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California's Groundwater Crisis: A Case for the Regulation of Groundwater Substitution Transfers

Chelsea Scharf*

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Abstract

This paper focuses on the California State Water Resources Control Board's regulation of "temporary groundwater substitution transfers." A survey of State Water Board orders issued over the past decade suggests that the agency, for a variety of reasons, is routinely approving petitions for transfers without adequately analyzing the water supply and environmental impacts of these transfers, as is required by law. To address that problem, this article recommends ways in which the State Water Board can better comply with the statutory requirements governing its approval of groundwater substitution transfers. Because of the need to promote the long-term viability of California's threatened groundwater resources, proper regulation of these transfers is imperative.

I. Introduction

California's Central Valley has been sinking over the course of the 20th century, a condition that has been described as the single largest human-caused alteration of the earth to date.¹ This alteration has occurred because the state's groundwater demand exceeds its groundwater reservoirs' capacity for renewal.² The drought has only worsened the situation. California is in the midst of a record-setting drought, which began in 2012 and now includes the most extreme drought indicators on record.³ The drought has led to acute water shortages, groundwater overdraft, and critically low stream-flow.⁴ It has also resulted in an increase in the use of temporary water

1. Janny Choy and Geoff McGhee, *Groundwater: Ignore It, and It Might Go Away* (July 2014), <http://waterinthewest.stanford.edu/groundwater/overview/>

2. Amanda Mascarelli, *Demand For Water Outstrips Supply*, NATURE INTERNATIONAL WEEKLY JOURNAL OF SCIENCE (Aug. 8, 2012), <http://www.nature.com/news/demand-for-water-outstrips-supply-1.11143>

3. Noah S. Diffenbaugh et al., *Anthropogenic Warming Has Increased Drought Risk in California*, PNAS (VOL. 122, NO. 13) 3931 (2015), <http://www.pnas.org/content/112/13/3931.full.pdf>

4. *Id.*

transfers, which tend to be used more during dry years when water demand is greatest.⁵

A “groundwater substitution transfer” occurs when a water user agrees to transfer its surface water to another water user, and then pumps groundwater to satisfy its own water needs.⁶ The water user can pump essentially unlimited amounts of unregulated groundwater and, as a result, transfer its “saved” surface water. The State Water Resources Control Board has facilitated these groundwater substitution transfers by consistently approving such transfers over the past decade.

Those consistent approvals reflect a broader state policy favoring water transfers. Water transfers lead to the improved valuation of water resources, resulting in an efficient use of water benefiting both the buyer and the seller, and serving as a potential adaptation response to climate-induced disruptions of water supplies. But transfers also pose risks. The overuse of groundwater has led to conditions of overdraft, which can harm surface water rights, diminish river flows, and impact fish, animal, and plant communities that depend on groundwater. Other environmental impacts associated with groundwater substitution transfers include environmental impacts from new pumping facilities, such as impacts to air quality.

Existing law is not blind to those risks. Before approving a temporary water transfer petition, the State Water Board must ensure that a proposed transfer (1) would only involve water that would have been consumptively used in the absence of the transfer; (2) would not injure other legal users of water; and (3) would not unreasonably affect fish, wildlife, or other instream beneficial uses.⁷ Implicit in those requirements is an obligation to consider cumulative impacts to which individual transfers might contribute, and also to base decisions on recent, accurate data on aquifer and surface water conditions and groundwater use. Furthermore, the force of those obligations ought to be even greater in the many groundwater basins that state agencies have flagged as critically overdrafted.

Compliance with these legal obligations has been weak. This article analyzes State Water Resources Control Board orders issued between the years of 2005 and 2015. On the basis of that analysis, it draws several key conclusions. First, the State Water Board approves most groundwater substitution transfer petitions it receives, and imposes only uniform, lax mitigation measures as a condition for approval. Second, the State

5. THE STATE WATER RESOURCES CONTROL BOARD, THE WATER RIGHTS PROCESS, http://www.waterboards.ca.gov/waterrights/board_info/water_rights_process.shtml

6. FINAL REPORT TO THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD BY THE WATER TRANSFER WORKGROUP, 42 (June 2002), <http://www.waterrights.ca.gov/watertransfer/Final%20Report%20-%20Water%20Transfer%20Group.pdf>

7. Cal. Water Code § 1725.

Water Board does not conduct a rigorous review—as is required by law—of a transfer’s environmental impacts in order to determine that the transfer would not injure other legal users of water and unreasonably affect fish and wildlife, instead deferring to the determinations of transfer petitioners and other agencies. Third, when determining whether to approve or deny a transfer petition, the State Water Board does not consider whether a particular transfer would cumulatively contribute to conditions of overdraft in an affected basin. Finally, the State Water Board never ordered that a party’s consecutive short-term transfers qualified as a long-term transfer (which are subject to more stringent environmental review requirements).

These practices can and should be reformed. In order to comply with the Water Code’s legal provisions, the State Water Board should, before granting approval, require water transfer petitioners to provide the Board with detailed and up-to-date data on the cumulative and other impacts of its groundwater substitution operations, particularly if a transfer is likely contributing to conditions of overdraft in an already critically overdrafted groundwater basin. In addition, the State Water Board could impose more stringent conditions for proceeding with a proposed groundwater substitution transfer, to ensure that a transfer does not injure other legal users of water and unreasonably affect fish and wildlife. Finally, the State Water Board should impose a threshold beyond which repeated short-term transfers cease to qualify as temporary and instead qualify as long-term. Additional recommendations are provided throughout the article.

If there is a silver lining to this article’s conclusions, it is that the amount of water moved through groundwater substitution transfers is small. Between 2005 and 2015, the total amount of water transferred through groundwater substitution transfers was 509,468.59 acre-feet. For context, since 2005, the annual totals of all water transfers in the state have ranged from 1.2 million to 1.7 million acre-feet.⁸ Consequently, the harms that have already occurred from temporary groundwater substitution transfers have likely been localized and minor. The 2014 adoption of the Sustainable Groundwater Management Act may also restrain future water transfers. Nevertheless, drought and climate change continue to threaten the state’s groundwater resources, and the negative risks associated with groundwater pumping, particularly in overdrafted basins, is high. If continued water shortages increase transfer volumes in the future, the State Water Board’s current review procedures will not be adequate.

This article will first explore the environmental impacts of groundwater extraction in California. Part II discusses the regulatory framework governing water transfers in California, as well as the state’s statutory policies surrounding such transfers. Part III examines all State Water

8. CALIFORNIA DEPARTMENT OF WATER RESOURCES, WATER TRANSFERS, <http://www.water.ca.gov/watertransfers/activity.cfm>.

Resources Control Board orders issued between the years of 2005 and 2015 that either approve or deny groundwater substitution transfer petitions, and draws a series of conclusions from the orders issued during these years. Part IV provides recommendations concerning ways in which the State Water Board can better comply with the provisions of the Water Code governing water transfers in order to ensure that legal users and consumers of water, fish, and wildlife are protected in accordance with law. Finally, it concludes that the State Water Board must adjust its practices in order to both comply with its legal obligations and address the state's acute groundwater crisis.

II. Groundwater Extraction in California

In California, a highly regulated surface water supply system combined with a largely unregulated groundwater system has increasingly led to over-reliance on the state's groundwater supplies.⁹ When surface water supplies are restricted, those with access to groundwater can pump it as a substitute, so it functions as a form of insulation against both drought and increasing regulation.¹⁰ The current drought has created a heavy groundwater demand, which has also prompted the use of water transfers. A 2014 drought response report indicated all-time historical lows for groundwater levels in most of the state.¹¹

A study estimates that in 2015, growers will pump an additional 6 million acre-feet of groundwater to offset the nearly 8.7 million acre-foot deficit in surface water deliveries.¹² For context, an acre-foot of water is equivalent to 325,851 gallons of water, or one acre of land covered one foot deep in water.¹³ One acre-foot is almost twice the amount of water a family of four would use in one year.¹⁴ Furthermore, over six million Californians rely solely or primarily on groundwater for their water supply and on average, groundwater use makes up 39% of California's water supply in dry

9. Tara Moran and Dan Wendell, *The Sustainable Groundwater Management Act of 2014: Challenges and Opportunities for Implementation*, at 5, http://waterinthewest.stanford.edu/sites/default/files/WitW_SGMA_Report_08242015.pdf.

10. Joseph L. Sax, *We Don't Do Groundwater: A Morsel of California Legal History*, 6 U. DENV. WATER L. REV., 269, 270 (2002).

11. *Id.*

12. RICHARD HOWITT ET AL., *ECONOMIC ANALYSIS OF THE 2015 DROUGHT FOR CALIFORNIA AGRICULTURE ES-2*, UC Davis Center for Watershed Sciences, 2015.

13. MONTECITO WATER DISTRICT, *WATER CONSERVATION*, http://www.montecitowater.com/how_many_gallons_of_water_in_a_c.htm.

14. Janny Choy and Geoff McGhee, *Groundwater: Ignore It, and It Might Go Away* (July 2014), <http://waterinthewest.stanford.edu/groundwater/overview/>

years.¹⁵ Thus, when rain and snow are in shortage in the state, groundwater prevents disaster.¹⁶ These figures demonstrate how important it is for the State Water Board to properly manage the state's precious groundwater resources.

A. Overuse of Groundwater Has Led to Conditions of Overdraft

The increasing demand for groundwater resources creates the danger that groundwater substitution transfers will exacerbate overdraft conditions in the state's groundwater basins. "Overdraft" is long-term groundwater extraction at unsustainable rates manifested by steadily decreasing regional groundwater levels over a period long enough to overlook seasonal and drought effects.¹⁷ Over and above the loss of water resources, groundwater overdraft can harm surface water rights; diminish river flows; impact fish, animal, and plant communities that depend on groundwater; increase energy costs from pumping; and result in economic impacts on agriculture that depends on groundwater.¹⁸ Further, overdraft has caused shallow wells to run dry, depriving poor communities of water.¹⁹

Groundwater substitution of surface water supply can also lead to land subsidence (the gradual sinking of the ground as groundwater depletion continues over time) and water quality degradation.²⁰ In some places where subsidence is occurring, the land surface is sinking as much as a foot a year,

15. Janny Choy and Geoff McGhee, *Groundwater: Ignore It, and It Might Go Away* (July 2014), <http://waterinthewest.stanford.edu/groundwater/overview/>; CHRISTOPHER B. FIELD ET AL., CLIMATE CHANGE 2014: IMPACTS, ADAPTATION, AND VULNERABILITY. PART A: GLOBAL AND SECTORAL ASPECTS. CONTRIBUTION OF WORKING GROUP II TO THE FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 14 (Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2014).

16. Janny Choy and Geoff McGhee, *Groundwater: Ignore It, and It Might Go Away* (July 2014), <http://waterinthewest.stanford.edu/groundwater/overview/>.

17. JULIEN J. HAROU AND JAY R. LUND, ENDING GROUNDWATER OVERDRAFT IN HYDROLOGIC-ECONOMIC SYSTEMS 1040 (Springer-Verlag 2008), <https://watershed.ucdavis.edu/shed/lund/papers/Harou2008.pdf>.

18. Janny Choy and Geoff McGhee, *Groundwater: Ignore It, and It Might Go Away* (July 2014), <http://waterinthewest.stanford.edu/groundwater/overview/>

19. *Id.*

20. M. RHEAD ENION, UNDER WATER: MONITORING AND REGULATING GROUNDWATER IN CALIFORNIA, ANTHONY PRITZKER ENVIRONMENTAL LAW AND POLICY BRIEFS 17 (Emmet Center on Climate Change and the Environment, UCLA School of Law – Policy Brief No. 1, 2011).

causing roads to buckle and bridges to crack.²¹ The severity of groundwater overdraft in many groundwater basins in California prompted the state legislature to sign the Sustainable Groundwater Management Act into law, which is discussed in more detail below.²²

III. California's Water Transfer Regime

To promote water transfers, but also to respond to the dangers they pose, California has enacted a series of statutory requirements for different categories of water transfers. This section explores the legal regime governing water transfers, as well as the policy arguments for and against such transfers.

A water transfer is a reallocation of water among users.²³ Each year, hundreds of water transfers occur in the state, tending to take place most frequently during dry years when water demand is greatest, as is the case now.²⁴ The majority of these transfers are between agricultural water users in the same basin.²⁵ Water transfers that involve changes in point of diversion, place of use, or purpose of use to a post-1914 water right most often require the approval of the State Water Resources Control Board (hereinafter referred to as the "State Water Board.")²⁶ The Department of Water Resources ("DWR") is another state agency involved in the approval and management of proposed water transfers in California.²⁷ DWR becomes

21. Justin Gillis and Matt Richtel, *Beneath California Crops, Groundwater Crisis Grows*, N.Y. TIMES (Apr. 5, 2015), http://www.nytimes.com/2015/04/06/science/beneath-california-crops-groundwater-crisis-grows.html?_r=0.

22. Tara Moran and Dan Wendell, *The Sustainable Groundwater Management Act of 2014: Challenges and Opportunities for Implementation*, at 4, http://waterinthewest.stanford.edu/sites/default/files/WitW_SGMA_Report_08242015.pdf

23. FINAL REPORT TO THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD BY THE WATER TRANSFER WORKGROUP, 4 (June 2002), <http://www.waterrights.ca.gov/watertransfer/Final%20Report%20-%20Water%20Transfer%20Group.pdf>

24. CALIFORNIA DEPARTMENT OF WATER RESOURCES, WATER TRANSFERS, <http://www.water.ca.gov/watertransfers/>; M. RHEAD ENION, UNDER WATER: MONITORING AND REGULATING GROUNDWATER IN CALIFORNIA, ANTHONY PRITZKER ENVIRONMENTAL LAW AND POLICY BRIEFS 17 (Emmet Center on Climate Change and the Environment, UCLA School of Law – Policy Brief No. 1, 2011).

25. CALIFORNIA DEPARTMENT OF WATER RESOURCES, WATER TRANSFERS, <http://www.water.ca.gov/watertransfers/>.

26. *Id.*

27. CALIFORNIA DEPARTMENT OF WATER RESOURCES, WATER TRANSFERS, FREQUENTLY ASKED QUESTIONS, <http://www.water.ca.gov/watertransfers/faqs.cfm>.

involved when the proposal involves the use of State Water Project or Central Valley Project water conveyance facilities.²⁸ DWR reviews water transfer proposals to confirm the amount of transferable water specified by sellers in order to ensure that the transfer will not cause injury to other legal users of water.²⁹ The U.S. Bureau of Reclamation also facilitates transfers of Central Valley Project (“CVP”) water, which is subject to the Central Valley Project Improvement Act, and the transfer of non-CVP water, which is subject to California law.³⁰

A. Types of Water Transfers

Water transfers can be structured as temporary, either as a short-term transfer (one year or less) or a long-term transfer (more than one year); or as permanent transfers.³¹ The most common types of water transfers are based on reservoir storage releases, substitution of groundwater for surface water diversions, and crop idling/shifting.³² Water is made available for transfer by reservoir release when reservoir operators release water in excess of what would have been released annually under normal operations.³³ Cropland idling includes the idling of land that would have been planted during the transfer period in the absence of the transfer.³⁴ Crop shifting is the shifting from historically planted higher-water-intensive crops to lower-water-using crops.³⁵ Cropland idling or cropland shifting water transfers make water available by reducing the consumptive use of surface water applied for irrigation.³⁶ Groundwater substitution transfers are discussed in more detail below.

28. *Id.*

29. *Id.*

30. U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION, WATER TRANSFERS, <http://www.usbr.gov/mp/watertransfer/>.

31. DEPARTMENT OF WATER RESOURCES AND THE STATE WATER RESOURCES CONTROL BOARD, BACKGROUND AND RECENT HISTORY OF WATER TRANSFERS IN CALIFORNIA, 2 (July 2015), http://www.water.ca.gov/watertransfers/docs/Background_and_Recent_History_of_Water_Transfers.pdf.

32. *Id.*

33. CALIFORNIA DEPARTMENT OF WATER RESOURCES, WATER TRANSFERS, <http://www.water.ca.gov/watertransfers/>.

34. *Id.*

35. *Id.*

36. *Id.*

B. Short-Term Versus Long-Term Water Transfers

The California Water Code distinguishes between short and long-term water transfers. The State Water Board gives the processing of short-term water transfers its highest priority.³⁷ In 1997 and 1998, the average time to approve a water transfer was less than two months, and in some cases the approval was achieved within hours of receiving the formal request because there was a critical need for the transfer.³⁸

The Water Code defines a “temporary change” as “any change of point of diversion, place of use, or purpose of use involving a transfer or exchange of water . . . for a period of one year or less.”³⁹ Long-term transfers, on the other hand, refer to any transfer longer than one year.⁴⁰ Because of the long-term nature of these transfers and their possible effects, the Water Code does not provide long-term transfers the type of expedited processing that is provided for short-term transfers.⁴¹ Further, long-term transfers are subject to the requirements of CEQA and NEPA.⁴² Water Code section 1729, however, explicitly *exempts* short-term water transfers from the requirements of CEQA. Under CEQA, environmental impact reports identify a project’s significant effect on the environment, identify alternatives to the project, and indicate the manner in which those significant effects can be mitigated or avoided.⁴³ Because short-term transfers are not required to undergo CEQA review, the Water Code provisions governing short-term transfers (discussed in more detail below) are the only procedural safeguards in place that address the environmental impacts and risks associated with such transfers. It is thus important that the State Water Board properly comply with these statutory provisions.

37. DIVISION OF WATER RIGHTS, STATE WATER RESOURCES CONTROL BOARD, A GUIDE TO WATER TRANSFERS, 6-1 (July 1999 Draft), <http://www.waterrights.ca.gov/watertransferguide.pdf>.

38. DIVISION OF WATER RIGHTS, STATE WATER RESOURCES CONTROL BOARD, A GUIDE TO WATER TRANSFERS, 6-1 (July 1999 Draft), <http://www.waterrights.ca.gov/watertransferguide.pdf>.

39. Cal. Water Code §1728; this paper uses the terms “short-term” and “temporary” interchangeably.

40. DIVISION OF WATER RIGHTS, STATE WATER RESOURCES CONTROL BOARD, A GUIDE TO WATER TRANSFERS, 6-12 (July 1999 Draft), <http://www.waterrights.ca.gov/watertransferguide.pdf>.

41. *Id.*

42. *Id.*

43. Cal. Pub. Res. Code § 21002.1, subd. (a).

C. Groundwater Substitution Transfers

A groundwater substitution transfer occurs when a water user agrees to transfer surface water diverted under a surface water right to another water user, and then pumps groundwater to satisfy the seller's own water needs.⁴⁴ In a State Water Board hypothetical example explaining groundwater substitution transfers, Agency B routinely purchases supplemental water during drought years and, during a dry year, Agency A agrees to transfer a portion of its contract supply to Agency B.⁴⁵ The primary incentive for Agency A to participate in the transfer is the willingness of Agency B to purchase the water at market rates, which translates into several million dollars in revenue for Agency A, an otherwise economically challenged agency.⁴⁶

In order to execute the transfer, Agency A foregoes part of its surface water diversion and pumps groundwater to make up the deficit in supply.⁴⁷ Usually, Agency A does not need a permit from the state to pump the groundwater needed to make up for the reduction in surface water, unless there are local ordinances which have been enacted to protect particular groundwater resources.⁴⁸ Pumping may also be limited if the groundwater basin has been adjudicated, a process through which groundwater users petition the court to define the rights various entities have in regards to certain groundwater resources (courts have adjudicated 22 basins in California).⁴⁹ However, in most cases, users are not required to report how much groundwater they have taken because groundwater is not subject to the State Water Board's permitting authority.⁵⁰ The recently enacted

44. FINAL REPORT TO THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD BY THE WATER TRANSFER WORKGROUP, 42 (June 2002), <http://www.waterrights.ca.gov/watertransfer/Final%20Report%20-%20Water%20Transfer%20Group.pdf>.

45. *Id.* at 43.

46. *Id.*

47. *Id.*

48. *Id.* at 48.

49. FINAL REPORT TO THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD BY THE WATER TRANSFER WORKGROUP, 42 (June 2002); WATER EDUCATION FOUNDATION, GROUNDWATER ADJUDICATION, <http://www.watereducation.org/aquapediagroundwater-adjudication>

50. Janny Choy and Geoff McGhee, *Groundwater: Ignore It, and It Might Go Away* (July 2014), <http://waterinthewest.stanford.edu/groundwater/overview/>; FINAL REPORT TO THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD BY THE WATER TRANSFER WORKGROUP, 42 (June 2002), <http://www.waterrights.ca.gov/watertransfer/Final%20Report%20-%20Water%20Transfer%20Group.pdf>.

Sustainable Groundwater Management Act includes reporting requirements, however, so the rules surrounding the reporting of groundwater extraction are changing.⁵¹

D. Environmental Impacts of Groundwater Substitution Transfers

The State Water Board has concluded that the environmental issues associated with groundwater substitution transfers include impacts from new facilities (as it can be necessary to drill additional pumping wells to facilitate the transfer), impacts to surface water bodies, and impacts to energy and air quality.⁵² This is in addition to the overdraft conditions described above.

Regarding surface water bodies, there may be *significant* long-term impacts to flows and water levels in streams, lakes or wetland areas as a result of a water transferor's long-term switch to increased groundwater pumping.⁵³ Further, over time, increased groundwater pumping may lower groundwater levels.⁵⁴ The decline of water levels in a groundwater basin may be a sign that water use is outpacing the short-term recharge of that groundwater basin.⁵⁵

In regards to energy and air quality, because groundwater substitution transfers result in additional groundwater pumping above what would have occurred without the transfer, additional energy usage is needed to drive the pumps.⁵⁶ Further, if pumps are connected to the state electrical grid, there may be significant impacts to state energy supply and to air quality from the power plants generating the electricity.⁵⁷ These impacts will be more

51. Cal. Water Code § 5202, et seq.

52. FINAL REPORT TO THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD BY THE WATER TRANSFER WORKGROUP, 55 (June 2002), <http://www.waterrights.ca.gov/watertransfer/Final%20Report%20-%20Water%20Transfer%20Group.pdf>.

53. *Id.*, Emphasis Added.

54. *Id.*

55. CALIFORNIA DEPARTMENT OF WATER RESOURCES, PUBLIC UPDATE FOR DROUGHT RESPONSE, GROUNDWATER BASINS WITH POTENTIAL WATER SHORTAGES AND GAPS IN GROUNDWATER MONITORING, 5 (April 30, 2015), http://www.water.ca.gov/waterconditions/docs/Drought_Response-Groundwater_Basins_April30_Final_BC.pdf.

56. FINAL REPORT TO THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD BY THE WATER TRANSFER WORKGROUP, 55 (June 2002), <http://www.waterrights.ca.gov/watertransfer/Final%20Report%20-%20Water%20Transfer%20Group.pdf>.

57. *Id.*

significant if groundwater pumping occurs during peak energy demand periods.⁵⁸

E. California's New Groundwater Law

The legal regime governing California's groundwater resources is in flux. The state legislature recently enacted a three-bill legislative package, collectively known as the Sustainable Groundwater Management Act (hereinafter "SGMA"), which took effect on January 1, 2015.⁵⁹ The Act provides that "[i]t is the policy of the state that groundwater resources be managed sustainably for long-term reliability and multiple economic, social, and environmental benefits for current and future beneficial uses."⁶⁰ Groundwater Sustainability Agencies, pursuant to the law, will have until 2040 to achieve groundwater sustainability.⁶¹ "Scientists, however, have no real idea if the state's groundwater supplies can even last that long."⁶²

Thus, because groundwater is not *currently* regulated on a statewide level in a comprehensive manner, it is imperative that the State Water Board prudently complies with the Water Code provisions governing short-term water transfers. Under these provisions, the State Water Board itself must determine on an ad hoc basis whether each water transfer petition it receives will involve unsustainable uses of groundwater.

F. California's Water Transfer Policies and Arguments in Favor of Transfers

Despite the fact that short-term groundwater substitution transfers pose certain risks and are regulated on a statewide level, policy arguments can be made in favor of such transfers:

Early in its development of the state's water law, the California Supreme Court held that appropriative rights are transferable. . . . [H]owever, the court also held that the transfer of water or water rights

58. *Id.*

59. CAL. DEPT OF WATER RES., *Groundwater Management*, http://www.water.ca.gov/groundwater/groundwater_management/index.cfm (last updated Feb. 29, 2016).

60. Cal. Water Code § 113 (2016) (effective January 1, 2015).

61. UNIV. OF CAL., DIV. OF AGRIC. & NAT. RES., *Sustainable Groundwater Management Act*, <http://groundwater.ucdavis.edu/SGMA/> (last visited Dec. 19, 2015).

62. Justin Gillis and Matt Richtel, *Beneath California Crops, Groundwater Crisis Grows*, N.Y. TIMES (April 5, 2015), <http://www.nytimes.com/2015/04/06/science/beneath-california-crops-groundwater-crisis-grows.html>.

“must not be to the prejudice of the rights of others.”⁶³ According to this principle, an appropriator may not move its point of diversion . . . if the change would deprive other . . . water rights holders of water to which they are legally entitled. . . . This “no injury” rule [discussed in more detail below] forms the basis of the statutory law that governs the transfer of water appropriated under permits and licenses issued by the State Water Resources Control Board.”⁶⁴

Specific statutory provisions of the Water Code also evince the state’s policy towards water transfers. Water Code section 109, subdivision (a) provides, “It is hereby declared to be the established policy of this state to facilitate the voluntary transfer of water and water rights where consistent with the public welfare of the place of export and import.”⁶⁵ In addition, Water Code section 475 states that voluntary water transfers between water users can result in a more efficient use of water, benefiting both the buyer and the seller.⁶⁶

Proponents of water transfers argue that water transfers “promote flexibility, respond to uncertainty, and lead to the improved valuation of water resources.”⁶⁷ “[E]conomists have long urged that California’s water resources would be more efficiently allocated if market forces played a greater role.”⁶⁸ In addition, “many of the state’s urban water agencies have come to support water transfers as a means of acquiring additional long-term supplies to meet growing demands for domestic and industrial needs . . . at a lesser cost . . . than through alternative strategies such as construction of new projects . . .”⁶⁹ “Some water managers . . . have considered the use of ‘water transfers’ as a response to climate-induced disruptions of water supplies. In a 2008 technical paper, the Intergovernmental Panel on Climate Change (IPCC) identified transfers as a potential adaptation tool to improve both demand-side and supply-side management.”⁷⁰

Regardless of the fact that water transfers have benefits, the State Water Board still is required to comply with the Water Code provisions governing water transfers. These Code sections require the State Water

63. *Butte T.M. Co. v. Morgan*, 19 Cal. 609, 615 (1862).

64. Brian E. Gray, *The Modern Era in California Water Law*, 45 HASTINGS L.J. 249, 273 (1994).

65. Cal. Water Code § 109(a).

66. Cal. Water Code § 475.

67. Jesse Reiblich & Christine A. Klein, *Climate Change and Water Transfers*, 41 PEPP. L. REV. 439, 448-49 (2014).

68. Gray, *supra* note 64, at 277.

69. *Id.* at 278.

70. Reiblich & Klein, *supra* note 67, at 447-48.

Board to assess the environmental impacts of water transfer petitions before granting approval, regardless of whether the State Water Board is under pressure to facilitate water transfers to meet growing statewide water demand.

IV. State Water Resources Control Board Groundwater Substitution Transfer Orders Issued Between 2005 and 2015

For this article, I reviewed State Water Board water transfer orders issued between the years of 2005 and 2015. I looked at Board orders either approving or denying water transfer petitions involving groundwater substitution. The State Water Board's Division of Water Rights issues the water transfer orders, which are posted on the agency's website.⁷¹

When reviewing each order, I tracked (1) the amount of water (in acre-feet) proposed to be transferred; (2) the parties involved in the transfer; (3) whether the State Water Board imposed any required reduction in transferrable amount as a condition for approval of the transfer; (4) whether any mitigation measures were imposed by the State Water Board as a condition for approval of the transfer; (5) comments the State Water Board received on the transfer petition; (6) the required findings of fact the State Water Board made pursuant to the Water Code before approving or denying the transfer; and (7) the terms and conditions imposed by the State Water Board in its final approval or denial decision, summarizing any mitigation measures or reductions in transferrable amount. These factors are discussed in more detail below. In addition, the various charts below summarize the data compiled from my review of the State Water Board's 2005-2015 orders.

The following table presents the number of transfers the State Water Board approved between the years of 2005 and 2015, as well as the total acre-feet of water transferred each year:

71. CAL. ENTL. PROT. AGENCY, STATE WATER RES. CONTROL BD., *Transfers and Temporary Urgency Actions – Orders*, http://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/transfers_tu_orders/ (last updated Apr. 25, 2016).

A. 2005-2015 Groundwater Substitution Transfers and Amount Transferred

YEAR	Number of Approved/Denied Transfers	Total Acre-Feet (AF) of Water Transferred Per Year
2015	2 denials	None
2014	2 approvals and 2 denials	16,600 AF
2013	8 approvals	35,108 AF
2012	None	N/A
2011	1 approval	1,000 AF
2010	4 approvals	23,699 AF
2009	12 approvals	53,061.59 AF
2008	None	N/A
2007	2 approvals	130,000 AF
2006	1 approval	125,000 AF
2005	1 approval	125,000 AF
TOTAL (2005-2015):	31 approvals and 4 denials	509,468.59 AF

This table illustrates two key points. First, the amount of water moved through groundwater substitution transfers each year is relatively small. As mentioned above, the total amount of water transferred between 2005 and 2015 through groundwater substitution transfers was 509,468.59 acre-feet, while the annual totals since 2005 for all water transfers in the state “have ranged from 1.2 million to 1.7 million acre-feet.”⁷² However, during the years of 2005, 2006, and 2007, large transfer petitions involving the transfer of up to 125,000 acre-feet were approved, and could be approved again.

Second, the State Water Board approves nearly all groundwater substitution transfers. The State Water Board approved 31 of the 35 groundwater substitution transfer petitions it received between the years of 2005 and 2015. The four denied petitions were all rejected for the same reason: the State Water Board had issued curtailment orders specifying that the specific water transfer petitioners needed to immediately stop diverting under their post-1914 water rights, so there was no water to *transfer* under their legal basis of right.⁷³ The denial was thus based on limited surface water availability, not concerns about groundwater pumping.

72. CAL. DEP’T OF WATER RES., *Water Transfers*, <http://www.water.ca.gov/watertransfers/activity.cfm> (last updated Oct. 8, 2015).

73. Plumas Mut. Water Co. 2 (State Water Res. Control Bd. June 10, 2014) http://www.waterboards.ca.gov/waterrights/water_issues/programs/ap

The data indicates that this article's recommendations are primarily focused on avoiding future environmental impacts associated with groundwater substitution transfers (such as overdraft), as opposed to addressing the relatively minor impacts that have already resulted from the groundwater substitution transfers executed between 2005 and 2015. The recommendations provide ways in which the State Water Board, in the future, can better comply with the procedural requirements governing groundwater substitution transfers in order to avoid the risks associated with such transfers.

B. Required Reductions in Transferrable Amount and Other Mitigation Measures

The fact that the State Water Board routinely approves groundwater substitution transfers does not, on its own, indicate a lax regulatory regime. In other realms, regulators also routinely issue approvals, but they also exact significant concessions or adjustments prior to issuing those approvals. For example, under the Endangered Species Act, "when a biological opinion determines that a project is not likely to adversely modify critical habitat or cause jeopardy, the opinion still will often contain a list of modifications of, and conditions for, proceeding with the project."⁷⁴ For that reason, I also tracked the adjustments or mitigation measures required by the State Water Board. The following tables show required reductions in transferrable amount and/or required mitigation measures for each approved transfer.

2015: No groundwater substitution transfer petitions were approved this year.

plications/transfers_tu_orders/docs/a000480_denyorder.pdf (last visited Feb. 14, 2016).

74. Dave Owen, *Critical Habitat and the Challenge of Regulating Small Harms*, 64 FLA. L. REV. 141, 170 (2012).

2014

Date of Adoption	Required Reductions in Transferrable Amount	Other Mitigation Measures
7-11-14	Water available for transfer is limited to 88% of the groundwater pumped.	Water may not be transferred until DWR and Reclamation have approved the groundwater substitution operation.
7-7-14	Water available for transfer shall not exceed 94% of the surface water released as a result of the transfer.	Groundwater Management Plan.

2013

Date of Adoption	Required Reductions in Transferrable Amount	Other Mitigation Measures
7-3-13	Water available for transfer is limited to 92% of the groundwater pumped.	Water may not be transferred until DWR and Reclamation have approved the groundwater substitution operation.
7-2-13 and 7-1-13 (6 transfers were approved subject to these same conditions on 7/1/13)	Water available for transfer is limited to 88% of the groundwater pumped.	Water may not be transferred until DWR and Reclamation have approved the groundwater substitution operation.

2012: No groundwater substitution transfers petitions were received this year.

2011

Date of Adoption	Required Reductions in Transferrable Amount	Other Mitigation Measures
7-5-11	None.	Compliance with monitoring/mitigation plans and reporting requirements contained in an agreement between the parties to the transfer.

2010

Date of Adoption	Required Reductions in Transferrable Amount	Other Mitigation Measures
7-2-10 (#1)	Water available for transfer is limited to 92% of the groundwater pumped.	Compliance with monitoring/ mitigation plans and reporting requirements contained in an agreement between the parties to the transfer.
7-2-10 (#2 and #3)	Water available for transfer is limited to 88% of the groundwater pumped.	Compliance with monitoring/ mitigation plans and reporting requirements contained in an agreement between the parties to the transfer.
7-1-10	Water available for transfer is limited to 94% of the groundwater pumped.	Compliance with monitoring/ mitigation plans and reporting requirements contained in an agreement between the parties to the transfer.

2009

Date of Adoption	Required Reductions in Transferrable Amount	Other Mitigation Measures
6-25-09	Water available for transfer is limited to 88% of the groundwater pumped.	Submit (to SWRCB) a copy of the mitigation and monitoring plans prepared by the 2009 Drought Water Bank to address the impacts of additional pumping.
6-30-09 (6 orders issued on this date were approved subject to these same conditions)	Water available for transfer is limited to 88% of the groundwater pumped.	Submit (to SWRCB) a copy of the mitigation and monitoring plans prepared by the 2009 Drought Water Bank to address the impacts of additional pumping.
6-30-09 (2 orders issued on this date were approved subject to these same conditions)	Water available for transfer is limited to 88% of the groundwater pumped.	Implementation of the monitoring, mitigation, and verification provisions contained in a groundwater substitution agreement between the parties to the transfer.
7-30-09, 8-17-09, 8-26-09	Water available for transfer is limited to 88% of the groundwater pumped.	Implementation of the monitoring and mitigation plans contained in an agreement between the parties to the transfer.

2008: No groundwater substitution transfers petitions were received this year.

2007

Date of Adoption	Required Reductions in Transferrable Amount	Other Mitigation Measures
3-30-07	None.	Implementation of groundwater monitoring/reporting program, monthly accounting of actual groundwater pumped, maps of groundwater levels in the area.
6-2-07	None.	Petitioner shall only use those wells that are approved by the agreement between the parties.

2006

Date of Adoption	Required Reductions in Transferrable Amount	Other Mitigation Measures
4-10-06	None.	Implementation of groundwater monitoring/reporting program, monthly accounting of actual groundwater pumped, maps of groundwater levels in the area.

2005

Date of Adoption	Required Reductions in Transferrable Amount	Other Mitigation Measures
9-22-05	None.	Implementation of groundwater monitoring/reporting program, monthly accounting of actual groundwater pumped, maps of groundwater levels in the area.

These tables support two important summary observations. The first is that the required adjustments were always minor. As these charts show, the most drastic required reduction in transferrable amount was limiting the amount of water for transfer to 88% of the groundwater pumped.

The second striking feature of these tables is the uniformity of the adjustments. For example, the majority of the orders between 2005 and 2015 stated, “DWR and Reclamation have reviewed the transfer proposal and associated groundwater pumping and determined that 12% of the additional groundwater pumping has the potential to affect streamflow. This Order limits the amount of water available for transfer to 88% of groundwater pumped.”⁷⁵ It is unclear why the Department of Water Resources (DWR), the U.S. Bureau of Reclamation (Reclamation), and the State Water Board have consistently determined that the water transferred pursuant to a particular order shall not exceed 88% of the rate of additional groundwater pumping. The State Water Board receives water transfer petitions from a variety of parties who pump groundwater from different basins throughout the state, so one might expect the 12% streamflow determination to vary more.

As the charts indicate, the State Water Board usually requires petitioners to comply with some form of a mitigation and monitoring plan to address the impacts of groundwater extraction. Therefore, other agencies (DWR and Reclamation) play an important role in monitoring and mitigating the impacts of a water transferor’s groundwater substitution operation. This is despite the fact that these agencies’ “calculation[s] of the amount of water available for substitution relies on hypothetical estimates of past baseline use and acreage estimates instead of using verifiable groundwater and surface water use data.”⁷⁶ “DWR and Reclamation . . . require significant documentation . . . for proposed groundwater substitution transfers . . .” in order to compensate for poor monitoring and the lack of statewide permitting of groundwater use.⁷⁷

The adequacy of Reclamation and DWR’s regulatory requirements is outside the scope of this article. Nevertheless, the tables indicate that even if the State Water Board’s compliance with the regulatory requirements surrounding transfers is weak, other agencies’ oversight helps mitigate the risks associated with groundwater substitution transfers.

75. Pelger Mut. Water Co. 4 (State Water Res. Control Bd. July 1, 2013), http://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/transfers_tu_orders/docs/pelger_order.pdf (last visited Feb 15, 2016).

76. M. Rhead Enion, *Under Water: Monitoring and Regulating Groundwater in California*, ANTHONY PRITZKER ENVTL. L. & POL’Y BRIEFS, July 2011, at 17.

77. Cal. Water Code § 1725.

C. Required Findings of Fact

When deciding whether to approve or deny a water transfer petition, the State Water Board must make a series of specific findings pursuant to the Water Code. The State Water Board must find that “[1] the transfer would only involve the amount of water that would have been consumptively used or stored by the permittee or licensee in the absence of the proposed temporary change, [2] would not injure any legal user of the water, and [3] would not unreasonably affect fish, wildlife, or other instream beneficial uses”⁷⁸ These provisions indicate that the legislature intended for the State Water Board to assess the environmental impacts of water transfer petitions before granting approval. I therefore reviewed the State Water Board’s findings and their bases. I generally found indications of only cursory review.

1. Availability of Water For Transfer

Before approving a short-term transfer, the State Water Board must find that “the transfer would only involve the amount of water that would have been consumptively used or stored by the permittee or licensee in the absence of the proposed temporary change.”⁷⁹ Water Code section 1725 defines “consumptively used” to mean “the amount of water which has been consumed through use by evapotranspiration, has percolated underground, or has been otherwise removed from use in the downstream water supply as a result of direct diversion.”⁸⁰ In all of the orders I reviewed between the years of 2005 and 2015, the State Water Board found that the water proposed for transfer complied with this requirement.

2. The “No Injury Rule”

A second determination the State Water Board must make before approving a short-term water transfer is that the proposed transfer “would not injure any legal user of the water.”⁸¹

One party’s groundwater extraction has the potential to injure other legal users of the water because surface water and groundwater systems are connected.⁸² Groundwater pumping “reduces the amount of groundwater

78. *Id.*

79. *Id.*

80. *Id.*

81. *Id.*

82. Paul M. Barlow & Stanley A. Leake, *Streamflow Depletion by Wells—Understanding and Managing the Effects of Groundwater Pumping on Streamflow*, U.S. GEOLOGICAL SURV. CIRCULAR 1376, 2012, at 1.

that flows to streams and, in some cases, can also draw streamflow into the underlying groundwater system.”⁸³ Reduced surface water flows have negative impacts “on aquatic ecosystems, the availability of surface water, and the quality and aesthetic value of streams and rivers.”⁸⁴ Thus, because groundwater extraction can affect the quality and quantity of surface water that others have the legal right to use, the State Water Board is statutorily required to determine how each groundwater substitution transfer will affect these other parties. Similar requirements also come from Water Code section 1745.10:

A water user that transfers surface water pursuant to this article may not replace that water with groundwater unless the groundwater use is either of the following:

- (a) Consistent with a groundwater management plan adopted pursuant to state law for the affected area.
- (b) Approved by the water supplier from whose service area the water is to be transferred and that water supplier, if a groundwater management plan has not been adopted, determines that the transfer will not create, or contribute to, conditions of long-term overdraft in the affected groundwater basin.⁸⁵

I did not find evidence of rigorous compliance with these legal requirements. Between 2005 and 2015, the State Water Board never found that a transfer would result in injury to other legal users of water. In reaching these “no injury” conclusions, the State Water Board may be deferring heavily to the findings of other agencies (DWR and Reclamation).

One particular order making the “no injury” determination, which is similar to the other approval orders made by the State Water Board between 2005 and 2015, provides, in pertinent part, that:

“DWR and USBR [Reclamation] have reviewed the proposed transfer and determined that . . . [other legal users of water] will not be injured by impacts resulting from the additional groundwater pumping associated with the transfer. Under this operating scenario [which includes compliance with DWR and Reclamation well construction, location and monitoring requirements as well as the application of the streamflow depletion factor], the transfer will not result in increased diversion of stream flow or reduction in return flows.”⁸⁶

83. *Id.*

84. *Id.*

85. Cal. Water Code § 1745.10.

86. Pelger, *supra* note 75, at 4-5.

The State Water Board is the lead agency that regulates groundwater substitution transfers, but it repeatedly defers to the conclusions of other agencies that a particular transfer will not injure other legal users of water. The Board also defers to the unsubstantiated conclusions of water transfer petitioners. As mentioned above, between 2005 and 2015 the State Water Board never denied a transfer because a petitioner failed to adequately demonstrate that the impacts resulting from the additional groundwater pumping associated with its transfer would not injure any legal user of the water. This is surprising, considering the fact that the State Water Board has identified the “[f]ailure to protect third parties from impacts from proposed transfers”⁸⁷ as one of “the most significant barriers to implementing groundwater substitution transfers”⁸⁸

Third parties can object to a transfer if the groundwater user’s “basin is in a state of overdraft, or if the increased pumping adversely impacts the water rights of other overlying owners who pump from the same basin.”⁸⁹ For example, in one transfer order, the Stevinson Water District commented that it had “numerous water rights and contracts for water on various watercourses including the Merced River,” and that it was “concerned that the proposed transfer could have an adverse impact on its various water rights, including changes in the timing and nature of return flows.”⁹⁰ Nevertheless, this water transfer was approved.⁹¹

Furthermore, in the transfer orders I reviewed, the State Water Board never found that a transfer created or contributed to conditions of long-term overdraft in the affected groundwater basin between the years of 2005 and 2015. One such section 1745.10 (b) determination provides that:

87. WATER TRANSFER WORK GROUP, WATER TRANSFER ISSUES IN CALIFORNIA 55-56 (2002).

88. *Id.*

89. *Id.* at 48.

90. Merced Irrigation Dist. 4 (State Water Res. Control Bd. June 21, 2007) http://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2007/wro2007_0024_dwr.pdf (last visited Feb.15, 2016).

91. *Id.* at 7.

"[The petitioner] has determined that its proposed transfer will not create, or contribute to, conditions of long-term overdraft in the affected groundwater basin pursuant to subdivision (b) of Water Code section 1745.10. This determination is based, in part, on groundwater elevation data from DWR's Monitoring Well . . . which is located near the southeast boundary of [petitioner's] place of use. This information shows that groundwater elevations have fluctuated seasonally each year with greater fluctuations during drier periods through the period from 1966 to 2011. However, the data shows that groundwater elevations have remained relatively stable during the 46-year period."⁹²

In this specific order, the excerpt above represents the only factual explanation offered by petitioners (which is published in the order) to show that their proposed transfer did not result in adverse impacts to the groundwater basin or to third parties.⁹³ Water transfer petitioners have the burden to specify the potential negative impacts of a proposed transfer.⁹⁴ This burden, however, may not be very demanding, as the State Water Board deferred to the conclusion excerpted above, and approved the order. The transfer orders from 2005 to 2015 indicate that the State Water Board does not require petitioners to provide any information on the cumulative impacts of the petitioner's groundwater substitution operation in order to help it determine whether a transfer would contribute to conditions of long-term overdraft of the affected basin or injure other legal users of water.

Comments on transfer petitions have expressed concerns that groundwater substitution transfers will contribute to conditions of long-term overdraft and subsidence. One such comment provides that:

92. David and Alice Te Velde Revocable Family Trust 2 (State Water Res. Control Bd. July 2, 2013) http://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/transfers_tu_orders/docs/a4902_order.pdf (last visited Feb. 15, 2016).

93. *Id.*

94. Cal. Water Code § 1727(c).

"[t]here is no adopted groundwater management plan for Sutter County. [The California Sportfishing Protection Alliance] alleges that GHMWC [the Garden Highway Mutual Water Company] has not shown that the groundwater substitution associated with the proposed temporary change will not contribute to conditions of groundwater overdraft. GHMWC should be required to provide an analysis that demonstrates that its proposed transfer would take place from a location where long-term groundwater overdraft does not exist."⁹⁵

In response to this comment, the State Water Board requested additional information from the water transfer petitioner (GHMWC) regarding groundwater substitution.⁹⁶ GHMWC responded that Sutter County was "in the process of preparing a groundwater management plan, [but that] it [had] yet to be completed due to funding issues."⁹⁷ GHMWC then submitted information to the State Water Board showing that groundwater elevations near the water company had fluctuated on a seasonal basis with the fluctuations increasing during dry years, but that these "groundwater elevations had remained relatively stable during this 55-year period [1950-2005]."⁹⁸ However, this particular transfer petition was approved in 2010, so the time period considered by the petitioner did not take into account the severe drought conditions in California between the years of 2005 and 2010. The drought from 2007 to 2009 was the "first drought for which a statewide proclamation of drought emergency was issued."⁹⁹

3. DWR Critically Overdrafted Groundwater Basins Data

The fact that the State Water Board has never found that a groundwater substitution transfer would contribute to overdraft would be unsurprising if very few of the state's groundwater basins were in a state of overdraft. But that is not the case. A comparison of the locations of recently identified overdrafted basins and the locations of transfers demonstrates that the State Water Board is routinely approving transfers out of regions where overdrafting is clearly a problem.

95. Garden Highway Mut. Water Co. 5 (State Water Res. Control Bd. July 2, 2010) http://www.waterboards.ca.gov/waterrights/board_decisions/orders/orders/2010/wro2010_0023dwr.pdf (last visited Feb. 15, 2016).

96. *Id.* at 3, 5.

97. *Id.* at 3.

98. *Id.* at 3-4.

99. Mark Cowin, *Foreword* to CAL. DEP'T. OF WATER RES., CALIFORNIA'S DROUGHT OF 2007-2009 (2010).

As required by the SGMA, DWR developed a 2015 list and map of critically overdrafted groundwater basins, which includes 21 basins and subbasins.¹⁰⁰ (DWR's map is attached below, on page 29.) One or more undesirable impacts within a basin, such as "seawater intrusion, land subsidence, groundwater depletion, and/or chronic lowering of groundwater levels," can place the basin in critical overdraft.¹⁰¹ Under the SGMA, basins "identified as critically overdrafted must have sustainability plans in place by 2020."¹⁰² Furthermore, DWR has indicated that there may be additional critically overdrafted basins, but that it does not have sufficient information to comprehensively identify all of the basins that are in such a critical state of overdraft.¹⁰³

DWR's new data suggests that some of the groundwater substitution transfers approved between the years of 2005 and 2010 may have contributed, in a cumulative manner, to overdraft conditions in the above-listed basins. For instance, in 2007, the State Water Board approved the Merced Irrigation District's 5,000 acre-foot groundwater substitution transfer petition.¹⁰⁴ Merced is one of the basins/subbasins on DWR's list. If the Merced Irrigation District pumped groundwater from this basin to facilitate its groundwater substitution transfer, it could have been contributing to the basin's state of critical overdraft.

100. CAL. DEPT OF WATER RES., *Critically Overdrafted Basins*, <http://www.water.ca.gov/groundwater/sgm/cod.cfm> (last updated March 1, 2016); *Draft List of Critically Overdrafted Basins –August 6, 2015*, <http://www.water.ca.gov/groundwater/sgm/pdfs/Draft%20COD%20Basins%20short%20Table.pdf> (last visited Feb. 15, 2016) (the critically overdrafted groundwater basins include, by basin/subbasin name, Soquel Valley, Pajaro Valley, 180/400 Foot Aquifer, Paso Robles Area, Los Osos Valley, Cuyuma Valley, Oxnard, Pleasant Valley, Eastern San Joaquin, Merced, Chowchilla, Madera, Delta-Mendota, Kings, Westside, Kaweah, Tulare Lake, Tule, Kern County, Indian Wells Valley, and Borrego Valley. The majority of these critically overdrafted basins are in the Central Valley).

101. CAL. DEPT OF WATER RES., *Critically Overdrafted Basins*, *supra* note 100, (last visited Feb. 15, 2016).

102. Matt Stevens, 21 California Groundwater Basins in 'Critical' Condition, *State Panel Says*, L.A. TIMES (Aug. 19, 2015, 4:30 PM), <http://www.latimes.com/local/lanow/la-me-ln-groundwater-basins-overdraft-20150819-story.html>.

103. CAL. DEPT OF WATER RES., *Critically Overdrafted Basins*, *supra* note 100, (last visited Feb. 15, 2016).

104. Merced, *supra* note 90.

“Yolo County has also been identified . . . as one of the problem areas in which there are conditions of overdraft in California.¹⁰⁵ . . . The county has a history of subsidence, and current overdrafting as a result of the drought is adding to the problem.”¹⁰⁶ Seven of the petitioners whose water transfers were approved by the State Water Board between 2005 and 2015 were located in Yolo County. These petitioners could also have cumulatively contributed to conditions of long-term overdraft if they pumped groundwater in Yolo County’s affected basins.

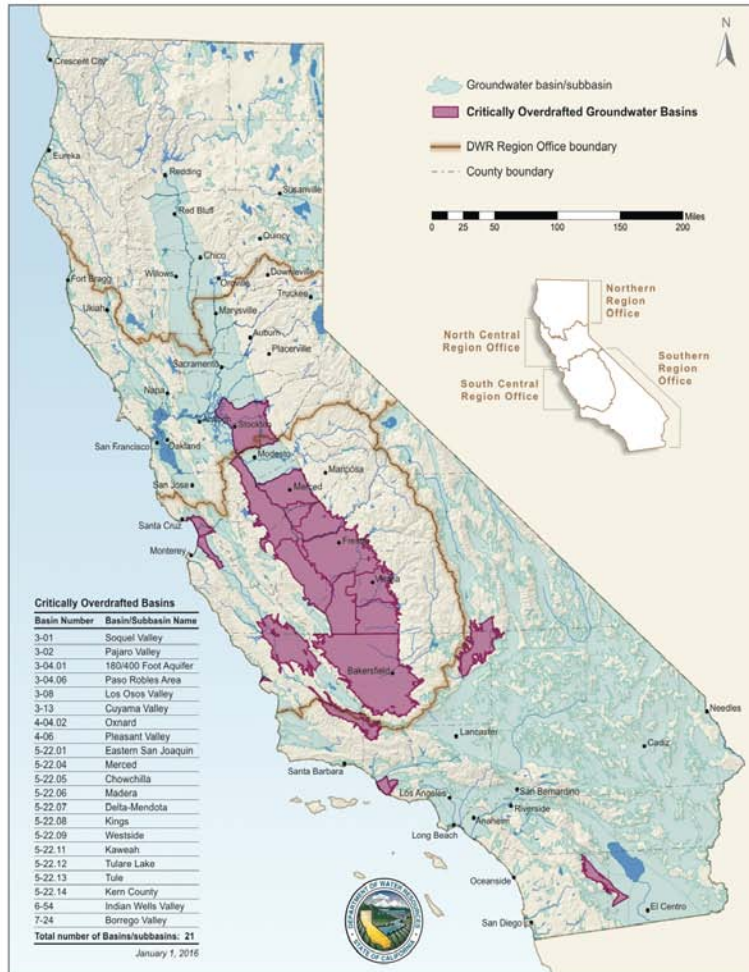
Finally, western Placer County’s North American Subbasin, which reaches into Sutter and Sacramento Counties, has been identified as high-priority, and thus subject to SGMA provisions.¹⁰⁷ Various approved transfers between 2005 and 2015 involved petitioners located in Placer County. If the State Water Board was aware that any of the approved 2005-2015 groundwater substitution operations took place in a critically overdrafted basin, it should have required the transfer petitioner to prove that the transfer did not create or contribute to conditions of long-term overdraft in the affected basin (taking into consideration cumulative impacts). If a petitioner could not satisfy this burden, the State Water Board should have disapproved the transfer for its violation of Water Code section 1745.10, subdivision (b). Further, now that the DWR has issued its 2015 list of critically overdrafted basins, the State Water Board should, in the future, *before* granting approval, determine whether a proposed groundwater substitution transfer cumulatively contributes to conditions of long-term overdraft in any of DWR’s listed basins or subbasins (as is required under section 1745.10).

105. YOLO COUNTY FARM BUREAU, *Subsidence from Overdraft*, <http://www.yolofarmbureau.org/p/getconnected/415> (last visited Feb. 15, 2016).

106. *Id.*

107. COUNTY OF PLACER, COMMUNITY DEVELOPMENT/RESOURCES AGENCY, GROUNDWATER LEGISLATION UPDATE, <http://www.placer.ca.gov/upload/bos/cob/documents/sumarchv/2015/150602A/06b.pdf>.

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4. Unreasonable Effects Analysis

The final finding of fact that the State Water Board must make is that the proposed transfer “would not unreasonably affect fish, wildlife, or other instream beneficial uses.”¹⁰⁸ I also reviewed these findings and the bases offered by the State Water Board, and found practices quite similar to those used for no-injury determinations. Between the years of 2005 and 2015, the State Water Board never denied a groundwater substitution transfer petition for this reason. And in making its unreasonable effects determination, the State Water Board often defers to the Department of Fish and Game (DFG) and infers approval when the agency does not submit comments or concerns regarding a temporary water transfer petition.

Two examples capture this practice of deference. On a particular transfer petition in which it *did* submit comments, the Department of Fish and Game expressed concern that the groundwater substitution transfer, involving 125,000 acre-feet of water, would result in unreasonable effects on fish, wildlife and other instream beneficial uses. The comment provides:

“DFG comments that the proposed temporary change may result in unreasonable effects on fish and wildlife unless properly conditioned. DFG notes several areas of disagreement with the [petitioner’s environmental analysis in support of its petition]. These areas include the potential for the inducement of artificial downstream movement of juvenile Chinook salmon, the interpretation of historical population data, the presence of spring-run Chinook salmon in the Yuba River, analytical methods, and issues regarding certain temperature correlations.”¹⁰⁹

In its comment, “DFG [recommended] several conditions to protect anadromous resources, minimize the take of spring-run Chinook salmon and steelhead trout, and to protect fall and late fall run Chinook salmon.”¹¹⁰ The transfer petition was approved by the State Water Board, and the order’s conditions included some of the mitigation measures suggested by the DFG.¹¹¹

108. Cal. Water Code § 1725.

109. Yuba Cty. Water Agency 3 (State Water Res. Control Bd. Sept. 22, 2005) http://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2005/wro2005_0025dwr.pdf (last visited Feb. 15, 2016).

110. *Id.*

111. *Id.* at 4, 10.

Between 2005 and 2015, however, DFG did *not* frequently provide comments on transfer petitions recommending that particular mitigation measures be imposed. State Water Board responses to most “unreasonable effects” comments (submitted by environmental groups) provide, “DFG was provided a copy of the subject petition and did not submit comments or concerns regarding the temporary change.”¹¹² Even though DFG is provided copies of water transfer petitions, this does not relieve the State Water Board of the obligation to itself determine whether a proposed transfer would unreasonably affect fish, wildlife, or other instream beneficial uses, as is required by Water Code section 1725.

Further, it is unclear whether the *absence* of comments and concerns from DFG necessarily indicates that a groundwater substitution transfer has no unreasonable effects on fish and wildlife. It may simply indicate that DFG staff did not have time to comment. Thus, as opposed to regularly making its own determinations pursuant to the Water Code, the State Water Board tends to defer to other agencies’ requirements, comments, or lack of comments when deciding whether to approve a transfer petition.

D. Cumulative Impacts Analysis

§15130 of the CEQA Guidelines requires that an Environmental Impact Report discuss cumulative impacts of a project when the project’s incremental effect is “cumulatively considerable.” According to Guidelines §15065, “cumulatively considerable” means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and effects of probable future projects.¹¹³

Short-term water transfers are exempt from the requirements of CEQA, and the Water Code does not explicitly require the State Water Board to assess the cumulative impacts of short-term transfers.¹¹⁴ Nevertheless, it is sensible for the State Water Board to consider the cumulative impacts of proposed groundwater substitution transfers before issuing approval, because an obligation to consider cumulative impacts to which individual transfers might contribute is arguably implicit in the Water Code section 1725 provisions. In order to properly determine whether a proposed transfer (1) would only involve water that would have been consumptively used in

112. Greg Amaral Ltd. Pension Plan & Trust 6 (State Water Res. Control Bd. June 30, 2009) http://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2009/wro2009_0043_dwr.pdf (last visited Feb. 15, 2016) (Cal. Water Code § 1726(c) requires a water transfer petitioner to provide a copy of its petition to DFG).

113. Cal. Pub. Res. Code § 15065.

114. Cal. Water Code § 1729.

the absence of the transfer; (2) would not injure other legal users of water; and (3) would not unreasonably affect fish, wildlife, or other instream beneficial uses, the State Water Board would have to consider cumulative impacts to affected groundwater basins. As DWR's map above indicates, various basins in the state have been overdrafted as a result of the incremental effects of groundwater extraction over time. Thus, the effects of groundwater extraction associated with a water transfer are cumulatively considerable when viewed in connection with the effects of past, present, and probable future groundwater extraction in a particular basin.

The Department of Fish and Wildlife (DFW), a state agency with expertise in the conservation and management of wildlife habitats in California, provided a comment on a 2013 groundwater substitution transfer petition in which it "expressed concern that there [would] be a cumulative impact of this and other transfers."¹¹⁵ Nonetheless, the State Water Board still approved this transfer, and the order did not include any response to DFW's comment. In no other order between the years of 2005 and 2015 did the State Water Board deny a transfer petition because it found that a petitioner's groundwater substitution transfer operation cumulatively contributed to conditions of overdraft in an affected basin.

Parties in other contexts have also expressed concern that the cumulative effects of long-term groundwater substitution transfers must be taken into consideration. In a 2013 letter from the Butte County Department of Water and Resource Conservation to the Bureau of Reclamation, the County asserted that a 2013 Central Valley Project Water Transfer Program involving groundwater substitution lacked adequate environmental assessment, clarity, and transparency; and as such, the Bureau's Finding of No Significant Impact (FONSI) had to be "rescinded and replaced with a [EIS/EIR]" under NEPA.¹¹⁶ The county argued that "multi-year groundwater acquisition under cumulative programs . . . could further reduce groundwater levels" and would have "a substantial cumulative effect" because "[g]roundwater levels may not fully recover following a transfer."¹¹⁷ Logically, short-term transfers may also cumulatively reduce groundwater levels, but on a smaller scale.

The State Water Board may be routinely approving short-term rather than long-term transfers because the Water Code distinguishes between the two, loosening the regulatory framework surrounding short-term transfers. Furthermore, temporary transfers generally involve less total acre-footage of

115. Te Velde, *supra* note 92, at 5.

116. Letter from Paul Gosselin, Director of the Butte County Department of Water and Resource Conservation, to Brad Hubbard of the Bureau of Reclamation (May 21, 2013), <https://docs.google.com/a/chicoer.com/filed/0B1UKQi5fdIpvX25zaFJUTmlIWEE/edit?pli=1>.

117. *Id.*

water being transferred than long-term transfers, which may be another factor driving the State Water Board's regular approval of such transfers. Nevertheless, the Water Code's procedural requirements implicitly urge the State Water Board to consider the cumulative impacts to which temporary groundwater substitution transfers contribute.

E. Consecutive Short-Term Transfers

A party should not be permitted to avoid the more stringent environmental review requirements governing long-term transfers by cutting up a long-term water transfer into multiple short-term one-year transfers; and yet, that seems to be happening. For instance, in 2005, 2006, and 2007, the State Water Board approved three consecutive groundwater substitution transfers between the same two parties (from the Yuba County Water Agency to the Department of Water Resources), each involving the transfer of up to 125,000 acre-feet of water—(a larger quantity of water than most other approved short-term groundwater substitution transfers).¹¹⁸ Furthermore, a pertinent comment on a different series of approved consecutive short-term transfers provides that “The [Merced Irrigation District] has obtained other temporary transfers in the past several years. Therefore, these transfers could represent a permanent transfer that would circumvent the normal environmental analyses necessary for permanent changes to water rights.”¹¹⁹

The State Water Board's usual response to such comments is that the Water Code does not prohibit the approval of a series of similar temporary changes.¹²⁰ However, if the State Water Board is willing to approve a party's consecutive short-term transfers for a number of successive years, this would essentially render the distinction between short-term and long-term transfers obsolete.

This issue has been separately litigated in the CEQA context, but not as pertaining to water transfers. Courts have held that “an approving agency may not ‘chop up’ a proposed project into small segments and review each segment in a separate CEQA analysis to misleadingly downplay the impact

118. Yuba (2005), *supra* note 109; Yuba Cty. Water Agency (State Water Res. Control Bd. Apr. 10, 2006) http://www.swrcb.ca.gov/waterrights/board_decisions/adopted_orders/orders/2006/wro2006_0010.pdf (last visited Feb. 15, 2016); Yuba Cty. Water Agency (State Water Res. Control Bd. Mar. 30, 2007) http://www.swrcb.ca.gov/waterrights/board_decisions/adopted_orders/orders/2007/wro2007_0012_dw r.pdf (last visited Feb.15, 2016).

119. Merced, *supra* note 90, at 3.

120. Yuba (2005), *supra* note 109, at 5.

of the proposed project as a whole.”¹²¹ By analogy, groundwater substitution transfer petitioners similarly should not be permitted to “chop up” a long-term transfer into a series of short-term transfers in order to misleadingly downplay the impacts of the proposed transfer.

“Under Water Code section 1732, if the State Water Board concludes that the petitioner has not exercised due diligence in petitioning for a long-term change,” it must disapprove the temporary transfer petition.¹²² However, between 2005 and 2015, the State Water Board never disapproved a temporary transfer petition on the grounds that the petitioner did not exercise due diligence in petitioning for a long-term change. This practice suggests that the State Water Board will likely continue to approve one party’s consecutive short-term transfer petitions on an ad hoc basis.

F. Conclusions

A few conclusions may be drawn from the 2005-2015 State Water Board orders on groundwater substitution transfer petitions. First, the State Water Board approves most groundwater substitution transfer petitions it receives, and requires only minor and uniform mitigation measures to be imposed as a condition for approval.

Second, there is little evidence of rigorous review of the impacts of these transfers by the State Water Board itself. Between 2005 and 2015, the State Water Board never found that a transfer would result in injury to other legal users of water, and, in reaching these determinations, relied heavily on the conclusions of other agencies. Furthermore, the State Water Board never found that a water transfer would create or contribute to conditions of long-term overdraft in an affected groundwater basin. This is surprising, considering the fact that the State Water Board approved transfers out of regions where overdraft has now been identified as a problem.

Third, the State Water Board never found that a groundwater substitution transfer would unreasonably affect fish, wildlife, or other instream beneficial uses. In making this determination, the State Water Board relied on either the presence or absence of comments submitted by the DFG.

Finally, when considering whether to approve a particular transfer petition, the State Water Board does not consider the cumulative impacts of groundwater substitution transfers and other transfers. Furthermore, the Board did not, between the years of 2005 and 2015, find that series of consecutive short-term transfers qualified as long-term transfers.

121. *Citizens for E. Shore Parks v. Cal. State Lands Comm’n.*, 202 Cal. App. 4th 549, 565 (Cal. Ct. App. 2011).

122. *Merced*, *supra* note 90, at 2-3.

The total amount of water moved through groundwater substitution transfers between the years of 2005 and 2015 was small in comparison to the total amount of water transferred annually statewide. Therefore, this paper's conclusions concern a small subset of the water transfers that take place (short-term, groundwater substitution transfers), and are consequently not of pressing importance on a statewide scale. Nevertheless, the Water Code provisions governing the state's approval of groundwater substitution transfers are clear. The State Water Board must comply with these procedural requirements, as is required by law.

V. Recommendations

Based on the conclusions above, this article recommends several ways in which the State Water Board can better comply with the legal provisions governing groundwater substitution transfers. Because there is an increasing demand for the state's dwindling groundwater resources, the Board must properly regulate groundwater substitution transfers in order to promote the long-term viability of the resource.

First, as a requirement for approval, State Water Board orders should list modifications of, and conditions for, proceeding with a proposed groundwater substitution transfer. If it is the case that the State Water Board is imposing uniform reduction requirements (such as water available for transfer is limited to 88% of the groundwater pumped) without actually determining the potential streamflow impacts from each petitioner's respective groundwater substitution operation, then the State Water Board is not conducting an adequate Water Code section 1725 inquiry. Therefore, if the State Water Board is provided with data indicating that a project could injure other legal users of water, contribute to conditions of overdraft in an affected groundwater basin, or unreasonably affect fish, wildlife, and other instream beneficial uses, tailored measures to mitigate these impacts should be imposed. Furthermore, before deferring to petitioner or other agency determinations regarding these impacts, the Board should ensure that such determinations are fully substantiated with adequate data.

Second, the State Water Board should conduct a cumulative impacts analysis before approving a proposed groundwater substitution transfer. Implicit in Water Code section 1725 requirements is an obligation to consider cumulative impacts to which individual transfers might contribute. Before issuing an approval order, the State Water Board could require petitioners to provide recent, accurate data on groundwater elevations within their service areas, as well as data on aquifer, surface water conditions, and groundwater use in order to accurately determine if the petitioner's groundwater substitution transfer would cumulatively impact a groundwater basin. This is particularly important for the groundwater basins that state agencies have flagged as critically overdrafted.

Third, the State Water Board should impose a threshold beyond which repeated short-term transfers cease to qualify as temporary, and instead qualify as long-term. This threshold requirement could be, for instance, three years of consecutive transfers. Long-term transfers are “for any period in excess of one year,” and are subject to CEQA and NEPA requirements.¹²³ A sequence of consecutive short-term transfers should similarly be subject to these environmental review requirements.

Thus, the State Water Board’s Water Code section 1725 analysis should be conducted as follows: First, in making its “no injury” determination, the State Water Board should, after determining based on adequate data the percentage at which a groundwater pumping operation has the potential to affect streamflow, impose individually tailored mitigation measures as a condition for approval. Second, the State Water Board must ensure that a transfer is either (a) consistent with a groundwater management plan, or (b) will not create or contribute to conditions of long-term overdraft in the affected groundwater basin. In making this section (b) determination, the State Water Board should require petitioners to provide enough data necessary for it to at least determine that the petitioner’s groundwater substitution operation is not cumulatively contributing to an already critically overdrafted groundwater basin. DWR’s recent overdrafted basins map suggests that the State Water Board is not adequately examining whether a transfer has cumulatively contributed to conditions of long-term overdraft in basins that have now been proven to be overdrafted. Third, in regards to the “unreasonable effects” determination, even if the Department of Fish and Game fails to submit comments or concerns on a temporary transfer petition, the State Water Board must still require enough data from petitioners as is necessary to make an informed determination that a transfer would not unreasonably affect fish and wildlife.

VI. Conclusion

Based on a review of State Water Board groundwater substitution transfer orders issued between the years of 2005 and 2015, the State Water Board must change its recent practices in regard to its approval of these transfers in order to both comply with its legal obligations under the Water Code, and to manage the state’s threatened groundwater resources. Pursuant to the Water Code, before approving a temporary groundwater substitution transfer petition, the State Water Board is *required* to determine that the transfer would not injure any other legal users of water and unreasonably affect fish, wildlife, or other instream beneficial uses. If a transfer petitioner does not provide the information necessary for the State Water Board to make these determinations, the State Water Board should

123. Cal. Water Code § 1735.

either request that the petitioner provide more information, or deny the transfer petition.

Once the statewide Sustainable Groundwater Management Act is implemented, the State Water Board's practices surrounding groundwater substitution transfers may change. In the meantime, the drought still poses true, imminent threats to the state's groundwater resources. As the primary state agency with the power to regulate this resource, the State Water Board must do so vigorously in order to ensure water security for California's residents in the years to come. When properly managed, groundwater resources will help protect communities, farms and the environment against the impacts of prolonged drought and climate change.¹²⁴

124. Tara Moran and Dan Wendell, *The Sustainable Groundwater Management Act of 2014: Challenges and Opportunities for Implementation*, at 6, http://waterinthewest.stanford.edu/sites/default/files/WitW_SGMA_Report_08242015.pdf.
