Thinking Big:
Is It Time for Transformative Changes in California Water Policy?

Privilege & Honor to Give Anne Schneider Lecture

- One of the great water lawyers in the State of California - and one of the first women to practice in the natural-resources law field
- Died far too young - 63, same age that I will turn this year
- Importantly for my purposes this afternoon:
  - Thought big and not afraid to encourage her clients to think big
  - Anne recognized the responsibility of lawyers to reform and improve the law, to promote the public interest - and recognized that strong water law and policy would ultimately redound to the benefit of her clients
  - Anne also very interested in two of the subjects that I want to discuss: groundwater management, and ecological protection
- Not only want to deliver the Schneider lecture, but dedicate it in her honor

Introduction

A Century of Incremental Change - of "small," albeit often important, thinking?

- Starting point: although Anne thought big, not sure that the State has always done so.
  - Reform, for purposes of California water policy, devolved in recent decades into a series of incremental improvements (and sometimes steps backward)
  - Until recently, had begun to wonder whether we had lost our ability to "think big" - or at least "act big"

- 100th anniversary of the implementation of the California Water Commission Act of 1913
  - Created the California Water Commission
  - Established permit system for new appropriative rights to surface water
  - But excluded pre-existing appropriative rights, riparian rights - and groundwater - creating a fragmented and gap-filled system of water management

- Other key elements of California water policy predated:
  - Prior appropriation system-1872 (statute), 1855 (California Supreme Court)
  - Creation of State Engineer - William Hammond Hall, 1878
    - Emphasis on *large regional* water projects - CVP, SF
    - 1919: Publication of plan by Lt. Col. Robert Marshall (USGS) for SWP
  - Wright Act - 1887
    - Local water districts ⟶ major management unit

- Would argue that California water policy has seen primarily incremental change since then
    - 1928 Constitutional Amendment: corrected judicial misstep in *Herminghaus v. Southern California Edison* by declaring all water subject to "reasonable and beneficial use" requirement
    - Build those large, regional projects conceived in the 19th century:
        - CVP (1933: state, 1935: federal)
        - SWP (Bums-Porter Act, 1959)
    - Reorganized and renamed various entities:
        - California Water Commission → State Water Rights Boarb → SWRCB (merger with water quality board) .
        - Merged several existing departments, including the State Engineer, into DWR (1956)
    - Enacted legislation and institutions to promote water transfers, but had recognized and affirmed transfers over a century and a half ago (McDonald v. Bear River Co. -- 1859)
    - All of these were significant measures, but all were *additive* to the framework that had already been created - and involved little rethinking of our water framework

- The major changes in California water policy have been in the environmental field - but driven primarily by the courts, not the legislature, *or* by the federal government
    - 1972 Clean Water Act (forced attention to the Delta)
    - 1983: National Audubon Society v. Superior Court
    - The major change (in terms of actual impact on water policy has been the 1973 federal Endangered Species Act
    - *And even these changes are now more than 30-years distant*

- Not much of an overstatement to say that virtually nothing of major significance has happened in *California* water policy since I was a water law student of Charlie Meyers
    - Meyers, of course, was a member of Governor Brown's 1978 Commission to Review California Water Rights Law
        - As Greg Thomas commented in a symposium on that report in 2005, "California's water world has changed a great deal since 1978, and yet the legal structures have remained very much the same."
    - In discussing California in my Water Law class year in and year out, the challenges have remained largely the same - and the solutions remained unadopted

In the Meantime, Many Other Jurisdictions Have Totally Revamped Water Policy

- They've "Thought Big"
- 1990s: 30 states adopted major new groundwater laws or policies, addressing problems ranging from GW depletion to conflicts between GW-SW that still plague much of California today
- The European Union adopted a new Water Framework Directive, binding on all members, designed to refocus their water policies on the protection of water-dependent ecosystems and the recognition of water otherwise as an economic commodity
- South Africa adopted a new constitution that enshrined both the concept of ecological water reserves and a human-right to water
- Australia recast its water policies to focus far more on market mechanisms

Perhaps Not Surprising that California Water Policy Has Remained Largely Stable

- Change is costly, both politically and economically
    - That's particularly true of fundamental reforms
- Property rights, and constitutional protection of those rights, remains in the background of all reform discussions
- So change does not tend to occur unless:
    - Current system becomes so costly that the value of change greatly outweighs its cost, *or*
    - New technologies open up new opportunities

But Fundamental Reforms Are on the Horizon, If Not Here Today

- Problems, as well as increasing scientific understanding and technological change, will force us to think about changes in many area
- This afternoon, I want to focus on the need to "think big" in four areas
    - Managerial gaps - particular for groundwater
    - Technological changes - and the potential ramifications for water institutions
    - The role of the market in water management
    - Our approaches to protecting ecological change

1. Managerial Gaps

- Can be relatively confident that reform will finally take place in groundwater
    - Governor Jerry Brown's Office: California Water Action Plan
    - ACWA: Recommendations for Achieving Groundwater Sustainability
    - California Water Foundation: Groundwater dialogues
    - S.B. 1168 - "Sustainable Grotmdwater Management Act" (Fran Pavley)
    - All not only recognize need for change, but in very similar terms

- Only surprise is that change has not come earlier
    - William Blomquist study in late 1990s: likelihood ofreform increases with (1) increasing dependence on groundwater, (2) degree of groundwater threats, and (3) moralistic political culture
        - At time of study, California was the major outlier
    - Problem of unsustainable groundwater pumping particularly severe in CA
        - Might have been able to ignore before - but GRACE has enabled us to quantify
        - The greatest GW concern in the US is Ogallala (or High Plains) Aquifer: #1 in terms of use, #I in terms of depletion rate (36% of all US depletion)
            - And difficult to solve because of low recharge rate
        - But Central Valley of California is #2 both in use &depletion
            - About 15% of stored water (and same percentage of total US depletion)
            - Annual volume of water lost each year is approximately equivalent to Lake Mead
            - And concentrated largely in just one part of the CV – Tulare basin
            - Particularly troubling given high dependency of local ag

- General direction of groundwater reform is appropriate
    - State sets overall standards
    - But local governments implement and enforce
    - A "cooperative federalism" approach much like used under CAA andCWA
    - Management is built around a flexible goal of sustainability

- ***Ultimate success, however, will depend on at least two things about which we should and must "think big":***
    - Appropriate state goals for groundwater management
    - Comprehensiveness of the groundwater reforms

- ***State Goal for Groundwater Management***

    - ***Major opportunity to rethink our values and thus our goals in groundwater management specifically - and in water management more generally***

    - As noted, "sustainability" is a good start
        - ACWA and S.B. 1168 should be complemented
        - Important step away from discredited concept of "safe yield"
    - Perhaps one of the most misunderstood and overly appropriated concepts in modem resource management
    - 1987 Brundtland Report ("Our Common Future"): management is sustainable if it "meets the needs of the present without compromising the ability of future generations to meet their own needs."
    - USGS report in 1999: "Development and use of groundwater in a manner that can be maintained for an indefinite time without causing unacceptable environmental, economic, or social consequences."
    - Commentary has emphasized the ambiguity and discretion intrinsic to this definition and therefore the need for greater guidance
        - The details of the definition are what matter.
        - In a generally excellent report, e.g., ACWA deemphasizes the intergenerational element of "sustainability." Thus, ACWA defines sustainability over a "planning and implementation horizon" of 50 years
            - Most analyses, by contrast, emphasize the need for a longer multi-generational time frame of twice that length
        - ACWA's definition also fails to elucidate the types of harms that should be avoided, leaving the possibility that economic needs for greater groundwater could regularly trump intra- and inter-generational harms from long-term overdrafting
    - The definition of "sustainable groundwater management" in S.B. 1168 seems better, both for its enumeration of specific types of impacts to be avoided and its emphasis of intergenerational equity:
        - "'Sustainable groundwater management' means the management of a groundwater basin to provide for multiple *long-term* benefits without resulting in or aggravating conditions that cause significant economic, social, or even environmental impacts *such as* long-term overdraft, land subsidence, ecosystem degradation, depletions from surface water bodies, and water degradation, *in order to protect the resource for future generations.* "
    - Australia, in its definition of sustainable groundwater management, has also emphasized the importance of the precautionary principle
    - Another question about which we must "think big" is *who* determines what is sustainable and *how*
        - ACWA and S.B. 1168 are so far silent on these issues
        - Determining what sustainability means provides an excellent opportunity for each community to discuss and evaluate, in an open and public forum
        - Ultimately, moreover, state-wide considerations

- ***Comprehensiveness of Groundwater Reform***

    - ***One of the flaws in California water policy in the past has been the failure to reflect interconnections between and among issues - we historically have fragmented our issues. GW management is an opportunity for changing that approach.***

    - ACWA report focuses on impacts of groundwater extraction on the groundwater aquifer itself and overlying land - "potentially unsustainable groundwater level declines, local subsidence and degraded groundwater quality."
        - But groundwater extraction also can affect surface water availability and groundwater dependent ecosystems
        - Rebecca Nelson study:
            - 55 reported conflicts between 2008 and 2012
            - 91% involved GDEs
            - 53% involved potential impacts on surface water right holders
        - Not surprising: 89% of watersheds in California contain some form of GDEs, and a TNC study found a high correlation between high concentrations of GDEs and high water demand
        - S.B. 1168 explicitly mentions potential impacts on surface water, but is unclear as to how law would actually apply
        - Difficult to address (and don't want to deter any reform), but addressing these connections is not impossible
            - Virtually all other states now protect surface water users
            - Growing number of states and foreign jurisdictions addressing GDEs

2. New Technologies

- Fundamental change also likely to come from new technologies in at least four different areas:
  - Sources of water:
    - Recycling
    - Desalination
  - Conservation opportunities:
    - Smart irrigation controllers
  - Water processing:
    - Wetland purification systems
    - Porous surfaces
  - Data
    - Groundwater management
    - Smart meters

- New technological opportunities raise at least two sets of interesting policy issues about which we need "big thinking."

- ***First, how can we promote the development and implementation of such technology?***
  - Rate technological advance in the water field has been far slower than in the energy arena.
  - Potential steps:
    - Governmental funding of technological research (such as the Energy Innovation Funding Opportunities at the CEC)
    - Water pricing
    - Governmental encouragement (e.g., portfolio standards)

- ***Second, what are the implications for water policy and institutions?***
  - Traditional water policy built around assumption that water systems will rely on large, often regional, engineered infrastructure systems
  - Consider two ways in which that traditional view might be challenged in the future
  - More distributed, decentralized water systems
    - Centralized systems costly both in capital (pipes) and operating costs (energy)
      - Constraints and pressures will militate against these traditional systems in the future
    - Compare new distributed water recycling facilities
    - How will this affect the importance and value of centralized systems, such as the State Water Project?
    - How will this affect the relationship between individual users and neighborhoods and their historic water suppliers?
  - Greater use of green infrastructure
    - Will require greater coordination between water supply systems and land use planners

3. Water Markets

- California has done a great deal to promote water markets
  - Protection of conserved water
  - Streamlined proceedings
  - Clearer authority for transfers by districts
- But water marketing has leveled off since the early 2000s
  - Yet still significant "arbitrage" opportunities
- Incremental changes can still help
  - Improvement in groundwater banking laws (S.B. 1168)
  - Removal of remaining process impediments

- ***Question is whether there are opportunities for more fundamental changes in the manner in which we think about water markets. How might we be able to produce even greater economic value by thinking "bigger" about water?***

- ***Development of Large Regional Marketing Institutions***
  - Always significant difference between formal transfers and intra-institutional trading
    - Water districts often facilitate large internal markets
  - Raises the option of trying to link large water suppliers together in order to create more effective regional water markets
    - Merger, umbrella institutions
    - Would need authorization to exempt such transfers from state review
  - Institutions do not even need to be physically adjacent where wheeling opportunities are present

- ***Independent Service Operator***
  - 2011 "Managing California's Water"
  - Start by linking CVP and SWP
  - Promote trading at multiple time scales
  - Not an idiosyncratic idea -- England has been examining setting up an ISO for its water industry

4. Ecological Protection

- Current system of ecological protection, led by the Endangered Species Act, does not seem to be working well for anyone
    - Continued decline in health of California fish species
        - Peter Moyle study
        - Further impacts of climate change
    - Conflict with water users
        - Delta
        - Difficulty of explaining to water users

- ***"Big thinking" will again be needed here, although the directions that such thinking will take us is less clear***

- Likely direction is less focus on individual species - and more on overall ecosystem health
    - Probably greater focus also on the multiple environmental services that we receive from healthy ecosystems, rather than on a singular focus on biodiversity and species protection
        - Ultimately, in my view, what we should care about
        - Easier, at least in theory, to explain the importance of protecting
        - Increasing number of tools permit us to aggregate, value, and balance
    - May be possible without Congressional action
        - Potential discretion under section 6 of the ESA

- Problem is whether can move to another system without giving up current environmental leverage
    - Environment often loses out politically in discretionary decision-making
    - ESA is one of the few laws that provides strong environmental support
    - And establishes a relatively clear line for determining protection
    - Can we create a policy that provides equivalent backbone, but at the same time increased discretion to focus on the most meaningful measures?