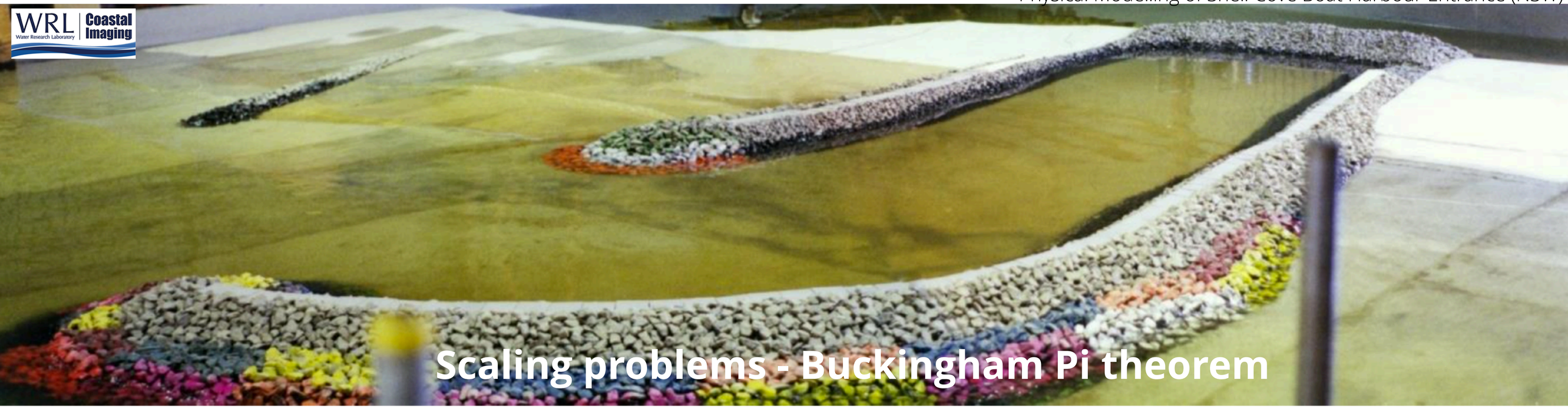
Physical modelling: laboratory models

Physical Modelling of Shell Cove Boat Harbour Entrance (NSW)



- For most coastal hydrodynamics problems, the physics of the fluid flow can be described by the velocity V, length L, force F, mass density ρ, dynamic viscosity μ, and gravity g.

	V	L	F	ρ	μ	g
L	1	1	1	-3	-1	1
T	-1	0	-2	0	-1	-2
M	0	0	1	1	1	0

Matrix of fundamental units

→ The number of dimensionless products in the complete set as 6-3=3

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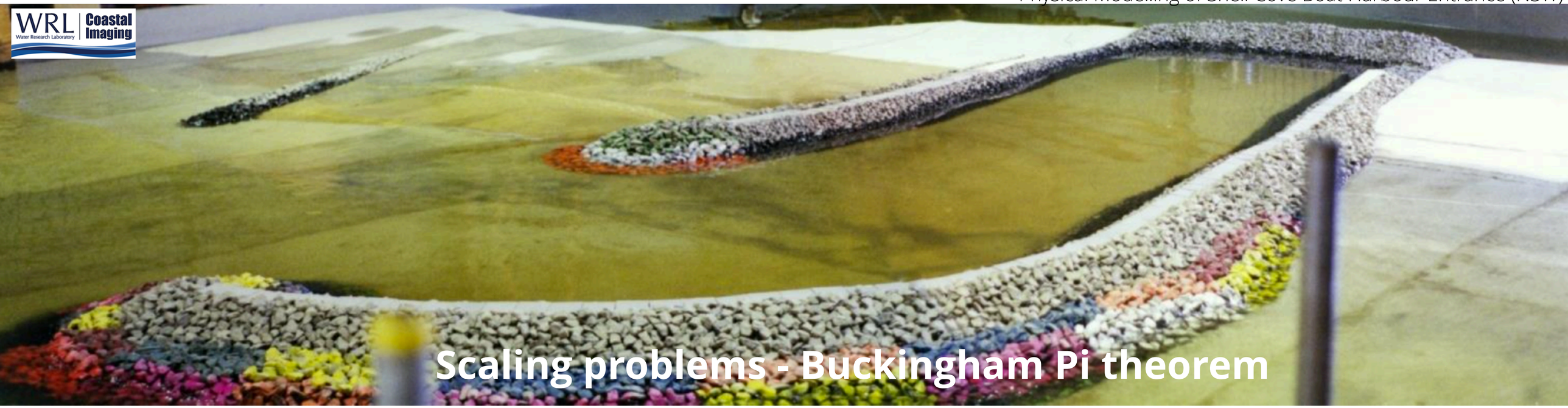

- Each of the product will have the form given by the expression:

exponents to be determined

$$\pi_{1\cdots3} = V^{k1}\, L^{k2}\, F^{k3}\, \rho^{k4}\, \mu^{k5}\, g^{k6}$$

dimensionless number