading operations.

If unexpected fills or underground facilities are encountered, such features should be removed and the excavation thoroughly cleaned prior to backfill placement and/or construction.

It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment.

Depending upon depth of excavation and seasonal conditions, groundwater may be encountered in excavations on the site. Pumping from sumps may be utilized to control water within excavations. Well points may be required for significant groundwater flow, or where excavations penetrate groundwater to a significant depth.

The individual contractor(s) is responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. All excavations should be sloped or shored in the interest of safety following local, and federal regulations, including current OSHA excavation and trench safety standards.

**Fill Materials and Placement**

The site should be graded to create a relatively level surface to receive fill, and to provide for a relatively uniform thickness of fill beneath proposed building structures.

All exposed areas which will receive fill should be scarified to a minimum depth of eight inches, conditioned to near optimum moisture content, and compacted.

The placement of soils on the site should be observed by Northern Colorado Geotech. The fill should be assessed for suitability of use in the proposed fill and tested for placement including compaction percentage and moisture content.

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Recommended compaction criteria for engineered fill materials are as follows:

Clean on-site soils or approved imported materials may be used as fill material.
On-site bedrock materials are not recommended for use as compacted fill beneath interior or exterior floor slabs or as foundation backfill.

Imported soils (if required) should conform to the following:

<table>
<thead>
<tr>
<th>Gradation</th>
<th>Percent fines by weight (ASTM C136)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot;</td>
<td>100</td>
</tr>
<tr>
<td>3&quot;</td>
<td>70-100</td>
</tr>
<tr>
<td>No. 4 Sieve</td>
<td>50-100</td>
</tr>
<tr>
<td>No. 200 Sieve</td>
<td>60 (max)</td>
</tr>
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</table>

- Liquid Limit: 30 (max)
- Plasticity Index: 15 (max)

<table>
<thead>
<tr>
<th>Material</th>
<th>Minimum Percent (ASTM D698)</th>
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<tr>
<td>Scarified subgrade soils</td>
<td>95</td>
</tr>
<tr>
<td>On-site and imported fill soils:</td>
<td></td>
</tr>
<tr>
<td>Beneath foundations</td>
<td>95</td>
</tr>
<tr>
<td>Beneath slabs</td>
<td>95</td>
</tr>
<tr>
<td>Beneath pavements</td>
<td>95</td>
</tr>
<tr>
<td>Aggregate base (beneath slabs)</td>
<td>95</td>
</tr>
<tr>
<td>Miscellaneous backfill (non-structural areas)</td>
<td>90</td>
</tr>
</tbody>
</table>

On-site or imported clay soils should be compacted within a moisture content range of 2 percent below, to 2 percent above optimum. Granular soils should be compacted within a moisture range of 3 percent below to 3 percent above optimum unless modified by the project geotechnical engineer.

**GENERAL COMMENTS**

The analysis and recommendations presented in this report are based upon data obtained from borings performed to obtain representative subsurface conditions at the site. Variations in the soil
between borings will occur. Northern Colorado Geotech should be present during construction to observe the excavation and construction procedures and confirm or modify our recommendations.

The scope of services for this project does not include either specifically or by implication any environmental assessment of the site.

This report is intended exclusively for the use by the client. Any use or reuse of the findings and/or recommendations of this report by parties other than the client without the written consent of Northern Colorado Geotech is undertaken at said parties' sole risk.

This report has been prepared in accordance with generally accepted geotechnical engineering practices in this area at this time. No warranties, either express or implied, are intended or made.
**LOG OF BORING No. 1**

**CLIENT**
Eaton School District RE-2

**SITE**
NW Corner of Weld County Roads 74 & 39
Eaton, Colorado

**PROJECT**
Preliminary Subsurface Exploration

<table>
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<tr>
<th>DEPTH (F.T.)</th>
<th>SAMPLES</th>
<th>TESTS</th>
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<tbody>
<tr>
<td><strong>0.5</strong></td>
<td>6&quot; TOPSOIL</td>
<td>SANDY LEAN CLAY</td>
</tr>
<tr>
<td></td>
<td>Brown, moist, medium</td>
<td></td>
</tr>
<tr>
<td><strong>5.0</strong></td>
<td>WEATHERED SANDSTONE/SILTSTONE</td>
<td>Tan, moist, soft</td>
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<tr>
<td><strong>10.0</strong></td>
<td>SILTSTONE/CLAYSTONE</td>
<td>Grey, moist, moderately hard to hard</td>
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**WATER LEVEL OBSERVATIONS**

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<th>Datum</th>
<th>W.D.</th>
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<tr>
<td>7.6</td>
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**When Checked 1 Day A.B.**

**STARTED**
3/1/18

**FINISHED**
3/1/18

**DRILL CO.**
Drilling Eng

**DRILL RIG**
CME-55

**LOGGED BY**
TK

**APPROVED**
DML

**NCG PROJECT NO.**
042-18

---

**GRAPHIC LOG**

---

**LOGICAL BORING No. 1**

**CLIENT**
Eaton School District RE-2

**SITE**
NW Corner of Weld County Roads 74 & 39
Eaton, Colorado

**PROJECT**
Preliminary Subsurface Exploration

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<td>Brown, moist, medium</td>
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<td>SILTSTONE/CLAYSTONE</td>
<td>Grey, moist, moderately hard to hard</td>
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**WATER LEVEL OBSERVATIONS**

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**When Checked 1 Day A.B.**

**STARTED**
3/1/18

**FINISHED**
3/1/18

**DRILL CO.**
Drilling Eng

**DRILL RIG**
CME-55

**LOGGED BY**
TK

**APPROVED**
DML

**NCG PROJECT NO.**
042-18

---

**GRAPHIC LOG**

---
LOG OF BORING No. 2

CLIENT
Eaton School District RE-2

SITE
NW Corner of Weld County Roads 74 & 39
Eaton, Colorado

PROJECT
Preliminary Subsurface Exploration

GRAPHIC LOG

DEPTH (FT.)

SAMPLES

BLOWS/12" N-VALUE

NUMBER

TYPE

IN DRIVEN IN RECOVERED

MOISTURE, %

DRY DENSITY PCF

HAND PENTETOMETER psi

LIQUID LIMIT PERCENT FINES

5.0

6" TOPSOIL
SANDY LEAN CLAY
Brown, moist, medium

0.5

WEATHERED SILTSTONE/CLAYSTONE
Tan, moist, soft

Minor Coal Seams Encountered at 14 Ft.

15.0

Coal Seam was Saturated and Flowing Water

BOTTOM OF BORING

Northern Colorado Geotech

WATER LEVEL OBSERVATIONS

WL

None

W.D.

10.5

A.B.

When Checked 1 Day A.B.

3/1/18

3/1/18

STARTED

FINISHED

DRILL CO. Drilling Eng

DRILL RIG CME-55

LOGGED BY TK

APPROVED DML

NCG PROJECT NO. 042-18

WL

CME-55
# LOG OF BORING No. 3

**CLIENT**
Eaton School District RE-2

**SITE**
NW Corner of Weld County Roads 74 & 39
Eaton, Colorado

**PROJECT**
Preliminary Subsurface Exploration

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<th>NUMBER</th>
<th>TYPE</th>
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<td>18</td>
<td>13</td>
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<td></td>
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<td>RS</td>
<td>12</td>
<td>17</td>
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<tr>
<td><strong>WEATHERED SILTSTONE/CLAYSTONE</strong></td>
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<tr>
<td><strong>SILTSTONE</strong></td>
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<td>Tan, moist, moderately hard</td>
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<td></td>
<td>15.0</td>
<td>23</td>
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<td>12</td>
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**WATER LEVEL OBSERVATIONS**

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<tr>
<th>WL</th>
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<th>W.D.</th>
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</thead>
<tbody>
<tr>
<td>WL</td>
<td>6.0</td>
<td>A.B.</td>
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</table>

When Checked 1 Day A.B.

**STARTED**
3/1/18

**FINISHED**
3/1/18

**DRILL CO.**
Drilling Eng

**DRILL RIG**
CME-55

**LOGGED BY**
TK

**APPROVED**
DML

**NCG PROJECT NO.**
042-18
## LOG OF BORING No. 4

**CLIENT**
Eaton School District RE-2

**SITE**
NW Corner of Weld County Roads 74 & 39
Eaton, Colorado

**PROJECT**
Preliminary Subsurface Exploration

### GRAPHIC LOG

#### DEPTH (F.T.)

<table>
<thead>
<tr>
<th>Number</th>
<th>Type</th>
<th>Drills</th>
<th>Recovered</th>
<th>Moisture, %</th>
<th>Dry Density,pcf</th>
<th>Swell</th>
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<tr>
<td>0.5</td>
<td>6&quot;</td>
<td>TOPSOIL S A N DY L E A N C L A Y</td>
<td>Brown, moist, medium</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>4.0</td>
<td>2</td>
<td>SILTY CLAYEY SAND</td>
<td>Tan, moist to wet, loose</td>
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<td></td>
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<tr>
<td>10.0</td>
<td>3</td>
<td>WEATHERED SILTSTONE/CLAYSTONE</td>
<td>Tan, moist, soft</td>
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<td></td>
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</tr>
<tr>
<td>15.0</td>
<td>4</td>
<td>BOTTOM OF BORING</td>
<td></td>
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**WATER LEVEL OBSERVATIONS**

<table>
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<th>WL</th>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

When Checked 1 Day A.B.

**STARTED**
3/1/18

**FINISHED**
3/1/18

**DRILL CO.**
Drilling Eng

**DRILL RIG**
CME-55

**LOGGED BY**
TK

**APPROVED**
DML

**NCG PROJECT NO.**
042-18
**LOG OF BORING No. 5**

**SITE**
NW Corner of Weld County Roads 74 & 39
Eaton, Colorado

**PROJECT**
Preliminary Subsurface Exploration

<table>
<thead>
<tr>
<th>DEPTH (FT.)</th>
<th>GRAPHIC LOG</th>
<th>SAMPLES</th>
<th>TESTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td></td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>6&quot; TOPSOIL</td>
<td></td>
<td>SS</td>
<td></td>
</tr>
<tr>
<td>SANDY LEAN CLAY</td>
<td>Brown, moist, medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.0</td>
<td></td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>SILTY CLAYEY SAND</td>
<td>Tan, moist, loose</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.0</td>
<td></td>
<td>50/1</td>
<td>3</td>
</tr>
<tr>
<td>WEATHERED SANDSTONE/SILTSTONE</td>
<td>Tan to brown, moist, soft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SANDSTONE CAPROCK</td>
<td>Densely Cemented - Approx 12 Inches Thick</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.5</td>
<td></td>
<td>33</td>
<td>4</td>
</tr>
<tr>
<td>SILTSTONE/CLAYSTONE</td>
<td>Brown to gray, moist, moderately hard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOTTOM OF BORING</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**WATER LEVEL OBSERVATIONS**

<table>
<thead>
<tr>
<th>WL</th>
<th>None</th>
<th>W.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11.10</td>
<td>A.B.</td>
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</table>

When Checked 1 Day A.B.

**STARTED** 3/1/18  **FINISHED** 3/1/18

**DRILL CO.** Drilling Eng  **DRILL RIG** CME-55

**LOGGED BY** TK  **APPROVED** DML

**NCG PROJECT NO.** 042-18
### LOG OF BORING No. 6

#### Preliminary Subsurface Exploration

**CLIENT**
Eaton School District RE-2

**SITE**
NW Corner of Weld County Roads 74 & 39
Eaton, Colorado

**PROJECT**
Eaton School District RE-2

<table>
<thead>
<tr>
<th>SAMPLES</th>
<th>TESTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEPTH (F.T.)</td>
<td>BLOWN/12&quot; N-VALUE</td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
</tr>
<tr>
<td>0.5</td>
<td>6&quot; TOPSOIL</td>
</tr>
<tr>
<td>7.0</td>
<td>WEATHERED SANDSTONE/SILTSTONE</td>
</tr>
<tr>
<td>10.0</td>
<td>SILTSTONE/CLAYSTONE</td>
</tr>
<tr>
<td>29.0</td>
<td>BOTTOM OF BORING AUGER REFUSAL</td>
</tr>
</tbody>
</table>

#### WATER LEVEL OBSERVATIONS

**WL**

<table>
<thead>
<tr>
<th>WL</th>
<th>W.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.0</td>
<td>W.D.</td>
</tr>
<tr>
<td>6.5</td>
<td>A.B.</td>
</tr>
</tbody>
</table>

When Checked 1 Day A.B.

**Northern Colorado Geotech**

2956 29th Street, Unit 27
Greeley, Colorado 80631
Phone: 970-506-9244
Fax: 970-506-9242

**STARTED**
3/1/18

**FINISHED**
3/1/18

**DRILL CO.**
Drilling Eng

**DRILL RIG**
CME-55

**LOGGED BY**
TK

**APPROVED**
DML

**NCG PROJECT NO.**
042-18
Specimen Identification | Classification | $\gamma$ | MC%  
--- | --- | --- | ---  
1 | 4.0 | Sandy Lean Clay | 111 | 16
<table>
<thead>
<tr>
<th>Specimen Identification</th>
<th>Classification</th>
<th>γₜ</th>
<th>MC%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Siltstone Sandstone</td>
<td>9.0</td>
<td>103</td>
</tr>
</tbody>
</table>

**CONSOLIDATION TEST**

Client: Eaton School District RE-2  Number: 042-18
Project: Preliminary Subsurface Exploration
Location: NW Corner of Weld County Roads 74 & 39

Northern Colorado Geotech
2956 29th Street, Unit 21
Greeley, Colorado 80631
Phone: 970-506-9244
Fax: 970-506-9242
CONSOLIDATION TEST

Client: Eaton School District RE-2   Number: 042-18
Project: Preliminary Subsurface Exploration
Location: NW Corner of Weld County Roads 74 & 39

<table>
<thead>
<tr>
<th>Specimen Identification</th>
<th>Classification</th>
<th>( \gamma_d )</th>
<th>MC%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Weathered Siltstone</td>
<td>111</td>
<td>17</td>
</tr>
</tbody>
</table>

2956 29th Street, Unit 21
Greeley, Colorado 80631
Phone: 970-506-9244
Fax: 970-506-9242

Northern Colorado Geotech
CONSOLIDATION TEST

Specimen Identification | Classification | \( \gamma_d \) | MC%  
--- | --- | --- | ---  
4 | 4.0 | Silty Sand | 117 | 9

Client: Eaton School District RE-2  Number: 042-18
Project: Preliminary Subsurface Exploration
Location: NW Corner of Weld County Roads 74 & 39

Northern Colorado Geotech
2956 29th Street, Unit 21
Greeley, Colorado 80631
Phone: 970-506-9244
Fax: 970-506-9242
<table>
<thead>
<tr>
<th>Specimen Identification</th>
<th>Classification</th>
<th>$\gamma_d$</th>
<th>MC%</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Silty Clayey Sand</td>
<td>109</td>
<td>19</td>
</tr>
</tbody>
</table>

**CONSOLIDATION TEST**

Client: Eaton School District RE-2   Number: 042-18  
Project: Preliminary Subsurface Exploration  
Location: NW Corner of Weld County Roads 74 & 39
### Specimen Identification

<table>
<thead>
<tr>
<th>Specimen Identification</th>
<th>Classification</th>
<th>$\gamma$</th>
<th>MC%</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4.0 Silty Clayey Sand</td>
<td>114</td>
<td>13</td>
</tr>
</tbody>
</table>

### CONSOLIDATION TEST

Client: Eaton School District RE-2 Number: 042-18
Project: Preliminary Subsurface Exploration
Location: NW Corner of Weld County Roads 74 & 39
Specimen Identification | Classification          | $\gamma_d$ | MC% |
--- | --- | --- | --- |
6   | 4.0 | Silty Clayey Sand | 105 | 19 |

CONSOLIDATION TEST

Client: Eaton School District RE-2  Number: 042-18
Project: Preliminary Subsurface Exploration
Location: NW Corner of Weld County Roads 74 & 39
<table>
<thead>
<tr>
<th>Specimen Identification</th>
<th>Classification</th>
<th>$\gamma$</th>
<th>MC%</th>
</tr>
</thead>
<tbody>
<tr>
<td>● 6</td>
<td>Siltstone Claystone</td>
<td>9.0</td>
<td>105</td>
</tr>
</tbody>
</table>

**CONSOLIDATION TEST**

Client: Eaton School District RE-2 Number: 042-18
Project: Preliminary Subsurface Exploration
Location: NW Corner of Weld County Roads 74 & 39

---

2956 29th Street, Unit 21
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Phone: 970-506-9244
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---

$\gamma$: Unit Weight
MC%: Moisture Content Percentage