Draft Geotechnical Data Report

IWRB's Mountain Home Air Force Base Water Resilience Project

Elmore County, Idaho

April 28, 2023

Terracon Project No. 62165079A

Prepared for:

Brown and Caldwell

Boise, Idaho

Prepared by:

Terracon Consultants, Inc.

Boise, Idaho

April 28, 2023

Brown and Caldwell
1290 W Myrtle Street, Suite 340
Boise, Idaho 83702

Attn: Mr. Vincent Roquebert
E: vroquebert@brwncald.com

Re: Draft Geotechnical Data Report
IWRB's Mountain Home Air Force Base Water Resilience Project
Elmore County, Idaho
Terracon Project No. 62165079A

Dear Mr. Roquebert:

Terracon Consultants, Inc. (Terracon) has performed geotechnical engineering field and laboratory services for the above referenced project. This Geotechnical Data Report presents a summary of the subsurface explorations for the proposed raw water conveyance system (raw water pipeline and intake/pump station site). The information included in this report is limited to the portion of the raw water conveyance system that is outside of the secured area of Mountain Home Air Force Base (MHAFB).

Recent changes to the project include the planned location of the intake structure and the alignment of the pipeline at the top of the Snake River Canyon, above the intake structure, and immediately north of MHAFB. The field exploration and laboratory data in this report predate these changes. We understand that Terracon will be authorized to perform additional field exploration to collect data at these changed locations, which data will be included in the final version of this report.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

DRAFT

Ryan J. Olsen, P.E.
Senior Geotechnical Engineer

DRAFT

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Senior Geotechnical Engineer

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DRAFT GEOTECHNICAL DATA REPORT
IWRB'S MOUNTAIN HOME AIR FORCE BASE WATER RESILIENCE PROJECT
ELMORE COUNTY, IDAHO

Terracon Project No. 62165079A
April 28, 2023

1.0 INTRODUCTION

This report presents data obtained from the geotechnical exploration and laboratory testing services performed for the proposed Raw Water Conveyance System (raw water pipeline and intake/pump station site) that will be a part of the Mountain Home Air Force Base (MHAFB) Water Resilience Project located in Elmore County, Idaho.

The information included in this report is limited to the portion of the raw water conveyance system that is outside of the secured area of MHAFB.

Recent changes to the project include the planned location of the intake structure and the alignment of the pipeline at the top of the Snake River Canyon, above the intake structure, and immediately north of MHAFB. The field exploration and laboratory data in this report predate these changes. We understand that Terracon will be authorized to perform additional field exploration to collect data at these changed locations, which data will be included in the final version of this report.

2.0 PROJECT INFORMATION

2.1 Project Description

The proposed project is located in Elmore County, Idaho and will convey raw water from C.J. Strike Reservoir to MHAFB where it will be treated and then distributed for use on the base. Once completed, the project will serve as MHAFB's primary source of water, with groundwater wells serving as a backup source.

2.1.1 Raw Water Pipeline

The raw water transmission pipeline will have a length of about 14.5 miles.

2.1.2 Intake and Pump Station

The intake for the raw water pipeline will be located within the Snake River Canyon at the west side of C.J. Strike Reservoir, near the south end of the project. A pump station will be located near the intake to pump water through the pipeline, out of the canyon and to MHAFB. The intake and pump station will be located to the north of the existing J.R. Simplot Corporation (Simplot) pipeline intake and pump station.

2.2 Site Description

2.2.1 Site Description – Raw Water Pipeline

The conceptual raw water pipeline alignment begins near the west side of C.J. Strike Reservoir and parallels (to the north) the existing Simplot irrigation pipeline as it ascends the Snake River Canyon in an approximately westerly direction to the canyon rim. Above the canyon rim, the alignment turns to the northwest until it meets an unpaved access road. The alignment then approximately follows the access road to Strike Dam Cut-Off Road. The pipeline alignment then turns and generally follows the east side of Strike Dam Cut-Off Road to the north. At SH-167 (Grand View Road) the pipeline trends in a northeast direction and generally parallels SH-167 on its north side. The pipeline then crosses to the east side of SH-67 (Airbase Road) and approximately parallels SH-67 south to MHAFB. Just north of MHAFB the pipeline alignment turns to the east for approximately 1000 feet. The conceptual raw water pipeline alignment is shown in Exhibit A-1 of Appendix A. This exhibit does not show the recent changes to the proposed pipeline alignment near each end of the project.

The majority of the raw water pipeline alignment is in generally undeveloped desert land covered with weeds, grasses, and brush. Along the alignment there are some areas of irrigated farmland. Some single-family residences, commercial properties, and a church building are located near the portion of the alignment along SH-67 and near the junction of SH-67 and SH-167. SH-67 and SH-167 are both paved with asphalt surfacing. Much of Strike Dam Cut-Off Road is gravel surfaced, but portions of Strike Dam Cut-Off Road near the north and south ends of the pipeline alignment are paved with asphalt surfacing.

As described above, the raw water pipeline alignment approximately parallels the existing Simplot water pipeline from the C.J. Strike Reservoir to the canyon rim. Within the Snake River Canyon, portions of the existing pipeline are exposed and portions are covered with fill, and the existing pipeline passes through both cut and fill areas. Intact basalt rock is observable in cuts. Fill materials appear to generally consist of boulders, cobbles, and soil. Some of the basalt rock at the canyon's rim appears to have been blasted, and near the rim the existing pipeline is on an embankment that appears to be composed of shot boulder and cobble size basalt rock mixed with soil. The following photograph shows the existing pipe on this embankment material near the canyon rim.

Photograph of the Existing Simplot Pipeline Below the Canyon Rim, Looking West. The Conceptual Alignment of the New Pipeline is to the Right of the Simplot Pipeline.

Between the canyon rim and Strike Dam Cut-Off Road the Simplot pipe is generally covered with fill consisting of soil, cobbles, and boulders above the native site topography. Portions of the conceptual alignment of the raw water pipeline along Strike Dam Cut-Off Road and SH-167 are on existing roadway embankment fills and other portions are within/near roadway cuts. Basalt boulders are observable at the ground surface and in roadway cuts along much of the project alignment. The following photographs show boulders observed near the conceptual raw water pipeline alignment.

Photograph of Boulders at Approximately Station 19+00, Previous Alignment

Photograph of Boulders at Approximately Station 117+50 to 118+00, Looking East

Photograph of Boulders at Approximately Station 120+00, Looking East

Photograph of Boulders at Approximately Station 120+50, Looking East

Photograph of Boulders at Approximately Station 359+00 to 359+50, Looking North

2.2.2 Site Description – Intake and Pump Station

The conceptual location of the intake structure and associated pump station is north of the existing Simplot intake structure at the west side of C.J. Strike Reservoir. An unpaved road leads from the canyon rim to the intake site. The area north and south of the Simplot intake system has previously been graded to create an approximately flat area, and portions of this area are covered with gravel surfacing. Weeds, grasses, and brush are growing at the perimeter of this graded area and boulders were observed in and near this area. Electric utility cabinets are located north of the existing intake structure. Photographs of the general area of the intake structure are shown below.

Photograph Taken North of the Simplot Intake Structure, Looking South/Southeast.

Photograph Taken Near the Simplot Intake Structure, Looking North.

Photograph Taken North of the Simplot Intake Structure, Looking Northeast.

3.0 SUBSURFACE CONDITIONS

3.1 Site Geology

The project area is located in the western Snake River Plain: a NW-SE trending basin that is the product of tectonic rifting along large normal faults that define its northeast and southwest sides. Extensive regional volcanism and sediments associated with the ancient Lake Idaho system dominate the stratigraphy throughout the project site. Between the Mountain Home Air Force Base and the rim of the Snake River canyon, the proposed alignment intersects a sequence of Pleistocene to Pliocene age basalt flow deposits that erupted from non-explosive volcanoes/vents near the city of Mountain Home. These include the Pliocene age Basalt of Canyon Creek and the Pleistocene age Basalt of Strike Dam Road.

Where the proposed alignment descends from the Snake River canyon rim to the CJ Strike Reservoir, the basalt deposits are underlain by the Miocene to Pliocene age Glenns Ferry Formation. This consists of poorly consolidated silt, sand, clay, and gravel deposited in lake and stream environments. It is part of a larger series of sedimentary and volcanic units that accumulated in the Lake Idaho Basin and are known as the Idaho Group.

Finally, Holocene to Pleistocene age landslide deposits are locally mapped on the lower flanks of the Snake River Canyon where the proposed alignment meets the CJ Strike Reservoir. These probably occurred in the late Pleistocene when the Bonneville Flood eroded the softer Glenns Ferry sediments and undercut the canyon's basalt rim.

References for the geology description provided above include the following:

- Geologic Map of the Grand View-Bruneau Area, Owyhee County, Idaho, Technical Report 98-1, published by the Idaho Geological Survey, December 1998
- Geologic Map of Idaho, Geologic Map 9, published by the Idaho Geologic Survey, 2012
- Geologic Map of the Murphy 30X60 Minute Quadrangle, Ada, Canyon, Elmore, and Owyhee Counties, Idaho, published by the Idaho Geological Survey, 2006
- Geologic Map of the Twin Falls 30X60 Minute Quadrangle, Idaho, Geologic Map 49, published by the Idaho Geological Survey, 2012

3.2 Geotechnical Exploration

Field exploration consisted of drilling air-track probes on an approximately 50-foot spacing along the conceptual alignment of the raw water pipeline above the canyon rim and drilling 14 conventional geotechnical borings at select locations along this alignment (borings B-1 to B-14). In addition, one conventional geotechnical boring was drilled near the previously proposed intake/pump station structure location (boring I-1). A description of the field exploration is presented in Appendix A. Logs of the borings are included in Appendix A, and a summary table of the air-track probes is included in Appendix C.

As previously described, the field exploration and laboratory data in this report predate the recent changes to the intake location and pipeline alignment.

3.3 Laboratory Testing

Laboratory tests were conducted on selected soil and rock samples obtained from the conventional geotechnical borings drilled near the proposed intake structure and along the conceptual pipeline alignment. A description of the laboratory testing and the test results are presented in Appendix B. Some laboratory test results are also included on the boring logs in Appendix A.

3.4 Summary of Air Track Probes and Boring Data

Specific soil conditions encountered at each boring location are indicated on the individual boring logs, which are presented in Appendix A, and depths to basalt rock at the air-track probe locations are presented in Appendix C. Stratification boundaries on the boring logs represent the

approximate locations of changes in soil types; in-situ, the transition between materials may be gradual.

Based on our borings, air-track probes, and laboratory testing, the subsurface conditions encountered along the raw water pipeline alignment generally consisted of basalt rock overlain by silt and sand soils. Within our explorations, the depth to the basalt rock surface was variable and ranged from being exposed at the ground surface to depths greater than the depth explored of about 10 to 11½ feet. Basalt cobbles and boulders were encountered in some explorations and were also observed at the ground surface in some areas. Soil layers that were moderately to strongly cemented were encountered in some of the explorations.

Within portions of the project, the conceptual pipeline alignment crosses existing embankment fill areas, including fill for the existing east/west trending Simplot pipeline and roadway embankments along Strike Dam Cut-Off Road and SH-167. The depths to rock listed in Appendix C refer to the depths below the existing ground surface at the actual boring/probe locations, including in areas where the existing ground surface consists of embankment fill. At locations where access constraints resulted in the air-track probe being offset from the staked alignment, the approximate horizontal and vertical offsets between the drilled locations and the staked locations are presented in Appendix C.

3.5 Groundwater

The borings were monitored during drilling for the presence and depth of groundwater. Groundwater was not encountered within the 14 borings drilled above the Snake River Canyon rim (borings B-1 to B-14). Groundwater was encountered at the time of drilling within the boring near the previously proposed intake structure location at a depth of about 5 feet below the existing ground surface (boring I-1). This boring is located within the canyon, near C.J. Strike Reservoir. Groundwater fluctuations may occur due to seasonal variations of the water level in the reservoir and variations in the amount of rainfall, runoff, irrigation and other factors not evident at the time the borings were performed. Isolated perched water conditions may develop above basalt rock or cemented soil layers.

4.0 GENERAL COMMENTS

The information presented in this report are based upon the data obtained from the borings and probes performed at the indicated locations and from other information discussed in this report. Variations may occur between borings, across the site, and/or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, and bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the data contained in this report may need to be supplemented to reflect the changed conditions.

APPENDIX A
FIELD EXPLORATION

Mountain Home Air Force Base
Proposed Water Supply Pipe

This figure does not show recent changes to the alignment near Mountain Home Air Force Base and near the canyon rim above the intake.

N

HIGHWAY 167:
NORTH SIDE OF ROAD AT
30' OFFSET FROM CENTERLINE
(120' R/W WIDTH)

Proposed Water Supply Pipe

STRIKE DAM ROAD:
EAST SIDE OF ROAD AT
25' OFFSET FROM CENTERLINE
(100' R/W WIDTH)

CANYON:
NORTH SIDE OF SIMPLOT PIPE AT
20' OFFSET FROM BORM CENTERLINE

SEE INSET AREA BELOW

S SIMCO RD
HIGHWAY 167
STRIKE DAM CUT-OFF RD
SW NIELSON RD
AIR BASE RD
WTP
B ST B ST
CEDAR ST
14TH AVE
LIBERATOR ST
A ST
3RD AVE
1ST AVE
GUNFIGHTER AVE
HEMLOCK ST
NO NAME
E MELLEN DR
PERIMETER RD
BOMBER RD

MOUNTAIN HOME AFB
OPPENHEIMER PROPERTY TRUST
STATE OF IDAHO
USA
J R SIMPLOT COMPANY
Overhead Power
INLAND TERMINAL WAREHOUSE CO

0 4,000 8,000
FEET

Inset

SW OLD GRANDVIEW HWY
HIGHWAY 167
SW EASY ST
SW BRADBURY RD
SW HUGHES WAY
SW LEE
SW VENABLE ST
AIR BASE RD

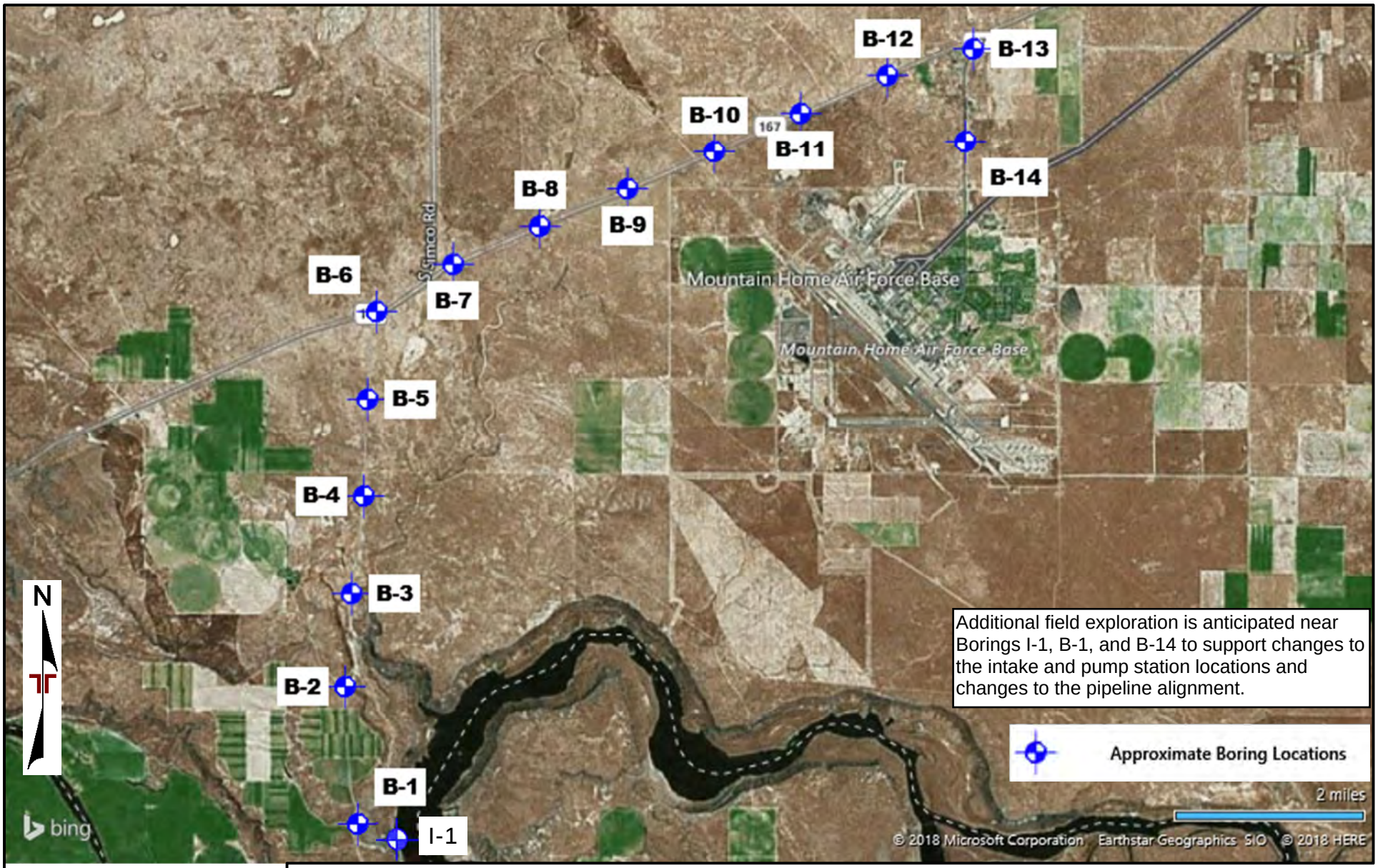
MOUNTAIN HOME AFB
STATE OF IDAHO
MARKHAM, DAN A
HANSON, LORNA J
NIELSEN, M PETER
SANTOS, VICTOR L
OPEN DOOR FELLOWSHIP
AERO STORAGE LLC
GAILEY, GEORGE A
KLAUSER, JOSEPH S
SCHULTZ, DONALD R
TAN, ROBIN
LASER INVESTMENT TRUST
I & T INVESTMENTS
BINGHAM, BRUCE L
WHEELER, VIRGINIA HELEN
WELLS, DIANNE K
CHUN, SUN CHA
CORNELL, AARON C
GOLDSBERRY, KELLY G
CHURCH OF LDS
BAUER, WARREN H
MERRICK, ALLEN H
AIRSUPPLY TOOLS NORTH INC
THOMAS, DAVID
DAFT, GEORGE A
SCOTT, ROBERT J
CHIN, JOHNSON
ROMAN CATHOLIC DIOCESE
OPPENHEIMER PROPERTY TRUST
STATE OF IDAHO

AIRBASE ROAD:
EAST SIDE OF ROAD AT
45' OFFSET FROM ROAD
EAST EDGE OF PAVEMENT
FIELD ADJUST TO AVOID
GAS, COMM, AND
OTHER UTILITIES
(200' R/W WIDTH)

Fig. 7-9

Exhibit A-1

J-U-B ENGINEERS, INC.



AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	RJO
Drawn by:	LJM
Checked by:	RJO
Approved by:	RJO

Project No.	62165079
Scale:	AS SHOWN
File Name:	62165079
Date:	03/07/2018

Terracon
11849 W Executive Dr Ste G
Boise, ID 83713-1944

EXPLORATION PLAN

Mountain Home Sustainable Water Supply Project
Raw Water Conveyance System Borings
Elmore County, ID

Exhibit
A-2

Field Exploration Description

The field exploration consisted of drilling probes with an air-track drill rig and drilling conventional geotechnical borings. The probes were drilled at approximately 50-foot intervals with an air-track drill rig approximately along the originally proposed conceptual raw water pipeline alignment above the canyon rim. The purpose of the air-track probes was to provide depth to rock information at each probe location. Air-track drills are typically used by blasting contractors to install explosives for rock excavation, and these drills work by a hammering action and circulation of air to remove cuttings to advance rapidly through the subsurface materials. This drilling method does not provide representative samples of the soil or rock, nor do they provide an evaluation of the rock condition. The air-track holes were extended to depths up to about 10 to 13½ feet below the existing ground surface. Depths to the rock surface, where encountered, are summarized in Appendix C. The exploration presented in this report was terminated at the north side of Mountain Home Air Force Base. Data from within the secured area of the base are not included in this report.

Fifteen geotechnical borings (14 along the conceptual pipeline alignment and 1 near the previously proposed intake/pump station location) were drilled using a truck-mounted drill rig equipped with hollow-stem augers and diamond-bit rock-coring equipment. The approximate locations of these borings are shown on the Exploration Plan, Exhibit A-2 included in this appendix. The borings along the pipeline alignment were drilled to depths ranging from about 10 feet to 12½ feet below the existing ground surface and the boring near the intake/pump station location was drilled to a depth of about 29½ feet. A Terracon field geologist recorded logs of the borings during the drilling operations. Boring logs are presented in this appendix. General notes for interpretation of the boring logs and a summary of the Unified Soil Classification System (USCS) are presented later in this appendix.

Prior to our exploration, the air-track hole locations were surveyed and staked by J-U-B Engineers, Inc. The station and elevation recorded by the surveyors for each staked location are shown on the attached summary of our explorations. At some locations access constraints required that we offset the air-track hole from the staked location. At these locations, the approximate offset and elevation difference between the drilled location and the staked location are presented on the summary of results in Appendix C.

The 15 conventional geotechnical boring locations were selected by Terracon. The majority of those borings were drilled near the alignment stakes, and the station, offset, and elevation corresponding to those stakes are presented on the boring logs. The alignment was not staked in the area of boring I-1, and the alignment stakes in the vicinity of borings B-3 to B-5 were removed prior to laying out the conventional geotechnical borings. At these locations, Terracon recorded the approximate boring locations using a handheld GPS device having an accuracy typically within 20 feet. Based on the recorded GPS coordinates, J-U-B provided the approximate stations, offsets, and elevations, which are shown on the boring logs. The locations and elevations

of the borings should be considered accurate only to the degree implied by the means and methods used to define them.

Disturbed soil samples were obtained at various depths in the conventional geotechnical borings using a 2-inch-outside-diameter split-spoon sampler driven in general accordance with the Standard Penetration Test (SPT). The result of the SPT is an N-value. The N-value is the number of blows from a 140-pound hammer falling from a height of 30 inches that are required to drive the split-spoon sampler the last 12 inches of an 18-inch interval (or the distance indicated). N-values are shown on the boring logs.

The N-value provides a reasonable estimate of the relative in-place density of non-cemented sandy type materials. However, the N-value only provides an indication of the relative stiffness of cohesive materials, since the penetration resistance of these soils may be affected by the moisture content. Considerable care must be exercised in interpreting the N-value in gravelly soils, particularly where the size of the gravel particles exceeds the inside diameter of the sampling spoon.

An automatic SPT hammer was used to advance the split-spoon sampler in the borings performed on this site. A greater efficiency is typically achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. Published correlations between the SPT values and soil properties are based on the cathead and rope method. The higher efficiency of the automatic hammer affects the standard penetration resistance blow count (N-value) by increasing the penetration per hammer blow over what would be obtained using the cathead and rope method.

Characteristics of the rock core samples were recorded, including percent recovery, Rock Quality Designation (RQD), and a description of the rock materials recovered from each core run. RQD and percent recovery are presented on the boring logs in this appendix. Photographs of the rock core and a Description of Rock Properties are presented in this appendix.

BORING LOG NO. B-1

PROJECT: Mountain Home Sustainable Water Supply Project

CLIENT: Brown & Caldwell
Boise, Idaho

SITE:
Elmore County, Idaho

LOCATION See Exhibit A-2

Station: 33+50

Surface Elev.: 2766.0 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	RECOVERY, %	RQD, %	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
SILTY SAND WITH GRAVEL (SM), dark brown, medium dense					1.3	4-12-13 N=25							12
2.0	2764												
SILTY SAND (SM), trace gravel, light brown, very dense					1	4-12-39 N=51				6			
3.5	2762.5												
BASALT, gray to black, slightly weathered to unweathered													
close to moderate fracture spacing, medium strong to strong, moderate vesicularity, silt embedded in fractures		5			0.3	50/3"							
					5		100	100	3700		144		
10.0	2756	10											
Boring Terminated at 10 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger & Diamond Bit Rock Core

Abandonment Method:
Boring backfilled with bentonite chips.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
11849 W Executive Dr Ste G
Boise, ID

Boring Started: 12-18-2017 | Boring Completed: 12-18-2017

Drill Rig: CME 75 | Driller: HazTech Drilling Inc.

Project No.: 62165079 | Exhibit: A-4

BORING LOG NO. B-2

PROJECT: Mountain Home Sustainable Water Supply Project

CLIENT: Brown & Caldwell
Boise, Idaho

SITE:
Elmore County, Idaho

LOCATION See Exhibit A-2

Station: 110+27 Offset: 7.5' RT
Approximate Surface Elev: 2814.3 (Ft.) +/-

DEPTH	ELEVATION (Ft.)
6.5	2808+/-
10.0	2804.5+/-
10.8	2803.5+/-

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
		1.4	3-3-4 N=7		
		1.1	4-5-5 N=10	4	22
5		1.3	2-3-4 N=7		
		1.2	3-8-10 N=18	3	5
10		0.8	20-50/4"		

SILTY SAND (SM), trace gravel, dark brown to light brown, loose to medium dense

POORLY GRADED SAND (SP), trace gravel, light brown to brown, medium dense

SILTY SAND (SM), brown, hard, strong cementation

Boring Terminated at 10.8 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
11849 W Executive Dr Ste G
Boise, ID

Boring Started: 12-19-2017 | Boring Completed: 12-19-2017
Drill Rig: CME 75 | Driller: HazTech Drilling Inc.
Project No.: 62165079 | Exhibit: A-5

BORING LOG NO. B-3

PROJECT: Mountain Home Sustainable Water Supply Project

CLIENT: Brown & Caldwell
Boise, Idaho

SITE:
Elmore County, Idaho

LOCATION See Exhibit A-2

Station: 164+05 Offset: 7.5' RT
Approximate Surface Elev: 2909.6 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	RECOVERY, %	RQD, %	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	SILT WITH SAND (ML), brown to light brown, stiff				1.2	3-4-7 N=11				8		NP	
					1.1	3-7-6 N=13							
4.5	2905+/-												
	SILTY SAND (SM), trace gravel, light brown, medium dense	5			1.2	3-4-8 N=12							28
7.5	2902+/-												
	SANDY SILT (ML), brown to light brown, very stiff to hard				1.4	10-13-12 N=25				21			58
		10			1.5	13-22-23 N=45							
11.5	2898+/-												
	Boring Terminated at 11.5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
11849 W Executive Dr Ste G
Boise, ID

Boring Started: 12-19-2017 Boring Completed: 12-19-2017

Drill Rig: CME 75 Driller: HazTech Drilling Inc.

Project No.: 62165079 Exhibit: A-6

BORING LOG NO. B-4

PROJECT: Mountain Home Sustainable Water Supply Project

CLIENT: Brown & Caldwell
Boise, Idaho

SITE:
Elmore County, Idaho

LOCATION See Exhibit A-2

Station: 218+97 Offset: 4.5' LT
Approximate Surface Elev: 2905.0 (Ft.) +/-

DEPTH	ELEVATION (Ft.)
2.5	2902.5+/-
11.5	2893.5+/-

SILTY SAND WITH GRAVEL (SM), brown, medium dense

POORLY GRADED SAND (SP), trace gravel, gray brown, loose to medium dense

Boring Terminated at 11.5 Feet

DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	RECOVERY, %	RQD, %	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
			1.3	5-5-8 N=13							28
			1.7								
5			1.4	3-3-6 N=9				3			
			1.4	3-4-8 N=12				3			
10			1.5	3-7-8 N=15							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
11849 W Executive Dr Ste G
Boise, ID

Boring Started: 12-19-2017 Boring Completed: 12-19-2017

Drill Rig: CME 75 Driller: HazTech Drilling Inc.

Project No.: 62165079 Exhibit: A-7

BORING LOG NO. B-5

PROJECT: Mountain Home Sustainable Water Supply Project

CLIENT: Brown & Caldwell
Boise, Idaho

SITE:
Elmore County, Idaho

LOCATION See Exhibit A-2

Station: 273+21 Offset: 0.5' RT
Approximate Surface Elev: 2933.1 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	RECOVERY, %	RQD, %	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	SANDY SILT (ML), trace gravel, light brown, stiff					1.1	5-4-5 N=9				8			68
2.5	2930.5+/-													
	BASALT, gray to black, very close to wide fracture spacing, unweathered, medium strong to strong, moderate vesicularity					0.1	50/1"							
			5			2.3		46	28			150		
			10			5		100	78	2800				
12.5	2920.5+/-													
	Boring Terminated at 12.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger & Diamond Bit Rock Core

Abandonment Method:
Boring backfilled with bentonite chips.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
11849 W Executive Dr Ste G
Boise, ID

Boring Started: 12-19-2017 | Boring Completed: 12-19-2017

Drill Rig: CME 75 | Driller: HazTech Drilling Inc.

Project No.: 62165079 | Exhibit: A-8

BORING LOG NO. B-6

PROJECT: Mountain Home Sustainable Water Supply Project

CLIENT: Brown & Caldwell
Boise, Idaho

SITE:
Elmore County, Idaho

LOCATION See Exhibit A-2

Station: 323+50

Surface Elev.: 2941.0 (Ft.)

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
		SANDY SILT (ML), trace gravel, light brown, medium stiff to stiff, with cemented particles			1.3	4-3-5 N=8		64
					1.2	3-3-4 N=7		53
			5		1.5			
7.0	2934				1.3	8-7-6 N=13	16	94
		SILT (ML), brown, stiff to very stiff			1.5	10-15-14 N=29		
10.0	2931		10					
		SILT WITH SAND (ML), brown, hard			1.5	13-20-26 N=46	18	
11.5	2929.5							
		Boring Terminated at 11.5 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
11849 W Executive Dr Ste G
Boise, ID

Boring Started: 12-19-2017 | Boring Completed: 12-19-2017

Drill Rig: CME 75 | Driller: HazTech Drilling Inc.

Project No.: 62165079 | Exhibit: A-9

BORING LOG NO. B-7

PROJECT: Mountain Home Sustainable Water Supply Project

CLIENT: Brown & Caldwell
Boise, Idaho

SITE:
Elmore County, Idaho

LOCATION See Exhibit A-2

Station: 374+00

Surface Elev.: 2960.7 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	RECOVERY, %	RQD, %	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
SANDY SILT (ML), trace gravel, light brown, stiff, with cemented particles					0.9	3-2-10 N=12				17			70
2.0	2958.5												
BASALT, black, close to moderate fracture spacing, unweathered, medium strong to strong, moderate vesicularity					2.9		94	39					
		5			5		100	86					
10.0	2950.5	10											
Boring Terminated at 10 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger & Diamond Bit Rock Core

Abandonment Method:
Boring backfilled with bentonite chips.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
11849 W Executive Dr Ste G
Boise, ID

Boring Started: 12-19-2017 | Boring Completed: 12-19-2017

Drill Rig: CME 75 | Driller: HazTech Drilling Inc.

Project No.: 62165079 | Exhibit: A-10

BORING LOG NO. B-8

PROJECT: Mountain Home Sustainable Water Supply Project

CLIENT: Brown & Caldwell
Boise, Idaho

SITE:
Elmore County, Idaho

LOCATION See Exhibit A-2

Station: 426+50

Surface Elev.: 2962.2 (Ft.)

DEPTH	ELEVATION (Ft.)	Description
0.0	2962.2	
2.0	2960	**FILL - SILTY SAND WITH GRAVEL**, brown
6.0	2956	**SANDY SILT (ML)**, trace gravel, dark brown, stiff
10.5	2951.5	**WELL GRADED SAND WITH SILT (SW-SM)**, trace gravel, light brown, medium dense
11.5	2950.5	**SANDY SILT (ML)**, dark brown, stiff
		Boring Terminated at 11.5 Feet

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0		0.7	1-3-2 N=5			
		1.5	4-5-9 N=14	22	25-21-4	68
5		2				
		1.4	8-9-9 N=18	3		5
10		1.5	7-4-7 N=11			53

RECOVERY, %; RQD, %; UNCONFINED COMPRESSIVE STRENGTH (psi); DRY UNIT WEIGHT (pcf): no data

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
11849 W Executive Dr Ste G
Boise, ID

Boring Started: 12-19-2017 | Boring Completed: 12-19-2017

Drill Rig: CME 75 | Driller: HazTech Drilling Inc.

Project No.: 62165079 | Exhibit: A-11

BORING LOG NO. B-9

PROJECT: Mountain Home Sustainable Water Supply Project

CLIENT: Brown & Caldwell
Boise, Idaho

SITE:
Elmore County, Idaho

LOCATION See Exhibit A-2
Station: 480+00
Surface Elev.: 2984.5 (Ft.)

DEPTH	ELEVATION (Ft.)	Description
0	2984.5	**SILTY SAND WITH GRAVEL (SM)**, light brown to brown, very loose
2.0	2982.5	**SANDY SILT (ML)**, light brown, medium stiff to stiff
4.5	2980	**SILTY SAND (SM)**, trace gravel, light brown, loose
7.5	2977	**POORLY GRADED SAND (SP)**, trace gravel, brown to black, loose to very dense
10.8	2973.5	***Boring Terminated at 10.8 Feet***

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0		1	2-1-0 N=1	11	NP	
		1.1	6-4-4 N=8			
5		1.1	5-5-4 N=9	10		14
		1.3	3-3-2 N=5			3
10		0.8	14-50/3"			

RECOVERY, % | RQD, % | UNCONFINED COMPRESSIVE STRENGTH (psi) | DRY UNIT WEIGHT (pcf) — not recorded

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
11849 W Executive Dr Ste G
Boise, ID

Boring Started: 12-20-2017 | Boring Completed: 12-20-2017
Drill Rig: CME 75 | Driller: HazTech Drilling Inc.
Project No.: 62165079 | Exhibit: A-12

BORING LOG NO. B-10

PROJECT: Mountain Home Sustainable Water Supply Project

CLIENT: Brown & Caldwell
Boise, Idaho

SITE:
Elmore County, Idaho

LOCATION See Exhibit A-2
Station: 532+50
Surface Elev.: 3027.2 (Ft.)

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0	3027.2	**SANDY SILT (ML)**, trace gravel, light brown to brown, stiff
2.5	3024.5	**BASALT**, gray to black, extremely close to close fracture spacing, unweathered, medium strong to strong, moderate vesicularity
5	3022	close to wide fracture spacing
10.1	3017	***Boring Terminated at 10.1 Feet***

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	RECOVERY, %	RQD, %	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0		1.1	4-3-10 N=13				11		NP	61
		0.1	50/2"							
		2.2		88	28					
5		5		100	100	3600		138		
10										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger & Diamond Bit Rock Core

Abandonment Method:
Boring backfilled with bentonite chips.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
11849 W Executive Dr Ste G
Boise, ID

Boring Started: 12-20-2017 | Boring Completed: 12-20-2017

Drill Rig: CME 75 | Driller: HazTech Drilling Inc.

Project No.: 62165079 | Exhibit: A-13

BORING LOG NO. B-11

PROJECT: Mountain Home Sustainable Water Supply Project

CLIENT: Brown & Caldwell
Boise, Idaho

SITE:
Elmore County, Idaho

LOCATION See Exhibit A-2

Station: 585+00

Surface Elev.: 3024.0 (Ft.)

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.0	3024	**SANDY SILT (ML)**, light brown, stiff
2.0	3022	**SILTY SAND (SM)**, trace gravel, light brown to dark brown, very loose to medium dense
8.0	3016	**SANDY SILT (ML)**, dark brown, very stiff, with cemented particles
11.5	3012.5	***Boring Terminated at 11.5 Feet***

DEPTH (Ft.)	RECOVERY (Ft.)	FIELD TEST RESULTS	RECOVERY, %	RQD, %	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	1.3	3-4-5 N=9							
	0.9	2-2-1 N=3							49
5	1.3	7-5-5 N=10				17			36
	0.7	3-1-1 N=2				17			27
	1.7								
10	1.5	9-13-16 N=29							

WATER LEVEL OBSERVATIONS: SAMPLE TYPE

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
11849 W Executive Dr Ste G
Boise, ID

Boring Started: 12-20-2017 | Boring Completed: 12-20-2017

Drill Rig: CME 75 | Driller: HazTech Drilling Inc.

Project No.: 62165079 | Exhibit: A-14

BORING LOG NO. B-12

PROJECT: Mountain Home Sustainable Water Supply Project

CLIENT: Brown & Caldwell
Boise, Idaho

SITE:
Elmore County, Idaho

LOCATION See Exhibit A-2
Station: 638+00
Surface Elev.: 3035.8 (Ft.)

DEPTH	ELEVATION (Ft.)	Description
0.0	3035.8	**FILL - SANDY SILT (ML)**, trace gravel, light brown to dark brown, with cemented fragments
2.0	3034	**POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM)**, light brown, medium dense
4.0	3032	**SILTY SAND (SM)**, light brown, very stiff, with cemented particles
7.5	3028.5	**BASALT**, black, close to moderate fracture spacing, unweathered, medium strong to strong, moderate vesicularity
10.0	3026	***Boring Terminated at 10 Feet***

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	RECOVERY, %	RQD, %	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		0.7	2-9-21 N=30							
		1.2	10-10-9 N=19				17			11
5		1.3	7-11-9 N=20				25			
		0.2	50/5"							
		2		87	87					
10										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger & Diamond Bit Rock Core

Abandonment Method:
Boring backfilled with bentonite chips.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
11849 W Executive Dr Ste G
Boise, ID

Boring Started: 12-20-2017 | Boring Completed: 12-20-2017

Drill Rig: CME 75 | Driller: HazTech Drilling Inc.

Project No.: 62165079 | Exhibit: A-15

BORING LOG NO. B-13

PROJECT: Mountain Home Sustainable Water Supply Project

CLIENT: Brown & Caldwell
Boise, Idaho

SITE:
Elmore County, Idaho

LOCATION See Exhibit A-2
Station: 690+50
Surface Elev.: 3078.3 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	RECOVERY (Ft.)	FIELD TEST RESULTS	RECOVERY, %	RQD, %	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0	3078.3										
FILL - SILTY SAND WITH GRAVEL, brown to dark brown			1.3	4-5-4 N=9				16		NP	32
1.5	3077										
SILTY SAND (SM), trace gravel, brown to dark brown, medium dense			1.5	3-4-6 N=10				20			43
4.5	3074										
BASALT, close to moderate fracture spacing, unweathered, medium strong to strong, slight to moderate vesicularity		5	4.6		92	92	5900		146		
10.2	3068	10	0.7		100	86					
Boring Terminated at 10.2 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger & Diamond Bit Rock Core

Abandonment Method:
Boring backfilled with bentonite chips.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
11849 W Executive Dr Ste G
Boise, ID

Boring Started: 12-20-2017 | Boring Completed: 12-20-2017

Drill Rig: CME 75 | Driller: HazTech Drilling Inc.

Project No.: 62165079 | Exhibit: A-16

BORING LOG NO. B-14

PROJECT: Mountain Home Sustainable Water Supply Project

CLIENT: Brown & Caldwell
Boise, Idaho

SITE:
Elmore County, Idaho

LOCATION See Exhibit A-2

Station: 742+50

Surface Elev.: 3039.5 (Ft.)

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	RECOVERY, %	RQD, %	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		SANDY SILT (ML), trace gravel, light brown to dark brown, very stiff				1.3	3-9-11 N=20							
2.0	3037.5													
		SILTY SAND WITH GRAVEL (SM), light brown, very dense, moderately to strongly cemented				1.3	20-24-36 N=60				15		NP	14
5.0	3034.5		5											
		SILTY SAND (SM), brown, medium dense, with cemented particles				1.2	8-8-9 N=17							
		trace gravel from 7 to 9.5 ft				1.5	6-9-9 N=18				24			41
9.5	3030													
10.5	3029	**BASALT**, very close to moderate fracture spacing, unweathered, medium strong to strong, moderate vesicularity	10			0.8		80	80					
		Boring Terminated at 10.5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger & Diamond Bit Rock Core

Abandonment Method:
Boring backfilled with bentonite chips.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
11849 W Executive Dr Ste G
Boise, ID

Boring Started: 12-22-2017 | Boring Completed: 12-22-2017

Drill Rig: CME 75 | Driller: HazTech Drilling Inc.

Project No.: 62165079 | Exhibit: A-17

BORING LOG NO. I-1

PROJECT: Mountain Home Sustainable Water Supply Project

CLIENT: Brown & Caldwell
Boise, Idaho

SITE:
Elmore County, Idaho

LOCATION See Exhibit A-2

Northing: 474944 Easting: 2565265
Station: 0+23 Offset: 74.5' LT
Approximate Surface Elev: 2464.6 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	RECOVERY (Ft.)	FIELD TEST RESULTS	RECOVERY, %	RQD, %	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0		1.2	3-11-14 N=25				11			
		0.9	6-5-7 N=12				7			24
5		0.7	13-6-6 N=12							
		0.7	5-3-3 N=6							
10		1.5	25-35-44 N=79							
15		1.2	5-35-50/3"							23
17.0	2447.5+/-									
		2.1		84	76					
20		3.6				4500		145		

FILL - VARIABLE MIXTURES OF SAND, SILT, GRAVEL, COBBLES AND POSSIBLY BOULDERS, brown to dark brown

BASALT, dark gray to black, very close to moderate fracture spacing, unweathered, strong rock, slight vesicularity

0.2 ft. embedded silt layer at 19 ft

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger & Diamond Bit Rock Core

Abandonment Method:
Boring backfilled with bentonite chips.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

5 ft while drilling

Terracon
11849 W Executive Dr Ste G
Boise, ID

Boring Started: 12-18-2017 Boring Completed: 12-18-2017

Drill Rig: CME 75 Driller: HazTech Drilling Inc.

Project No.: 62165079 Exhibit: A-18

BORING LOG NO. I-1

PROJECT: Mountain Home Sustainable Water Supply Project

CLIENT: Brown & Caldwell
Boise, Idaho

SITE:
Elmore County, Idaho

LOCATION See Exhibit A-2

Northing: 474944 Easting: 2565265
Station: 0+23 Offset: 74.5' LT
Approximate Surface Elev: 2464.6 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	GRAPHIC LOG	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	RECOVERY, %	RQD, %	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		BASALT, dark gray to black, very close to moderate fracture spacing, unweathered, strong rock, slight vesicularity *(continued)*			3.6		72	72					
25		moderate fracture spacing, medium strong to strong, moderate vesicularity			4.4		88	88					
29.5	2435+/-	***Boring Terminated at 29.5 Feet***											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger & Diamond Bit Rock Core

Abandonment Method:
Boring backfilled with bentonite chips.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *5 ft while drilling*

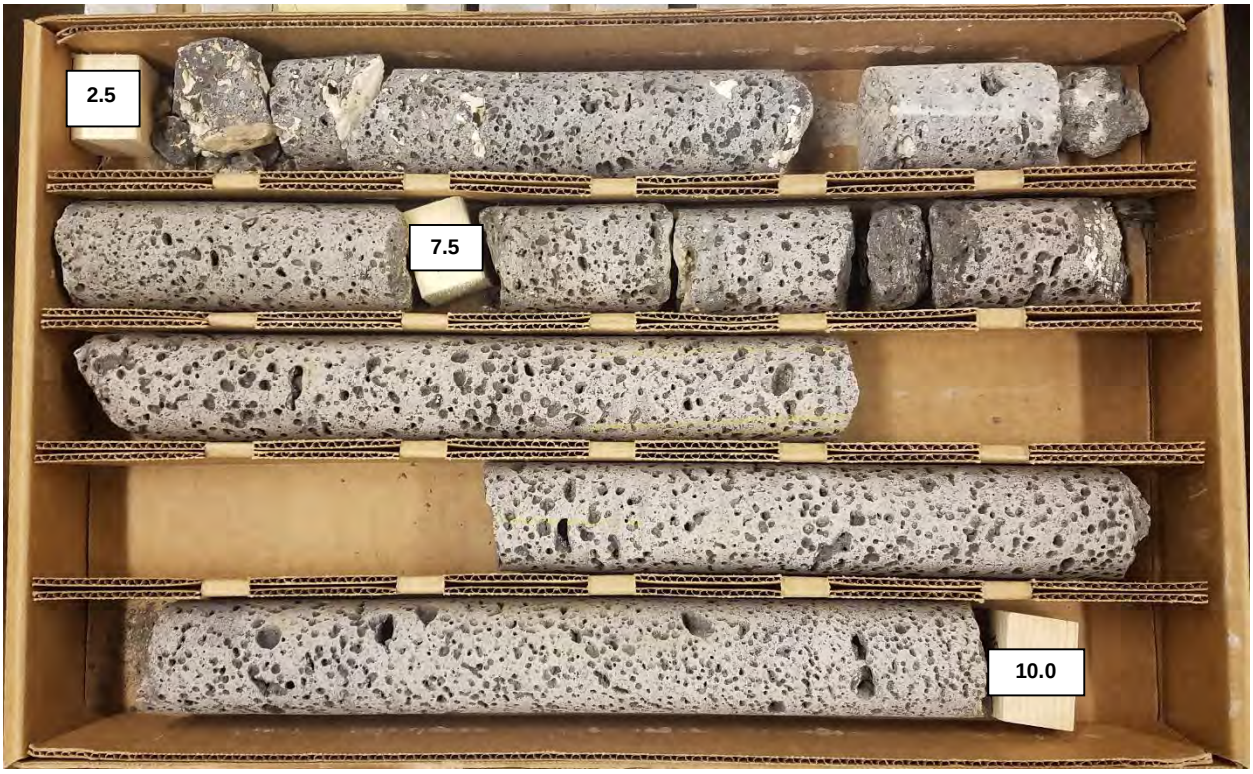
Terracon
11849 W Executive Dr Ste G
Boise, ID

Boring Started: 12-18-2017 Boring Completed: 12-18-2017

Drill Rig: CME 75 Driller: HazTech Drilling Inc.

Project No.: 62165079 Exhibit: A-18

B-1, 5.0-10.0 feet



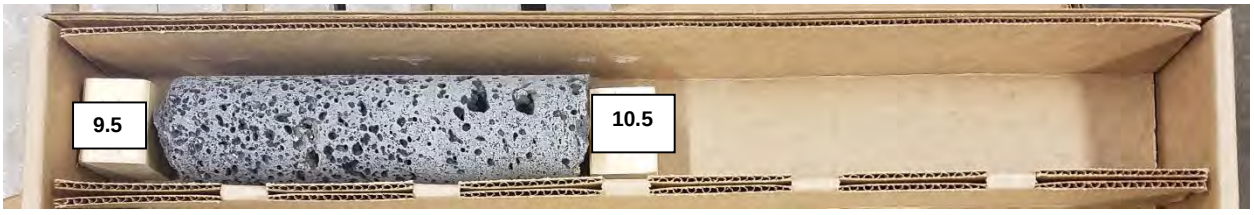
B-2, 2.5-10.0 feet

B-7, 1.9-10.0 feet

B-10, 2.6-10.1 feet

B-12, 7.7-10.0 feet

B-13, 4.5-10.2 feet



B-14, 9.5-10.5 feet

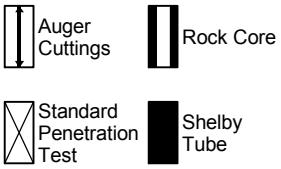
I-1, 17.0-24.5 feet

I-1, 24.5-29.5 feet

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING



WATER LEVEL

Water Initially Encountered

Water Level After a Specified Period of Time

Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

N	**Standard Penetration Test Resistance (Blows/Ft.)**
(HP)	**Hand Penetrometer**
(T)	**Torvane**
(DCP)	**Dynamic Cone Penetrometer**
(PID)	**Photo-Ionization Detector**
(OVA)	**Organic Vapor Analyzer**

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		**CONSISTENCY OF FINE-GRAINED SOILS** (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (psi)**	**Standard Penetration or N-Value Blows/Ft.**
Very Loose	0 - 3	Very Soft	less than 3.50	0 - 1
Loose	4 - 9	Soft	3.5 to 7.0	2 - 4
Medium Dense	10 - 29	Medium Stiff	7.0 to 14.0	4 - 8
Dense	30 - 50	Stiff	14.0 to 28.0	8 - 15
Very Dense	> 50	Very Stiff	28.0 to 55.5	15 - 30
		Hard	> 55.5	> 30

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K,L,M,P]
			Liquid limit - not dried			Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

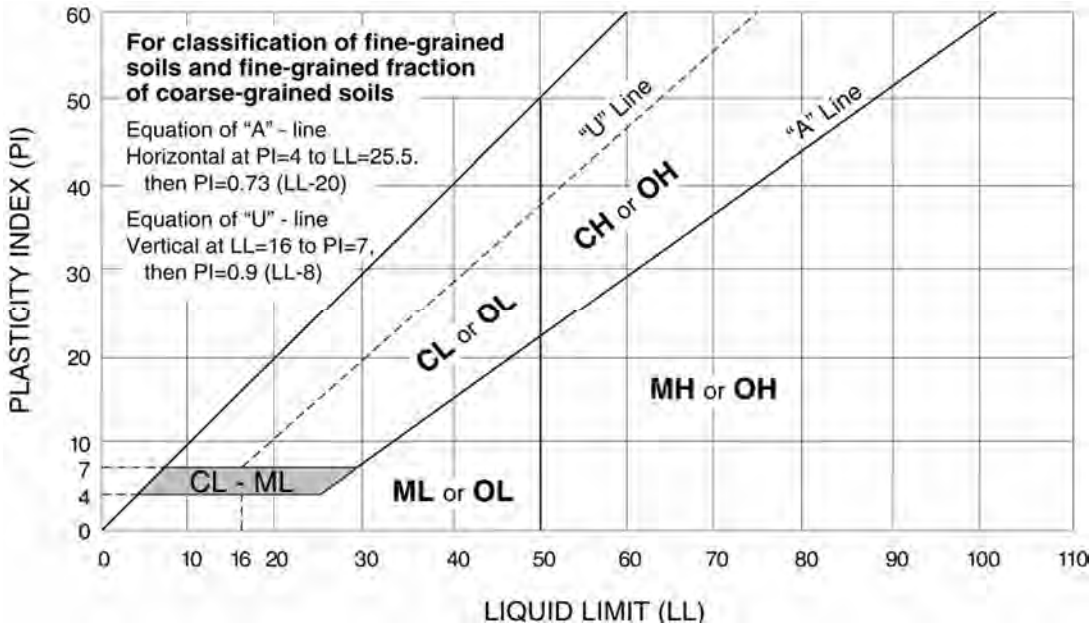
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



DESCRIPTION OF ROCK PROPERTIES

WEATHERING	
Term	**Description**
Unweathered	No visible sign of rock material weathering, perhaps slight discoloration on major discontinuity surfaces.
Slightly weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than in its fresh condition.
Moderately weathered	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as corestones.
Highly weathered	More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones.
Completely weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.
Residual soil	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.

STRENGTH OR HARDNESS		
Description	**Field Identification**	**Uniaxial Compressive Strength, PSI (MPa)**
Extremely weak	Indented by thumbnail	40-150 (0.3-1)
Very weak	Crumbles under firm blows with point of geological hammer, can be peeled by a pocket knife	150-700 (1-5)
Weak rock	Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer	700-4,000 (5-30)
Medium strong	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with single firm blow of geological hammer	4,000-7,000 (30-50)
Strong rock	Specimen requires more than one blow of geological hammer to fracture it	7,000-15,000 (50-100)
Very strong	Specimen requires many blows of geological hammer to fracture it	15,000-36,000 (100-250)
Extremely strong	Specimen can only be chipped with geological hammer	>36,000 (>250)

DISCONTINUITY DESCRIPTION			
Fracture Spacing (Joints, Faults, Other Fractures)		**Bedding Spacing (May Include Foliation or Banding)**	
Description	**Spacing**	**Description**	**Spacing**
Extremely close	< ¾ in (<19 mm)	**Laminated**	< ½ in (<12 mm)
Very close	¾ in – 2-1/2 in (19 - 60 mm)	**Very thin**	½ in – 2 in (12 – 50 mm)
Close	2-1/2 in – 8 in (60 – 200 mm)	**Thin**	2 in – 1 ft (50 – 300 mm)
Moderate	8 in – 2 ft (200 – 600 mm)	**Medium**	1 ft – 3 ft (300 – 900 mm)
Wide	2 ft – 6 ft (600 mm – 2.0 m)	**Thick**	3 ft – 10 ft (900 mm – 3 m)
Very Wide	6 ft – 20 ft (2.0 – 6 m)	**Massive**	> 10 ft (3 m)

Discontinuity Orientation (Angle): Measure the angle of discontinuity relative to a plane perpendicular to the longitudinal axis of the core. (For most cases, the core axis is vertical; therefore, the plane perpendicular to the core axis is horizontal.) For example, a horizontal bedding plane would have a 0 degree angle.

ROCK QUALITY DESIGNATION (RQD*)	
Description	**RQD Value (%)**
Very Poor	0 - 25
Poor	25 – 50
Fair	50 – 75
Good	75 – 90
Excellent	90 - 100

*The combined length of all sound and intact core segments equal to or greater than 4 inches in length, expressed as a percentage of the total core run length.

Reference: U.S. Department of Transportation, Federal Highway Administration, Publication No FHWA-NHI-10-034, December 2009 Technical Manual for Design and Construction of Road Tunnels – Civil Elements

APPENDIX B
LABORATORY TESTING

Laboratory Test Description

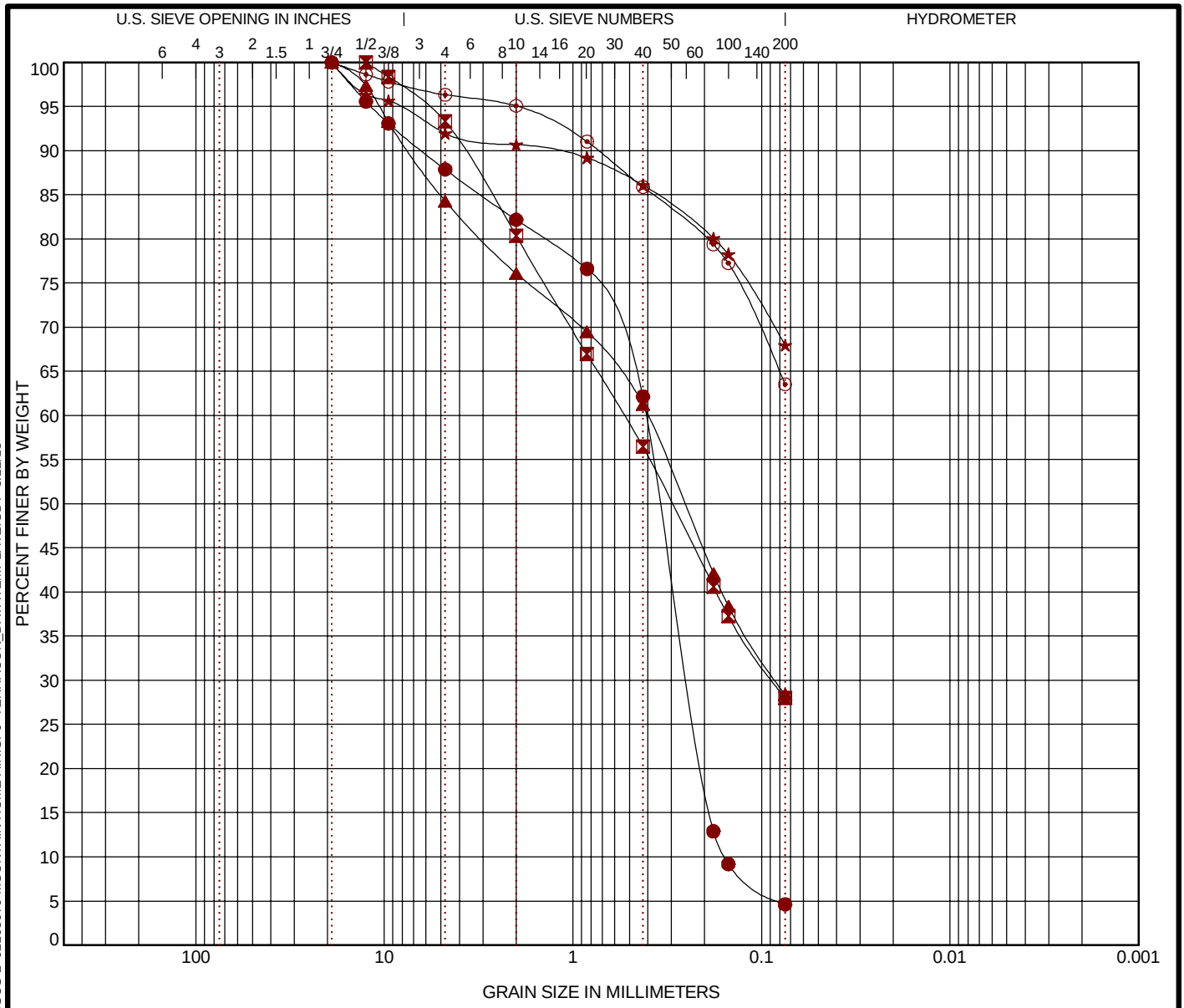
Samples obtained from the conventional geotechnical borings during the field exploration were transferred to the laboratory. Soils were visually classified in general accordance with the Unified Soil Classification System described in Appendix A and rock was visually described in general accordance with the Description of Rock Properties presented in Appendix A. Representative samples were selected for testing to determine physical and engineering properties of the subsurface materials. Following are the laboratory tests conducted and a brief description of the purpose of each test:

Test Conducted	To Determine:
Moisture content	Moisture content of the sample.
Percent passing no. 200 sieve	Amount of clay/silt sized particles in the sample.
Gradation (sieve analyses)	Particle size analysis of the sample.
Atterberg limits	Plasticity characteristics of the sample.
Compaction characteristics of soil (Modified Proctor)	Maximum density and optimum moisture content of the soil for a given compaction effort.
Unconfined compressive strength	Compressive strength of the unconfined rock sample.
pH, resistivity, water soluble sulfate content, and chloride content	Potential of the soil to corrode metal and degrade concrete.

The tests were performed in general accordance with the respective ASTM standards. These standards are a reference to general methodology. In some cases, variations to methods are applied as a result of local practice or professional judgment. Results of the laboratory tests are generally summarized on the boring logs in Appendix A. The graphical result of the gradation, modified Proctor, and unconfined compressive strength tests are presented in this appendix. This appendix also includes results of the laboratory chemical tests.

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	B-2	7.5 - 9	POORLY GRADED SAND (SP)	3				0.92	2.62
⊠	B-3	5 - 6.5	SILTY SAND (SM)						
▲	B-4	0 - 1.5	SILTY SAND with GRAVEL (SM)						
★	B-5	0 - 1.5	SANDY SILT (ML)	8					
⊙	B-6	0 - 1.5	SANDY SILT (ML)						

Boring ID		Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Fines	%Clay
●	B-2	7.5 - 9	19	0.409	0.243	0.156	12.1	83.3		4.6	
⊠	B-3	5 - 6.5	12.5	0.535	0.087		6.7	65.3		28.0	
▲	B-4	0 - 1.5	19	0.402	0.084		15.7	55.9		28.4	
★	B-5	0 - 1.5	19				8.0	24.0		68.0	
⊙	B-6	0 - 1.5	19				3.7	32.8		63.5	

PROJECT: Mountain Home Air Force Base Water Supply Project

SITE: Elmore County, Idaho

Terracon
11849 W Executive Dr Ste G
Boise, ID

PROJECT NUMBER: 62165079

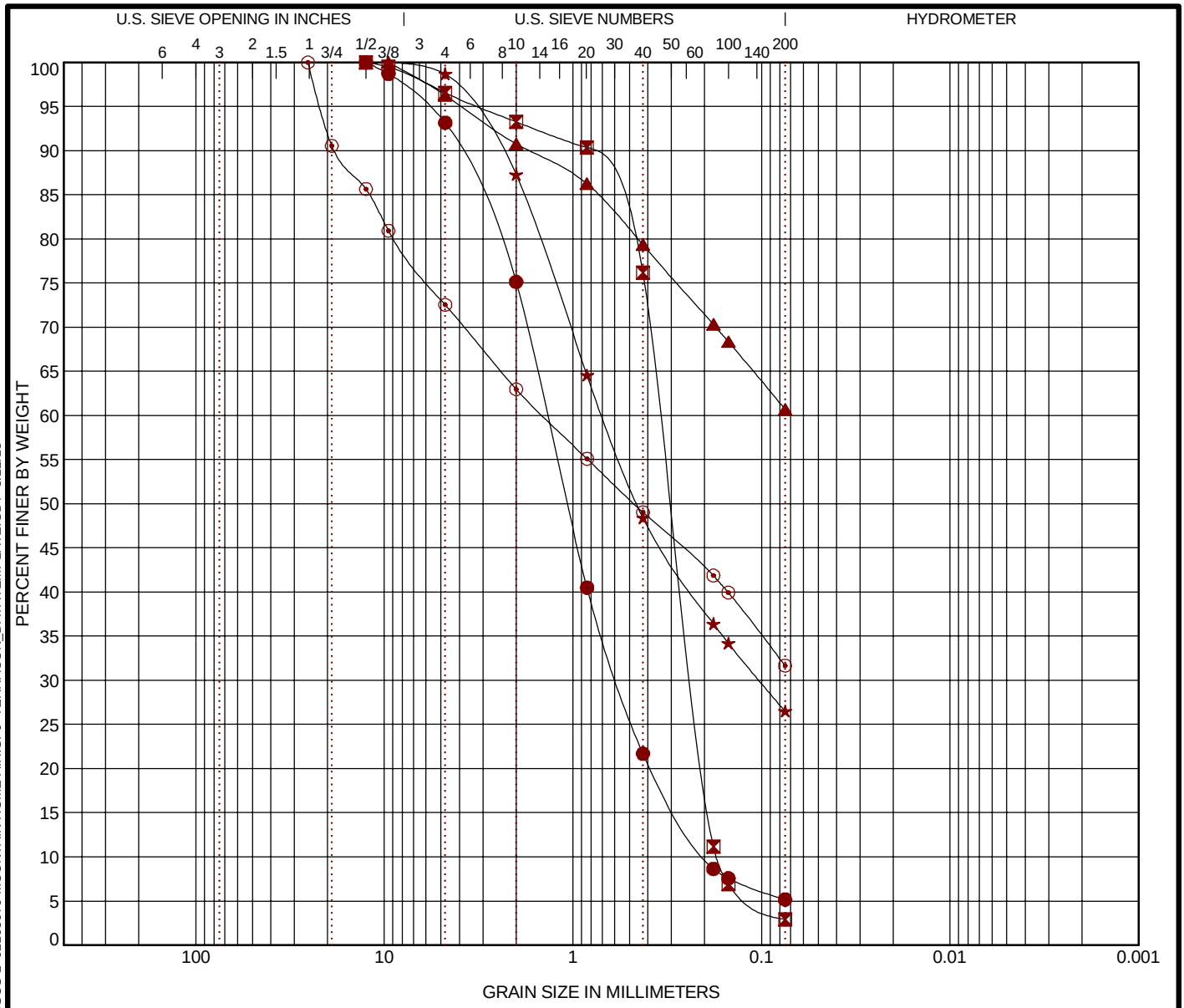
CLIENT: Brown & Caldwell
Boise, Idaho

EXHIBIT: B-2

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 62165079 MOUNTAIN HOME AIR.GPJ TERRACON_DATATEMPLATE.GDT 3/22/18

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	B-8	7.5 - 9	WELL GRADED SAND with SILT (SW-SM)	3				1.22	6.95
⊠	B-9	7.7 - 9	POORLY GRADED SAND (SP)					0.91	2.00
▲	B-10	0 - 1.5	SANDY SILT (ML)	11	NP	NP	NP		
★	B-11	7.5	SILTY SAND (SM)	17					
⊙	B-13	0 - 1.5	SILTY SAND with GRAVEL (SM)	16	NP	NP	NP		

Boring ID		Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Fines	%Clay
●	B-8	7.5 - 9	12.5	1.37	0.575	0.197	6.8	88.0		5.2	
⊠	B-9	7.7 - 9	12.5	0.343	0.231	0.171	3.4	93.6		2.9	
▲	B-10	0 - 1.5	9.5				3.7	35.6		60.7	
★	B-11	7.5	9.5	0.693	0.103		1.3	72.2		26.5	
⊙	B-13	0 - 1.5	25.4	1.442			27.5	40.9		31.7	

PROJECT: Mountain Home Air Force Base
Water Supply Project

SITE:
Elmore County, Idaho

Terracon
11849 W Executive Dr Ste G
Boise, ID

PROJECT NUMBER: 62165079

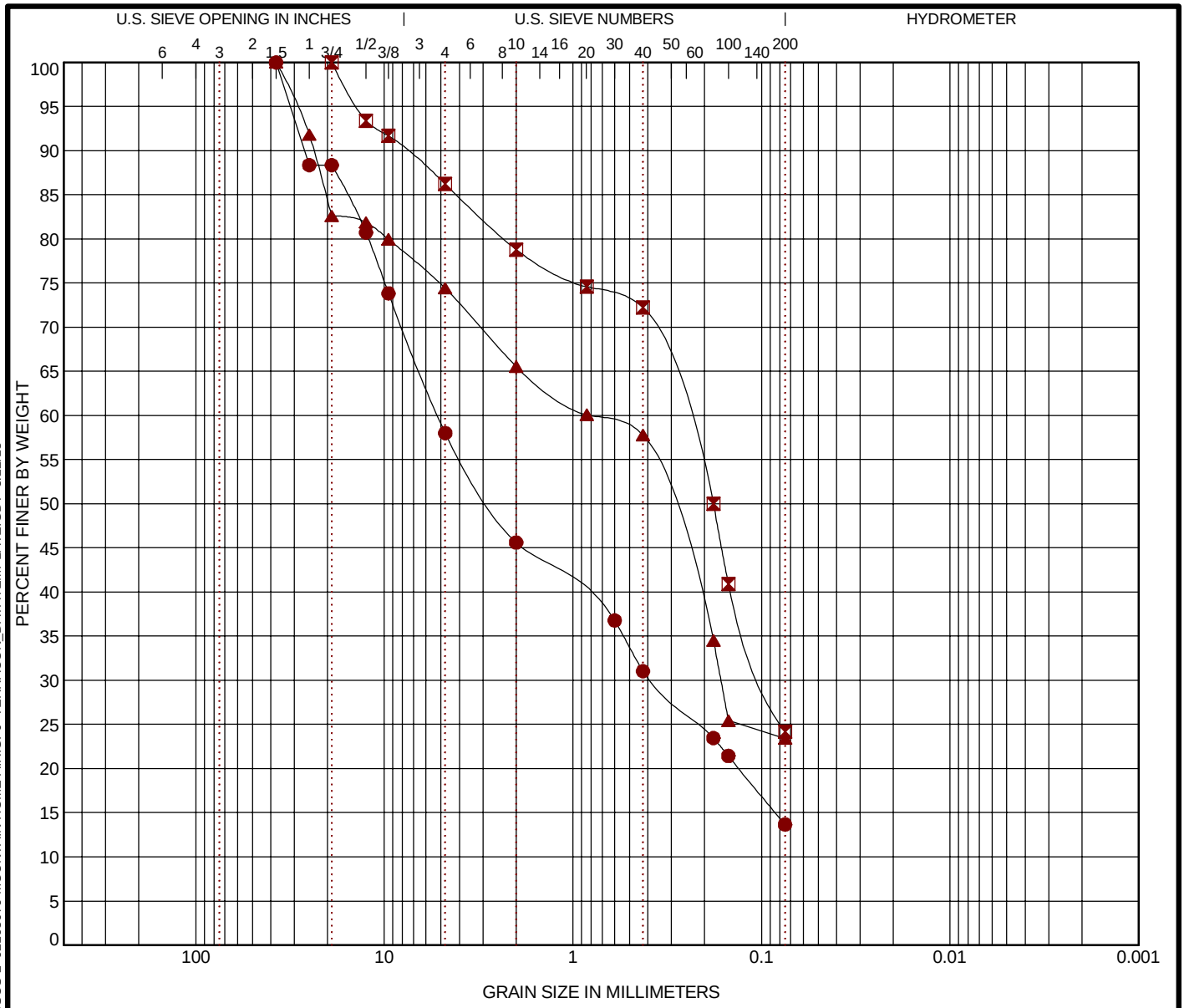
CLIENT: Brown & Caldwell
Boise, Idaho

EXHIBIT: B-3

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 62165079 MOUNTAIN HOME AIR.GPJ TERRACON_DATATEMPLATE.GDT 3/22/18

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	B-14	2.5 - 4	SILTY SAND with GRAVEL (SM)	15	NP	NP	NP		
⊠	I-1	2.5 - 4	SILTY SAND (SM)	7					
▲	I-1	15 - 16.3	SILTY SAND with GRAVEL (SM)						

Boring ID		Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Fines	%Clay
●	B-14	2.5 - 4	37.5	5.182	0.378		42.0	44.4		13.7	
⊠	I-1	2.5 - 4	19	0.265	0.095		13.8	62.0		24.2	
▲	I-1	15 - 16.3	37.5	0.821	0.164		25.6	51.0		23.4	

PROJECT: Mountain Home Air Force Base Water Supply Project

SITE: Elmore County, Idaho

Terracon
11849 W Executive Dr Ste G
Boise, ID

PROJECT NUMBER: 62165079

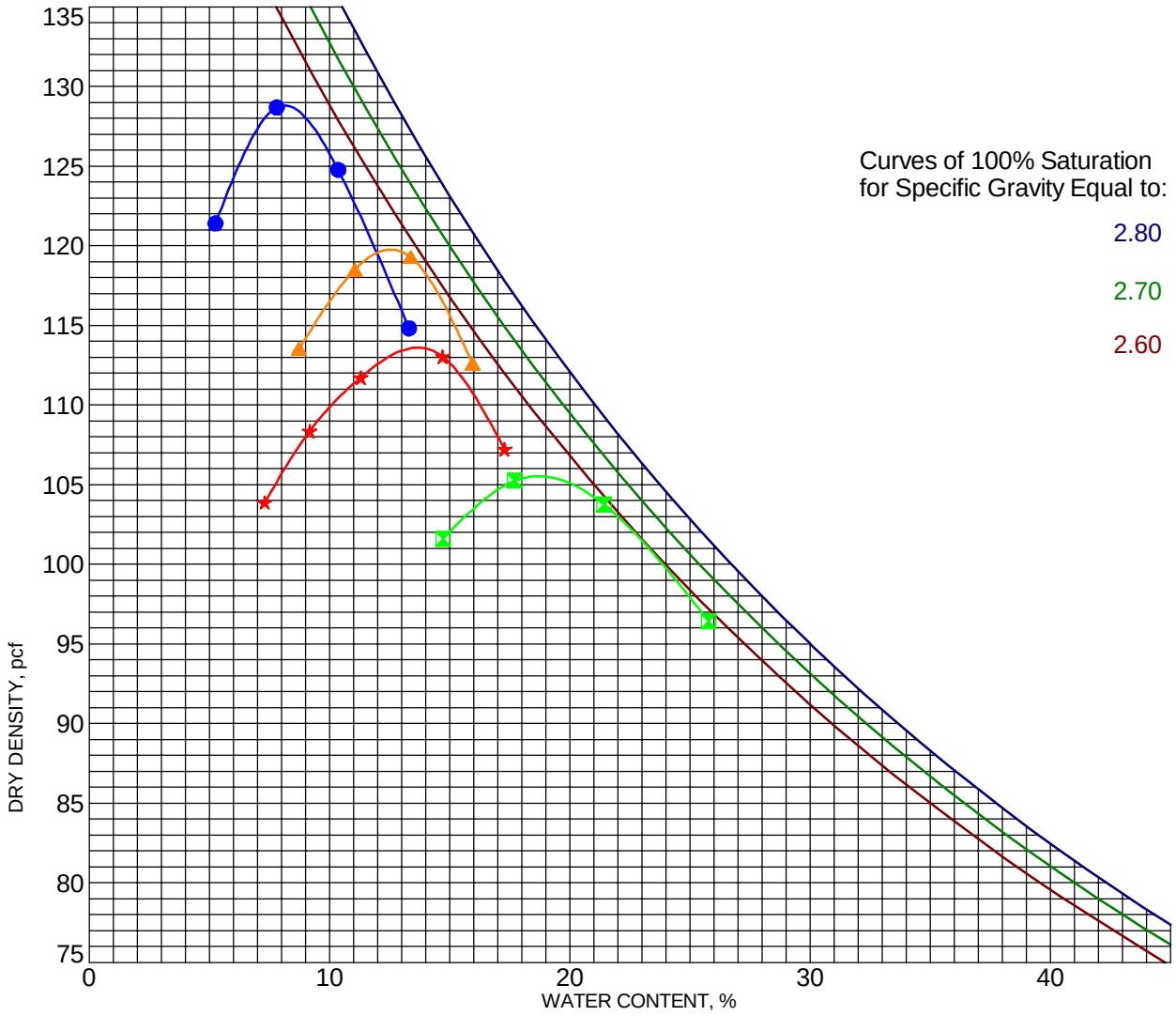
CLIENT: Brown & Caldwell
Boise, Idaho

EXHIBIT: B-4

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 62165079 MOUNTAIN HOME AIR.GPJ TERRACON_DATATEMPLATE.GDT 3/22/18

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557



Boring ID	Depth	Description of Materials
● B-2	2 - 4 ft	SILTY SAND (SM)
⊠ B-6	2 - 4 ft	SANDY SILT (ML)
▲ B-8	2.5 - 4 ft	SANDY SILT (ML)
★ B-11	2 - 4 ft	SILTY SAND (SM)

Boring ID	Depth	Test Method	Fines (%)	LL	PL	PI	Max DD (pcf)	Optimum WC (%)
● B-2	2 - 4 ft	ASTM D1557 Method C					128.8	8.1
⊠ B-6	2 - 4 ft	ASTM D1557 Method C	53				105.5	18.7
▲ B-8	2.5 - 4 ft	ASTM D1557 Method C	68				119.8	12.5
★ B-11	2 - 4 ft	ASTM D1557 Method C	49				113.6	13.6

PROJECT: Mountain Home Air Force Base Water Supply Project

SITE: Elmore County, Idaho

Terracon
11849 W Executive Dr Ste G
Boise, ID

PROJECT NUMBER: 62165079

CLIENT: Brown & Caldwell
Boise, Idaho

EXHIBIT: B-5

COMPRESSIVE STRENGTH OF INTACT ROCK CORES

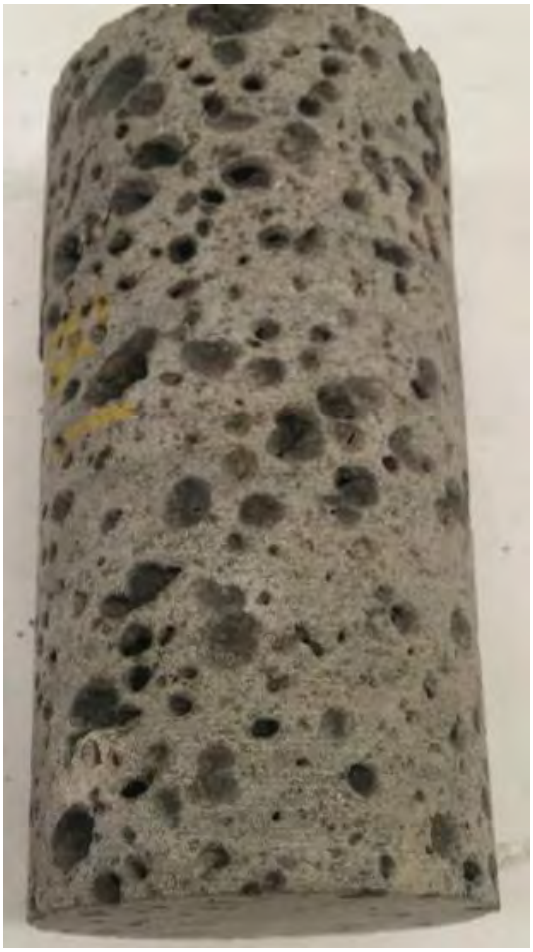
Boring ID & Depth: B-1 at 7.0 - 7.5 **Date of Test:** 1/18/2018

Rock Lithology: Basalt **Specimen Confinement:** Unconfined

Test Method: ASTM D7012, Method C **Moisture Condition:** Air dried

Ambient Temp. (^{o}C)	Duration of Test (min)	Density (pcf)	Average Diameter (in)	Average Length (in)	Area (in^2)	Length to Diameter Ratio	Maximum Applied Load (lbs)	Compressive Strength (psi)
22	1.00	144	2.393	5.400	4.498	2.257	16800	3700

Photograph of fractured core specimen



Photograph of fractured core specimen, rotated 90^{o}

PROJECT:	Mountain Home Air Force Base Water Supply	Terracon 11849 W. Executive Dr., Suite G Boise Idaho	PROJECT NUMBER: 62165079
SITE:	Elmore County, ID		CLIENT: Brown & Caldwell950 West Bannoc
			EXHIBIT: B-6

COMPRESSIVE STRENGTH OF INTACT ROCK CORES

Boring ID & Depth: B-5 at 7.0 - 7.5 **Date of Test:** 1/18/2018

Rock Lithology: Basalt **Specimen Confinement:** Unconfined

Test Method: ASTM D7012, Method C **Moisture Condition:** Air dried

Ambient Temp. (^{o}C)	Duration of Test (min)	Density (pcf)	Average Diameter (in)	Average Length (in)	Area (in^2)	Length to Diameter Ratio	Maximum Applied Load (lbs)	Compressive Strength (psi)
22	1.00	150	2.388	5.440	4.479	2.278	12400	2800

Photograph of fractured core specimen

Photograph of fractured core specimen, rotated 90^{o}

PROJECT:	Mountain Home Air Force Base Water Supply	Terracon 11849 W. Executive Dr., Suite G Boise Idaho	PROJECT NUMBER: 62165079
SITE:	Elmore County, ID		CLIENT: Brown & Caldwell950 West Bannoc
			EXHIBIT: B-7

COMPRESSIVE STRENGTH OF INTACT ROCK CORES

Boring ID & Depth: B-10 at 7.0 - 7.5 **Date of Test:** 1/18/2018

Rock Lithology: Basalt **Specimen Confinement:** Unconfined

Test Method: ASTM D7012, Method C **Moisture Condition:** Air dried

Ambient Temp. (^{o}C)	Duration of Test (min)	Density (pcf)	Average Diameter (in)	Average Length (in)	Area (in^2)	Length to Diameter Ratio	Maximum Applied Load (lbs)	Compressive Strength (psi)
22	1.00	138	2.386	5.111	5.114	2.142	18300	3600

Photograph of fractured core specimen

Photograph of fractured core specimen, rotated 90^{o}

PROJECT:	Mountain Home Air Force Base Water Supply	Terracon 11849 W. Executive Dr., Suite G Boise Idaho	PROJECT NUMBER: 62165079
SITE:	Elmore County, ID		CLIENT: Brown & Caldwell950 West Bannoc
			EXHIBIT: B-8

COMPRESSIVE STRENGTH OF INTACT ROCK CORES

Boring ID & Depth: B-13 at 8.0 - 8.5 **Date of Test:** 1/18/2018

Rock Lithology: Basalt **Specimen Confinement:** Unconfined

Test Method: ASTM D7012, Method C **Moisture Condition:** Air dried

Ambient Temp. (^{o}C)	Duration of Test (min)	Density (pcf)	Average Diameter (in)	Average Length (in)	Area (in^2)	Length to Diameter Ratio	Maximum Applied Load (lbs)	Compressive Strength (psi)
22	1.00	146	2.389	5.452	5.114	2.283	30200	5900

Photograph of fractured core specimen

Photograph of fractured core specimen, rotated 90^{o}

PROJECT:	Mountain Home Air Force Base Water Supply	Terracon 11849 W. Executive Dr., Suite G Boise Idaho	PROJECT NUMBER: 62165079
SITE:	Elmore County, ID		CLIENT: Brown & Caldwell950 West Bannoc
			EXHIBIT: B-9

CR6205, 11-16-17, Rev. 1.1

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COMPRESSIVE STRENGTH OF INTACT ROCK CORES

Boring ID & Depth: I-1 at 19.5 - 20.0 **Date of Test:** 1/18/2018

Rock Lithology: Basalt **Specimen Confinement:** Unconfined

Test Method: ASTM D7012, Method C **Moisture Condition:** Air dried

Ambient Temp. (^{o}C)	Duration of Test (min)	Density (pcf)	Average Diameter (in)	Average Length (in)	Area (in^2)	Length to Diameter Ratio	Maximum Applied Load (lbs)	Compressive Strength (psi)
22	1.00	145	2.391	5.502	5.114	2.301	22900	4500

Photograph of fractured core specimen

Photograph of fractured core specimen, rotated 90^{o}

PROJECT:	Mountain Home Air Force Base Water Supply	Terracon 11849 W. Executive Dr., Suite G Boise Idaho	PROJECT NUMBER: 62165079
SITE:	Elmore County, ID		CLIENT: Brown & Caldwell950 West Bannoc
			EXHIBIT: B-10

CHEMICAL LABORATORY TEST REPORT

Project Number: 62165079
Service Date: 01/17/18
Report Date: 02/02/18
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

Project

Mountain AFB Water Supply

Sample Submitted By: Terracon (62) **Date Received:** 1/15/2018 **Lab No.: 18-0109**

Results of Corrosion Analysis

Sample Number				
Sample Location	B-1	B-2	B-3	B-4
Sample Depth (ft.)	2.5-4.0	7.5-9.0	7.5-9.0	7.5-9.0
pH Analysis, AWWA 4500 H	7.85	8.95	6.84	7.19
Water Soluble Sulfate (SO4), ASTM C 1580 (mg/kg)	540	78	3493	119
Chlorides, ASTM D 512, (mg/kg)	100	50	1750	50
Resistivity, ASTM G 57, (ohm-cm)	786	2910	165	5238

Analyzed By:

Trisha Campo
Chemist

CHEMICAL LABORATORY TEST REPORT

Project Number: 62165079
Service Date: 01/17/18
Report Date: 02/02/18
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

Project

Mountain AFB Water Supply

Sample Submitted By: Terracon (62) **Date Received:** 1/15/2018 **Lab No.: 18-0109**

Results of Corrosion Analysis

Sample Number				
Sample Location	B-6	B-8	B-9	B-11
Sample Depth (ft.)	8.0-9.5	7.5-9.0	5.0-6.5	7.5-9.0
pH Analysis, AWWA 4500 H	6.54	7.47	8.65	8.14
Water Soluble Sulfate (SO4), ASTM C 1580 (mg/kg)	8333	143	81	1121
Chlorides, ASTM D 512, (mg/kg)	1225	75	150	600
Resistivity, ASTM G 57, (ohm-cm)	330	18430	1358	*--

**Not enough material for resistivity*

Analyzed By:

Trisha Campo
Chemist

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Mountain AFB Water Supply

Sample Submitted By: Terracon (62) **Date Received:** 1/15/2018 **Lab No.: 18-0109**

Results of Corrosion Analysis

Sample Number				
Sample Location	B-12	B-13	B-14	I-1
Sample Depth (ft.)	2.5-4.0	2.5-4.0	7.5-9.0	7.5-9.0
pH Analysis, AWWA 4500 H	7.73	7.63	7.95	8.45
Water Soluble Sulfate (SO4), ASTM C 1580 (mg/kg)	7755	9268	851	96
Chlorides, ASTM D 512, (mg/kg)	300	100	925	75
Resistivity, ASTM G 57, (ohm-cm)	524	815	398	5141

Analyzed By: Trisha Campo

Trisha Campo
Chemist

APPENDIX C
Summary of Air-Track Probes

Air-Track Drilling Depth to Bedrock Record

Project Number:	**62165079**	Recorded by:	**K. Nichols**
Project Name	**MHAFB Water Supply & Pipeline**	Drilling Subcontractor:	**Superior Blasting**

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
10 + 00	2758.3			1	Near Canyon Rim
10 + 50	2759.5			5	
11 + 00	2760.0			5	
11 + 50	2760.3			2	Soil layer from 6' to 8'
12 + 00	2761.4			0	
12 + 50	2758.3			3	Cemented from 0' to 3'
13 + 00	2758.9			5	Cemented from 0' to 5'
13 + 50	2758.7			1.5	
14 + 00	2757.8			Not Encountered	
14 + 50	2756.6			4	Partially cemented from 0' to 4'
15 + 00	2756.6			2	Partially cemented from 0' to 2'
15 + 50	2758.6			6	
16 + 00	2759.9			4	
16 + 50	2760.6			4.5	
17 + 00	2760.7			9	Boulders at surface
17 + 50	2762.6			5.5	Boulders at surface
18 + 00	2769.1			3.5	
18 + 50	2767.3			Not Encountered	Cemented soil
19 + 00	2772.9			3.5	Boulders at surface
19 + 50	2769.8			Not Encountered	Boulder at 8'
20 + 00	2769.4			Not Encountered	Cemented soil
20 + 50	2768.1			2	Cemented from 0' to 2'
21 + 00	2768.2			3	Cemented from 0' to 3' and soil below 7'
21 + 50	2767.1			7	
22 + 00	2764.7			9.5	
22 + 50	2763.2			7.5	
23 + 00	2761.7			5.5	
23 + 50	2761.0			3	
24 + 00	2762.9			3	
24 + 50	2763.6			4	
25 + 00	2763.6			4	Boulders at 1'
25 + 50	2763.6			9.5	Boulders at 4'
26 + 00	2763.3			3	Cemented soils from 1' to 3'
26 + 50	2762.7			4	
27 + 00	2762.7			8.5	
27 + 50	2763.2			4	Boulder at 1'
28 + 00	2762.9			3	
28 + 50	2762.7			6	
29 + 00	2763.0			3	
29 + 50	2763.5			2	
30 + 00	2763.7			3	
30 + 50	2763.5			4.5	
31 + 00	2763.3			7	Cemented soils from 4.5' to 7'
31 + 50	2763.4			5.5	Cemented soils from 3' to 5.5'
32 + 00	2763.9			6	Cemented soils from 3' to 6'
32 + 50	2764.9			7.5	Cemented soils and boulder above 7.5'
33 + 00	2765.5			7	
33 + 50	2766.0			3.5	Cemented from 2' to 3.5'
34 + 00	2766.6			5.5	
34 + 50	2766.9			5.5	
35 + 00	2768.5			5.5 to 7	Boulder or rock layer from 5.5' to 7'
35 + 50	2769.8			2.5	Soil layer from 4' to 7'
36 + 00	2770.5			Not Encountered	Cemented soilsbelow 4'
36 + 50	2772.6			Not Encountered	
37 + 00	2774.2			1 to 2	Boulder or rock layer from 1' to 2'
37 + 50	2775.6			Not Encountered	Cemented soil below 6'
38 + 00	2777.5			Not Encountered	
38 + 50	2779.4			Not Encountered	Cemented soil from 5.5' to 9.5'
39 + 00	2781.4			Not Encountered	Cemented soil from 3.5' to 10'
39 + 50	2783.7			Not Encountered	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
40 + 00	2786.4			Not Encountered	
40 + 50	2788.2			Not Encountered	
41 + 00	2791.4			Not Encountered	Cemented soil below 8.5'
41 + 50	2795.2			Not Encountered	Various boulders and cemented soils
42 + 00	2798.2			Not Encountered	
42 + 50	2800.5			2	
43 + 00	2803.4			0.5	
43 + 50	2806.4			2	
44 + 00	2809.0			1.5	
44 + 50	2811.3			2.5	Soil layer from 4.5' to 5.5'
45 + 00	2813.4			3	Cemented from 1' to 3', soil layer from 7' to 9'
45 + 50	2815.7			3	
46 + 00	2818.1			6.5	Cemented from 3' to 6.5'
46 + 50	2820.5			8	
47 + 00	2823.2			Not Encountered	
47 + 50	2825.1			Not Encountered	
48 + 00	2826.5			3.5 to 4.5	Boulder or rock layer from 3.5' to 4.5'
48 + 50	2827.2			Not Encountered	Cemented soil below 2'
49 + 00	2827.3			3	
49 + 50	2827.0			Not Encountered	Cemented soil from 5' to 7'
50 + 00	2827.3			9.5	
50 + 50	2827.4			Not Encountered	
51 + 00	2827.6			Not Encountered	
51 + 50	2828.2			Not Encountered	Cemented soils from 0' to 3'
52 + 00	2828.6	4' E	+1'	Not Encountered	
52 + 50	2828.7	12' E	+1'	Not Encountered	
53 + 00	2829.8			Not Encountered	
53 + 50	2829.2			Not Encountered	
54 + 00	2830.1			Not Encountered	
54 + 50	2830.2			Not Encountered	
55 + 00	2830.5			Not Encountered	
55 + 50	2830.7			Not Encountered	Cemented soil from 3.5' to 6'
56 + 00	2830.9			Not Encountered	
56 + 50	2831.2			0.5 to 1.5	Boulder or rock layer from 0.5' to 1.5'
57 + 00	2831.4			Not Encountered	
57 + 50	2831.3			Not Encountered	
58 + 00	2831.0			Not Encountered	
58 + 50	2830.4			Not Encountered	Some boulders
59 + 00	2830.0			Not Encountered	
59 + 50	2829.5			Not Encountered	
60 + 00	2829.0			Not Encountered	
60 + 50	2828.5			Not Encountered	
61 + 00	2828.0			Not Encountered	
61 + 50	2827.6			Not Encountered	
62 + 00	2827.0			Not Encountered	
62 + 50	2826.4			1.5 to 3	Boulder or rock layer from 1.5' to 3'
63 + 00	2826.1			Not Encountered	
63 + 50	2825.5			Not Encountered	
64 + 00	2825.0			Not Encountered	
64 + 50	2824.6			Not Encountered	
65 + 00	2824.2			8.5	
65 + 50	2823.7			7	
66 + 00	2823.0			6.5	
66 + 50	2822.4			Not Encountered	
67 + 00	2822.0			Not Encountered	
67 + 50	2821.6			Not Encountered	
68 + 00	2821.2			10.5	
68 + 50	2821.1			6.5	
69 + 00	2821.6			Not Encountered	
69 + 50	2821.5			2 to 3	Boulder or rock layer from 2' to 3'

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
70 + 00	2821.7			7	
70 + 50	2821.7			4.5	
71 + 00	2821.6			5	
71 + 50	2822.6			8	
72 + 00	2822.5			8	
72 + 50	2822.7			9	
73 + 00	2823.0			8	
73 + 50	2823.1			9.5	
74 + 00	2823.6			8.5	
74 + 50	2823.8			9	
75 + 00	2824.0			9	
75 + 50	2824.2			10	Some boulders
76 + 00	2824.3			11	
76 + 50	2824.2			11	
77 + 00	2824.1			10	
77 + 50	2823.8			8	
78 + 00	2823.6			8	
78 + 50	2823.2			8	
79 + 00	2823.2			7	
79 + 50	2822.9			5	
80 + 00	2822.7			4	
80 + 50	2822.2			4	
81 + 00	2821.8			6	
81 + 50	2821.8			6	
82 + 00	2821.6			7	Void in rock at 10'
82 + 50	2821.3			8	
83 + 00	2821.1			8	
83 + 50	2820.8			9	
84 + 00	2820.3			9	
84 + 50	2819.5			9	
85 + 00	2818.6			9	
85 + 50	2817.4			8	
86 + 00	2816.1			8	
86 + 50	2814.7			9	
87 + 00	2813.4			Not Encountered	
87 + 50	2812.1			Not Encountered	
88 + 00	2810.7			Not Encountered	
88 + 50	2809.4			Not Encountered	
89 + 00	2808.1			Not Encountered	
89 + 50	2806.9			Not Encountered	
90 + 00	2805.6			Not Encountered	
90 + 50	2804.3			Not Encountered	
91 + 00	2803.0			Not Encountered	
91 + 50	2801.6			Not Encountered	
92 + 00	2800.2			Not Encountered	
92 + 50	2798.8			Not Encountered	
93 + 00	2797.8			Not Encountered	
93 + 50	2796.5			10	Some cemented soils
94 + 00	2795.2			Not Encountered	
94 + 50	2794.0			Not Encountered	
95 + 00	2792.7			Not Encountered	
95 + 50	2791.0			Not Encountered	
96 + 00	2790.1			Not Encountered	
96 + 50	2789.2			Not Encountered	
97 + 00	2788.9			Not Encountered	
97 + 50	2788.9			Not Encountered	
98 + 00	2788.9			Not Encountered	
98 + 50	2789.4			Not Encountered	
99 + 00	2789.9			Not Encountered	
99 + 50	2790.4			Not Encountered	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
100 + 00	2791.0			Not Encountered	
100 + 50	2791.6			Not Encountered	
101 + 00	2792.1			Not Encountered	
101 + 50	2792.8			Not Encountered	
102 + 00	2793.8			Not Encountered	
102 + 50	2794.9			Not Encountered	
103 + 00	2796.0			Not Encountered	
103 + 50	2797.9			Not Encountered	
104 + 00	2798.8			Not Encountered	
104 + 50	2800.1			Not Encountered	
105 + 00	2802.0			Not Encountered	
105 + 50	2804.7			1.5	
106 + 00	2807.2			2	
106 + 50	2808.0			5	
107 + 00	2808.9			3	
107 + 50	2809.1	9' E	+2'	3	
108 + 00	2809.6			2.5	
108 + 50	2810.2			8.5	
109 + 00	2811.1			10	
109 + 50	2812.2			Not Encountered	
110 + 00	2813.1			9.5	
110 + 50	2814.1			Not Encountered	
111 + 00	2815.1			Not Encountered	
111 + 50	2816.6			Not Encountered	
112 + 00	2818.2			Not Encountered	
112 + 50	2820.0			Not Encountered	
113 + 00	2822.1			Not Encountered	
113 + 50	2824.9			Not Encountered	
114 + 00	2827.9			Not Encountered	
114 + 50	2831.3			Not Encountered	
115 + 00	2835.3			Not Encountered	
115 + 50	2839.5			Not Encountered	
116 + 00	2843.8			Not Encountered	
116 + 50	2848.4			Not Encountered	
117 + 00	2853.4			6	Some cemented soils
117 + 50	2858.2			5	Some cemented soils
118 + 00	2863.0			3	Some cemented soils
118 + 50	2867.9			3	Some cemented soils
119 + 00	2872.8			3	Some cemented soils
119 + 50	2877.3			4	Some cemented soils
120 + 00	2881.1			4	
120 + 50	2884.1			3.5	
121 + 00	2886.4			5.5	
121 + 50	2888.4			4	
122 + 00	2890.4			Not Encountered	
122 + 50	2892.5			2	
123 + 00	2896.3			2.5	
123 + 50	2897.6			2.5	
124 + 00	2901.1			1	
124 + 50	2902.6			2	
125 + 00	2903.2			8	
125 + 50	2903.7			8	
126 + 00	2904.2			Not Encountered	
126 + 50	2905.1			Not Encountered	
127 + 00	2905.6			Not Encountered	
127 + 50	2905.6			Not Encountered	
128 + 00	2906.6			8	
128 + 50	2907.4			4	
129 + 00	2908.3			4	
129 + 50	2909.2			2	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
130 + 00	2909.7			1	
130 + 50	2910.3			1	
131 + 00	2910.7			1	
131 + 50	2910.9			1	
132 + 00	2910.7			0	
132 + 50	2908.8			7	
133 + 00	2906.8			4	
133 + 50	2905.0			8	
134 + 00	2903.9			8	Some cemented soils
134 + 50	2902.8			Not Encountered	Cemented soils below 7'
135 + 00	2902.5			7	Some cemented soils
135 + 50	2902.3			7	Some cemented soils
136 + 00	2902.7			7	Some cemented soils
136 + 50	2902.9			7	Some cemented soils
137 + 00	2903.4			7	Some cemented soils
137 + 50	2903.8			7	Some cemented soils
138 + 00	2904.6			6	Some cemented soils
138 + 50	2907.6			5	
139 + 00	2911.9			1	
139 + 50	2913.3			6	
140 + 00	2911.3			3	
140 + 50	2908.5			8.5	Some cemented soils
141 + 00	2906.6			8	Some cemented soils
141 + 50	2905.7			Not Encountered	
142 + 00	2904.6			Not Encountered	
142 + 50	2903.6			Not Encountered	
143 + 00	2902.4			Not Encountered	
143 + 50	2901.4			Not Encountered	
144 + 00	2899.9			Not Encountered	
144 + 50	2897.9			9	
145 + 00	2895.3			9.5	
145 + 50	2893.6			7.5	
146 + 00	2892.6			7	
146 + 50	2892.8			7	
147 + 00	2893.4			7.5	
147 + 50	2894.3			9.5	
148 + 00	2895.5			5	
148 + 50	2896.3			2	
149 + 00	2897.6			4.5	Some cemented soils
149 + 50	2899.0			6	Some cemented soils
150 + 00	2900.6			Not Encountered	
150 + 50	2902.6			Not Encountered	
151 + 00	2904.7			8	Some cemented soils
151 + 50	2907.2			9	Some cemented soils
152 + 00	2910.1			Not Encountered	
152 + 50	2913.4			6	
153 + 00	2917.3			3	
153 + 50	2920.0			3	
154 + 00	2920.3			4	
154 + 50	2918.9			3	
155 + 00	2916.0			5	
155 + 50	2913.3			6.5	
156 + 00	2911.1			Not Encountered	
156 + 50	2909.5			9	Some cemented soils
157 + 00	2908.4			Not Encountered	
157 + 50	2907.6			7	
158 + 00	2906.9			4	
158 + 50	2906.4			2	
159 + 00	2906.0			3	
159 + 50	2905.5			6	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
160 + 00	2904.8			5.5	
160 + 50	2904.9			2.5	
161 + 00	2904.7			7	
161 + 50	2904.9			8	
162 + 00	2905.1			6.5	
162 + 50	2905.5			6.5	
163 + 00	2906.2			5	
163 + 50	2906.9			Not Encountered	
164 + 00	2908.0			7	
164 + 50	2909.5			8	
165 + 00	2910.0			1.5	
165 + 50	2907.5			3.5	Soil layer from 5' to 8'
166 + 00	2904.9			5	
166 + 50	2904.6			7	
167 + 00	2906.0			2.5	
167 + 50	2907.5			6.5	
168 + 00	2910.1			3	
168 + 50	2911.9			8.5	
169 + 00	2914.1			4	
169 + 50	2915.0			4	
170 + 00	2915.4			4	
170 + 50	2915.6			4	
171 + 00	2915.7			3	
171 + 50	2915.8			5	
172 + 00	2915.7			4	
172 + 50	2916.1			3.5	
173 + 00	2916.3			6.5	
173 + 50	2916.9			4.5	
174 + 00	2917.2			4	
174 + 50	2916.6			3	
175 + 00	2916.2			3	
175 + 50	2915.8			5.5	
176 + 00	2915.5			3	
176 + 50	2915.5			4.5	
177 + 00	2915.4			3.5	
177 + 50	2915.6			6.5	
178 + 00	2915.5			5.5	
178 + 50	2915.4			3.5	
179 + 00	2915.4			3.5	
179 + 50	2915.8			5.5	
180 + 00	2916.6			7.5	
180 + 50	2917.9			8.5	
181 + 00	2920.1			Not Encountered	
181 + 50	2923.2			Not Encountered	
182 + 00	2927.3			7.5	
182 + 50	2931.7			3	
183 + 00	2933.3			6	
183 + 50	2930.1			5	
184 + 00	2925.9			4.5	
184 + 50	2922.8			3	
185 + 00	2920.8			3	
185 + 50	2919.5			7	
186 + 00	2918.8			Not Encountered	
186 + 50	2918.9			Not Encountered	
187 + 00	2918.8			Not Encountered	
187 + 50	2919.2			Not Encountered	
188 + 00	2920.5			Not Encountered	
188 + 50	2922.8			5	
189 + 00	2925.0			2.5	
189 + 50	2924.2			3.5	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
190 + 00	2922.5			8.5	Some boulders
190 + 50	2921.7			Not Encountered	
191 + 00	2921.3			Not Encountered	
191 + 50	2920.9			Not Encountered	
192 + 00	2920.4			Not Encountered	
192 + 50	2919.7			Not Encountered	
193 + 00	2919.2			Not Encountered	
193 + 50	2918.7			4.5	
194 + 00	2918.6			4.5	
194 + 50	2918.3			4	
195 + 00	2918.2			Not Encountered	
195 + 50	2918.2			6	
196 + 00	2918.2			4.5	
196 + 50	2918.2			9.5	
197 + 00	2918.4			5	
197 + 50	2918.6			5	
198 + 00	2919.0			2	
198 + 50	2919.2			2.5	
199 + 00	2919.0			3	
199 + 50	2919.0			3	
200 + 00	2919.1			3	
200 + 50	2919.5			3.5	
201 + 00	2919.8			3	
201 + 50	2919.6			2.5	
202 + 00	2918.9			5	
202 + 50	2918.5			6	
203 + 00	2918.1			Not Encountered	
203 + 50	2918.0			7	
204 + 00	2917.9			4	
204 + 50	2917.8			3.5	
205 + 00	2917.7			3.5	
205 + 50	2917.6			3	
206 + 00	2917.6			3.5	
206 + 50	2917.3			3	
207 + 00	2916.8			4	
207 + 50	2916.3			2	
208 + 00	2915.7			3	
208 + 50	2915.0			7 to 8.5	Boulder or rock layer from 7' to 8.5'
209 + 00	2914.9			4	
209 + 50	2916.0			1.5	
210 + 00	2915.7			5	
210 + 50	2915.3			3	
211 + 00	2914.9			8	
211 + 50	2914.1			5.5	
212 + 00	2913.3			9	
212 + 50	2912.3			8	
213 + 00	2911.9			Not Encountered	
213 + 50	2911.6			8 to 9	Boulder or rock layer from 8' to 9'
214 + 00	2911.1			5.5 to 7.5	Boulder or rock layer from 5.5' to 7.5'
214 + 50	2910.0			Not Encountered	
215 + 00	2908.4			Not Encountered	
215 + 50	2907.8			Not Encountered	
216 + 00	2907.2			Not Encountered	
216 + 50	2906.2			Not Encountered	
217 + 00	2905.8			Not Encountered	
217 + 50	2905.7			Not Encountered	
218 + 00	2905.2			Not Encountered	
218 + 50	2904.2			Not Encountered	
219 + 00	2903.9			Not Encountered	
219 + 50	2904.3			Not Encountered	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
220 + 00	2905.5			Not Encountered	
220 + 50	2906.3			Not Encountered	
221 + 00	2907.0			Not Encountered	
221 + 50	2907.5			Not Encountered	
222 + 00	2907.4			Not Encountered	
222 + 50	2907.3			Not Encountered	
223 + 00	2907.4			Not Encountered	
223 + 50	2907.5			Not Encountered	
224 + 00	2907.6			Not Encountered	
224 + 50	2907.7			Not Encountered	
225 + 00	2907.6			Not Encountered	
225 + 50	2907.6			Not Encountered	
226 + 00	2907.2			Not Encountered	
226 + 50	2907.2			Not Encountered	
227 + 00	2907.0			Not Encountered	
227 + 50	2906.9			Not Encountered	
228 + 00	2906.5			Not Encountered	
228 + 50	2906.1			Not Encountered	
229 + 00	2905.8			Not Encountered	
229 + 50	2905.5			Not Encountered	
230 + 00	2905.5			Not Encountered	
230 + 50	2905.2			Not Encountered	
231 + 00	2904.7			Not Encountered	
231 + 50	2904.6			Not Encountered	
232 + 00	2904.2			Not Encountered	
232 + 50	2904.2			Not Encountered	
233 + 00	2904.2			Not Encountered	
233 + 50	2904.9			Not Encountered	
234 + 00	2903.4			Not Encountered	
234 + 50	2903.4			Not Encountered	
235 + 00	2903.4			Not Encountered	
235 + 50	2903.6			Not Encountered	
236 + 00	2903.6			Not Encountered	
236 + 50	2904.3			Not Encountered	
237 + 00	2905.0			Not Encountered	
237 + 50	2905.7			Not Encountered	
238 + 00	2906.2			Not Encountered	
238 + 50	2907.0			Not Encountered	
239 + 00	2907.9			Not Encountered	
239 + 50	2908.8			Not Encountered	
240 + 00	2909.7			Not Encountered	
240 + 50	2911.5			3 to 5	Boulder or rock layer from 3' to 5'
241 + 00	2912.4			Not Encountered	
241 + 50	2913.1			Not Encountered	
242 + 00	2914.0			Not Encountered	
242 + 50	2915.5			2	
243 + 00	2916.9			2.5	
243 + 50	2918.0			3	Soil layer from 5' to 7'
244 + 00	2917.9			3.5	
244 + 50	2917.3			9	
245 + 00	2916.8			3	
245 + 50	2916.5			3	
246 + 00	2916.5			5.5	
246 + 50	2916.4			Not Encountered	
247 + 00	2916.5			8	
247 + 50	2916.3			3.5	
248 + 00	2915.9			3	
248 + 50	2914.6			5	
249 + 00	2914.1			3.5	
249 + 50	2913.9			3	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
250 + 00	2913.6			Not Encountered	
250 + 50	2913.0			Not Encountered	
251 + 00	2912.0			Not Encountered	
251 + 50	2910.8			Not Encountered	
252 + 00	2910.4			Not Encountered	
252 + 50	2910.2			Not Encountered	
253 + 00	2910.2			Not Encountered	
253 + 50	2910.1			Not Encountered	
254 + 00	2909.9			Not Encountered	
254 + 50	2909.8			Not Encountered	
255 + 00	2910.0			Not Encountered	
255 + 50	2910.0			Not Encountered	
256 + 00	2910.5			Not Encountered	
256 + 50	2911.0			Not Encountered	
257 + 00	2911.9			Not Encountered	
257 + 50	2912.7			Not Encountered	
258 + 00	2913.7			Not Encountered	
258 + 50	2914.4			Not Encountered	
259 + 00	2915.5			4	
259 + 50	2917.1			3	
260 + 00	2919.2			Not Encountered	
260 + 50	2921.7			Not Encountered	
261 + 00	2924.0			Not Encountered	
261 + 50	2926.4			Not Encountered	
262 + 00	2928.4			Not Encountered	
262 + 50	2930.0			Not Encountered	
263 + 00	2931.2			4	
263 + 50	2932.3			3	
264 + 00	2932.6			2	
264 + 50	2932.3			3	
265 + 00	2932.3			4.5	
265 + 50	2932.5			Not Encountered	
266 + 00	2932.8			4	
266 + 50	2933.1			2.5	
267 + 00	2933.2			2	
267 + 50	2933.1			2	
268 + 00	2933.1			3.5	
268 + 50	2933.1			5.5	
269 + 00	2933.1			Not Encountered	
269 + 50	2933.2			5.5	
270 + 00	2933.3			3.5	
270 + 50	2933.4			3	
271 + 00	2933.3			4.5	
271 + 50	2933.1			3	
272 + 00	2932.8			2.5	
272 + 50	2933.0			4	
273 + 00	2932.9			3.5	
273 + 50	2932.9			2.5	
274 + 00	2933.2			4.5	
274 + 50	2933.4			2	
275 + 00	2933.1			3	
275 + 50	2932.3			2.5	
276 + 00	2930.8			2.5	
276 + 50	2928.8			2	
277 + 00	2926.9			3	Soil layer from 5' to 7'
277 + 50	2925.0			7	
278 + 00	2923.1			Not Encountered	
278 + 50	2921.7			Not Encountered	
279 + 00	2921.0			Not Encountered	
279 + 50	2920.8			Not Encountered	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
280 + 00	2920.5			Not Encountered	
280 + 50	2920.5			Not Encountered	
281 + 00	2920.4			Not Encountered	
281 + 50	2920.6			Not Encountered	
282 + 00	2920.5			Not Encountered	
282 + 50	2921.0			Not Encountered	
283 + 00	2921.5			Not Encountered	
283 + 50	2922.2			Not Encountered	
284 + 00	2923.4			Not Encountered	
284 + 50	2925.5			8.5	
285 + 00	2928.4			4 to 6	Boulder or rock layer from 4' to 6'
285 + 50	2931.4			Not Encountered	
286 + 00	2934.4			Not Encountered	
286 + 50	2937.3			8	
287 + 00	2941.2			3	
287 + 50	2944.8			0.5	
288 + 00	2947.3			10	
288 + 50	2948.6			4	Soil layer from 6' to 9'
289 + 00	2947.4			9	
289 + 50	2946.6			Not Encountered	
290 + 00	2946.1			Not Encountered	
290 + 50	2946.4			Not Encountered	
291 + 00	2947.0			Not Encountered	
291 + 50	2947.8			Not Encountered	
292 + 00	2948.9			Not Encountered	
292 + 50	2949.8			Not Encountered	
293 + 00	2950.9			5	
293 + 50	2952.2			6	
294 + 00	2953.1			8	
294 + 50	2953.9			7	
295 + 00	2953.8			4.5	
295 + 50	2953.3			1	
296 + 00	2953.1			1.5	
296 + 50	2953.8			4.5	
297 + 00	2954.2			9	
297 + 50	2953.5			Not Encountered	
298 + 00	2952.8			Not Encountered	
298 + 50	2952.0			Not Encountered	
299 + 00	2952.1			Not Encountered	
299 + 50	2951.7			Not Encountered	
300 + 00	2951.5			Not Encountered	Boulder at 3.5'
300 + 50	2951.6			Not Encountered	
301 + 00	2951.7			7	
301 + 50	2952.8			3	
302 + 00	2955.3			3	
302 + 50	2957.4			1.5	
303 + 00	2957.0			1.5	
303 + 50	2955.7			2	
304 + 00	2955.3			4	
304 + 50	2954.5			8	
305 + 00	2954.1			Not Encountered	
305 + 50	2953.8			Not Encountered	
306 + 00	2953.3			Not Encountered	
306 + 50	2953.0			Not Encountered	
307 + 00	2952.8			Not Encountered	
307 + 50	2952.2			Not Encountered	
308 + 00	2951.0			Not Encountered	
308 + 50	2950.0			7 to 9	Boulder or rock layer from 7' to 9'
309 + 00	2948.9			1.5	
309 + 50	2948.4			6	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
310 + 00	2948.5			Not Encountered	
310 + 50	2948.5			Not Encountered	
311 + 00	2947.5			Not Encountered	
311 + 50	2948.3			Not Encountered	
312 + 00	2948.6			7	Various boulders or rock layers above 7ft
312 + 50	2949.7			6	
313 + 00	2949.6			4.5	
313 + 50	2949.0			4	
314 + 00	2948.9			5	
314 + 50	2948.8			4	
315 + 00	2949.0			7	
315 + 50	2948.0			Not Encountered	
316 + 00	2947.5			Not Encountered	
316 + 50	2946.9			Not Encountered	
317 + 00	2946.4			Not Encountered	
317 + 50	2946.0			6.5	
318 + 00	2945.5			Not Encountered	
318 + 50	2945.7			Not Encountered	
319 + 00	2945.8			Not Encountered	
319 + 50	2945.3			6	
320 + 00	2944.9			3	
320 + 50	2944.5			1	
321 + 00	2943.5			2	
321 + 50	2942.6			6.5	
322 + 00	2942.0			Not Encountered	
322 + 50	2942.4			Not Encountered	
323 + 00	2942.3				Not drilled due to road crossing
323 + 50	2941.0			Not Encountered	
324 + 00	2940.0			Not Encountered	
324 + 50	2939.6			Not Encountered	
325 + 00	2938.9			Not Encountered	
325 + 50	2938.6			8	
326 + 00	2938.1			3.5	
326 + 50	2937.0			9	
327 + 00	2936.4			Not Encountered	
327 + 50	2935.9			10	
328 + 00	2934.6			Not Encountered	
328 + 50	2933.4			Not Encountered	
329 + 00	2932.7			Not Encountered	
329 + 50	2932.1			Not Encountered	
330 + 00	2931.9			Not Encountered	
330 + 50	2931.6			9	
331 + 00	2932.0			3	
331 + 50	2931.7			2.5	
332 + 00	2931.2			Not Encountered	
332 + 50	2930.7			Not Encountered	
333 + 00	2930.4			Not Encountered	
333 + 50	2929.8			Not Encountered	
334 + 00	2929.6			Not Encountered	
334 + 50	2929.4			Not Encountered	
335 + 00	2928.8			Not Encountered	
335 + 50	2928.4			Not Encountered	
336 + 00	2928.2			Not Encountered	
336 + 50	2927.8			4	
337 + 00	2927.6			6	
337 + 50	2927.0			Not Encountered	
338 + 00	2927.0			Not Encountered	
338 + 50	2927.2			9.5	
339 + 00	2927.0			Not Encountered	
339 + 50	2927.3			Not Encountered	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
340 + 00	2927.3			Not Encountered	
340 + 50	2927.5			8	
341 + 00	2927.8			7	
341 + 50	2927.9			Not Encountered	
342 + 00	2927.8			Not Encountered	
342 + 50	2927.9			Not Encountered	
343 + 00	2928.0			Not Encountered	
343 + 50	2928.1			Not Encountered	
344 + 00	2928.6			Not Encountered	
344 + 50	2928.9			7.5	
345 + 00	2928.6			6	
345 + 50	2928.6			3.5	
346 + 00	2929.4			Not Encountered	
346 + 50	2929.8			8	
347 + 00	2930.8			5	
347 + 50	2932.5			4	
348 + 00	2933.7			1.5	
348 + 50	2934.9			4	
349 + 00	2935.4			6	
349 + 50	2936.0			Not Encountered	
350 + 00	2937.1			Not Encountered	
350 + 50	2938.0			2.5	
351 + 00	2939.0			2	
351 + 50	2939.9			3.5	
352 + 00	2940.7			1	
352 + 50	2941.8			1.5	
353 + 00	2942.3			4	
353 + 50	2942.6			4	
354 + 00	2943.0			4.5	
354 + 50	2943.8			5	
355 + 00	2943.4			3	
355 + 50	2943.7			4.5	
356 + 00	2944.6			7	
356 + 50	2945.5			7	
357 + 00	2945.6			7	
357 + 50	2946.1			7	
358 + 00	2946.3			8	
358 + 50	2947.2			Not Encountered	
359 + 00	2948.9			5	
359 + 50	2950.8			2.5	
360 + 00	2949.4			5	
360 + 50	2948.3			7	
361 + 00	2947.0			3	
361 + 50	2946.6			3.5	
362 + 00	2945.9			Not Encountered	
362 + 50	2944.6			Not Encountered	
363 + 00	2944.7			9	
363 + 50	2944.8			9	
364 + 00	2944.7			Not Encountered	
364 + 50	2944.4			Not Encountered	
365 + 00	2944.4			Not Encountered	
365 + 50	2944.7			Not Encountered	
366 + 00	2944.9			8	
366 + 50	2945.5			Not Encountered	
367 + 00	2946.2			9	
367 + 50	2946.9			Not Encountered	
368 + 00	2947.5			2	Soil layer from 3' to 8.5'
368 + 50	2948.4			7	
369 + 00	2949.4			Not Encountered	
369 + 50	2950.8			Not Encountered	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
370 + 00	2951.3			Not Encountered	
370 + 50	2953.1			5	
371 + 00	2955.0			Not Encountered	
371 + 50	2956.5			3	
372 + 00	2957.6			2.5	
372 + 50	2959.2			1	
373 + 00	2960.1			3	
373 + 50	2960.6			2	
374 + 00	2960.7			1	
374 + 50	2960.9			3.5	
375 + 00	2961.2			1.5	
375 + 50	2961.6			1	
376 + 00	2961.6			2	
376 + 50	2961.8			5	
377 + 00	2961.8			5	
377 + 50	2961.6			4	
378 + 00	2961.7			2	
378 + 50	2961.6			1	
379 + 00	2961.8			1.5	
379 + 50	2961.5			3.5	
380 + 00	2961.3			9	Boulders or rock layers from 0' to 9'
380 + 50	2961.4			Not Encountered	
381 + 00	2961.7			Not Encountered	
381 + 50	2962.0			Not Encountered	
382 + 00	2962.0			Not Encountered	
382 + 50	2962.3			Not Encountered	
383 + 00	2962.0			Not Encountered	
383 + 50	2962.3			Not Encountered	
384 + 00	2962.4			Not Encountered	
384 + 50	2962.5			Not Encountered	
385 + 00	2962.5			Not Encountered	
385 + 50	2962.7			Not Encountered	
386 + 00	2963.1			Not Encountered	
386 + 50	2963.3			Not Encountered	
387 + 00	2963.9			Not Encountered	
387 + 50	2964.0			Not Encountered	
388 + 00	2964.0			Not Encountered	
388 + 50	2964.3			Not Encountered	
389 + 00	2964.2			Not Encountered	
389 + 50	2964.6			Not Encountered	
390 + 00	2964.6			Not Encountered	
390 + 50	2964.8			Not Encountered	
391 + 00	2965.2			Not Encountered	
391 + 50	2965.8			Not Encountered	
392 + 00	2966.5			Not Encountered	
392 + 50	2966.8			Not Encountered	
393 + 00	2967.0			Not Encountered	
393 + 50	2967.5			4	Boulders or rock layers from 0' to 4'
394 + 00	2968.0			Not Encountered	
394 + 50	2968.6			Not Encountered	
395 + 00	2969.0			Not Encountered	
395 + 50	2969.5			Not Encountered	
396 + 00	2970.2			Not Encountered	
396 + 50	2970.6			8	
397 + 00	2970.7			10	
397 + 50	2971.0			5	
398 + 00	2971.0			3	
398 + 50	2971.1			Not Encountered	
399 + 00	2971.0			Not Encountered	
399 + 50	2971.1			Not Encountered	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
400 + 00	2971.5			Not Encountered	
400 + 50	2971.7			Not Encountered	
401 + 00	2972.1			Not Encountered	
401 + 50	2972.5			Not Encountered	
402 + 00	2973.6			3.5	
402 + 50	2974.1			3.5	
403 + 00	2974.1			6	
403 + 50	2974.2			8.5	
404 + 00	2974.2			Not Encountered	
404 + 50	2974.4			Not Encountered	
405 + 00	2974.7			5.5	
405 + 50	2974.8			Not Encountered	
406 + 00	2974.9			Not Encountered	
406 + 50	2975.0			Not Encountered	
407 + 00	2975.0			Not Encountered	
407 + 50	2975.0			Not Encountered	
408 + 00	2975.3			Not Encountered	
408 + 50	2975.3			Not Encountered	
409 + 00	2975.7			Not Encountered	
409 + 50	2976.2			5	
410 + 00	2976.4			3.5	
410 + 50	2976.9			3.5	
411 + 00	2977.5			5	
411 + 50	2978.0			2	
412 + 00	2979.0			1	
412 + 50	2979.7			1.5	
413 + 00	2979.4			1	
413 + 50	2979.4			3	
414 + 00	2978.5			2	
414 + 50	2977.2			1	
415 + 00	2977.1			1.5	
415 + 50	2976.0			1.5	
416 + 00	2974.4			1.5	
416 + 50	2972.9			4.5	
417 + 00	2970.6			Not Encountered	
417 + 50	2969.2			Not Encountered	
418 + 00	2968.0			Not Encountered	
418 + 50	2967.1			Not Encountered	
419 + 00	2966.1			4	Some boulders from 0' to 4'
419 + 50	2965.5			Not Encountered	
420 + 00	2965.1			Not Encountered	
420 + 50	2964.4			Not Encountered	
421 + 00	2964.0			Not Encountered	
421 + 50	2963.3			Not Encountered	
422 + 00	2962.9			Not Encountered	
422 + 50	2963.2			Not Encountered	
423 + 00	2964.1			Not Encountered	
423 + 50	2965.1			Not Encountered	
424 + 00	2965.1			Not Encountered	
424 + 50	2964.8			Not Encountered	
425 + 00	2964.6			Not Encountered	
425 + 50	2963.8			Not Encountered	
426 + 00	2962.3			Not Encountered	
426 + 50	2962.2			Not Encountered	
427 + 00	2962.1			Not Encountered	
427 + 50	2962.6			Not Encountered	
428 + 00	2962.6			Not Encountered	
428 + 50	2962.5			Not Encountered	
429 + 00	2962.4			Not Encountered	
429 + 50	2961.7			Not Encountered	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
430 + 00	2962.8			Not Encountered	
430 + 50	2962.6			Not Encountered	
431 + 00	2961.4			Not Encountered	
431 + 50	2962.7			Not Encountered	Boulders below 4'
432 + 00	2963.9			5 to 6.5	Boulder or rock layer from 5' to 6.5'
432 + 50	2964.3			Not Encountered	
433 + 00	2966.1			8.5	
433 + 50	2967.6			Not Encountered	
434 + 00	2968.0			8	
434 + 50	2971.6			Not Encountered	
435 + 00	2973.0			Not Encountered	
435 + 50	2973.9			Not Encountered	
436 + 00	2973.8			Not Encountered	
436 + 50	2974.4			Not Encountered	
437 + 00	2974.8			Not Encountered	
437 + 50	2975.6			Not Encountered	
438 + 00	2976.1			Not Encountered	
438 + 50	2976.5			Not Encountered	
439 + 00	2976.8			Not Encountered	
439 + 50	2977.1			Not Encountered	
440 + 00	2977.3			Not Encountered	
440 + 50	2978.0			Not Encountered	
441 + 00	2977.6			Not Encountered	
441 + 50	2977.9			Not Encountered	
442 + 00	2977.6			Not Encountered	
442 + 50	2977.3			Not Encountered	
443 + 00	2977.0			Not Encountered	
443 + 50	2976.9			Not Encountered	
444 + 00	2977.1			Not Encountered	
444 + 50	2977.1			Not Encountered	
445 + 00	2977.0			Not Encountered	
445 + 50	2977.0			Not Encountered	
446 + 00	2976.9			7	
446 + 50	2977.0			3	
447 + 00	2976.7			2	
447 + 50	2976.3			3	
448 + 00	2975.9			4	
448 + 50	2975.0			Not Encountered	
449 + 00	2974.3			Not Encountered	
449 + 50	2973.7			Not Encountered	
450 + 00	2973.3			Not Encountered	
450 + 50	2972.8			Not Encountered	
451 + 00	2972.8			5	
451 + 50	2973.0			2.5	
452 + 00	2972.5			6	
452 + 50	2972.0			8	
453 + 00	2971.5			Not Encountered	
453 + 50	2971.5			8.5	
454 + 00	2971.6			Not Encountered	
454 + 50	2971.6			Not Encountered	
455 + 00	2971.5			Not Encountered	
455 + 50	2971.7			Not Encountered	
456 + 00	2971.6			Not Encountered	
456 + 50	2971.8			7.5	
457 + 00	2972.6			7	
457 + 50	2974.3			5.5	
458 + 00	2975.1			4.5	
458 + 50	2975.4			4	Cemented soils from 0' to 4'
459 + 00	2975.6			8	
459 + 50	2976.0			Not Encountered	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
460 + 00	2975.9			Not Encountered	
460 + 50	2976.1			Not Encountered	
461 + 00	2976.3			Not Encountered	
461 + 50	2976.2			Not Encountered	
462 + 00	2976.4			Not Encountered	
462 + 50	2976.3			7.5	
463 + 00	2976.3			6.5	
463 + 50	2976.4			Not Encountered	
464 + 00	2976.4			9	
464 + 50	2976.8			4	
465 + 00	2976.8			7.5	
465 + 50	2976.9			5	
466 + 00	2977.4			7	
466 + 50	2977.5			4	
467 + 00	2977.8			5	
467 + 50	2978.3			5.5	
468 + 00	2977.7			Not Encountered	
468 + 50	2977.5			Not Encountered	
469 + 00	2977.1			Not Encountered	
469 + 50	2977.3			Not Encountered	
470 + 00	2977.5			Not Encountered	
470 + 50	2977.8			Not Encountered	
471 + 00	2978.2			Not Encountered	
471 + 50	2978.9			Not Encountered	
472 + 00	2979.6			Not Encountered	
472 + 50	2980.0			Not Encountered	
473 + 00	2980.2			Not Encountered	
473 + 50	2979.9			Not Encountered	
474 + 00	2979.9			Not Encountered	
474 + 50	2979.7			Not Encountered	
475 + 00	2979.7			8.5	
475 + 50	2979.9			Not Encountered	
476 + 00	2980.1			Not Encountered	
476 + 50	2980.5			Not Encountered	
477 + 00	2981.2			Not Encountered	
477 + 50	2981.9			Not Encountered	
478 + 00	2982.7			10	
478 + 50	2983.2			8	
479 + 00	2983.5			Data Not Recorded	
479 + 50	2984.2			8.5	
480 + 00	2984.5			Not Encountered	
480 + 50	2984.7			7	
481 + 00	2985.5			8	
481 + 50	2985.8			6.5	
482 + 00	2986.8			7	
482 + 50	2987.5			7.5	
483 + 00	2988.3			5	
483 + 50	2988.5			9	
484 + 00	2989.0			Not Encountered	
484 + 50	2989.4			8	
485 + 00	2990.0			8	
485 + 50	2990.7			7.5	
486 + 00	2991.4			7.5	
486 + 50	2991.6			5	
487 + 00	2991.5			6.5	
487 + 50	2991.4			4.5	
488 + 00	2991.4			1.5	
488 + 50	2991.1			5	
489 + 00	2990.8			2.5	
489 + 50	2991.0			5	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
490 + 00	2991.1			3	
490 + 50	2991.5			4	
491 + 00	2990.9			5	
491 + 50	2991.1			4.5	
492 + 00	2991.5			6	
492 + 50	2992.7			3.5	
493 + 00	2994.1			1	
493 + 50	2994.0			1	
494 + 00	2993.0			7	
494 + 50	2992.0			6	
495 + 00	2991.0			7	
495 + 50	2990.5			4.5	
496 + 00	2991.5			8	
496 + 50	2992.0			6	
497 + 00	2992.0			8.5	
497 + 50	2992.5			4	
498 + 00	2992.8			2.5	
498 + 50	2993.4			2.5	
499 + 00	2994.2			3	
499 + 50	2994.8			4.5	
500 + 00	2995.2			4.5	
500 + 50	2995.4			4.5	
501 + 00	2995.7			4	
501 + 50	2995.8			5	
502 + 00	2996.3			7	
502 + 50	2996.8			Not Encountered	
503 + 00	2997.3			Not Encountered	
503 + 50	2997.8			Not Encountered	
504 + 00	2998.3			Data Not Recorded	
504 + 50	2999.2			Not Encountered	
505 + 00	2999.8			8.5	
505 + 50	3000.7			5	
506 + 00	3000.8			7	
506 + 50	3000.7			3	
507 + 00	3001.2			7	
507 + 50	3001.7			8.5	
508 + 00	3002.9			6.5	
508 + 50	3003.6			9	
509 + 00	3004.2			9.5	Cemented soils above rock
509 + 50	3005.5			Not Encountered	
510 + 00	3006.1			9.5	
510 + 50	3007.6			Not Encountered	
511 + 00	3009.2			8	
511 + 50	3012.4			6	
512 + 00	3015.7			2	
512 + 50	3019.3			1.5	
513 + 00	3021.5			Not Encountered	
513 + 50	3022.8			1.5	
514 + 00	3023.0			1.5	
514 + 50	3021.6			3	
515 + 00	3020.1			7	
515 + 50	3019.4			Not Encountered	
516 + 00	3019.1			Not Encountered	
516 + 50	3018.5			Not Encountered	
517 + 00	3018.6			Not Encountered	
517 + 50	3017.4			Not Encountered	
518 + 00	3017.3			Not Encountered	
518 + 50	3017.6			Not Encountered	
519 + 00	3017.6			Not Encountered	Boulders at 8'
519 + 50	3017.4			Not Encountered	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
520 + 00	3017.7			7	
520 + 50	3018.4			10	
521 + 00	3020.2			8.5	
521 + 50	3021.6			Not Encountered	
522 + 00	3020.9			10	
522 + 50	3022.0			Not Encountered	
523 + 00	3022.2			Not Encountered	Cemented soils below 6'
523 + 50	3023.3			Not Encountered	
524 + 00	3024.5			Not Encountered	
524 + 50	3025.6			Not Encountered	
525 + 00	3026.7			3	
525 + 50	3027.0			Not Encountered	
526 + 00	3027.2			3	
526 + 50	3027.7			5	
527 + 00	3028.0			6	
527 + 50	3028.0			4	
528 + 00	3027.9			5.5	
528 + 50	3027.6			7	
529 + 00	3027.4			Not Encountered	
529 + 50	3027.0			8.5	
530 + 00	3026.7			9	
530 + 50	3026.8			5.5	
531 + 00	3026.6			5.5	
531 + 50	3026.6			6	
532 + 00	3026.9			5.5	
532 + 50	3027.2			4.5	
533 + 00	3027.3			5.5	
533 + 50	3026.3			Not Encountered	
534 + 00	3027.2			Not Encountered	
534 + 50	3027.8			Not Encountered	
535 + 00	3028.2			Not Encountered	
535 + 50	3028.6			Not Encountered	
536 + 00	3029.2			Not Encountered	
536 + 50	3030.2			Not Encountered	
537 + 00	3030.8			Not Encountered	
537 + 50	3031.3			Not Encountered	
538 + 00	3031.9			7.5	
538 + 50	3032.1			4	
539 + 00	3032.4			5.5	
539 + 50	3032.6			7.5	
540 + 00	3032.7			Not Encountered	
540 + 50	3033.0			Not Encountered	
541 + 00	3033.9			Not Encountered	
541 + 50	3034.5			Not Encountered	
542 + 00	3034.4			7	
542 + 50	3033.7			3.5	
543 + 00	3033.2			3	
543 + 50	3032.2			2	
544 + 00	3031.6			6.5	
544 + 50	3031.6			Not Encountered	
545 + 00	3030.7			Not Encountered	
545 + 50	3028.5			Not Encountered	
546 + 00	3027.2			7.5	
546 + 50	3026.6			Not Encountered	
547 + 00	3025.4			7.5 to 8.5	Boulder or rock layer from 7.5' to 8.5'
547 + 50	3024.8			4.5	
548 + 00	3025.2			7.5	
548 + 50	3026.1			6.5	
549 + 00	3026.2			Not Encountered	
549 + 50	3026.2			Not Encountered	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
550 + 00	3026.6			6 to 8	Boulder or rock layer from 6' to 8'
550 + 50	3026.6			Data Not Recorded	
551 + 00	3027.2			Not Encountered	
551 + 50	3028.1			Not Encountered	
552 + 00	3027.9			6	
552 + 50	3027.9			9	
553 + 00	3027.5			9.5	
553 + 50	3026.9			8	
554 + 00	3026.1			9	
554 + 50	3025.9			Not Encountered	
555 + 00	3025.7			8	
555 + 50	3025.0			7.5	
556 + 00	3025.1			Not Encountered	
556 + 50	3025.4			Not Encountered	
557 + 00	3026.9			10	
557 + 50	3027.8			8.5	
558 + 00	3027.8			Not Encountered	
558 + 50	3028.2			Not Encountered	
559 + 00	3027.8			Not Encountered	
559 + 50	3026.4			Not Encountered	
560 + 00	3026.0			Not Encountered	
560 + 50	3025.8			Not Encountered	
561 + 00	3026.1			6	
561 + 50	3026.2			4	
562 + 00	3026.9			7.5	
562 + 50	3026.9			5	
563 + 00	3026.8			5	
563 + 50	3026.5			4	
564 + 00	3025.9			5	
564 + 50	3025.6			6	
565 + 00	3025.7			6	
565 + 50	3025.6			6	
566 + 00	3025.5			5.5	
566 + 50	3025.4			6	
567 + 00	3025.5			1	
567 + 50	3025.4			7	
568 + 00	3025.4			5	
568 + 50	3025.6			8.5	
569 + 00	3025.4			7	
569 + 50	3025.3			6.5	
570 + 00	3024.8			2	
570 + 50	3024.5			3	
571 + 00	3024.1			4	
571 + 50	3024.2			7	
572 + 00	3024.2			4	
572 + 50	3024.1			9	
573 + 00	3023.8			8.5	
573 + 50	3023.5			4.5	
574 + 00	3023.5			5	
574 + 50	3023.7			Not Encountered	
575 + 00	3024.3			Not Encountered	
575 + 50	3025.0			7.5	
576 + 00	3025.4			7	
576 + 50	3026.0			Not Encountered	
577 + 00	3026.4			9.5	
577 + 50	3026.8			Not Encountered	
578 + 00	3027.1			Not Encountered	
578 + 50	3027.7			Not Encountered	
579 + 00	3027.8			Not Encountered	
579 + 50	3029.0			6	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
580 + 00	3029.6			1	
580 + 50	3029.3			3.5	
581 + 00	3028.4			6.5	
581 + 50	3027.6			Not Encountered	
582 + 00	3027.0			Not Encountered	
582 + 50	3025.9			Not Encountered	
583 + 00	3025.1			8	
583 + 50	3024.0			6.5	
584 + 00	3024.0			Not Encountered	
584 + 50	3024.2			10	
585 + 00	3024.0			Not Encountered	
585 + 50	3023.7			Not Encountered	
586 + 00	3023.4			4	
586 + 50	3023.5			6	
587 + 00	3023.6			6.5	
587 + 50	3023.5			9	
588 + 00	3023.4			6.5	
588 + 50	3023.6			6	
589 + 00	3023.8			Not Encountered	
589 + 50	3023.6			Not Encountered	
590 + 00	3023.4			Not Encountered	
590 + 50	3023.5			Not Encountered	
591 + 00	3023.1			9.5	
591 + 50	3022.9			9	
592 + 00	3022.5			9.5	
592 + 50	3021.5			5	
593 + 00	3021.8			3.5	
593 + 50	3021.9			6.5	
594 + 00	3022.3			4.5	
594 + 50	3022.8			7	
595 + 00	3023.3			5.5	
595 + 50	3024.4			6	
596 + 00	3025.1			3	
596 + 50	3025.7			5.5	
597 + 00	3025.3			4.5	
597 + 50	3025.1			5	
598 + 00	3024.7			7	
598 + 50	3025.4			6	
599 + 00	3025.6			5	
599 + 50	3025.7			5	
600 + 00	3025.8			8	
600 + 50	3026.2			8	
601 + 00	3026.5			4	Cemented soils from 0' to 4'
601 + 50	3026.7			8	
602 + 00	3026.9			5.5	
602 + 50	3027.4			3	
603 + 00	3027.5			6	
603 + 50	3027.8			4	
604 + 00	3027.6			5.5	
604 + 50	3027.8			4	
605 + 00	3028.3			5	
605 + 50	3028.6			4	
606 + 00	3028.6			8	
606 + 50	3028.3			5.5	
607 + 00	3028.0			5	
607 + 50	3027.5			5	
608 + 00	3027.5			4.5	
608 + 50	3027.5			4	
609 + 00	3028.2			5.5	
609 + 50	3028.7			5	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
610 + 00	3029.0			6.5	
610 + 50	3029.7			Not Encountered	
611 + 00	3029.4			7	
611 + 50	3028.8			4	
612 + 00	3028.7			5.5	
612 + 50	3029.0			7	
613 + 00	3029.4			5	
613 + 50	3029.9			4.5	
614 + 00	3030.6			2	
614 + 50	3030.7			5	
615 + 00	3031.0			5	
615 + 50	3031.2			5	
616 + 00	3031.8			5.5	Cemented soils from 0' to 5.5'
616 + 50	3032.3			Not Encountered	Cemented soils below 1'
617 + 00	3032.7			8.5	Cemented soils from 1' to 8.5'
617 + 50	3033.4			7	
618 + 00	3034.0			4.5	
618 + 50	3034.6			3.5	
619 + 00	3035.6			7.5	
619 + 50	3036.4			7	
620 + 00	3037.3			8	
620 + 50	3037.5			4.5	
621 + 00	3037.9			5	
621 + 50	3037.8			8.5	
622 + 00	3038.1			6.5	
622 + 50	3038.2			6.5	
623 + 00	3038.3			Not Encountered	
623 + 50	3038.1			7	
624 + 00	3037.1			8	
624 + 50	3036.5			7.5	
625 + 00	3036.5			6	
625 + 50	3036.4			5.5	
626 + 00	3036.3			7.5	
626 + 50	3036.3			Not Encountered	
627 + 00	3036.2			5	
627 + 50	3036.0			6.5	
628 + 00	3035.2			7.5	
628 + 50	3035.1			6	Cemented soil from 1' to 6'
629 + 00	3035.3			5	
629 + 50	3035.2			2	Cemented soil from 1' to 2'
630 + 00	3034.3			6	
630 + 50	3033.7			7	
631 + 00	3033.6			6	
631 + 50	3033.3			2	
632 + 00	3032.5			8	
632 + 50	3032.6			10	
633 + 00	3033.0			Not Encountered	Cemented soil from 1' to 2'
633 + 50	3033.2			Not Encountered	
634 + 00	3033.4			9.5	
634 + 50	3033.7			9	
635 + 00	3033.8			9	Cemented soil from 1' to 2'
635 + 50	3034.1			9	
636 + 00	3034.3			9.5	
636 + 50	3034.9			9.5	
637 + 00	3035.5			9	
637 + 50	3035.8			9	
638 + 00	3035.8			8	
638 + 50	3036.1			7.5	
639 + 00	3036.3			Not Encountered	
639 + 50	3036.4			Not Encountered	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
640 + 00	3036.5			Not Encountered	
640 + 50	3037.0			9	Cemented soil from 1' to 2'
641 + 00	3037.6			4	Soil layers from 5' to 6' and 7' to 9'
641 + 50	3038.6			3	
642 + 00	3039.2			3	
642 + 50	3039.8			2.5	Cemented soils from 1' to 2.5'
643 + 00	3039.7			2	Cemented soils from 0' to 2'
643 + 50	3039.7			3	
644 + 00	3039.7			1	
644 + 50	3039.3			3	
645 + 00	3037.8			1.5	
645 + 50	3036.5			2.5	
646 + 00	3035.8			4	
646 + 50	3036.3			4	
647 + 00	3037.1			3	
647 + 50	3038.8			2	
648 + 00	3040.0			2	
648 + 50	3040.6			2	Cemented soils from 0' to 2'
649 + 00	3041.2			1.5	
649 + 50	3041.9			5.5	
650 + 00	3042.6			1.5	
650 + 50	3043.2			4	
651 + 00	3043.0			3.5	
651 + 50	3042.7			3	
652 + 00	3042.6			9.5	
652 + 50	3042.9			10	
653 + 00	3043.7			6	
653 + 50	3044.8			6.5 to 8	Boulder or rock layer from 6.5' to 8'
654 + 00	3046.0			Not Encountered	
654 + 50	3046.8			9	
655 + 00	3047.4			7.5	
655 + 50	3047.9			5	
656 + 00	3047.9			3	
656 + 50	3048.0			3	
657 + 00	3048.1			5.5	
657 + 50	3048.6			8.5	
658 + 00	3048.9			6	
658 + 50	3049.0			Not Encountered	
659 + 00	3049.5			6.5	
659 + 50	3049.8			5	
660 + 00	3050.2			6	
660 + 50	3050.8			6.5	
661 + 00	3051.3			Not Encountered	
661 + 50	3052.0			7	
662 + 00	3052.8			5.5	
662 + 50	3054.1			6.5	
663 + 00	3056.1			3	
663 + 50	3057.1			1.5	
664 + 00	3057.0			2	
664 + 50	3057.0			3.5	
665 + 00	3058.8			4	
665 + 50	3057.7			2.5	
666 + 00	3058.1			9	
666 + 50	3058.5			8	
667 + 00	3059.2			4	
667 + 50	3060.0			Not Encountered	
668 + 00	3061.1			Not Encountered	
668 + 50	3062.3			Not Encountered	
669 + 00	3063.6			Not Encountered	
669 + 50	3065.1			7	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
670 + 00	3066.4			1	
670 + 50	3067.2			3.5	
671 + 00	3067.6			2.5	
671 + 50	3067.6			1	
672 + 00	3067.5			1.5	
672 + 50	3067.0			1	
673 + 00	3067.1			6.5	
673 + 50	3067.1			2	
674 + 00	3067.3			7	
674 + 50	3067.1			7.5	
675 + 00	3067.1			6.5	
675 + 50	3067.3			Not Encountered	
676 + 00	3067.8			9.5	
676 + 50	3068.0			9.5	
677 + 00	3068.2			Not Encountered	
677 + 50	3067.9			Not Encountered	
678 + 00	3068.1			9.5	
678 + 50	3067.2			8.5	
679 + 00	3068.4			8.5	
679 + 50	3070.1			Not Encountered	
680 + 00	3070.3			Not Encountered	
680 + 50	3070.9			Not Encountered	
681 + 00	3071.2			Not Encountered	Cemented soils from 1' to 2'
681 + 50	3072.5			Not Encountered	
682 + 00	3074.1			Not Encountered	
682 + 50	3074.2			Not Encountered	
683 + 00	3073.7			4.5	
683 + 50	3075.0			5.5	
684 + 00	3075.9			6.5	
684 + 50	3077.4			4.5	
685 + 00	3078.0			1	
685 + 50	3079.1			Not Encountered	
686 + 00	3079.9			7.5	
686 + 50	3078.9			8	
687 + 00	3078.0			Not Encountered	
687 + 50	3078.6			7	
688 + 00	3080.0			10	
688 + 50	3082.3			10	
689 + 00					Not drilled due to road crossing
689 + 50					Not drilled due to road crossing
690 + 00					Not drilled due to road crossing
690 + 50	3078.3			4.5	
691 + 00	3078.2			6	
691 + 50	3081.1			Not Encountered	
692 + 00	3080.5	10' N	-1'	6	
692 + 50	3081.4	5' N	-1'	2	
693 + 00	3081.2	5' N	-1'	2	
693 + 50	3081.0	5' N	-1'	8	
694 + 00	3080.9	5' N	-1'	Not Encountered	
694 + 50	3080.7	5' N	-1'	Not Encountered	
695 + 00	3079.7	5' N	-1'	9	
695 + 50	3079.1	9' N	-2'	8	
696 + 00	3077.8	10' N	-2'	3.5	
696 + 50	3076.8	10' N	-2'	2	
697 + 00	3075.8	10' W	-2'	3.5	
697 + 50	3074.9	10' W	-2'	6	
698 + 00	3073.9	10' W	-1'	4.5	
698 + 50	3073.3	10' W	-1'	7	
699 + 00	3073.6	10' W	-0.5'	6.5	
699 + 50	3073.3	10' W	-0.5'	7.5	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
700 + 00	3072.9	10' W	-1'	9	
700 + 50	3072.3	10' W	-1'	9	
701 + 00	3072.0	10' W	-1'	6	
701 + 50	3071.5	10' W	-1'	7	
702 + 00	3070.6	10' W	-1'	6	
702 + 50	3070.5	10' W	-1'	5	
703 + 00	3070.5	10' W	-1'	7	
703 + 50	3069.9	10' W	-1'	7.5	
704 + 00	3068.3	10' W	-1.5'	6	
704 + 50	3067.1	15' W	-1.5'	6.5	
705 + 00	3066.6	15' W	-1'	5	
705 + 50	3065.8	15' W	-1'	4	
706 + 00	3064.8	15' W	-1'	3.5	
706 + 50	3064.4	15' W	-0.5'	3	
707 + 00	3064.2	15' W	+0.5'	3.5	
707 + 50	3064.0	15' W	-0.5'	Data Not Recorded	
708 + 00	3063.6	15' W	-0.5'	Data Not Recorded	
708 + 50	3063.6	15' W	0	2.5	
709 + 00	3063.1	20' W 10' N	0	3	
709 + 50	3062.6	15' W	0	3.5	
710 + 00	3061.8	15' W	0	3	
710 + 50	3061.5	20' W	+0.5'	7	
711 + 00	3060.8	20' W	0	1.5	
711 + 50	3060.4	20' W	+0.5'	4	
712 + 00	3060.2	20' W	+0.5'	5	
712 + 50	3060.3	15' W	+0.5'	7	
713 + 00	3059.7	15' W	0	6.5	
713 + 50	3059.6	15' W	+0.5'	6	
714 + 00	3059.8	15' W	0	7	
714 + 50	3060.4	15' W	0	8	
715 + 00	3061.2	15' W	0	7	
715 + 50	3062.3	15' W	+1.5'	7	
716 + 00	3062.0	20' W	+1'	2	
716 + 50	3062.5	20' W	0	2	
717 + 00	3064.1	20' W	0	9	
717 + 50	3065.4	15' W	0	7.5	
718 + 00	3066.2	20' W	-1'	8.5	
718 + 50	3066.5	20' W	-1'	4	
719 + 00	3066.9	10' N 20' W	0	7	
719 + 50	3065.5	20' W	+1'	7	
720 + 00	3064.9	20' W	+1.5'	7	
720 + 50	3064.4	20' W	+1'	9	
721 + 00	3064.1	20' W	0	7	
721 + 50	3063.5	20' W	0	9	
722 + 00	3065.5	10' N 20' W	0	7.5	
722 + 50	3064.1	10' N 20' W	0	9	
723 + 00	3061.7	25' W	0	9	
723 + 50	3060.7	25' W	0	7.5	
724 + 00	3060.8	25' W	0	8.5	
724 + 50	3060.8	10' N 25' W	0	5.5	
725 + 00	3060.0	25' W	0	6	
725 + 50	3059.3	25' W	0	5.5	
726 + 00	3059.1	20S 25' W	0	5.5	
726 + 50	3058.5	25' W	0	5.5	
727 + 00	3057.3	25' W	0	6	
727 + 50	3056.5	25' W	0	7.5	
728 + 00	3056.8	25' W	+2'	8.5	
728 + 50	3056.1	25' W	+2'	13	
729 + 00	3053.2	25' W	+2'	12.5	
729 + 50	3052.2	25' W	+2'	11	

Air-Track Drilling Depth to Bedrock Record

Project Number:	62165079	Recorded by:	K. Nichols
Project Name	MHAFB Water Supply & Pipeline	Drilling Subcontractor:	Superior Blasting

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
730 + 00	3051.7	25' W	0	13	
730 + 50	3051.1	25' W	0	13.5	
731 + 00	3050.7	25' W	0	Not Encountered	
731 + 50	3050.2	25' W	0	Not Encountered	
732 + 00	3049.3	25' W	0	10	
732 + 50	3048.8	25' W	0	10	
733 + 00	3047.9	25' W	0	9	
733 + 50	3047.4	25' W	0	8	
734 + 00	3046.5	25' W	0	4	
734 + 50	3046.1	25' W	0	5.5	
735 + 00	3045.6	25' W	0	9	
735 + 50	3045.2	25' W	0	8	
736 + 00	3044.5	25' W	0	10	
736 + 50	3043.7	25' W	0	10.5	
737 + 00	3043.4	25' W	0	6.5	
737 + 50	3042.6	25' W	0	6.5	
738 + 00	3041.9	25' W	0	8	
738 + 50	3041.4	25' W	0	9.5	
739 + 00	3040.9	25' W	0	12	
739 + 50	3040.3	25' W	0	9.5	
740 + 00	3040.1	25' W	0	10	
740 + 50	3039.9	25' W	0	10.5	
741 + 00	3039.7	25' W	0	7.5	
741 + 50	3039.6	25' W	0	6.5	
742 + 00	3039.7	25' W	0	6.5	
742 + 50	3039.5	25' W	+2'	13	
743 + 00	3039.6	25' W	0	13	
743 + 50	3039.0	25' W	0	6.5	
744 + 00	3039.1	25' W	0	7	
744 + 50	3038.7	25' W	+1'	6.5	
745 + 00	3038.5	25' W	+1'	7.5	
745 + 50	3038.4	25' W	0	8	
746 + 00	3038.2	25' W	0	7.5	
746 + 50	3037.9	25' W	0	8.5	
747 + 00	3037.7	25' W	0	10	
747 + 50	3037.4	25' W	0	10	
748 + 00	3037.3	25' W	+2'	11	
748 + 50	3037.8	25' W	+2'	7	
749 + 00	3037.5	25' W	+2'	6.5	
749 + 50	3037.6	25' W	+2'	9	
750 + 00	3037.5	25' W	+2'	6	
750 + 50	3037.6	25' W	+2'	7.5	
751 + 00	3037.7	25' W	+2'	6	
751 + 50	3037.1	25' W	+2'	8	
752 + 00	3036.9	25' W	+2'	13	
752 + 50	3036.8	25' W	+2'	7	
753 + 00	3036.7	25' W	+2'	11	
753 + 50	3037.1	25' W	+2'	9	
754 + 00	3036.8	25' W	+2'	9	
754 + 50	3036.8	25' W	+2'	8	
755 + 00	3036.7	20' W	+2'	6	
755 + 50	3036.5	20' W	+2'	8	
756 + 00	3035.9	20' W	+2'	11	
756 + 50	3035.6	20' W	+2'	7.5	
757 + 00	3035.7	20' W	+2'	8	
757 + 50	3036.0	20' W	+2'	11.5	
758 + 00	3035.1	20' W	+2'	13.5	
758 + 50	3035.6	20' W	+2'	10.5	
759 + 00	3035.1	20' W	+2'	8	
759 + 50	3035.0	20' W	+2'	7.5	

Air-Track Drilling Depth to Bedrock Record

Project Number:	**62165079**	Recorded by:	**K. Nichols**
Project Name	**MHAFB Water Supply & Pipeline**	Drilling Subcontractor:	**Superior Blasting**

Station	Elevation	Approx. Hor. Offset	Approx. Vert. Offset	Depth to Bedrock (ft)	Notes
760 + 00	3034.9	20' W	+2'	Not Encountered	
760 + 50	3034.8	20' W	+2'	12	
761 + 00	3034.6	20' W	+2'	10	
761 + 50	3034.7	20' W	+2'	Not Encountered	
762 + 00	3034.7	20' W	+2'	9.5	
762 + 50	3035.0	20' W	+2'	7.5	
763 + 00	3034.8	20' W	+2'	8	
763 + 50	3034.4	20' W	+2'	7.5	
764 + 00	3034.3	20' W	+2'	8	
764 + 50	3034.4	20' W	+2'	Not Encountered	
765 + 00	3033.5	20' W	+2'	13	
765 + 50	3033.8	20' W	+2'	10	
766 + 00	3033.6	20' W	+2'	8.5	
766 + 50	3032.9	20' W	+2'	11.5	
767 + 00	3032.4	20' W	+2'	12	
767 + 50	3032.2	20' W	+2'	10.5	
768 + 00	3032.6	20' W	+2'	10	

The notes regarding cemented soils are provided as information to the Contractor, and are based on the response of the subsurface materials during drilling, as interpreted by the drill-rig operator. Due to the method of drilling, information regarding soil cementation is not comprehensive, and cemented soil layers may exist even if not noted during drilling or recorded on the attached summary tables. If cemented soils could present a concern to the Contractor, the Contractor should perform characterization of these soils to evaluate their extent and excavation characteristics for the specific earthwork equipment that will be used during construction.