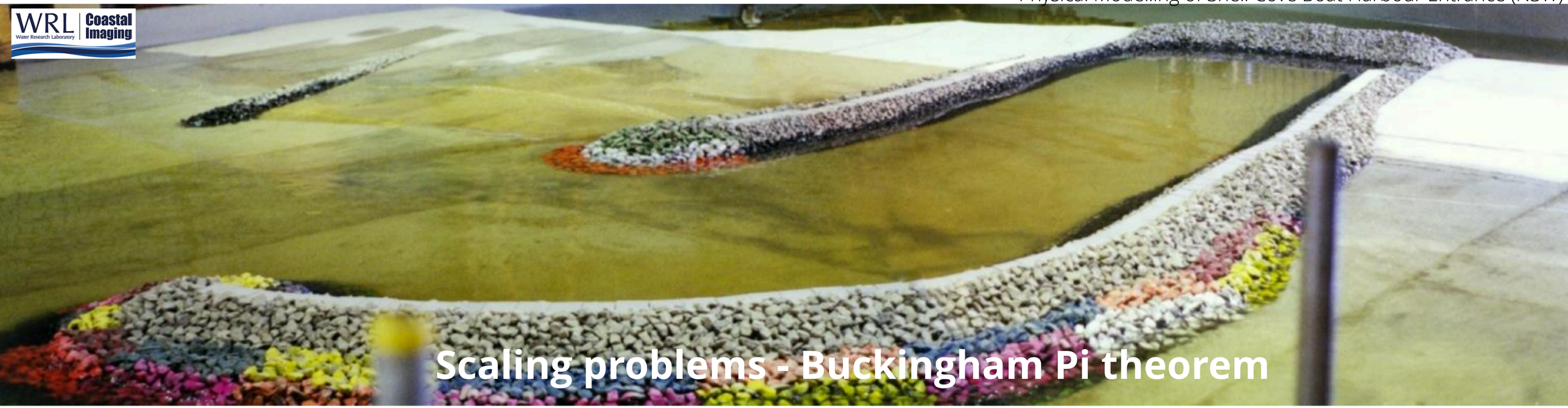
Physical modelling: laboratory models

Physical Modelling of Shell Cove Boat Harbour Entrance (NSW)



- The theorem states that if there is a physically meaningful equation involving a certain number **n** of physical variables with ***k*** the number of physical dimensions involved, then the original equation can be rewritten in terms of a set of $p = n - k$ dimensionless parameters π_1, π_2, ..., π_p constructed from the original variables.
- The theorem provides a method for computing sets of dimensionless parameters from the given variables

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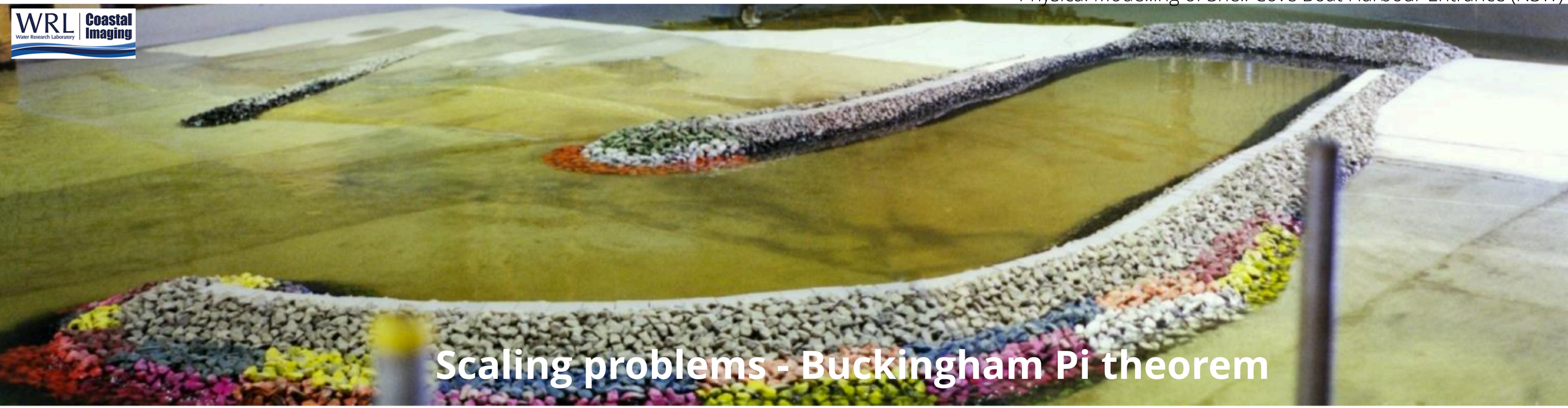

- For most coastal hydrodynamics problems, the physics of the fluid flow can be described by the velocity V, length L, force F, mass density ρ, dynamic viscosity μ, and gravity g.

	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