Sisters Creek Young Pit Data
for Vigil Network Filing

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Young Pits are for measuring downhill creep. A set of aluminum plates is set vertically, and move down hill. For description of method, see "Simple Field Methods ...", Revue de Geomorphologie Dynamique

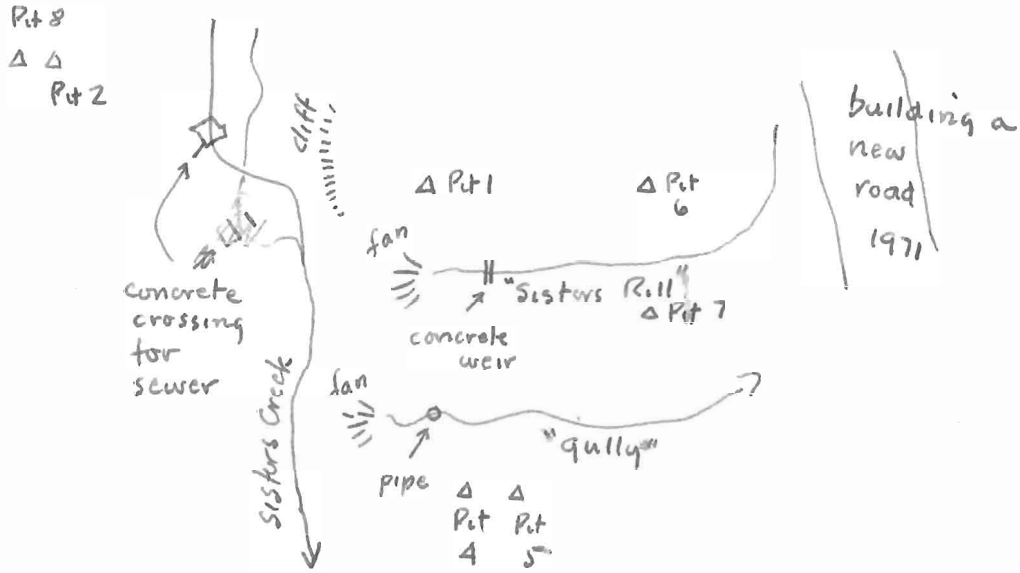
Measurements given here were taken with a WILD T-1 theodolite which can give horizontal angles to .2 and usually 0.1 minutes of arc.

Location, near Bethesda, Maryland.

To get there, go N on River Road past the Beltway, to Bradley Blvd. Turn right. Go about 1/2 mile to Kentdale Ave, turn left. Go about 1/3 mile to Warde St, turn Right. Go to Kentdale Road, turn left, and go to Carmelita St, turn left, go one block. Then follow sketch below.

See enlarged map, next page

Enlarged sketch of Young Pit Location.



There is no pit No 3.
Details of distances on page with Pit data
Earliest complete data is 1964, though Pit 1 was put in previous to that date.

By laboratory trials with the instrument, the way to convert the azimuth to distance is

(Dist from ↑ to ~~the~~ target in ft) × (30.5) × tan β = distance off line of sight in cm.

The distance from ↑ means measured horizontally on the ground.

where ~~tan~~ β is the ~~azimuth~~ horizontal angle measured from 0° 0'

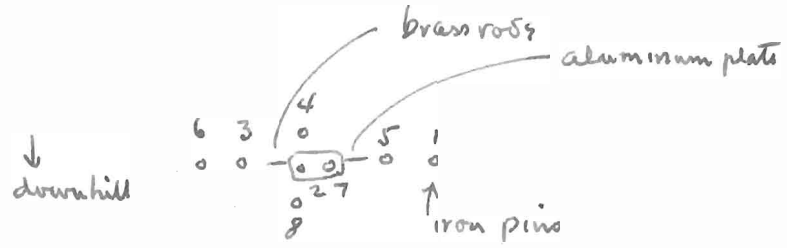
The azimuth angle increases clockwise. So if, as in most pits here described, the azimuth angle increases as the instrument is turned up hill, ~~then~~ larger than 0° angles mean the target is uphill of line of sight, and azimuths 359° or less than 0° are downhill of line of sight.

In those instances where azimuth angles increase in downhill direction, the opposite is the case. angles 70° are downhill of line of sight and 359° or < 0 are uphill. Each map tells where ↑ is located relative to up or down hill.

Young Pit No 1

(upstream direction)

The pit is 20' along contour from a 15" tulip tree with a board nailed on it. It is 25' uphill of a cliff next to stream, and exactly uphill of a red rock outcrop all the way across channel. It is 70 ft upstream (along Sisters Creek) from Sisters Rib



To sight brass pins, set ⊼ on Pin 1 and orient on pin 6
Distance BM 1 to end of brass rods is 5.75 ft horizontal
On BM 1 there is a center dot or punch hole. at about center of iron pin. Use this dot.
On BM 6 there is a dot or hole on the uphill side of the top of the iron pin. Center over this dot and use it for orienting from Pin 1.

Distance Pin 6 to aluminum plates is 5.90 ft. To shoot aluminum plates, set up ⊼ over dot on pin 6 and orient on dot on Pin 1
The aluminum plate is solid; not ~~cut~~ cut into segments.
Brass rods are about 0.1 inch diameter.
At bottom of the hole are iron pins for reference. The one nearest aluminum plate is Pin No 7. and it is 2.2 ft below surface.

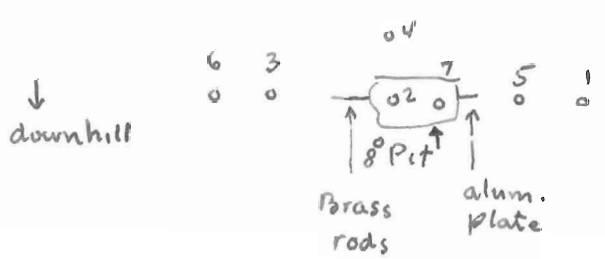
Young Pit No 1 Sisters Cerca.

local slope 34%

+ is downhill

Brass Pins			Aluminum Plate		
Depth to Brass pins (ft)	Horiz. angle to pins 1964	Horiz ~~angle~~ azimuth 1971	Depth to ~~pins~~ reading (ft)	Horiz angle azimuth 1964	Horiz angle azimuth 1971
.1	+0° 1.5'	359° 57.5'	0	0° 32.9'	0° 34.5'
.2	− 5.8'	0° 4.5'	.1	32.1	34.8
.3	− 13.0'	0° 13.2'	.2	32.9 ~~35.9~~	35.2
.45	− 7.2'	" 7.5	.3	28.6 ~~32.9~~	32.0
.6	0	" 0.5	.4	30.9 ~~28.6~~	29.4
.8	− 5.0'	" 5.0	.5	26.2 ~~30.9~~	29.2
1.0	+ 20.5'	359° 41.5	.6	26.7 ~~26.2~~	26.5
1.2	+ 2.9'	359 58.5	.7	24.5 ~~26.7~~	23.2
1.5	+ 21.9'	" 45.2	.8	22.4 ~~24.5~~	24.0
1.9	+ 8.4'	" 56.	.9	22.2	22.8
			1.0	20.2	19.8
			1.1	18.0	18.2
			1.2	15.7	15.0
			1.3	13.0	13.8
Dist BM 1 to brass rods 5.8'			1.4	12.0	14.1
			1.5	12.6	12.0
			1.6	11.6	9.8
			1.7	8.9	5.5
			1.8	4.9	0° 2.8
as values get larger >0 dist down hill decreases			1.9	3.0	359° 59'
			2.0	1.0'	
			BM 7 2.2' deep.	0° 14.7'	0° 13.0'

as values get larger >0 dist down hill increases



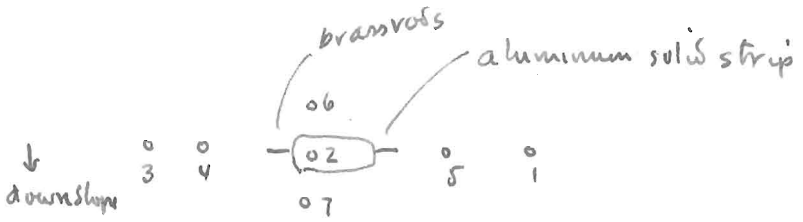
Dist BM 6 to alum strip 5.91'

Young Pit No 2, Sisters Creek. (Chorley Pit)

Ave ground slope. ~~=~~ 35 %

Brass Pins			Aluminum Plate		
Depth to pin (ft)	Azimuth 1964	Azimuth 1971	Depth (ft)	1964 azimuth	1971 azimuth
					Top bent over 1971
.25	359° 47.5'	359° 45'	−0.1	1° 9.5'	
.40	48.5	55.2	0	1° 3.0'	1° 7.0'
.50	51.4	0	.1	0° 57.0'	0° 57.5
.70	47.8	359° 56	.2	51.0	51.0
.9	56.8	0° 4.0'	.3	47.9	46.9
1.15	59.5	" 8.8'	.4	45.7	44.7
1.4	0	8.2'	.5	44.8	43.0
1.5	0° 8.9'	19.8'	.6	44.1	42.9
BM 2	0° 1.0'	0° 14.2'	.7	44.7	43.8
			.8	46.0	44.·
As values get larger > 0			.9	46.0	44.8
dist. downhill decreases			1.0	46.5	46.8
			1.1	48.0	48.0
			1.2	49.1	48.5
			1.3	51.0	48.5

As values get larger > 0, distance downhill increases.



BM 3 protrudes .8 ft and is firm

BM 1 protrudes 0.1 ft and firm.

Distance BM 1 to brass rods is ± 6.3' BM1 - BM2 is 6.16'

" BM 3 to aluminum plate is 11.7' BM1 to BM 3 is 15.9'

This pit is on right side (west or southwest) of Sisters Creek and uphill from a point about 30 yards downstream of a concrete revetment built where sewer crosses creek

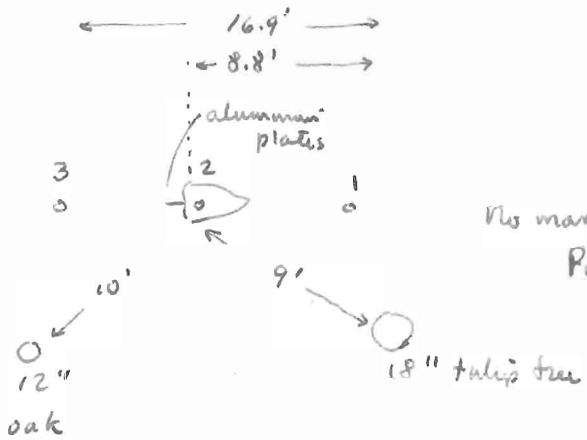
It is downhill from Pit No 8. It is some 100 ft approx from creek

Young Pit 4, Sesters Area.
Local slope 54%

Dist below Sfc. (ft)	Azimuth 1964	Azimi. 1971
0	0° 49.5	0° 35.7
.1	46.5	46.0
.2	39.0	46.0
.3	35.9	40.1
.4	35.2	41.0
.5	36.4	40.0
.6	33.2	33.1
.7	29.7	33.5
.8	28.8	36.1
.9	27.1	32.1
1.0	24.1	30.2
Bot of plate	0° 24.3	29.9

BM at bottom of pit 359° 57.0' 0° 0.5'

Set up over Pin 1 sight on Pin 3, check on Pin 2 at bottom of pit



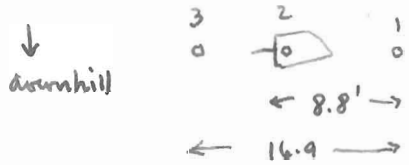
No marks on either BM.
Pin 1 protrudes 0.35 ft
3 " .2 ft

This pit is on hill on left bank of Sesters Creek, some 100' ± downstr of "gully" and ± 150' upstream of fence line. It is about 20' up the hill from the valley flat. It is downhill by 19 ft from Pit No 5.

Young Pit No 5, Sisters area.

Dist below sfc. (ft)	Azimuth 1964	Azimuth 1971
Top 0	359° 12.0'	358° 43'
.1	15.0	359° 9.5
.2	14.7	" 15.5
.3	16.0	20.5
.4	19.5	25
.5	25.0	30.2
.6	30.1	36.4
.7	34.4	41.8
.8	34.8	40.9
.9	32.5	38.8
1.0	33.8	41.2
Bot of plate	35.1	42.9
BM 2	36.0	39.6

As values increase (>0) distance down hill decreases



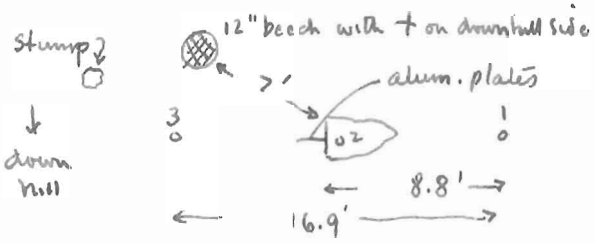
No dot on either BM

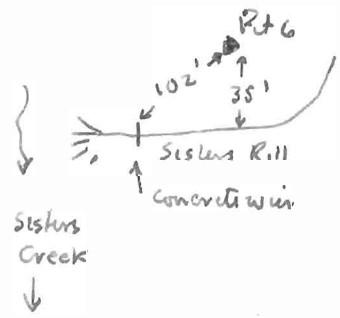
This pit is uphill from Pit 4 by 19 ft and downstream from Pit ~~5~~ 4 by 3 feet. See map of Pit ~~5~~ 4

Set ⅄ over BM 1, orient on BM 3, check on BM 2 at bottom of pit

Young Pit 6, Sisters Area.
local slope 25%

Dist below sfc (ft)	Azimuth 1964	Azimuth 1971
Top	0° 22.9'	Top plate disturbed
.1	20.4	0° 19'
.2	17.0	0° 16.5
.3	18.0	17.2
.4	14.0	16.2
.5	15.0	15.1
.6	15.9	16.2
.7	18.6	18.2
.8	16.7	17.8
.9	15.1	15.9
1.0	15.5	15.0
Bott of plate	17.0	
BM 2	359° 40.2	



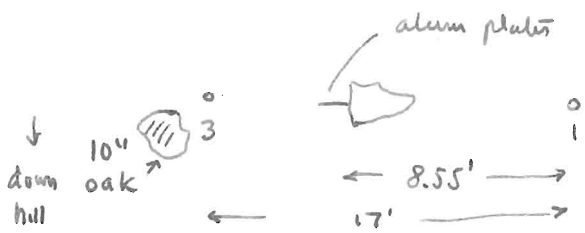


← direction of flow of Sisters Rill

Set ⊼ over Pin 1, orient on Pin 3, check on Pin 2 at bottom of pit.
As readings get greater (>0) distance downhill decreases

Young Pit 7, Sisters Area.

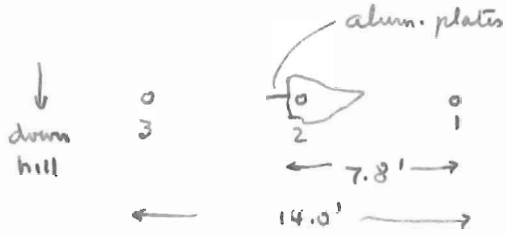
Rest below s/e (ft)	Azimuth 1964		Azimuth 1971	
Top.	0°	19.5'	0°	14.8'
.1		22.1		27.2
.2		20.5		22.5
.3		21.9		23.2
.4		20.7		21.5
.5		22.0		25.0
.6		23.1		26.2
.7		22.7		25.5
.8		23.0		24.9
.9		23.4		26.2
1.0		25.0		26.9
Bot of plate		23.1		25.0
BM 2	0°	24.1	0°	28.0



This pit is opposite Pit No. 6 but across Sisters Rill. It is 32' from thalweg of rill. See map for Pit 6 to get distances from concrete weir

Pit No 8, Sisters Area.

Dist below sfc (ft)	Azimuth 1964	Azimuth 1971
0	1° 0.5'	0° 45.5
.1	0° 58.0'	0° 57'
.2	1° 1.0	1° 0
.3	1° 1.0	1° 6'
.4	1° 1.0	1° 4.2
.5	1° 3.5	1° 13
.6	1° 8.5	1° 11.8
.7	1° 10.8	1° 15.5
.8	1° 13.5	1° 15.5
.9	1° 14.9	1° 16.5
1.0	1° 14.0	1° 15
Bot plate BM 2	1° 18.5	1° 21'



Pin 1 protrudes 0.35'
2 " 0.4' No crosses or marks on either pin

Set π on BM 1, orient on BM 3, check on burned BM 2

BM 2 is .95' below gr. sfc.

This pit is about 30' uphill from Pit No 2. and slightly upstream (relative to Sisters Creek).