

The following application was submitted to the MARGINS Office:

Name:

Stephen Coleman

Category: Other: Senior Lecturer

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Statement of interest:

I am highly interested in the workshop based on my background and skills; my past, present and intended research in regard to the Waipaoa River; and my experience of international and national collaborative research in this field. This is expanded below.

My background is in geomorphic and sedimentary processes in rivers as this relates to fluvial sediment transport, particularly erosion/ scour processes in rivers (e.g. bed form processes, aggradation and degradation processes, bend erosion and lateral erosion). In particular, I have won awards for my research into bed forms, and I have been invited to present a workshop (Taiwan, 1998) and write a book (Melville and Coleman, 2000) and sections of books (Melville et al., 2003; Coleman, 1996) based on my work on bed forms and erosion/ scour processes in rivers. I am presently the PI on a New Zealand Marsden Fund grant for work in collaboration with NIWA (2003-2005) into bed-form mechanics and processes. I am also presently involved in a US NCHRP project looking at erosion processes around bridge abutments.

In regard to the Waipaoa River, I have researched the river system (morphology, hydrology, hydraulics, and sediment transport), together with other river systems within New Zealand, publishing the Waipaoa material in a book (Melville and Coleman, 2000), and papers (e.g. Coleman, Melville and Lauchlan, 2000). I am further presently researching the river system (analyzing hydraulic geometry and linking this to the evolution of the channel/floodplain system) in an NSF funded project with Professor Basil Gomez of Indiana State University and Dave Peacock of the local Gisborne District Council. Given the databases and measuring sites associated with the river, it is my aim to carry out future field assessments of general scour processes for this river, principally field studies of bed-form

behavior and motion and the relation of this to sediment transport through the system; bend-scour processes and magnitudes; and lateral erosion in relation to the river system.

Short resume:

HONOURS

2001 Recipient of New Zealand Fulbright Fellowship for visit to and research (into subaqueous sediment movement and sediment waves) at The University of Illinois at Urbana-Champaign, Illinois, U.S.A.

1995 Recipient of the international Lorenz G. Straub Award from the University of Minnesota for the most meritorious thesis at PhD level in hydraulic engineering or a closely related field

PROFESSIONAL MEMBERSHIP

1. Member, International Association of Hydraulic Engineering and Research
2. Committee Member, Task Committee on Bed Forms and Flow of the Sedimentation Committee of the American Society of Civil Engineers
3. Member, Institution of Professional Engineers, New Zealand (IPENZ)
4. Member, New Zealand Society on Large Dams, IPENZ
5. Member, The Modelling Group, New Zealand Water and Wastes Association
6. Member, New Zealand Water and Wastes Association
7. Member, New Zealand Hydrological Society

SELECTED PUBLICATIONS

Books

1. MELVILLE, B. W., and COLEMAN, S. E. Bridge scour. Water Resources Publications, Colorado, USA, 550pp, 2000.

Sections in Books

2. MELVILLE, B. W., PAROLA, A. C., and COLEMAN, S. E. Bridge-scour prevention and countermeasures. In M.H. Garcia (ed.), Sedimentation Engineering, American Society of Civil Engineers, New York, NY, USA, 2003.
3. COLEMAN, S. E. Wave generation and development on a sandy river bed. Discussion of 'The stability of a sandy river bed', by J. Fredsøe. In T. Nakato and R. Ettema (eds), Issues and Directions in Hydraulics, Rotterdam, A. A. Balkema, 145-155, 1996.

Refereed Journal Articles

4. COLEMAN, S. E., LAUCLAN, C. S., and MELVILLE, B. W. Clear-water scour development at bridge abutments. Accepted for publication in Journal of Hydraulic Research, IAHR, 2003.
5. COLEMAN, S. E., ANDREWS, D. P., and WEBBY, M. G. Overtopping breaching of noncohesive homogeneous embankments. Journal of Hydraulic Engineering, ASCE, 128(9), 829-838, 2002.
6. ASCE TASK COMMITTEE ON FLOW AND TRANSPORT OVER DUNES. Flow and transport over dunes. Journal of Hydraulic Engineering, ASCE, 128(8), 726-728, 2002.

7. COLEMAN, S. E., and MELVILLE, B. W. “Case Study: New Zealand bridge-scour experiences.” Journal of Hydraulic Engineering, ASCE, 127(7), 535-546, 2001.
8. COLEMAN, S. E., and ELING, B. “Sand wavelets in laminar open-channel flows.” Journal of Hydraulic Research, IAHR, Vol. 38, No. 5, 331-338, 2000.
9. COLEMAN, S. E., and FENTON, J. D. “Potential flow instability theory and alluvial stream bed forms.” Journal of Fluid Mechanics, Vol. 418, 101-117, 2000.
10. COLEMAN, S. E., and MELVILLE, B. W. ‘Initiation of bed forms on a flat sand bed.’ Journal of Hydraulic Engineering, ASCE, 122(6), 301-310, 1996.
11. COLEMAN, S. E., and MELVILLE, B. W. ‘Bed form development.’ Journal of Hydraulic Engineering, ASCE, 120(5), 544-560, 1994.

Refereed Conference Papers

12. COLEMAN, S. E., MELVILLE, B. W., and LAUCLAN, C. S. ‘New Zealand reflections on bridge scour.’ In ‘Scour of Foundations’, J. Briaud (ed.), Proc., Int. Symp., Melbourne, Australia, November 19, 2000, 286-296.
13. ETTEMA, R., MUSTE, M., and COLEMAN, S. “Flume notes on sediment transport and boil formation in ice-covered channels.” Proc., 28th Congress of the International Association for Hydraulic Research, Graz, Austria, 22-27 August, 1999, 6pp.
14. GORE, L., COLEMAN, S., and MELVILLE, B. “Channel scour downstream of Aniwhenua Barrage.” Proc., “The Sustainable City”, IPENZ Annual Conference, Auckland, New Zealand, February, 1998, Vol. 3, 77-81.
15. COLEMAN, S. E. ‘Ultrasonic measurement of sediment bed profiles.’ Proc., 27th Congress of the International Association for Hydraulic Research, San Francisco, California, USA, August, 1997, B221-B226.

Technical Reports

16. COLEMAN, S. E., and CAMERON, S. ‘Erodibility tests of marine sediments: Project Manukau.’ Report Ref. No. 8780.00, Auckland Uniservices, The University of Auckland, Auckland, 10pp, 2001.
17. COLEMAN, S. E., and MELVILLE, B. W. ‘Waioeka and Otara Rivers confluence hydraulic model study.’ Report Ref. No. 8358.00, Auckland Uniservices, The University of Auckland, Auckland, 97pp, 2001.
18. COLEMAN, S. E., and MELVILLE, B. W. ‘Bridge-scour screening methodology.’ Report Ref. No. 8094.00, Auckland Uniservices, The University of Auckland, Auckland, 106pp, 2000.
19. WARBRICK, P., COLEMAN, S. E., and MELVILLE, B. W. ‘Wairoa River - preliminary hydraulic study of the Wairoa River.’ Report for Force Corporation Ltd, 47pp, June 2000.
20. COLEMAN, S. E. ‘Alluvial bed forms.’ Report Ref. No. 588, School of Engineering, The University of Auckland, Auckland, 218pp, 1999.

SELECTED INVITED PRESENTATIONS

Workshops

21. MELVILLE, B. W., and COLEMAN, S. E. ‘Workshop on Bridge Scouring.’ Two-day short course held at National Central University, Taiwan, July, 1998.

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ABSTRACT

Title:

Authors:

Abstract:

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