Water Resources Management
Spring 2015
Roger C. Bales

	Week	Topic	Reading	In class	Homework
1	1-19	Water Resources, water security, historical challenges	ICA 2012, UN 2013, Hanak ch1	discussion	
2	1-26	Hydrologic context, California & western U.S.	CWP ch1.3, CWP highlights	discussion	HW1
3	2-2	Water law, Water rights	WEF	analysis	HW2
4	2-9	Water institutions – California, IRWM	CWP ch1.4	discussion	HW3
5	2-16	Demand context, valuing water, agriculture, urban, environmental	Hanemann	discussion	HW4
6	2-23	Diversions, accounting, full natural flow, water information, modeling	Harou	analysis	HW5
7	3-2	Groundwater regulation, depletion, conjunctive use	Faunt	Modeling	HW6
8	3-9	Conservation, agriculture, urban, environmental, sustainability	CWP 3.3	modeling	HW7
9	3-16	Droughts, extent, climate context, adaptation	MacDonald	analysis	HW8
10	3-30	Floods & flood control, frequency, climate context	Lund	discussion	HW9
11	4-6	Sacramento-San Joaquin Delta	PPIC	analysis	HW10
12	4-13	Natural capital, forest & watershed management	WRI	discussion	HW 11
13	4-20	Hydropower, facilities, pumped storage, latitude of operation	various	modeling	Optional
14	4-27	Projects & discussion	none	students	–
15	5-4	Open week	–	–	–
16	5-11	Finals week	–	–	–

Week 1-2 reading

ICA 2012-08*. Global Water Security, Intelligence Community Assessment*.

UN 2013. *Water Security & the A UN-Water Analytical Brief Global Water Agenda*, Ch 1.

E. Hanak et al., ch 1 Floods, Droughts, and Lawsuits: A Brief History of California Water Policy. In *Managing California's Water, From Conflict to Reconciliation*. PPIC 2011.

CWP 2013 *Highlights*. *California Water Plan Update*.

CWP 2013 ch1.3. California water today, in *California Water Plan Update*, vol 1 The Strategic Plan.

Week 1-2 background

C. Sadoff & M. Muller, *Water Management, Water Security and Climate Change Adaptation: Early Impacts and Essential Responses*, Global Water Partnership Technical Committee, TEC paper no. 14.

C. Vorosmarty et al., Global threats to human water security and river biodiversity, *Nature*, 2010.

Mount, J. F. (1995). *California Rivers and Streams: The Conflict Between Fluvial Process and Land Use*. University of California Press. See ch 8 & part of ch 9.

Week 3 reading

Water Education Foundation. *Layperson's Guide to Water Rights Law*, 2013

Week 3 background

Sawyer, California Water Rights: An Introduction

Week 4 reading

CWP 2013 ch1.3. Strengthening Government Alignment, in *California Water Plan Update*, vol 1 The Strategic Plan.

Week 4 background

F.G. Mukhtarov, Intellectual history and current status of Integrated Water Resources Management: A global perspective. in *Adaptive and Integrated Water Management*; C. Pahl-Wostl, P. Kabat, J. Möltgen eds. Springer, 2008.

Week 5 reading

W. M. Hanemann, The economic conception of water, in *Water Crisis: myth or reality*? Eds. P.P. Rogers, M.R. Llamas, L. Martinez-Cortina, Taylor & Francis plc., London, 2006.

Week 5 background

D.S. Brookshire, L.S. Eubanks, C.F. Sorg. Existence Values and Normative Economics: Implications for Valuing Water Resources, Water Resources Research, 22:11, 1509–1518, 1986

Week 6 reading

Harou, Julien J., Manuel Pulido-Velazquez, David E. Rosenberg, Josué Medellín-Azuara, Jay R. Lund, and Richard E. Howitt. "Hydro-Economic Models: Concepts, Design, Applications, and Future Prospects." Journal of Hydrology 375, no. 3–4 (September 15, 2009): 627–43. doi:10.1016/j.jhydrol.2009.06.037.

Week 6 background

Loucks. Ch 2 in Water Resource Systems Modelling: Its Role in Planning and Management in Loucks, Daniel P., Eelco van Beek, Jery R. Stedinger, Jozef P. M. Dijkman, and Monique T. Villars. 2005. Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications. Paris : UNESCO

Week 7 reading

Faunt et al., Groundwater Availability in California's Central Valley, Chapter B in *Groundwater Availability in California's Central Valley,* ed C.C. Faunt, USGS Professional Paper 1766, 2009.

Week 7 background

Conjunctive Management and Groundwater Storage, v 3, ch 9 in California Water Plan, Update 2013.

Week 8 reading

California Water Plan, Agricultural Water Use Efficiency, Chapter 3, in Vol 3, Resource Management Strategies, pp 18-30.

California Water Plan, Urban Water Use Efficiency, Chapter 3, in Vol 3, Resource Management Strategies, pp 5-30.

Week 8 background

H. Cooley, J. Christian-Smith, P.H. Gleick. More with Less: Agricultural Water Conservation and Efficiency in California, Special Focus on the Delta. Pacific Institute, 2008.

LADWP. Urban Water Management Plan, Executive Summary, 2010.

Week 9 reading

G.M. MacDonald, Severe and sustained drought in southern California and the West: Present conditions and insights from the past on causes and impacts, Quaternary International, 173–174 (2007) 87–100.

Week 9 background

CADWR, California's Drought of 2007–2009.

Week 10 reading

J. Lund, Flood Management in California, *Water* (2012) 4, 157-169.

Week 10 background

California Water Plan 2013, Vol 3, Ch 4. Flood Management.

P.C.D Milly (2002) Increasing Risk of Great Floods in a Changing Climate. *Nature* 415 (6871): 514–17.

Week 11 reading

Executive summary & Chapter 3 in J. Lund, Comparing Futures for the Sacramento-San Joaquin Delta, PPIC report, 2008.

Week 11 background

Executive summary & Chapter 7 in J. Lund, Envisioning Futures for the Sacramento-San Joaquin Delta, PPIC report 2007.

Week 12 reading

T. Gartner, "Natural Infrastructure: Investing in forest Landscapes for Water Protection in the United States", World Resources Institute.

Week 13 reading

Egré, D., and Milewski, J. C. (2002). "The diversity of hydropower projects." *Energy Policy*, Hydropower, Society, and the Environment in the 21st Century, 30(14), 1225–1230.

Oud, E. (2002). "The evolving context for hydropower development." *Energy Policy*, Hydropower, Society, and the Environment in the 21st Century, 30(14), 1215–1223.

Frey, G. W., and Linke, D. M. (2002). "Hydropower as a renewable and sustainable energy resource meeting global energy challenges in a reasonable way." *Energy Policy*, Hydropower, Society, and the Environment in the 21st Century, 30(14), 1261–1265.

Week 13 background

Chen, Q., Zhang, X., Chen, Y., Li, Q., Qiu, L., and Liu, M. (2015). "Downstream effects of a hydropeaking dam on ecohydrological conditions at subdaily to monthly time scales." *Ecological Engineering*, 77, 40–50.