



performed  
summary

Include the following per ECM Appendix  
C Section C.2.2.E.

the soils. Laboratory test results are

## SOIL AND GROUNDWATER CONDITIONS:

1 E.

### Geologic Interpretation.

The report shall include interpretations and detailed descriptions of the following:

#### 1. Geologic Hazards.

Geologic hazards include landslides, avalanche, rockfall, mudflows, debris flows, radioactivity, etc.

- Geomorphic and structural features/processes present in the area;
- Man-induced features/processes;
- Age and activity of the features/processes;
- Natural contentions affecting the features/processes;
- Susceptibility to man-induced changes;
- Potential impact of hazard(s) and risk to project;

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## APPENDIX C - SOILS INVESTIGATION REPORTS AND MITIGATION

C.2.2

- Amenability of adverse conditions for adequate mitigation;
- Long-term lateral and vertical stability of earth materials; and,
- Impact of project on materials stability.

#### 2. Geologic Constraints.

Geologic constraints include expansive soil or rock, potentially unstable slopes, high groundwater levels, soil creep, hydrocompaction, shallow bedrock, erosion, etc.

- Soil, surface and ground water, and geomorphic conditions;
- Man-induced conditions;
- Activity of conditions
- Effect of natural or man-induced changes;
- Potential impact of conditions and risk to project;
- Amenability of adverse conditions for adequate mitigation; and,
- Impact of project on long-term project stability.

Additional soil descriptions are presented on the enclosed drill logs. (Appendix A). A Summary of Laboratory Test Results is presented in Table 1. Laboratory test results are included in Appendix B. The soils were classified using the results of the laboratory testing, the Unified Soil

Classification System (USCS), and visual classification. The soil types are expected to vary across the site. Also, stratification lines shown on the logs represent the approximate boundary between soil types and the actual transition are expected to be gradual and vary with location.

Groundwater was not encountered in any of the test borings which were drilled to 20 feet. This indicates that groundwater will have little effect on shallow foundations proposed for the site depending on final grades and depth of excavations. Groundwater conditions may vary due to

See Engineering Criteria Manual Appendix C Section C.3.2.B.  
Address the highlighted items.

Development  
n affect the

#### **PRELIMINARY DEVELOPMENT CONSIDERATIONS AND RECOMMENDATIONS:**

Grading plans were not available at the time of this investigation. The soils in the test borings

##### **B. Recommendations and Mitigation Plans.**

The report shall include recommendations and mitigation concerning but not limited to the following:

- Allowable soil pressure
- Foundation types
- Groundwater
- Maximum stable slopes (cut, fill, and natural)
- Retaining wall information (if applicable)
- Detention pond design and construction (if applicable)
- Cut and fill criteria (such as compaction, moisture content, benching)

30 inches below the adjacent exterior site grade for frost protection. Drilled piers are a suitable alternative to overexcavation.

Groundwater is not expected to be encountered in shallow foundation excavations depending on final grades and depths of excavations. However, groundwater conditions may vary. Excavation of clay and sand soils will be moderate with rubber-tired equipment, the hard claystone bedrock where encountered will likely require track-mounted equipment.

#### **ON-GRADE FLOOR SLABS:**

If standard spread footing foundations are used, any grade supported floor slabs should be separated from other structural components and utility penetrations to allow for possible future vertical movement unless designed as part of the foundation. Uncontrolled fills, and expansive clays at or near slabs grade will require overexcavation. Control joints in grade-supported slabs are recommended at 10 to 15-foot perpendicular spacings to control cracking. We anticipate perimeter drains are not necessary for slab-on-grade construction provided the slabs are positioned above finished exterior site grade, irrigation is minimized and foundation wall backfill is properly placed.

On-grade floor slabs should not be considered unless slab movement can be tolerated. If slab movement cannot be tolerated, then structural floors should be considered.

#### **PRELIMINARY CONCRETE RECOMMENDATIONS:**

Sulfate solubility testing was conducted on select samples recovered from the test borings to evaluate the potential for sulfate attack on concrete placed below surface grade. The test results indicated less than 0.01 percent soluble sulfate (by weight). These test results indicate that the sulfate component of the in-place soils present a negligible exposure threat to concrete placed below the site grade. Type II cement is recommended for the soils which pose a negligible to moderate threat, which will include imported structural fill materials. We recommend additional sulfate testing as the site is developed as high sulfate levels are common in this area.

To further avoid concrete degradation during construction it is recommended that concrete not be placed on frozen or wet ground. Care should be taken to prevent the accumulation or ponding of water in the foundation excavation prior to the placement of concrete. If standing water is present in the foundation excavation, it should be removed by ditching to sumps and pumping the water away from the foundation area prior to concrete placement. If concrete is placed during periods of cold temperatures, the concrete must be kept from freezing. This may require covering the concrete with insulated blankets and adding heat to prohibit freezing.

#### **SITE GRADING:**

Any areas to receive fill should have all topsoil, organic material or debris removed. Fill must be properly benched and compacted to minimize potentially unstable conditions in slope areas. Completed slopes should be 3:1 or flatter if constructed without reinforcing. Flatter slopes may be required depending upon specific conditions. The ground surface should be scarified, and moisture conditioned to within  $\pm 2$  percent of optimum moisture content and compacted to a minimum of 95 percent of its maximum Standard Proctor Dry Density, ASTM D-698, prior to placing new fill.

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 granular soils and 95 percent of its maximum Standard Proctor Dry Density, ASTM D-698 for cohesive soils. These materials should be placed at a moisture content conducive to compaction, usually  $\pm 2$  percent 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 hauling them to the site.

#### **ADDITIONAL SUBSURFACE SOIL INVESTIGATIONS:**

Additional subsurface soil investigations are recommended when building locations and grading plans are determined. The individual open foundation excavations should also be observed prior to construction of the foundation in order to verify that no anomalies are present, that materials at the proper design bearing capacity have been encountered, no unsuitable fill soils are present, and that no soft or loose spots or debris are present in the foundation area. Final



Waterview Commercial Investors, LLC  
Preliminary Subsurface Soils Investigation  
Powers Boulevard and Bradley Road  
El Paso County, Colorado

drainage recommendations should also be determined at the time of the excavation observations.

#### **CLOSURE:**

The Preliminary Subsurface Investigation, geotechnical evaluation and recommendations presented in this report are intended for use by Waterview Commercial Investors, LLC for the subject site. The borings were located to provide preliminary recommendations, variations in site subsurface conditions not indicated on the borings should be anticipated. Preliminary grading plans with respect to the soils encountered can be evaluated once plans become available. Additional subsurface investigation and testing is recommended to further evaluate the site after development plans are prepared.

In conducting the preliminary subsurface investigation, laboratory testing, engineering evaluation and reporting, Entech Engineering, Inc. endeavored to work in accordance with generally accepted professional geotechnical and geologic practices and principles consistent with the level of care and skill ordinarily exercised by members of the geotechnical profession currently practicing in same locality and under similar conditions. No other warranty, expressed or implied is made.

If there are any questions regarding the information provided herein or if Entech Engineering, Inc. can be of further assistance, please do not hesitate to contact us.

Respectfully Submitted,

ENTECH ENGINEERING, INC.


  
Stuart Wood  
Geologist

LLL/am

Entech Job No. 220689  
AAPProjects/2022/220689 pssi



Reviewed by:

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

## TABLE

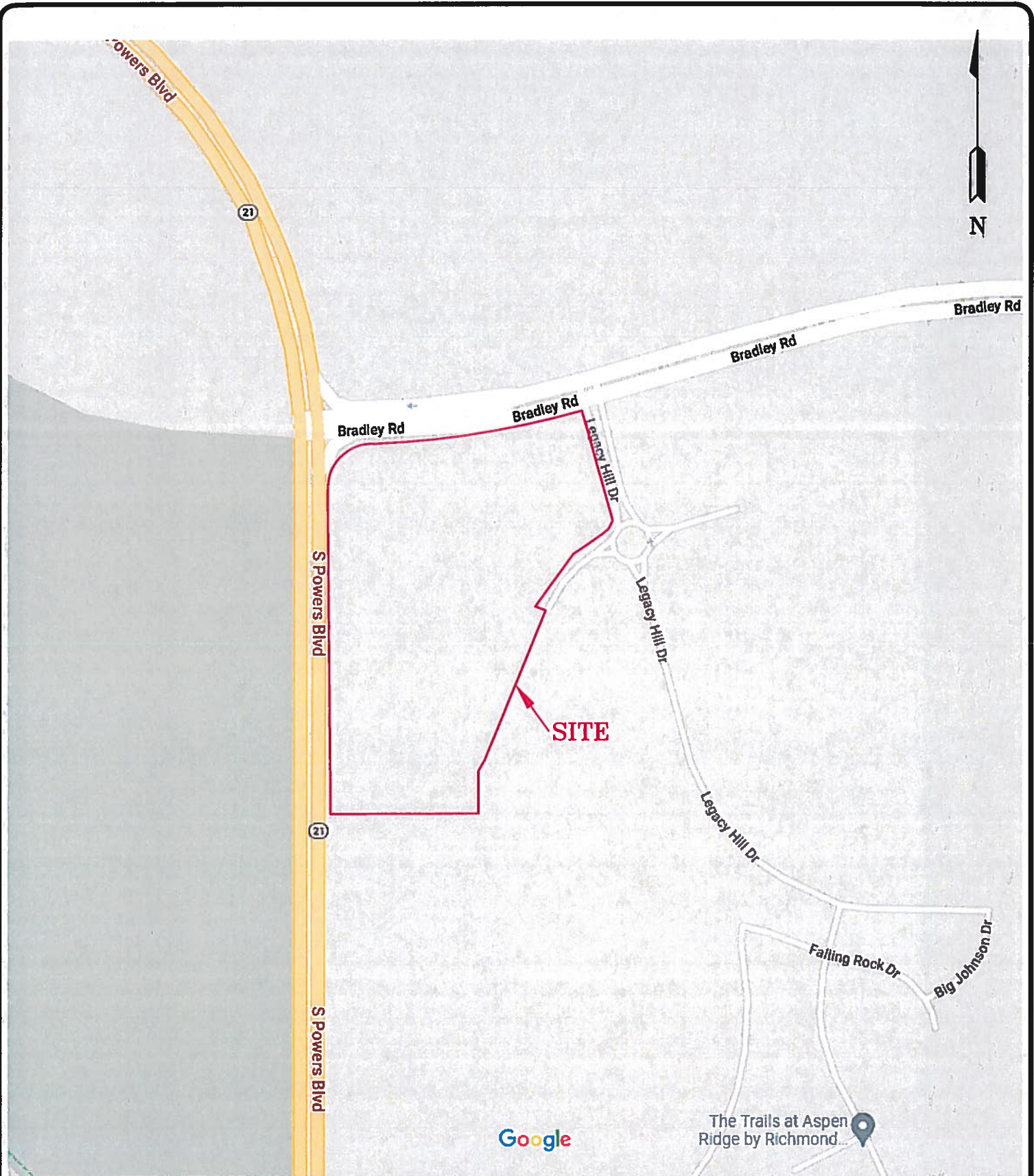
**TABLE 1**  
**SUMMARY OF LABORATORY TEST RESULTS**

CLIENT    WATerview COMMERCIAL  
PROJECT    WATerview EAST DEV.  
JOB NO.    220689

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	3	2-3			21.7	NV	NP	<0.01			SM	SAND,S ILTY
1	4	5			47.1						SM	SAND, VERY SILTY
1	5	10			20.2						SM	SAND, SILTY
2	2	5	9.7	89.9	81.7	33	14	<0.01		-0.4	CL	CLAY, SANDY
2	6	20	21.9	100.5	81.4					1.4	CL	CLAY, SANDY
2	7	2-3			85.5						CL	CLAY, SANDY
3	1	15	13.9	109.6	84.4	43	24	<0.01		2.1	CL	CLAYSTONE, SANDY

## FIGURES





**ENTECH**  
ENGINEERING, INC.  
585 ELKTON DRIVE  
COLORADO SPRINGS, CO. 80907 (719) 531-5399

VICINITY MAP  
WATerview EAST DEVELOPMENT  
COLORADO SPRINGS, CO.  
FOR: WATerview COMMERCIAL INVESTORS, LLC

DRAWN:  
JAC

DATE:  
4/29/22

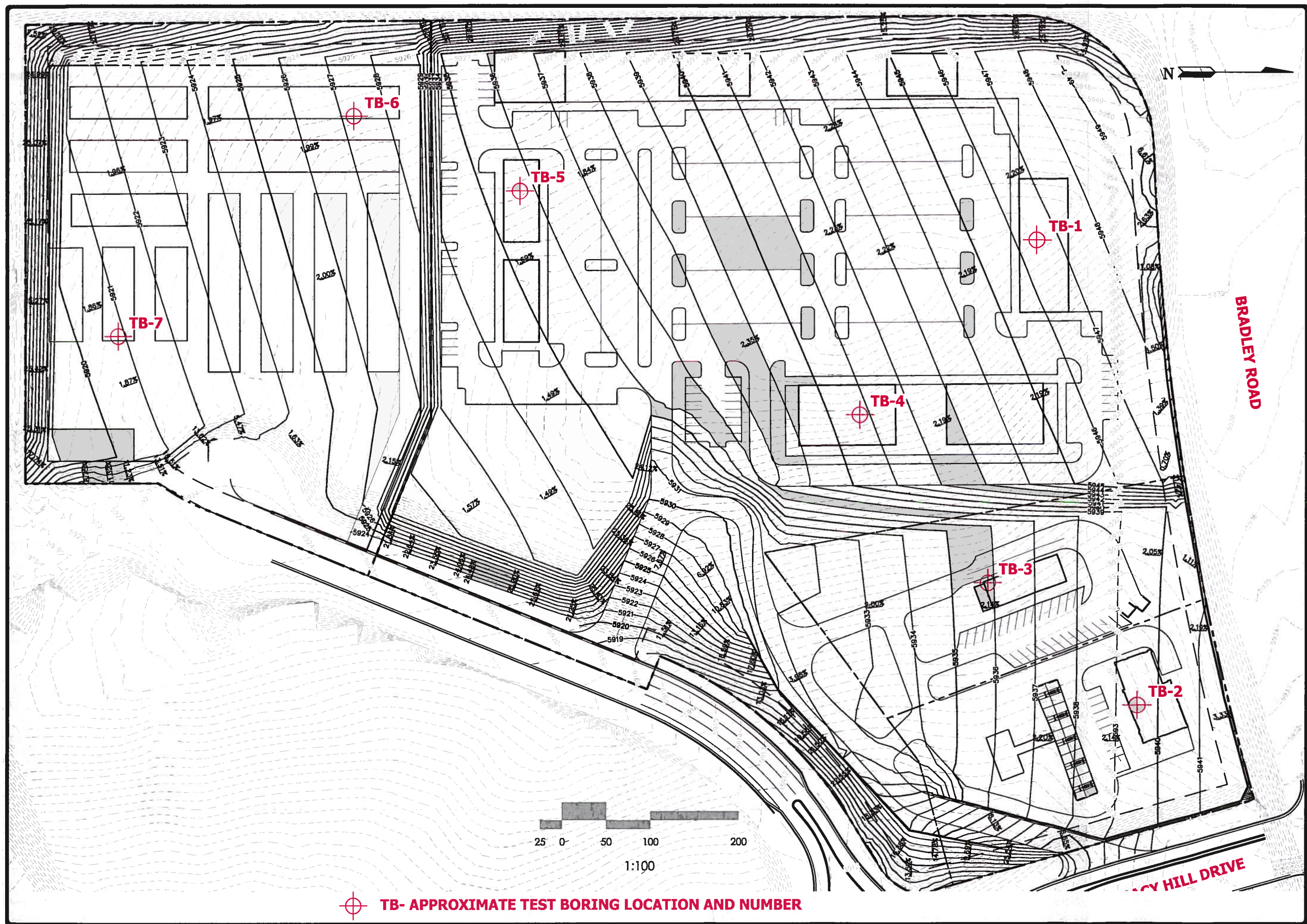
CHECKED:  
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DATE:

JOB NO.:  
220689

FIG NO.:  
1





REVISION	BY

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

TEST BORING LOCATION MAP  
WATERVIEW EAST DEVELOPMENT  
COLORADO SPRINGS, CO.  
FOR: WATERVIEW COMMERCIAL INVESTORS, LLC

DATE	4/29/22
SCALE	1:100
JOB NO.	220689
7500' N.	2



## **APPENDIX A: Test Boring Logs**

TEST BORING NO. 1  
 DATE DRILLED 4/11/2022  
 Job # 220689

TEST BORING NO. 2  
 DATE DRILLED 4/11/2022  
 CLIENT WATERVIEW COMMERCIAL  
 LOCATION WATERVIEW EAST DEV.

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 18', 4/14/22							DRY TO 17', 4/14/22						
SAND, SILTY, FINE TO MEDIUM GRAINED, TAN, DENSE, DRY TO MOIST				35	2.1	1	CLAY, SANDY, DARK BROWN, STIFF TO FIRM, MOIST				15	6.9	2
	5			31	4.9	1		5			22	7.1	2
CLAY, SANDY, BROWN, VERY STIFF, MOIST	10			34	8.4	2		10			13	11.5	2
CLAYSTONE, SANDY, BROWN, HARD, MOIST	15			50 11"	11.1	3		15			17	13.8	2
	20			50	12.3	3	CLAYSTONE, SANDY, BROWN, HARD, MOIST	20			50 2"	10.3	3



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505 ELKTON DRIVE  
 COLORADO SPRINGS, COLORADO 80907

### TEST BORING LOG

DRAWN:

DATE:

CHECKED: SW

DATE: 4-26-22

JOB NO.:  
 220689

FIG NO.:  
 A- 1

TEST BORING NO. 3  
 DATE DRILLED 4/11/2022  
 Job # 220689

TEST BORING NO. 4  
 DATE DRILLED 4/11/2022  
 CLIENT WATERVIEW COMMERCIAL  
 LOCATION WATERVIEW EAST DEV.

REMARKS

DRY TO 18', 4/14/22

SAND, SILTY, FINE TO MEDIUM  
 GRAINED, TAN, MEDIUM DENSE,  
 DRY TO MOIST

CLAY, SANDY, GRAY BROWN,  
 VERY STIFF, MOIST

CLAYSTONE, SANDY, GRAY  
 BROWN, HARD, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
5			10	2.8	1
5			14	4.2	1
10			36	12.3	2
15			50 9"	13.4	3
20			50	13.7	3

REMARKS

DRY TO 18', 4/14/22

SAND, VERY SILTY TO SILTY,  
 FINE TO MEDIUM GRAINED, TAN,  
 MEDIUM DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
5			21	5.3	1
5			12	5.1	1
10			28	3.0	1
15			16	3.4	1
20			19	3.5	1



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 COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:

DATE:

CHECKED: SW

DATE: 4-26-22

JOB NO.:  
 220689

FIG NO.:  
 A- 2

TEST BORING NO. 5  
 DATE DRILLED 4/11/2022  
 Job # 220689

TEST BORING NO. 6  
 DATE DRILLED 4/11/2022  
 CLIENT WATERVIEW COMMERCIAL  
 LOCATION WATERVIEW EAST DEV.

REMARKS

DRY TO 19', 4/14/22

SAND, SILTY, FINE TO MEDIUM  
 GRAINED, TAN, MEDIUM DENSE,  
 DRY TO MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			29	2.4	1
5			25	2.0	1
10			21	2.6	1
15			16	3.5	1
20			17	5.5	1

REMARKS

DRY TO 19', 4/14/22

SAND, SILTY, FINE TO MEDIUM  
 GRAINED, TAN, MEDIUM DENSE,  
 MOIST

CLAY, SANDY, BROWN, STIFF,  
 MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			17	4.2	1
5			17	3.7	1
10			25	3.6	1
15			43	4.3	1
20			26	17.3	2



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 COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:

DATE:

CHECKED: SW

DATE: 4-26-22

JOB NO.:  
 220689

FIG NO.:  
 A- 3



TEST BORING NO. 7  
 DATE DRILLED 4/11/2022  
 Job # 220689

TEST BORING NO.  
 DATE DRILLED  
 CLIENT  
 LOCATION WATERVIEW COMMERCIAL  
 WATERVIEW EAST DEV.

REMARKS

DRY TO 18.5', 4/14/22

CLAY, SANDY, TAN, FIRM,  
 MOIST

SAND, SILTY, FINE TO MEDIUM  
 GRAINED, TAN, MEDIUM DENSE  
 TO DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			12	18.5	2
5			22	6.0	1
10			23	3.0	1
15			40	3.9	1
20			32	8.6	1

REMARKS

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



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 COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:

DATE:

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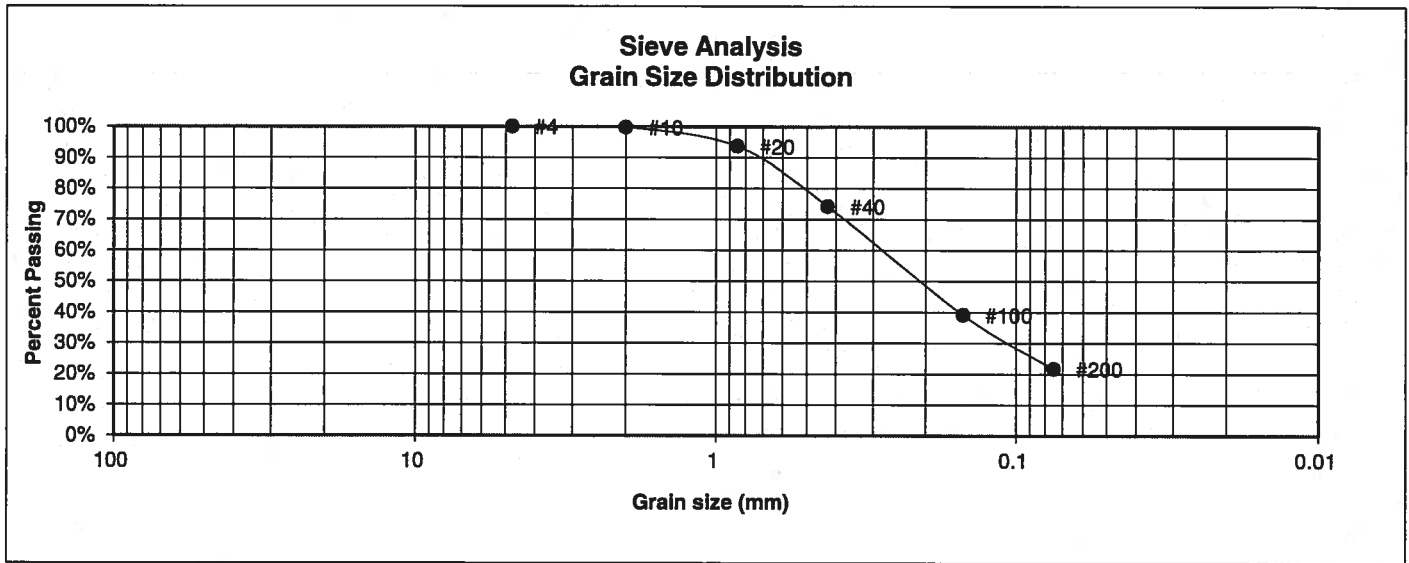
DATE: 4-26-22

JOB NO.:  
 220689

FIG NO.:  
 A- 4

## **APPENDIX B: Laboratory Test Results**

<u>UNIFIED CLASSIFICATION</u>	SM	<u>CLIENT</u>	WATerview COMMERCIAL
<u>SOIL TYPE #</u>	1	<u>PROJECT</u>	WATerview EAST DEV.
<u>TEST BORING #</u>	3	<u>JOB NO.</u>	220689
<u>DEPTH (FT)</u>	2-3	<u>TEST BY</u>	BL



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.7%
20	93.6%
40	74.1%
100	39.1%
200	21.7%

<u>Atterberg Limits</u>	
Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

<u>Swell</u>
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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505 ELKTON DRIVE  
COLORADO SPRINGS, COLORADO 80907

### LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED:

SW

DATE:

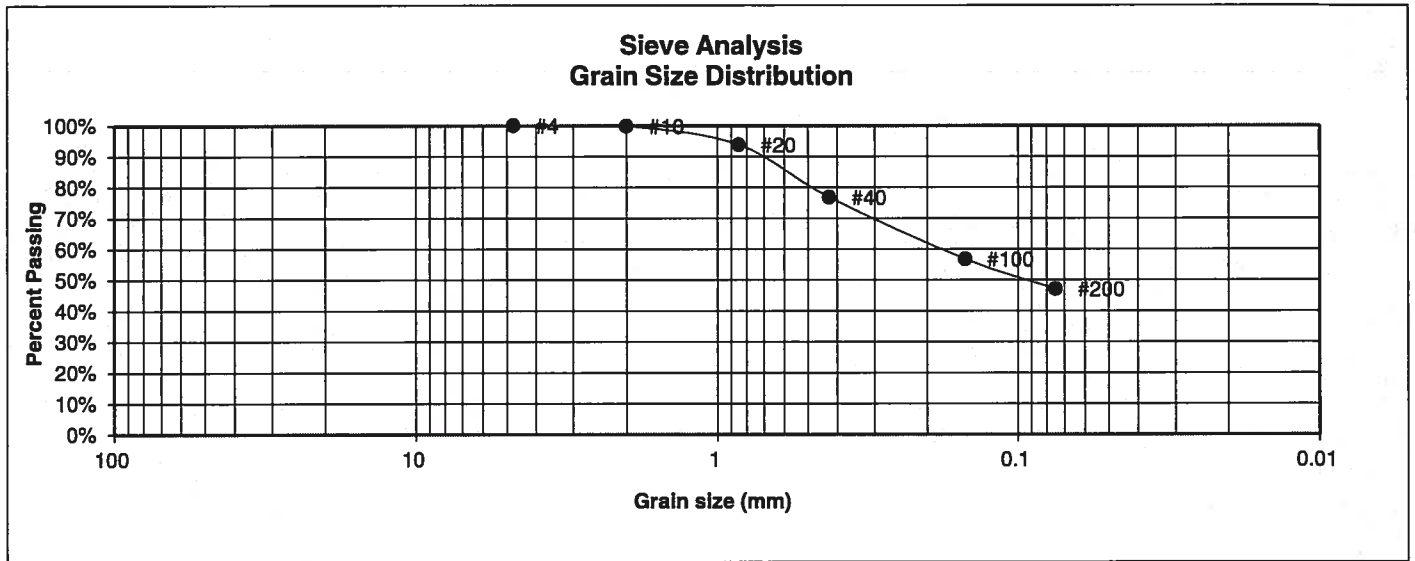
4-26-22

JOB NO.:  
220689

FIG NO.:

B-1

<u>UNIFIED CLASSIFICATION</u>	SM	<u>CLIENT</u>	WATerview COMMERCIAL
<u>SOIL TYPE #</u>	1	<u>PROJECT</u>	WATerview EAST DEV.
<u>TEST BORING #</u>	4	<u>JOB NO.</u>	220689
<u>DEPTH (FT)</u>	5	<u>TEST BY</u>	BL



U.S.  
Sieve #

3"  
1 1/2"  
3/4"  
1/2"  
3/8"  
4  
10  
20  
40  
100  
200

Percent  
Finer

100.0%  
99.9%  
93.8%  
76.8%  
56.8%  
47.1%

Atterberg  
Limits

Plastic Limit  
Liquid Limit  
Plastic Index

Swell

Moisture at start  
Moisture at finish  
Moisture increase  
Initial dry density (pcf)  
Swell (psf)



**ENTECH  
ENGINEERING, INC.**

505 ELKTON DRIVE  
COLORADO SPRINGS, COLORADO 80907

### LABORATORY TEST RESULTS

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CHECKED:

SW

DATE:

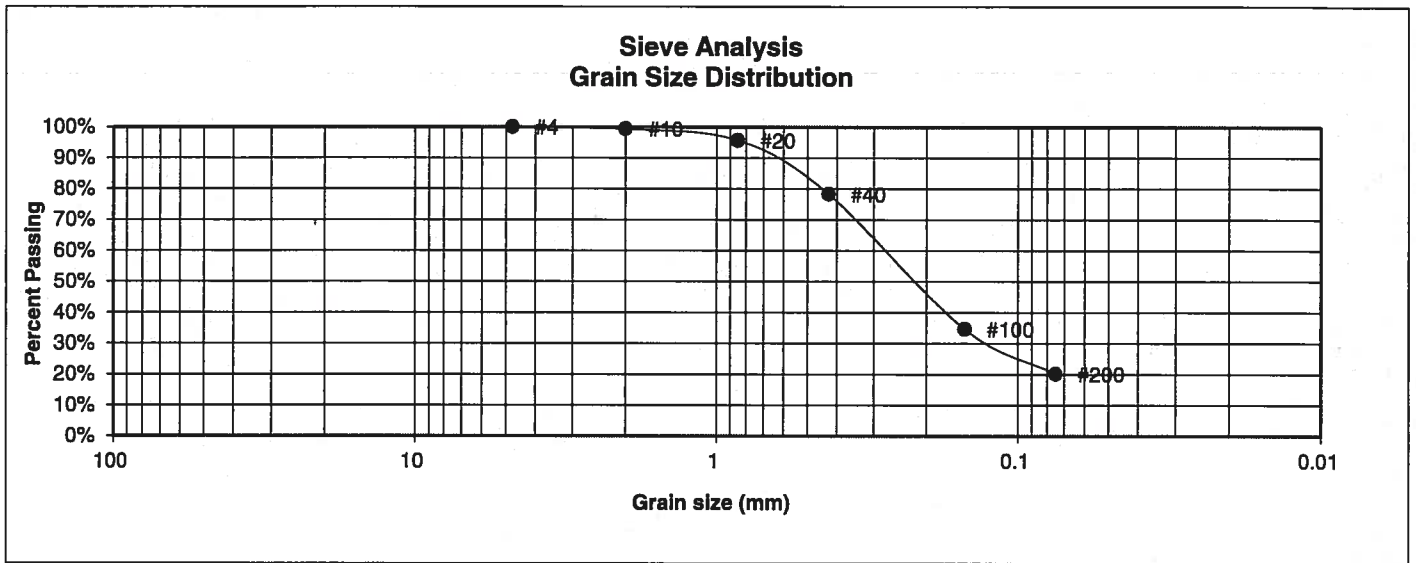
4-26-22

JOB NO.:  
220689

FIG NO.:

B-2

<u>UNIFIED CLASSIFICATION</u>	SM	<u>CLIENT</u>	WATERVIEW COMMERCIAL
<u>SOIL TYPE #</u>	1	<u>PROJECT</u>	WATERVIEW EAST DEV.
<u>TEST BORING #</u>	5	<u>JOB NO.</u>	220689
<u>DEPTH (FT)</u>	10	<u>TEST BY</u>	BL



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.4%
20	95.7%
40	78.3%
100	34.7%
200	20.2%

Atterberg  
Limits  
Plastic Limit  
Liquid Limit  
Plastic Index

Swell  
Moisture at start  
Moisture at finish  
Moisture increase  
Initial dry density (pcf)  
Swell (psf)



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505 ELKTON DRIVE  
COLORADO SPRINGS, COLORADO 80907

### LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *SW*

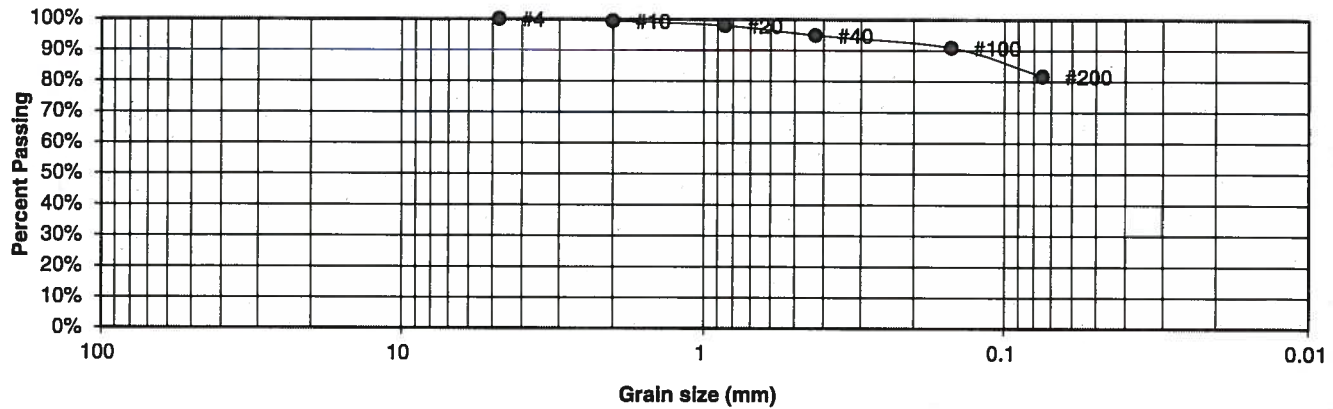
DATE: *4-26-22*

JOB NO.:  
220689

FIG NO.:  
*B-3*

<u>UNIFIED CLASSIFICATION</u>	CL	<u>CLIENT</u>	WATERVIEW COMMERCIAL
<u>SOIL TYPE #</u>	2	<u>PROJECT</u>	WATERVIEW EAST DEV.
<u>TEST BORING #</u>	2	<u>JOB NO.</u>	220689
<u>DEPTH (FT)</u>	5	<u>TEST BY</u>	BL

**Sieve Analysis  
Grain Size Distribution**



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.4%
20	98.0%
40	94.8%
100	90.9%
200	81.7%

<u>Atterberg Limits</u>	
Plastic Limit	19
Liquid Limit	33
Plastic Index	14

<u>Swell</u>	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



**ENTECH  
ENGINEERING, INC.**

505 ELKTON DRIVE  
COLORADO SPRINGS, COLORADO 80907

**LABORATORY TEST  
RESULTS**

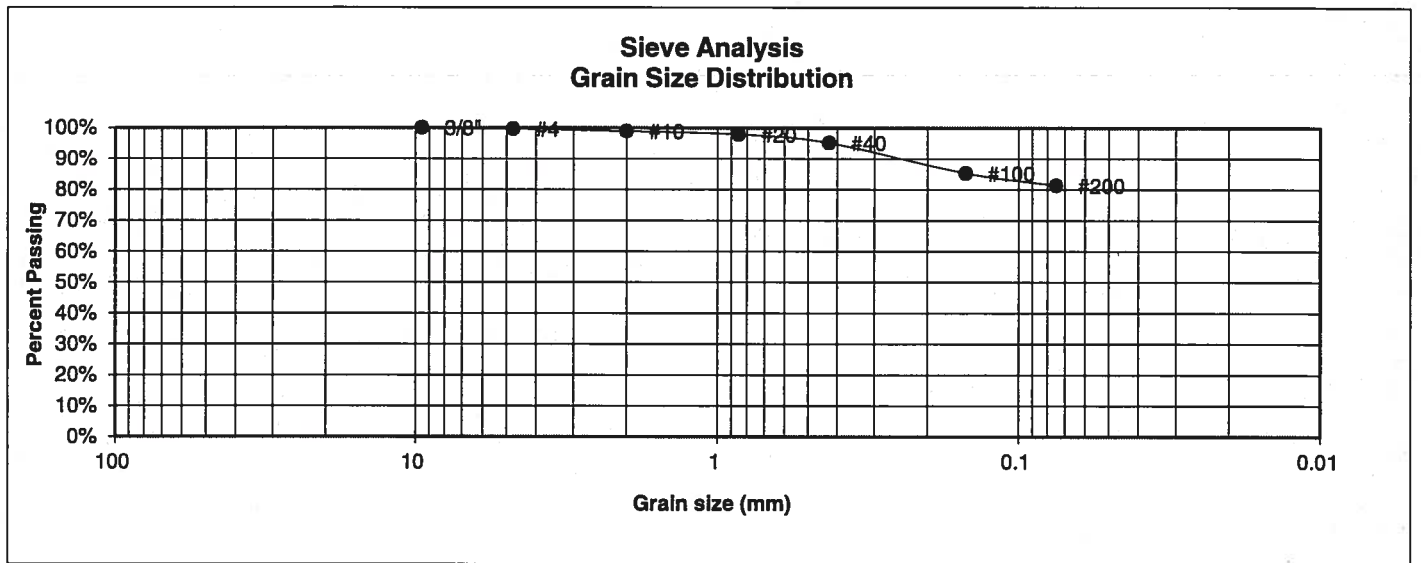
DRAWN:	DATE:	CHECKED: <i>SW</i>	DATE: <i>4-26-22</i>
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JOB NO.:  
220689

FIG NO.:  
*B-4*



<u>UNIFIED CLASSIFICATION</u>	CL	<u>CLIENT</u>	WATerview COMMERCIAL
<u>SOIL TYPE #</u>	2	<u>PROJECT</u>	WATerview EAST DEV.
<u>TEST BORING #</u>	6	<u>JOB NO.</u>	220689
<u>DEPTH (FT)</u>	20	<u>TEST BY</u>	BL



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.6%
10	98.9%
20	97.9%
40	95.2%
100	85.3%
200	81.4%

Atterberg  
Limits  
Plastic Limit  
Liquid Limit  
Plastic Index

Swell  
Moisture at start  
Moisture at finish  
Moisture increase  
Initial dry density (pcf)  
Swell (psf)



**ENTECH  
ENGINEERING, INC.**

505 ELKTON DRIVE  
COLORADO SPRINGS, COLORADO 80907

### LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *SW*

DATE: *4-26-22*

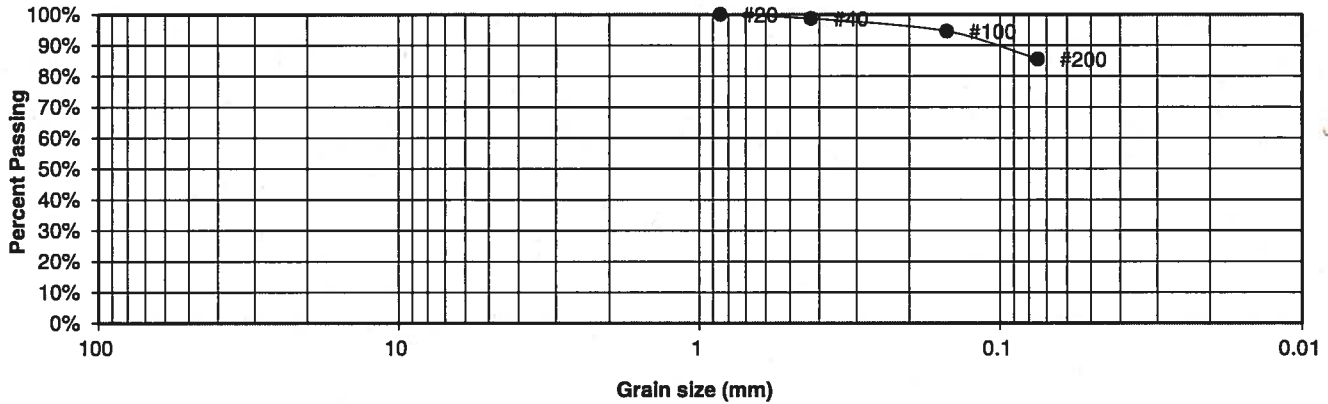
JOB NO.:  
220689

FIG NO.:

*B-5*

<u>UNIFIED CLASSIFICATION</u>	CL	<u>CLIENT</u>	WATerview COMMERCIAL
<u>SOIL TYPE #</u>	2	<u>PROJECT</u>	WATerview EAST DEV.
<u>TEST BORING #</u>	7	<u>JOB NO.</u>	220689
<u>DEPTH (FT)</u>	2-3	<u>TEST BY</u>	BL

### Sieve Analysis Grain Size Distribution



U.S.  
Sieve #

3"  
1 1/2"  
3/4"  
1/2"  
3/8"  
4  
10  
20  
40  
100  
200

Percent  
Finer

100.0%  
98.7%  
94.5%  
85.5%

Atterberg  
Limits

Plastic Limit  
Liquid Limit  
Plastic Index

Swell

Moisture at start  
Moisture at finish  
Moisture increase  
Initial dry density (pcf)  
Swell (psf)



**ENTECH**  
**ENGINEERING, INC.**

505 ELKTON DRIVE  
COLORADO SPRINGS, COLORADO 80907

### LABORATORY TEST RESULTS

DRAWN:

DATE:

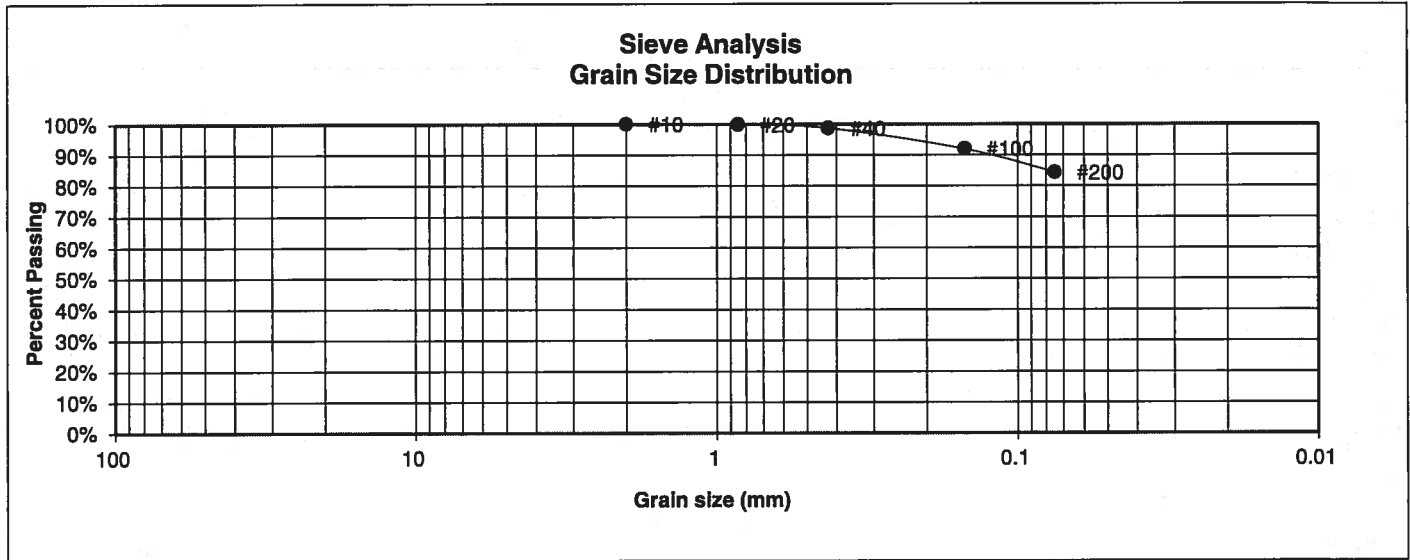
CHECKED: SW

DATE: 4-26-22

JOB NO.:  
220689

FIG NO.:  
B-6

<u>UNIFIED CLASSIFICATION</u>	CL	<u>CLIENT</u>	WATerview COMMERCIAL
<u>SOIL TYPE #</u>	3	<u>PROJECT</u>	WATerview EAST DEV.
<u>TEST BORING #</u>	1	<u>JOB NO.</u>	220689
<u>DEPTH (FT)</u>	15	<u>TEST BY</u>	BL



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	
10	100.0%
20	99.9%
40	98.7%
100	92.0%
200	84.4%

<u>Atterberg Limits</u>	
Plastic Limit	19
Liquid Limit	43
Plastic Index	24

<u>Swell</u>	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



**ENTECH  
ENGINEERING, INC.**

505 ELKTON DRIVE  
COLORADO SPRINGS, COLORADO 80907

## LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *SW*

DATE: *4-26-22*

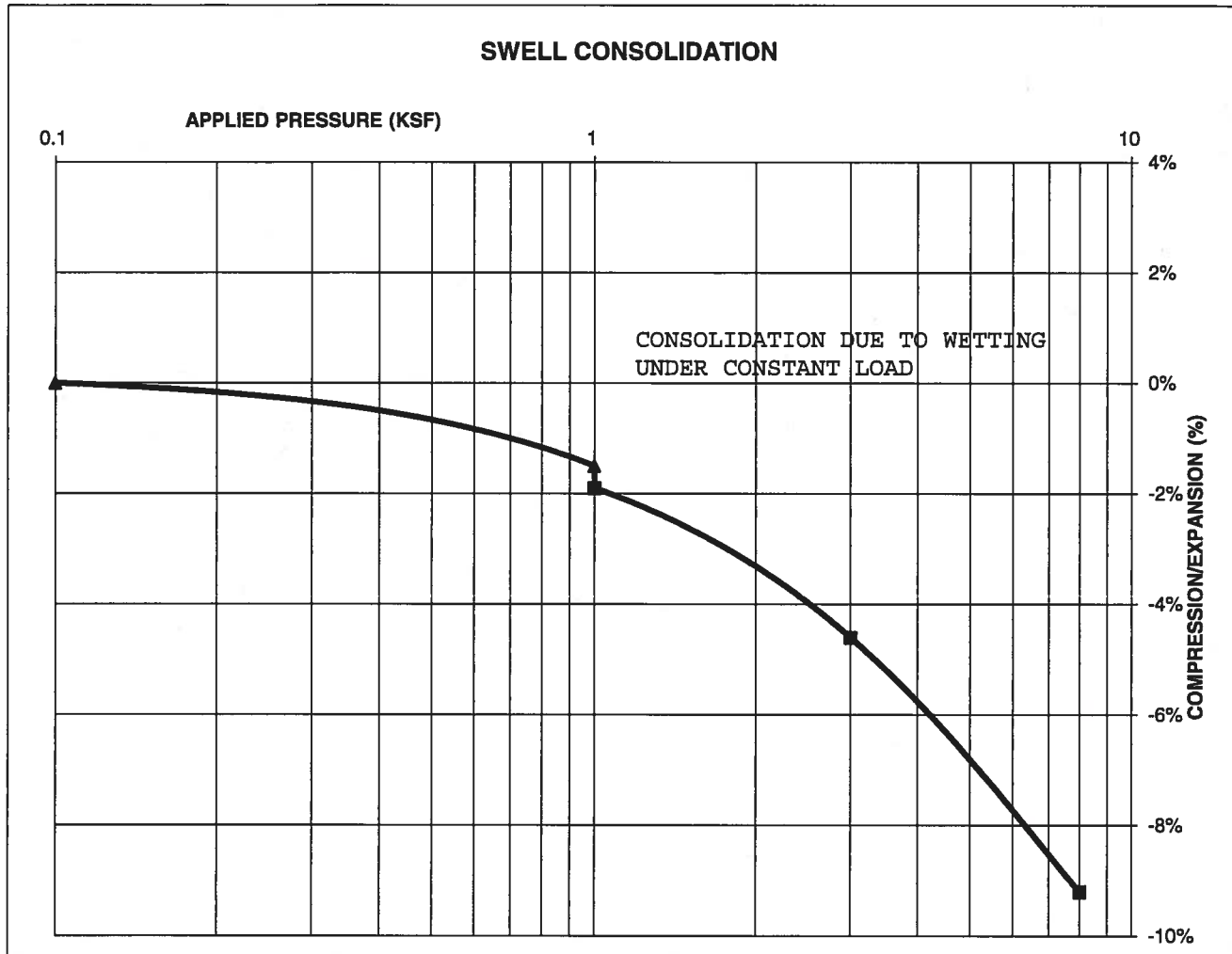
JOB NO.:  
220689

FIG NO.:  
*B-7*

### CONSOLIDATION TEST RESULTS

TEST BORING #	2	DEPTH(ft)	5
DESCRIPTION	CL	SOIL TYPE	2
NATURAL UNIT DRY WEIGHT (PCF)	90		
NATURAL MOISTURE CONTENT	9.7%		
SWELL/CONSOLIDATION (%)	-0.4%		

JOB NO. 220689  
 CLIENT WATERVIEW COMMERCIAL  
 PROJECT WATERVIEW EAST DEV.



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### SWELL CONSOLIDATION TEST RESULTS

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DATE:

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DATE: *4-26-22*

JOB NO:  
220689

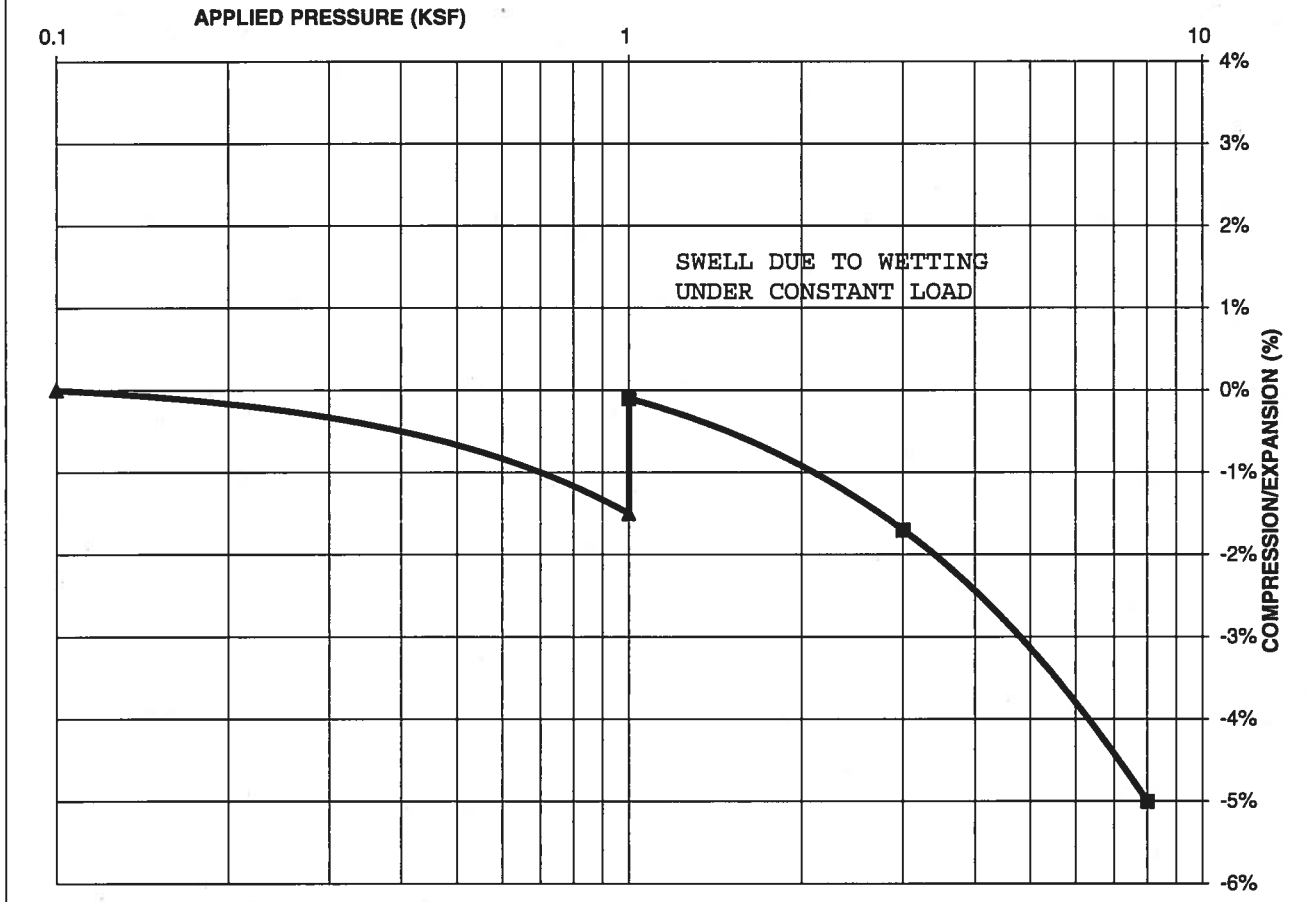
FIG NO:  
*B-8*

### CONSOLIDATION TEST RESULTS

TEST BORING #	6	DEPTH(ft)	20
DESCRIPTION	CL	SOIL TYPE	2
NATURAL UNIT DRY WEIGHT (PCF)	100		
NATURAL MOISTURE CONTENT	21.9%		
SWELL/CONSOLIDATION (%)	1.4%		

JOB NO.	220689
CLIENT	WATERVIEW COMMERCIAL
PROJECT	WATERVIEW EAST DEV.

### SWELL CONSOLIDATION



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### SWELL CONSOLIDATION TEST RESULTS

DRAWN:

DATE:

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DATE:

SW

4-26-22

JOB NO.:  
220689

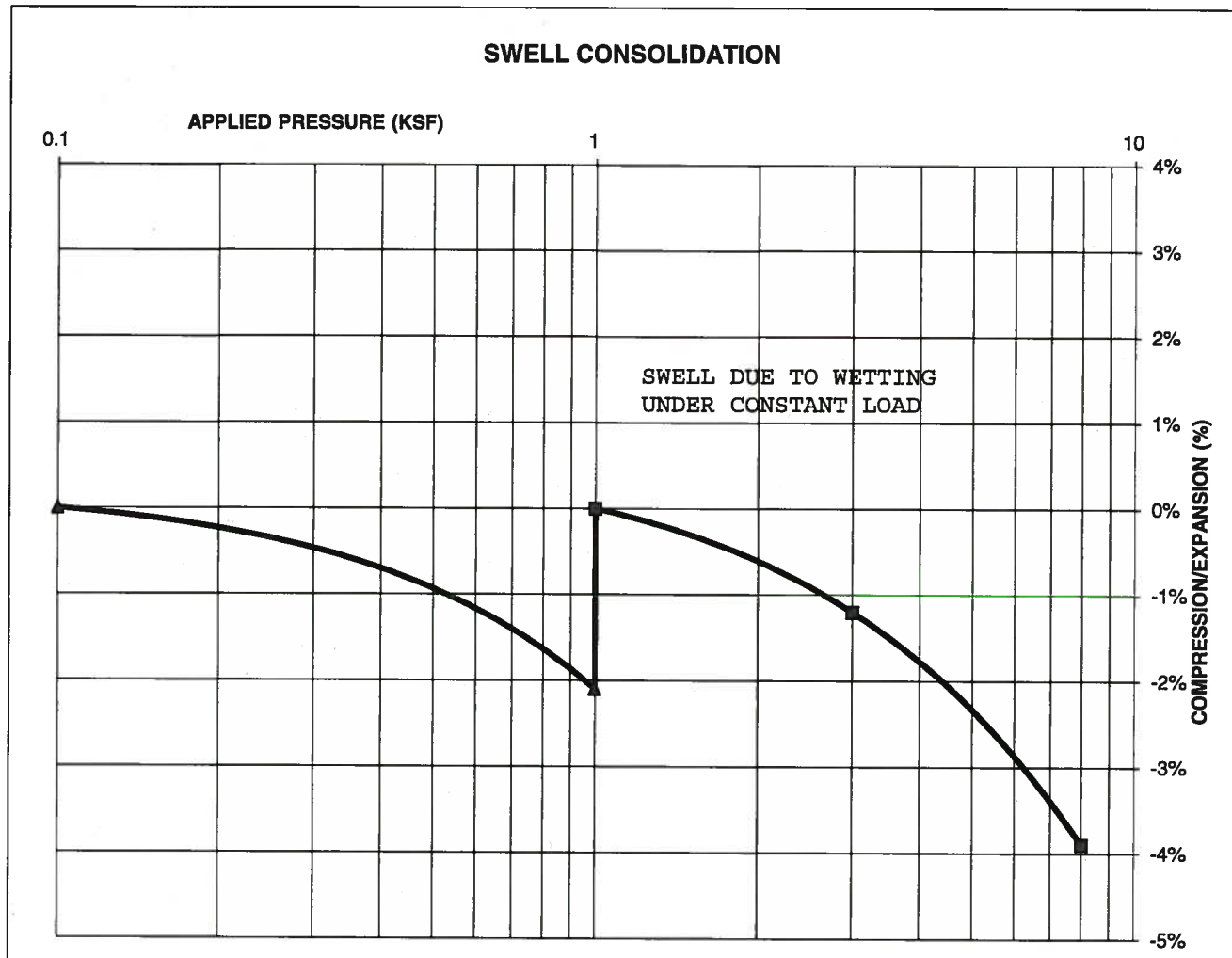
FIG NO.:

B-9

# **CONSOLIDATION TEST RESULTS**

TEST BORING #	1	DEPTH(ft)	15
DESCRIPTION	CL	SOIL TYPE	3
NATURAL UNIT DRY WEIGHT (PCF)	110		
NATURAL MOISTURE CONTENT	13.9%		
SWELL/CONSOLIDATION (%)	2.1%		

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 CLIENT WATERVIEW COMMERCIAL  
 PROJECT WATERVIEW EAST DEV.



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## **SWELL CONSOLIDATION TEST RESULTS**

DRAWN:

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CHECKED: *SW*

DATE: *4-26-22*

JOB NO.:  
220689

FIG NO.:  
*B-10*



CLIENT	WATERVIEW COMMERCIAL	JOB NO.	220689
PROJECT	WATERVIEW EAST DEV.	DATE	4/15/2022
LOCATION	WATERVIEW EAST DEV.	TEST BY	BL

BORING NUMBER	DEPTH, (ft)	SOIL TYPE NUMBER	UNIFIED CLASSIFICATION	WATER SOLUBLE SULFATE, (wt%)
TB-1	15	3	CL	<0.01
TB-2	5	2	CL	<0.01
TB-3	2-3	1	SM	<0.01

QC BLANK PASS



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505 ELKTON DRIVE  
COLORADO SPRINGS, COLORADO 80907

**LABORATORY TEST  
SULFATE RESULTS**

DRAWN:

DATE:

CHECKED:

DATE:

SW

4-26-22

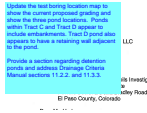
JOB NO.:  
220689

FIG NO.:

B-1

# Soils and Geo Report V1.pdf Markup Summary

## Callout (1)



**Subject:** Callout  
**Page Label:** 1  
**Author:** dsdlaforce  
**Date:** 10/11/2022 5:22:14 PM  
**Status:**  
**Color:** ■  
**Layer:**  
**Space:**

Update the test boring location map to show the current proposed grading and show the three pond locations. Ponds within Tract C and Tract D appear to include embankments. Tract D pond also appears to have a retaining wall adjacent to the pond.

Provide a section regarding detention ponds and address Drainage Criteria Manual sections 11.2.2. and 11.3.3.

## Group (2)



**Subject:** Group  
**Page Label:** 1  
**Author:** dsdlaforce  
**Date:** 10/11/2022 5:21:23 PM  
**Status:**  
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**Layer:**  
**Space:**



**Subject:** Group  
**Page Label:** 1  
**Author:** dsdlaforce  
**Date:** 10/11/2022 5:21:26 PM  
**Status:**  
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**Layer:**  
**Space:**

## Image (2)



**Subject:** Image  
**Page Label:** 2  
**Author:** dsdlaforce  
**Date:** 10/11/2022 5:33:45 PM  
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**Space:**




**Subject:** Image  
**Page Label:** 3  
**Author:** dsdlaforce  
**Date:** 10/11/2022 5:34:20 PM  
**Status:**  
**Color:** ■  
**Layer:**  
**Space:**

Text Box (2)

Waterview Commercial Investors, LLC  
Tremaine Subsurface Soils Investigation  
10405 Boulevard and Bradley Road  
3 Paso County, Colorado


Include the following per ECM Appendix C Section C.2.2.E.

**SOIL AND GROUNDWATER CONDITIONS:**  
Two soil types and one bedrock type were encountered in preliminary subsurface investigation: Type 1: native silt to clay (CL), and Type 3: native sandy claystone bedrock (CL). In accordance with the Unified Soil Classification System (USC) results and the observations made during drilling.

**Subject:** Text Box  
**Page Label:** 2  
**Author:** dsdlaforce  
**Date:** 10/11/2022 5:29:35 PM  
**Status:**  
**Color:**   
**Layer:**  
**Space:**

Include the following per ECM Appendix C Section C.2.2.E.

[illegible]

**Subject:** Text Box  
**Page Label:** 3  
**Author:** dsdlaforce  
**Date:** 10/11/2022 5:34:17 PM  
**Status:**  
**Color:**   
**Layer:**  
**Space:**

See Engineering Criteria Manual Appendix C  
Section C.3.2.B.  
Address the highlighted items.