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National Water Reform – Public Inquiry

Water reform – ecology and agricultural science

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All reports on water management in the Murray-Darling Basin and elsewhere in Australia suggest that little progress has been made in understanding Australia's water supply systems and, as a result, water is being used unsustainably in many catchments. The National Water Initiative attempted to address this problem but little progress has been made in finding a solution.

It is argued that an important reason for this situation is that, from the very beginning, water management has been seen as a political undertaking on the assumption that the mechanics of water supply were well understood. That this situation persists is confirmed by the absence in the Intergovernmental Agreement on a National Water Initiative or in all subsequent reports, of a statement of how the water is supplied in the various catchments considered. It is assumed that those 'in authority' know how the system works, and so are capable of managing it. The evidence suggests that this assumption is incorrect.

It is suggested that, before an attempt is made to manage the innumerable basins which provide Australia's water supplies, it is first necessary to recognize that all catchments are different and that the relationship between rainfall and runoff is at the very core of hydrology (Freeze and Cherry 1979, p. 217). The path by which water reaches a stream depends upon such controls as climate, geology, topography, soils, vegetation and land use. Therefore, hydrology is an important component of ecology, as explained by Horton (1933). This fact has not been recognised in Australia and we have entrusted water management of civil engineers who have been trained in hydraulic engineering and the design of dams but with not in ecology.

It is well known that most Australian water is used in Agriculture which is why water management is central to agriculture. All the factors which influence the movement of rain water to streams (listed above) are covered in some detail in courses in Agricultural Science, but few agricultural scientists are employed in water management positions. This situation must change if we are to 'complete the return of all currently over-allocated or overused systems to environmentally-sustainable levels of extraction' (NWI 2004) (outcome v).

Before a professional officer is given the responsibility of restoring over-allocated systems to sustainability, it is essential that he or she is able to provide the local community with a detailed account of 'how the system works' and to provide scientific proof that the proposed system is capable of restoring the catchment. In other words, the proposed solution must be well grounded in science, and science is demonstrable knowledge.

To date, this approach has been absent from water management in Australia. Once we are able to explain and demonstrate the science of water movement is catchments, then we can move to effective, political management.

References

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Horton, RE 1933, *The relation of hydrology to the biological sciences*, Transactions of the American Geophysical Union, vol. 14, pp. 23-25.

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