VSP Preliminary Data Sheet

Date: 7 AUG 2000 Type of Phones 0/90

1. Well Name DEW 2K

2. Location of Well

X= 0 Y= 0 Z= 0

Casing Elevation: +.35m

3. Depth to top of water table (measured from CE) NO Water

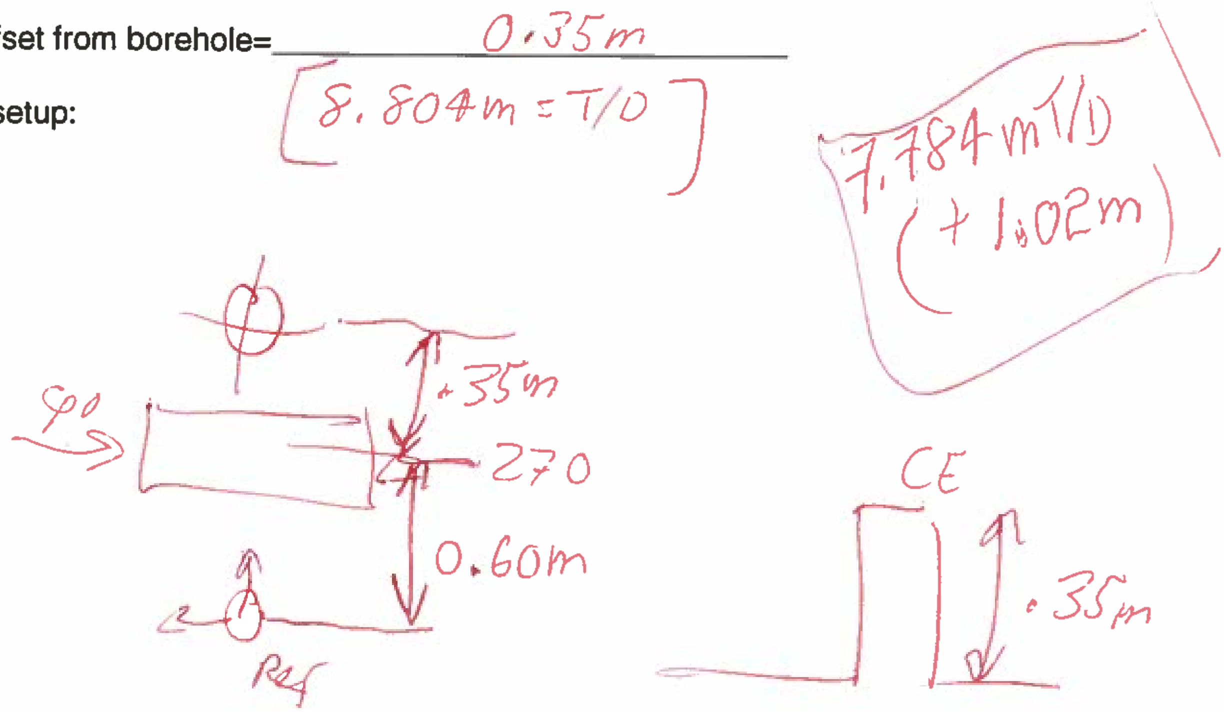
4. Casing Elevation, distance above ground level= .35m

5. Reference phone offset from borehole= .95m

6. Reference phone depth below ground level= 0.

7. Source Offset from borehole= 0.35m

8. Sketch of setup: [8.804m = T/D]



9. Blue Box switch settings:

Channel	Component
1	Vertical
2	Longitudinal (radial)
3	Transverse

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .35 m above G.L.
Azimuth x-axis: 90
Azimuth y-axis: 0
Well Coord: X=____ Y=____ Z=____

Reference Phone: Offset: .95 m
Azimuth____
Elev.____ m below G.L.
X= 0 m
Y= -.95 m

Channel Configuration:

Borehole Phone	Reference Phone
V=Channel 1	V=Channel 4
R=Channel 2	R=Channel 5
T=Channel 3	T=Channel 6

Ref. Polarization:

	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 7 AUG 2000 Location: ARS Sand & Gravel Quarry, Denver 2K Field Day
High-Cut 2000 Low-Cut 4 Sample Int. .1 ms Number Samples 5000

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
1		8.25					0	-.35	270	135°
2		8.25							90	155°
3		8.00							270	
4		8.00							90	
5		7.75								
6		7.75								
7		7.50								
8		7.50								
9		7.25								
10		7.25								

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .35 m above G.L.
Azimuth x-axis: 90
Azimuth y-axis: 0
Well Coord: X= Y= Z=

Reference Phone: Offset: .95 m
Azimuth
Elev. m below G.L.
X= 0 m
Y= -.95 m

Channel Configuration:

Borehole Phone	Reference Phone
V=Channel 1	V=Channel 4
R=Channel 2	R=Channel 5
T=Channel 3	T=Channel 6

Ref. Polarization:

	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 7 AUG 2000 Location: ARS Denmark
High-Cut 2000 Low-Cut 4 Sample Int. 0.1 ms Number Samples 5000

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
11		7.0					0	-.35	270	135
12		7.0							90	
13		6.75								
14		6.75								
15		6.50								
16		6.50								
17		6.25								
18		6.25								
19		6.00								
20		6.00								

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .35 m above G.L.
Azimuth x-axis: 90
Azimuth y-axis: 0
Well Coord: X= 0 Y= 0 Z= 0

Reference Phone: Offset: ____ m
Azimuth ____
Elev. ____ m below G.L.
X= 0 m
Y= -.35 m

Channel Configuration:

Borehole Phone	Reference Phone
V=Channel 1	V=Channel 4
R=Channel 2	R=Channel 5
T=Channel 3	T=Channel 6

Ref. Polarization:

	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 7 AUG 2000 Location: ARS Denver 2K
High-Cut 2000 Low-Cut 4 HZ Sample Int. 0.1 ms Number Samples 5000

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
21		5.75					0	-.35	270	135
22		5.75							90	135
23		5.50								
24		5.50								
25		5.25								
26		5.25								
27		5.00								
28		5.00								
29		4.75								
30		4.75								

clipped 21-42

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .35 m above G.L.
Azimuth x-axis: 90
Azimuth y-axis: 0
Well Coord: X= ____ Y= ____ Z= ____

Reference Phone: Offset: ____ m
Azimuth ____
Elev. ____ m below G.L.
X= 0 m
Y= -.95 m

Channel Configuration:

Borehole Phone	Reference Phone
V=Channel 1	V=Channel 4
R=Channel 2	R=Channel 5
T=Channel 3	T=Channel 6

Ref. Polarization:

	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 7 AUG 2000 Location: ARS
High-Cut 2000 Low-Cut 4 Sample Int. 0.1 ms Number Samples 5000

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
31		4.50					0	-.35		
32		4.50								
33		4.25								
34		4.25								
35		4.80								
36		4.00								
37		3.75								
38		3.75								
39		3.50								
40		3.50								

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: 4.35 m above G.L.
Azimuth x-axis: 90
Azimuth y-axis: 0
Well Coord: X= ____ Y= ____ Z= ____

Reference Phone: Offset: ____ m
Azimuth ____
Elev. ____ m below G.L.
X= 0 m
Y= -.95 m

Channel Configuration:

Borehole Phone	Reference Phone
V=Channel 1	V=Channel 4
R=Channel 2	R=Channel 5
T=Channel 3	T=Channel 6

Ref. Polarization:

	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 7 AUG 2000 Location: ARS
High-Cut 2000 Low-Cut 4 Sample Int. 0.1ms Number Samples 5000

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
41		3.25					0	-.35	270°	135°
42		3.25							90°	135
43		3.00								
44		3.00								
45		2.75								
46		2.75								
47		2.50								
48		2.50								
49		2.25								
50		2.25								

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: +.35 m above G.L.
Azimuth x-axis: 90
Azimuth y-axis: 80
Well Coord: X= ___ Y= ___ Z= ___

Reference Phone: Offset: ___ m
Azimuth ___
Elev. ___ m below G.L.
X= 0 m
Y= -.95 m

Channel Configuration:

Borehole Phone
V=Channel 1
R=Channel 2
T=Channel 3

Reference Phone
V=Channel 4
R=Channel 5
T=Channel 6

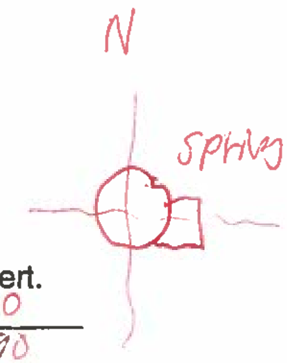
Ref. Polarization:

	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 7 AUG 2000 Location: ARS
High-Cut 7000 Low-Cut 4 Sample Int. 0.1 ms Number Samples 5000

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
51		2.00					0	-.35	270°	135°
52		2.00							90°	138°
53		1.75								
54		1.75								
55		1.50								
56		1.50								
57		1.25								
58		1.25								
59		1.00								
60		1.00								

BSU GEOPHYSICS VSP OBSERVER'S LOG



Coordinate System Origin at Borehole
Casing Elevation:________m above G.L.
Azimuth x-axis: 90
Azimuth y-axis: 0
Well Coord: X=______ Y=______ Z=______

Reference Phone: Offset:________m
Azimuth________
Elev.________m below G.L.
X= 0 m
Y= -.95 m

Channel Configuration:

Borehole Phone: V=Channel 1, R=Channel 2, T=Channel 3

Reference Phone: V=Channel 4, R=Channel 5, T=Channel 6

Ref. Polarization:	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 7 AUG 2000 Location: ARS
High-Cut 2000 Low-Cut 4 Sample Int. 0.1 ms Number Samples 5000

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
61		0.75					0	-.35	270	135'
62		0.75							90	135'
63		0.50								
64		0.50								
65		0.5							Single	Blow
66		0.5							Single	Blow
				end of day						

Repeat Shallow Level

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .35 m above G.L.
Azimuth x-axis: 90
Azimuth y-axis: 0
Well Coord: X= Y= Z=

Repeat Clipped Levels with lower gain

Reference Phone: Offset: m
Azimuth
Elev. m below G.L.
X= 0 m
Y= -.35 m

Channel Configuration:	Borehole Phone	Reference Phone	Ref. Polarization:	Az	Vert.
	V=Channel 1	V=Channel 4	V	0	0
	R=Channel 2	R=Channel 5	R	~~0~~	90
	T=Channel 3	T=Channel 6	T	270	90

Date: 8 AUG 2000 Location: Denv 2K ARS
High-Cut 2000 Low-Cut 4 Sample Int. .0001 Number Samples 5000

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
1		5.75					0	-.35	270	135
2		5.75							90	
3		5.50							270	
4		5.50							90	
5		5.25							270	
6		5.25							90	
7		5.00							270	
8		5.00							90	
9		4.75							270	
10		4.75							90	

Reshoot Clipped levels plus same

~~Rec 8 may be a repeat of 7 (stored 7 twice)?~~ ~~No~~
Same time stamp

Had to Redo 7 8 Ref knocked over

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: +.35 m above G.L.
Azimuth x-axis: 90
Azimuth y-axis: 0
Well Coord: X= ____ Y= ____ Z= ____

Reference Phone: Offset: ____ m
Azimuth ____
Elev. ____ m below G.L.
X= 0 m
Y= -.95 m

Channel Configuration:	Borehole Phone	Reference Phone
	V=Channel 1	V=Channel 4
	R=Channel 2	R=Channel 8
	T=Channel 3	T=Channel 6

Ref. Polarization:	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 8 AUG 2000 Location: ARS
High-Cut 2000 Low-Cut 4 Sample Int. 0.1ms Number Samples 5000

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
11		4.50					0	-.35	270	135°
12		4.50							90	135°
13		4.25							270	
14		4.25							90	
15		4.00							270	
16		4.00							90	
17		3.75							270	
18		3.75							90	
19		3.50							270	
20		3.50							90	

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: +.35 m above G.L.
Azimuth x-axis: 90
Azimuth y-axis: 0
Well Coord: X= Y= Z=

Reference Phone: Offset: m
Azimuth
Elev. m below G.L.
X= 0 m
Y= -.95 m

Channel Configuration:

Borehole Phone
V=Channel 1
R=Channel 2
T=Channel 3

Reference Phone
V=Channel 4
R=Channel 5
T=Channel 6

Ref. Polarization:

	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 8 AUG 2000 Location: ARS
High-Cut Low-Cut Sample Int. Number Samples

off hole
26 ??

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
21		3.25					0	-.35	270	135°
22		3.25							90	135°
23		3.00							270	
24		3.00							90	
25		2.75							270	
27		2.75							90	
28		2.50							270	
29		2.50							90	
30		2.25							270	
31		2.25							90	

26 also at 90°

27 same source polarity as 26, both 90°AZ
Probably did an extra at 90°AZ

yes Ch02 Radial ∥ to source
27 is a second repeat at same depth
Thus 28 should → 27, 29 → 28, etc. till 45 → 44

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: +.35 m above G.L.
Azimuth x-axis: 90
Azimuth y-axis: 0
Well Coord: X= ____ Y= ____ Z= ____

Reference Phone: Offset: ____ m
Azimuth ____
Elev. ____ m below G.L.
X= 0 m
Y= -.95 m

Channel Configuration:

	Borehole Phone	Reference Phone
V=Channel	1	4
R=Channel	2	5
T=Channel	3	6

Ref. Polarization:

	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 8 AUG 2000 Location: ARS
High-Cut 2000 Low-Cut 4 Sample Int. 0.1 ms Number Samples 5000

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
32		2.0					0	-.35	270	135°
33		2.0							90	135°
34		1.75							270 ReClamp	
35		1.75							90	
36		1.50							270	
37		1.50							90	
38		1.25							270	
39		1.25							90	
40		1.00							270	
41		1.00							90	

pull VZ for clamp

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: +.35 m above G.L.
Azimuth x-axis: 90
Azimuth y-axis: 0
Well Coord: X= ____ Y= ____ Z= ____

Reference Phone: Offset: ____ m
Azimuth ____
Elev. ____ m below G.L.
X= 0 m
Y= −.95 m

Channel Configuration:

Borehole Phone
V=Channel 1
R=Channel 2
T=Channel 3

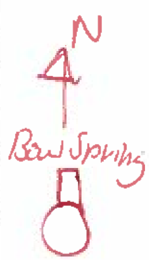
Reference Phone
V=Channel 4
R=Channel 5
T=Channel 6

Ref. Polarization:

	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 8 AUG 2000 Location: ARS
High-Cut 2000 Low-Cut 4 Sample Int. 0.1ms Number Samples 5000

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
42		0.75					0	−.35	270	135°
43		0.75							90	135°
44		0.50							270	
45		0.50							90	
					end of day					



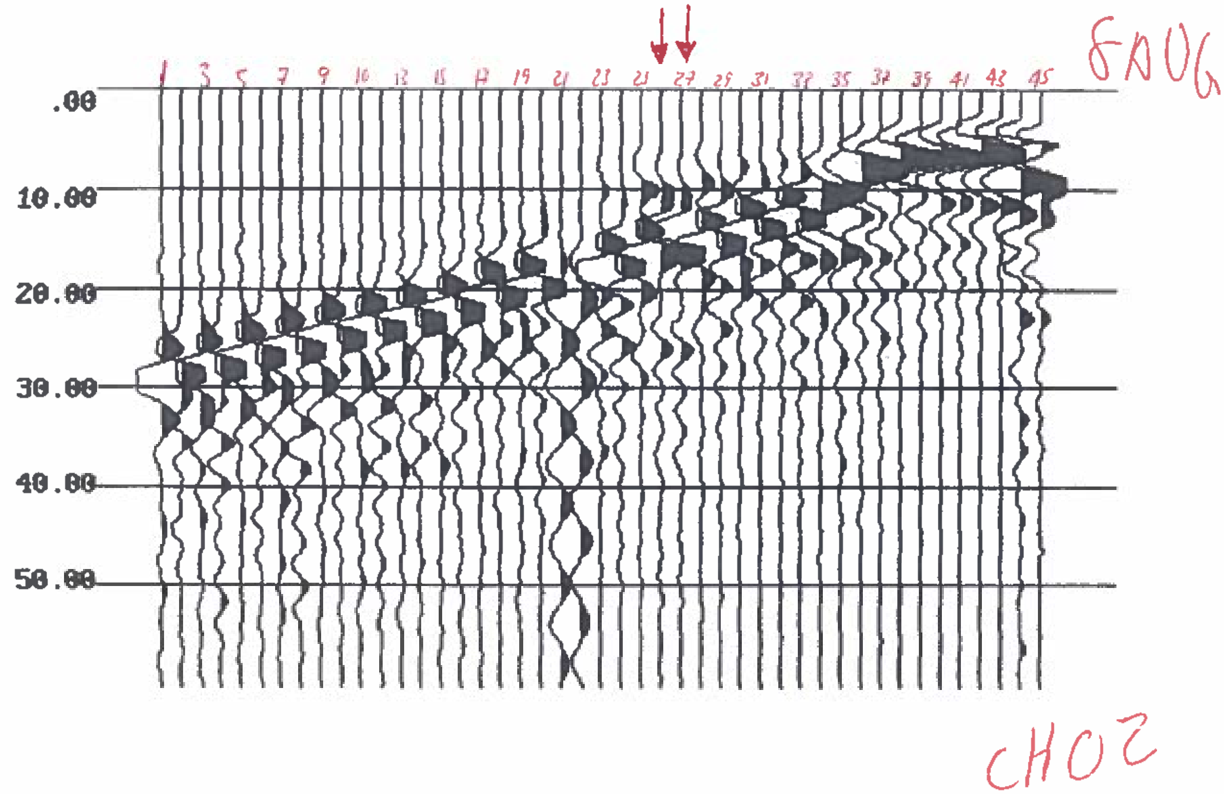
These data repeat the clipped data recorded one day
earlier (7aug2000).

An error in acquistion occured. Record 27 is a repeat of record 26. Having stored record 26 (source pol at 90 azimuth) I went back and reshot the same thing again, apparently having forgot that I already did it. This is evident from ch06 (T-comp) on reference phone, 26 and 27 same. It is also evident from down hole R-component, ch02, which was essentially parallel to source, 26 and 27 are almost identical realizations at the same depth.

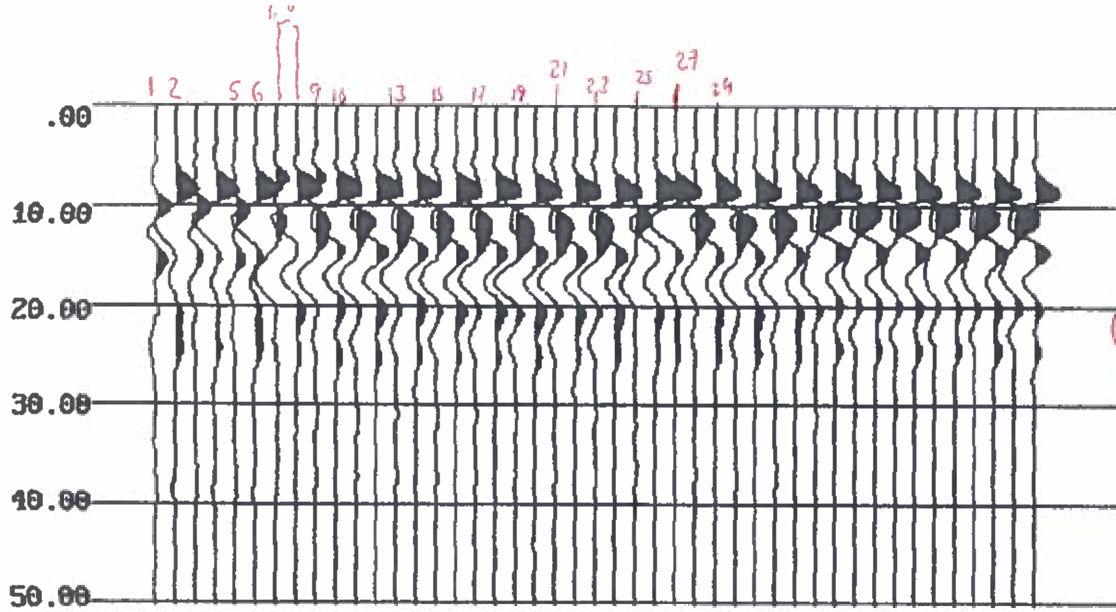
To correct the situation, discard record 27, and rename 28 as 27. Rename 29 as 28, rename 30 as 29, etc. until 45 is renamed 44.

The data here have not had this done, and it should be part of a batch flow to document it in processing.

P M. 8 Aug 2000



1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45
.00
10.00
20.00
30.00
40.00
50.00
6AUG
CH02



8AUG

Ch06

sessions
exhibits
field demos
tech tours
courses
location
tours
sponsors
editors
speakers
home

Soil Descriptions

ARS, Inc. AEE Project No. Pit Evaluation June 2,1997 Douglas County, Colorado

3.0 FIELD AND LABORATORY INVESTIGATION

On March 18 and 19, 1997, we logged and sampled four exploratory borings made at the site. The borings were advanced with a CME 55 truck-mounted drill, utilizing 3-3/4 inch ID hollow-stem auger. Samples were taken at 5-foot depth intervals with a 2-1/2 inch ID (3-inch OD) split spoon barrel sampler, driven with standard hammer energy (in substantial accordance with ASTM D1586 procedures). The sampler was driven 18 inches at most locations. The number of hammer blows for each -inch increment was recorded. The Boring Logs, Fig. 2, show an interpretation of the materials encountered and the hammer blow counts for the last 12 inches of sampling are presented at each sample location. A legend and notes related to the field investigation are presented on Fig. 2A. The number of hammer blows required to penetrate the strata can be used as an indication of the density or consistency of a deposit, with experience and judgement. The hammer blows are not similar to the "Standard Penetration Test" because the sampler presents a considerably larger frontal area than the standard split spoon sampler.

We found that, in general, the finer-grained materials (clays, silty clays) had lower penetration resistance than the predominantly coarse materials. During drilling, only Boring 3 encountered groundwater, at a depth of 51 feet. The other borings remained dry while drilling.

The project engineer visually classified all of the samples retrieved and formulated a laboratory testing plan. Tests included grain size analysis, moisture content, Atterberg Limits, Hveem RValue to gain a measure of the stability of the material under load and sodium sulfate soundness to determine the resistance of the material to weathering. The test results are summarized on Table 1. Graphical presentations of the grain size analysis and R-Value testing are presented on Figs. 3-16.

Starting with the deposits at the highest elevation, the following sections describe the strata encountered:

3.1 Silty Sand

Borings 1 and 2, located on the upper terrace, encountered about 8 feet cf medium brown, slightly calcareous, silty to slightly clayey sand from the ground surface. This material was formed by the forces of wind, plucking fine to medium sands from the South Platte River, depositing them on the plain between the South Platte and Plum Creek. This material is absent from the lower terrace on the property, and has been stripped from portions of the upper terrace.

Figures 3 and 7 present gradation curves for representative samples of this material, both non-plastic, with about 22% fines. In general, the deposit is cleaner near the upper part and becomes more clayey at its base. Of the many samples tested of the silty sand, the range of fines is between 13 and 32% and most have non-plastic fines. Liquid limits, where obtainable, are generally 16 to 20%.

The silty sand has been used for trail topping, ballfield skinned infield and pitcher's mound fill.

The material has qualities of non-cohesiveness to avoid sticking to cleats and allowing quick drainage and drying without overly hard compaction, mostly fine to medium sand content for ease of working and traction, and a medium brown color for aesthetics. The material is fairly unique in the area, due to its thickness and general lack of plastic clay fines.

3.2 Clayey, Gravelly Sand

Several feet of reddish, clayey, gravelly sand separates the upper silty sand from cleaner sand deposits in the upper terrace. The reddish color is common in Slocum Alluvium deposits. The deposit appears to be only ~5 feet thick. Previous testing (Feb. 13, 1997) indicates the material has a gradation similar to CDOT Class 6 Road Base, but with a liquid limit (LL) of 22-23 and plasticity index (PI) of 7-10, would be considered too clayey for specification material. The material would make a good quality light-duty road base for driveways because of its tendency of slight cohesion and high compact-ability, at the expense of somewhat less drainage capacity when compared to specification road base.

3.3 Well-Graded Sand with Gravel

Below the above-described materials, the next 30-40 feet in Borings 1 - 2 consist of well-graded sand with gravel. About 10% of the thickness of the deposit appears to contain clayey sand layers of medium plasticity. Gravel, to the 1/2-inch size represents about 18-22% of the material, with about ~8% mostly non-plastic fines. Close examination of the gravel particles indicates that most are sound, subangular mineral aggregates of orthoclase-biotite-quartz granite. The sand particles are chiefly subangular crystalline quartz and pink orthoclase feldspar. Fines are silty, with muscovite mica flakes. Rare particles of lightweight igneous rock (Castle Rock Welded Tuff) were noted on the surface of the pit, but were not found in samples from the borings. Although generally considered a detrimental material, its rarity is believable considering the large size of the Plum Creek drainage and the very limited outcrop of these materials south of Castle Rock. We do not consider these materials as detrimental to the overall quality of the deposit.

The coefficient of uniformity is generally high, on the order of 10 to 25, indicating well-graded material with a wide size variety. We obtained H-veem Stabilometer R-Value test results from two composited samples of this material. The results of 71 and 76 indicate excellent stability for road subgrade materials. Because of a relative deficiency of gravel and somewhat variable fines content, the deposit does not make a specification road base as a pit-run, but could be used, with sieving, for asphalt or concrete fine aggregate, or without sieving for high-quality select fill where close packing, relatively free-draining fill with very high stability is required, such as road subbase or Mechanically Stabilized Earth (MSE) retaining wall backfill. The angle of internal friction would vary somewhat with density and confining pressure, but a conservative estimate would be 38 degrees for the well-graded sand. If sieved, the resulting gravel would be a saleable product. The results of a sodium sulfate soundness test indicate negligible loss over the sieve sizes, with weighted loss of 0.01 to 0.07% in the No. 30 to No. 100 Std. Sieve sizes.

3.4 Interlayered Micaceous Clay and Clean Medium Sands

Encountered at a depth of 48 feet in B-1, 41 feet in B-2, and from the surface in B-3 and B-4, we noted a layer that contained mixed micaceous lean to fat clay with clean sand lenses. The deposit was only about 5 feet thick in B-1 and about 20 feet thick in B-2, with mostly thin sand lenses separated by silty lean clay layers. In B-3 and B-4, the upper 20 and 45 feet, respectively were predominantly fat clay and clayey sand, with the exception of a 5-1/2 foot thick layer of wellgraded sand with gravel in B-3 and a 14 foot thick layer in B-4.

Generally well graded sands with gravel were found below the clay in ali borings. Near bedrock in B-1 and B-2, we encountered what appeared to be small cobbles in the sand.

The interlayered micaceous day and clean sands are assumed to be waste material, because of the thin layers that will generally preclude sorting.

3.5 Bedrock

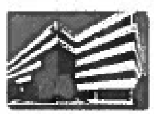
Hard, blue-gray claystone bedrock was encountered in B-1, B-2 and B-4 at depths of 81, 105.5 and 65 feet respectively. We did not drill down to bedrock in B-3, because we encountered groundwater at a depth of 51 feet in sands and gravels.

4.0 PIT RESERVES

We assume that this mining operation would not be able to utilize large quantities of water for washing aggregate products. Where silty, non-plastic fines exist, particularly the surface layer and the well-graded sand with gravel, a variety of products could be made by utilizing dry sieving. The area studied has available the following saleable products:

Fine to medium grained silty sand; currently of value as ballfield skinned infield surface and pitchefs mound fill Clayey road base; suitable for driveways and light-duty gravel-surfaced roads

A G R A
Earth & Environmental



ASCE - World Headquarters
1801 Alexander Bell Drive
Reston, Virginia 20191-4400

(800) 548-2723 or (703) 295-6300 (outside the US)
(703) 295-6144 fax

Subject: Re: waiver
Date: Wed, 26 Jul 2000 08:36:54 -0600
From: "Jeff Farrar" <JFARRAR@do.usbr.gov>
To: <pm@cgiss.boisestate.edu>

Installed your casing yesterday to 28.5 ft - with about 1 to 1.5 stickup. Top 20 ft is SC-SM soil with about 20-30 % fines. From about 20 to 28.5 is a cleaner gravelly sand - fine gravel max size. Hole stayed open well - dumped 10-20 sand as backfill looks like it went in well.

I have the place set up just down from the radar pit - and there is room for your van.

I'll have the waiver forms - and I will be around all weekend workking out there so don't worry we'll get is signed. We will be doing some pre work on stone columns, and earthwork test fills that weekend also.

Thanks for participating! I'll be interested to see your modulus and damping in the unsaturated stuff. Did I give you the drill logs earlier?

best regards

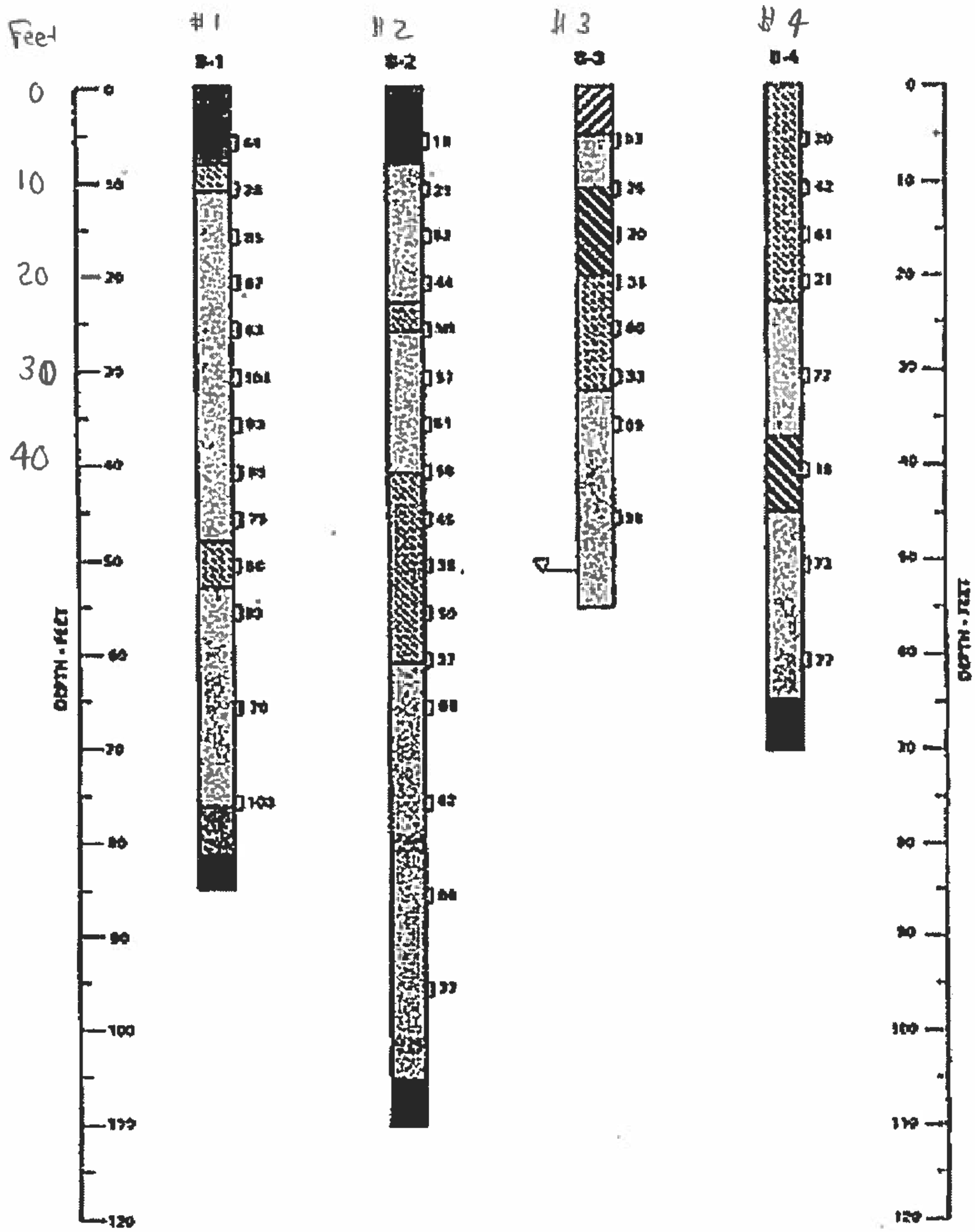
Jeffrey A. Farrar, M.S., P.E.
Bureau of Reclamation
Earth Sciences and Research Laboratory
Denver Federal Center Bldg 67
PO Box 25007 D-8340
Denver CO 80225
303-445-2333
fax 445-6341
jfarrar@do.usbr.gov

>>> "P. Michaels" <pm@cgiss.boisestate.edu> 07/25 4:43 PM >>>
Jeff,

I will be leaving Boise on 1 August for Denver 2k. Will the waiver
for the field day reach me before then? If not, let's figure out a place I can go when I get there to fill this form out. I would like to
collect some data the day before the event (on Monday), and don't want to get tripped up about the waiver.
Thanks
Paul
--

Dr. Paul Michaels, PE
Boise State University, Geosciences
1910 University Drive
Boise, Idaho 83725

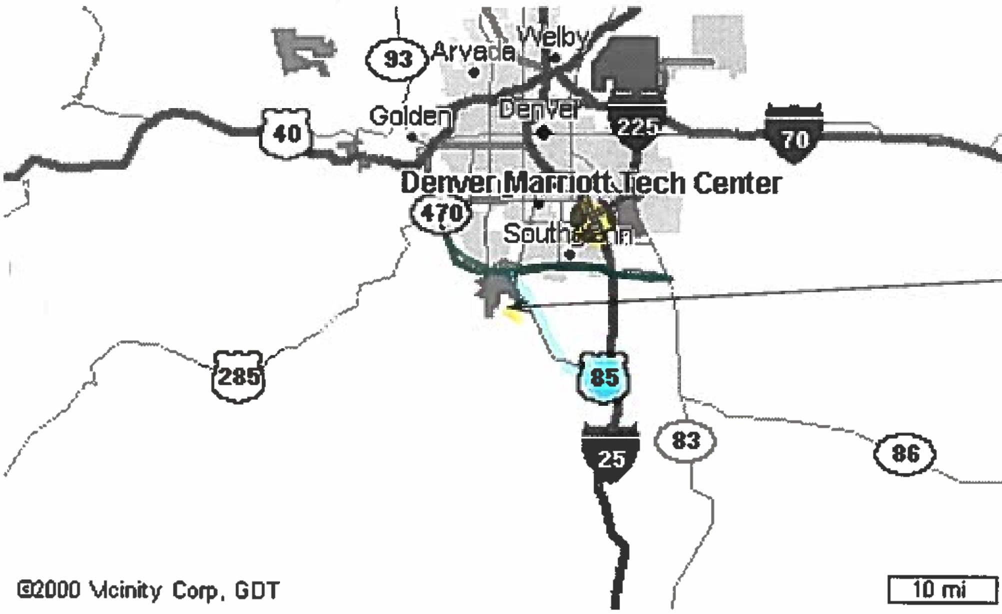
Email: pm@cgiss.boisestate.edu Web Page:
http://cgiss.boisestate.edu/~pm/
Phone: (208) 426-1929 Fax: (208) 426-4061
ASCE-GI Engineering Geophysics Committee
Web Page: http://cgiss.boisestate.edu/~pm/geoph_cmty/index.html



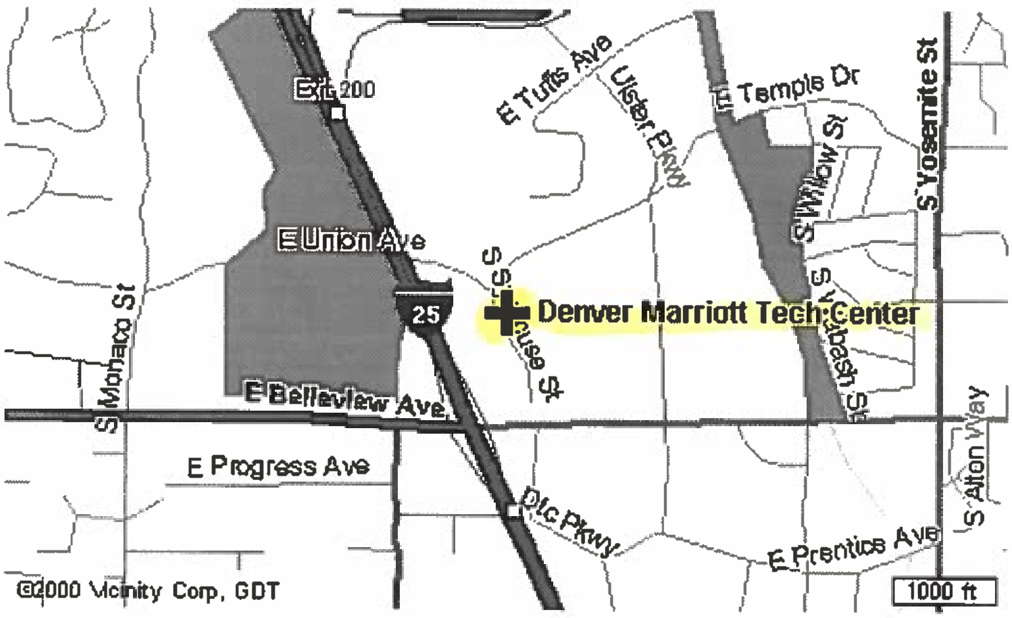
AGRA

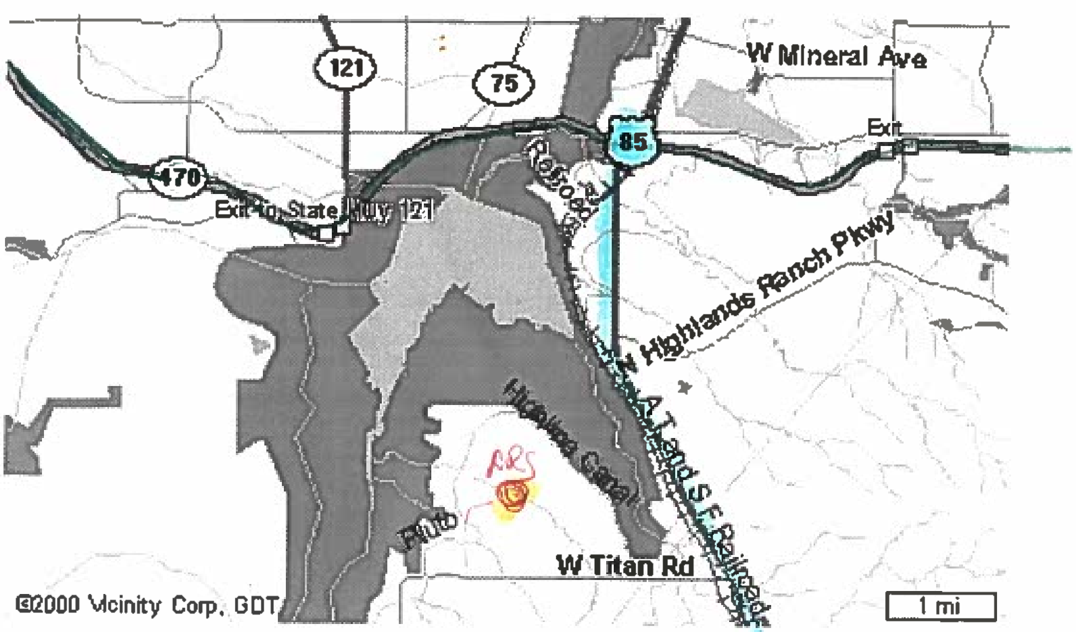
ARS SAND & GRAVEL
BORING LOGS

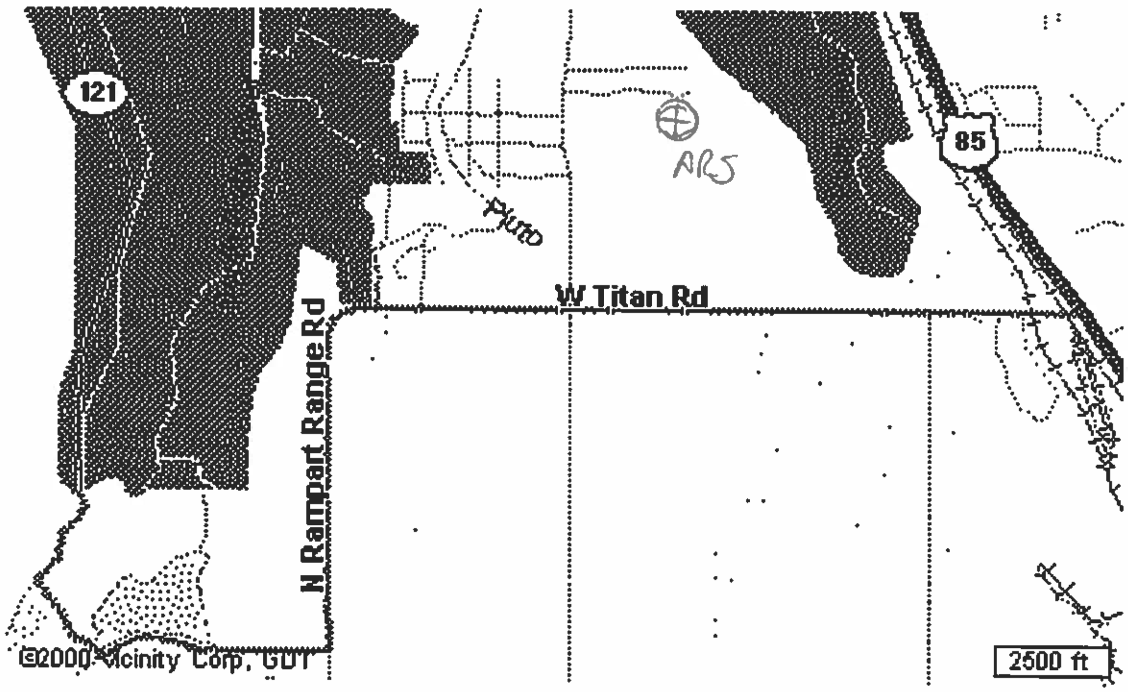
Project No.: 7-317-000009


Arvada
Welby
Golden
Denver
Denver Marriott Tech Center
Southglenn
93
40
225
70
470
285
85
25
83
86
©2000 Vicinity Corp, GDT
10 mi

Field Site


Exit 200
E Tufts Ave
Ulster Pkwy
E Temple Dr
S Willow St
S Yosemite St
E Union Ave
25
Denver Marriott Tech Center
S Syracuse St
S Wabash St
S Monaco St
E Belleview Ave
E Progress Ave
Dtc Pkwy
E Prentice Ave
S Alton Way
©2000 Vicinity Corp, GDT
1000 ft


121
75
W Mineral Ave
85
Exit
470
Exit to State Hwy 121
Highlands Ranch Pkwy
Highline Canal
A T and S F Railroad
ARS
W Titan Rd
©2000 Vicinity Corp, GDT
1 mi


121
85
Pluto
ARS
W Titan Rd
N Rampart Range Rd
©2000 Vicinity Corp, GDT
2500 ft