Club:	Name of Area:	Author:	Date of trip:
VSA	*Drik Drik, 3DD-4 & DD-18S.*	***K.G. Grimes.***	*13-11-2004*

Caves visited:
3DD-4 and DD-18. Plus results of earlier levelling traverse

Title of report (if any):
Drik Drik area.

Names in party (indicate Author, Leader)
Ken Grimes, Janeen Samuel.

Report: **No locations, but attach sketches of new caves if possible.**

Introduction

While the main team were in the far end of DD-4, two of us spent a couple of hours measuring stream flows & EC in the entrance area of DD-4 and at the DD-18 stream sink on the far side of the plateau. The results of a pair of earlier (2001) surface levelling traverses are also given here.

Part 1: Hydrology.

In DD-4, Entrance section.

Just inside the entrance the small stream entering from the side passage on the NE side flowed at about 0.05 L/s (timed into a 500ml container). Its temperature was 15.3˚C and its EC = 902 µS (about 585 ppm TDS). The main stream here was 14.4˚C and had an EC = 1625 µS (about 1060 ppm TDS).

About 40 m upstream (beside the mud stalactites) the main stream was flowing at 8.0 L/sec (measured with Pooh-sticks), and had a temperature of 14.3˚C and EC of 1573 µS (about 1020 ppm TDS)

Stream sink at DD-18S

The stream was flowing out of the swampy area, but sinking into its gravel bed about 3 m before the entrance to the cave! I measured the flow (using Pooh-sticks) in a short , but relatively straight and smooth section of the channel just inside the swamp. The flow was about 5.6 L/s (+/- 15%). The temperature was 14.9˚C temp, and the EC was 166 µS (about 100 ppm TDS). The water was cloudy with fine sediment.

Comment on hydrology:

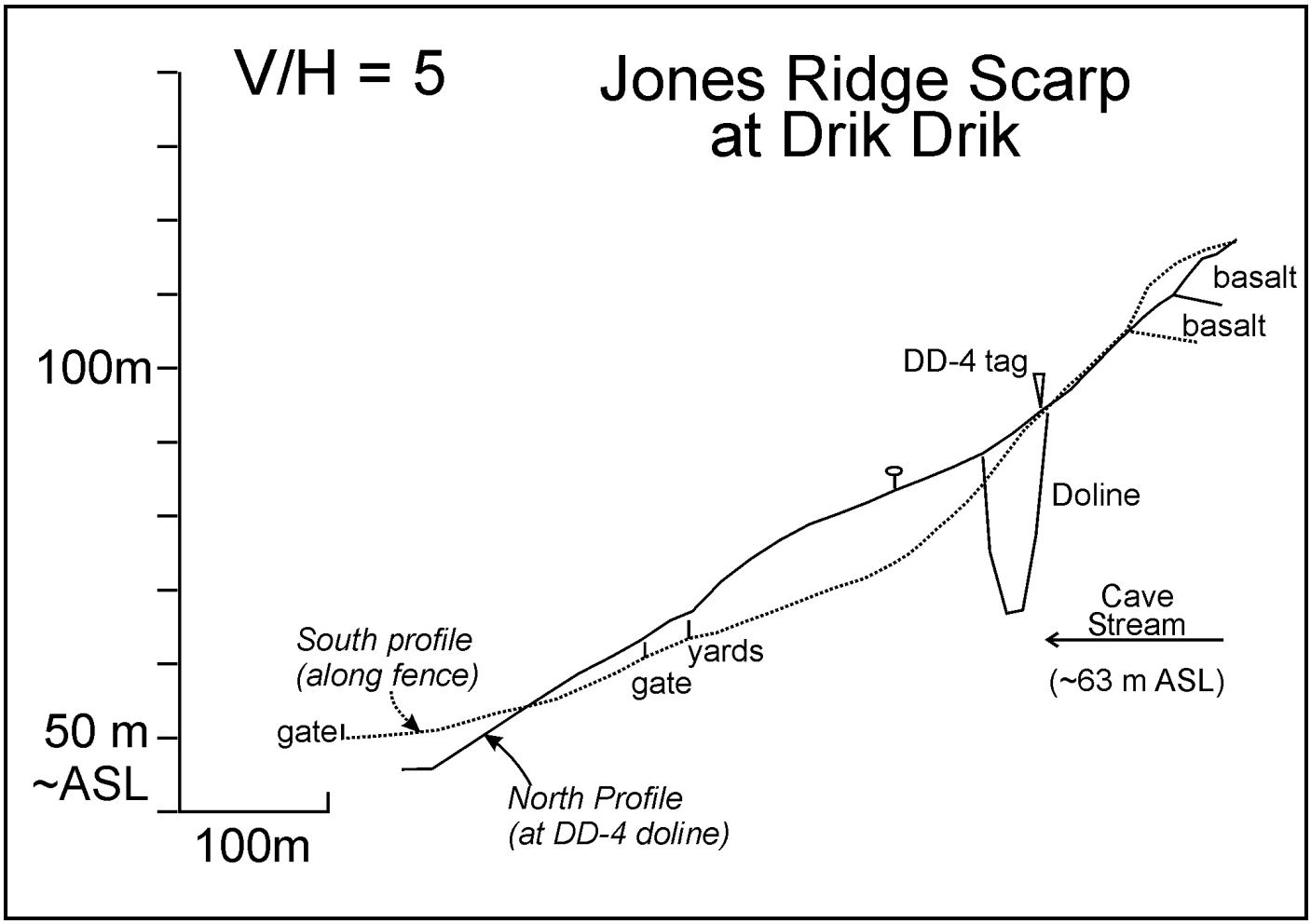
Although previous years have been very dry, this winter we had 'average' rainfall. The visit pn 13-11-2004 was after several rainy days (about 15mm at Hamilton).

In DD-4 the discharge of the cave stream (8 L/s) was about four times that in the previous visit in January 2004. The EC of about 1600 µS was a bit lower than the EC of 2100 µS on 25-1-2004, but much the same as an earlier measurement of 1590 µS on 9-6-2001. However, these are all still fairly high for a karst cave stream. This decrease in EC (i.e. of dissolved material) with increased flow seems reasonable: A greater flow probably means a greater input of surface water entering rapidly via the stream sink at DD-18 (where the EC was only 166 µS), and faster flow through the cave would give less time for solution to boost the concentration of dissolved material (and thence the EC). However the significant increase from sink to the cave stream in DD-4 (assuming the sink IS feeding water to DD-4!) suggests that there is still a significant component of saturated seepage water mixing with the stream waters.

The side passage at the entrance showed little change in its EC, even though the flow rate had increased from 0.02 to 0.05 L/s . Its temperature had not changed significantly.

The temperature of the main stream in DD-4 was a bit lower than last time (14.3˚C as against 15.1˚C in January, and also lower than the side stream at 15.3˚C). The DD-18 stream sink was 14.9˚C – slightly warmer, but not enough to build theories on.

D042549gt: Stream sink at DD-18. Arrow shows where the water was sinking into gravel in the stream channel on 13-11-2004.



Two profiles up the scarp near DD-4. The vertical scale is exaggerated x5. The datum for the vertical scale is just a contour on the 1:25,000 topo map, and would be +/- 3m.

Part 2: Surface levelling

On 10-6-2001 we used an Abney level & staff to measure two surface profiles up the scarp (see figure above). One ran past the DD-4 doline (solid line), and tied in to the DD-4 tag to allow an estimate of the cave stream level relative to the surface features. The second was measured along the boundary fence about 300m to the south (dotted line). The levels were not tied to any bench mark, but the lowest point on the southern level was at the fence next to the main road, and corresponded to the 50 m contour line, so that was taken as a rough datum (+/- 3m?). The profiles are shown in the figure, and tying to the contour line suggests a level of about 63 m SL (+/- 3m) for the cave stream at the DD-4 entrance.

For comparison, the contours on the topo sheet suggest the following:

- The plateau top is a bit over 120m ASL.
- The base of the scarp is between 40 and 50 m ASL
- The DD-18 stream sink is about 90 m ASL.
- The water in the Glenelg River is a bit below10 m ASL

Part 3: Cave biology

In the entrance zone of DD-4 we saw a lot of wetas, in several sizes. There were also several large 'garden' snails (*Helix sp*.) on the walls.