

IN THE MATTER OF The Resource Management Act 1991

AND

IN THE MATTER OF application for Resource Consents to Abstract water from

Mistake River (CRC031175) and

BY Lone Star Farms Limited Applicant

TO Canterbury Regional Council

**EVIDENCE OF DAVID JOHN BORAMAN IN SUPPORT OF APPLICATIONS BY LONE STAR
FARMS LIMITED**

Introduction

1. My Name is David John Boraman. I am a hydrological Consultant and a Director of Boraman Consultants Limited (BCL). I am a current member of the New Zealand Hydrological Society.
2. I hold a New Zealand Certificate in Engineering (Civil Option) I have been working in the field of Hydrology since 1986. I was employed by the South Canterbury Catchment Board, and by the Canterbury Regional Council (ECan) as a Hydrological Officer. I was later employed as the Hydrological Team Leader of the Southern (Timaru) Office, reporting directly to the Hydrologist.
3. In 1997 I was employed as the Field Hydrologist for Environmental Consultancy Services. (ECS) My work at ECS generally involved monitoring of irrigation abstractions and monitoring of flows for investigations for resource consent applications.
4. I am currently a Managing Director of Boraman Consultants Limited (formed in 2005). BCL monitor a proportion of South and Mid-Canterbury's irrigation takes and related minimum flow sites. BCL are currently involved in many investigations relating to resource investigations.
5. Although this is a Regional Council hearing, I have prepared my evidence in compliance with the Code of Conduct for Expert Witnesses set out in the Environment Court's consolidated Practice Note dates 31 July 2006. I confirm that my evidence is within my area of expertise.

6. SCOPE OF EVIDENCE

My evidence will provide the following

- a. Introduction
 - b. Flow data Summary
 - c. Analysis
 - d. Conclusions and proposed Mean Annual Low Flows for the subject waterway
- My Flow report is attached as appendices to this evidence

INTRODUCTION

7. Boraman Consultants Limited was commissioned to determine the Mean Annual Low Flow measurement for the Mistake River, this measurement being a key statistic for these waterways under the Waitaki Catchment Water Allocation Regional Plan.
8. A report produced by Environment Canterbury in 2005 titled “Seven Day mean annual low flow mapping of the Waitaki River” by Graeme Horrell and Suzanne Gabites is referred to in my evidence and has been the basis for much of my analysis.
9. Much of the previous flow measurements carried out in these streams were carried out by the Waitaki Catchment Commission from the mid 1970’s to early 1980’s. The statistics derived from the Gabites and Horrell report, for the Mistake River have been derived from measurements from the Forks River recorded by NIWA. I obtained copies of this information and applied nationally recognized audit procedures to the datasets. The results of the audit checks showed the data did not meet NIWA standards, and I requested a revision of data. From this the Forks Stream had a review carried out although not a formal audit.
10. As my Analysis was carried out with a revised dataset, my results necessarily differ from those set out in the Gabites and Horrell report. Mr Graeme Horrell was unable to revise his analysis using the updated dataset however, my analysis has been submitted to Mr. David Stewart, a consultant hydrologist engaged by ECan. Mr. Stewart has checked my analysis and accepted the revisions.
11. Previous information for the statistics for Forks River were extracted from the Gabites and Horrell report, Boraman Consultants checked the validity of the statistics of this report. The results are listed in Table 1 and did not vary from the Gabites and Horrell report greatly. However the revised dataset did affect the accuracy of the correlation between the Mistake River and the Forks River.

Table 1: Forks River Statistics

Statistic	Ecan	Niwa Revised (BCL)
Period	30/7/62 to Not Specified	30/7/62 to 16/4/07
7DMALF	1318 L/s	1278 L/s
5Y7DLF	1080 L/s	1035 L/s
Mean Flow	3203 L/s	3176 L/s

MISTAKE RIVER

12. PREVIOUS INFORMATION

Environment Canterbury derived flow record for Station Stream in the Gabites/Horrell report utilizing a correlation with 11 flow measurements carried out relating to their analysis and the Forks River. Specific values and dates relating to actual flow measurements were not included in their report.

BORAMAN CONSULTANTS ANALYSIS

13. ADDITIONAL INFORMATION

In 2005 I commenced a study into the hydrology of Mistake River between September 2005 and March 2007 a further 18 flow measurements were taken and a water level recorder was installed between November 2005 and June 2007.

I derived a flow record utilizing a linear correlation with the measured instantaneous values of Mistake River and the Daily mean recorded value for the Forks River. The calculated R2 for the correlation was 0.99 indicating excellent reliability.

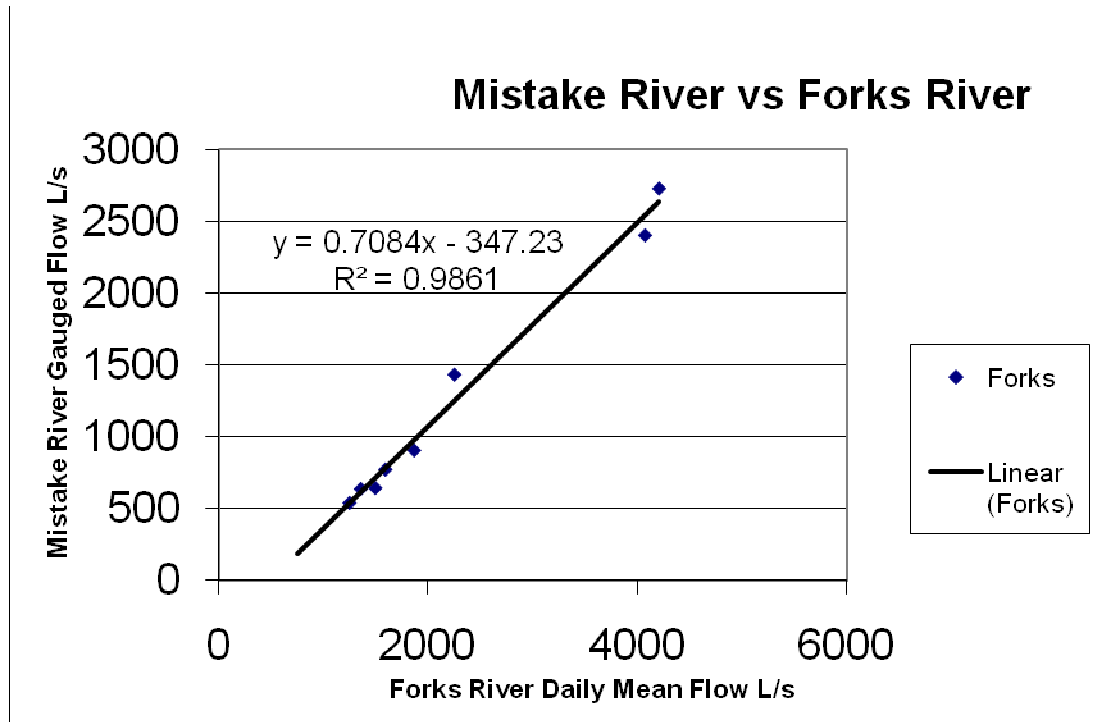


Figure 2: Mistake River Gaugings vs Forks River Daily Mean Flows (L/s)

14. The derived flow for Mistake River utilises the equation

$$\text{Mistake River} = 0.7084 \times \text{Forks} - 347 \text{ Litres per second.}$$

15. From my analysis I consider that the statistics for Mistake River to be:

Table 4: Mistake River Statistics

Statistic	Forks River	Mistake river
Period	30/7/62 to 16/4/07	30/7/62 to 16/4/07
MALF	1220 L/s	517 L/s
7DMALF	1278 L/s	558 L/s
5Y7dLF	1035 L/s	386 L/s
Mean Flow	3176 L/s	1902 L/s

CONCLUSIONS

16. My analysis supports the contention that the figure for Mean Annual Low Flow for Mistake River is 517 Litres per second. This figure was rounded to 520 litres per second.

NOTES ON SECTION 42A REPORTS

17. The matter of the minimum flow site being below the points of abstraction has been addressed in my evidence relating to UWAG clients, when referring to Section 42A report 2A. It should be noted that this is the case with the Mistake River. The minimum flow site is below the point of abstraction and the annexed graph will not work as the WCWARP intended.
18. When referring to the annexed graph for the Mistake River the flow of the river must be referred to as the natural flow, i.e. the residual in addition to the abstraction from Mistake River.
19. The conditions set out in section 42A report, 25A page 25, condition WP07 is correct.