

1-6-2018

## A Report Card: Progress under California's Sustainable Groundwater Management Act (SGMA)

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# **A REPORT CARD: PROGRESS UNDER CALIFORNIA'S SUSTAINABLE GROUNDWATER MANAGEMENT ACT (SGMA)**

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## **ABSTRACT**

This article briefly explores the history of California's regulation of water. It then focusses on the state's 2014 Sustainable Groundwater Management Act ("SGMA"). SGMA requires the formation of Groundwater Sustainability Agencies ("GSAs") to oversee critically overdrafted groundwater basins.<sup>1</sup> The GSAs are in the nascent stages of developing groundwater sustainability plans ("GSPs") to preserve groundwater. This article also addresses SGMA's short-term impact on the value of agricultural land in California. Will SGMA ultimately overcome the historic barriers to water management in California and achieve its goal of sustainability for a multitude of competing water uses?

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1. *See generally* CAL. WATER CODE §§ 100-113 (West 2018).

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## I. INTRODUCTION: CALIFORNIA'S WATER SUPPLY

California's water resources vary greatly from the north to the south end of the state.<sup>2</sup> For the vast majority of its water supplies, California relies on rain and snow that fall only during the winter months.<sup>3</sup> The runoff from melting snow pack provides approximately one-third of the water used by cities and farms in California.<sup>4</sup> California's remaining water source is groundwater.<sup>5</sup> Sometimes, the state receives such low quantities of precipitation that conditions are labelled a drought, "a period of drier-than-normal conditions that result in water-related problems."<sup>6</sup> The years 2012-2016 were abnormally dry

2. CAL. DEP'T OF WATER RES., CALIFORNIA WATER TODAY 3-10 (2013), [http://www.water.ca.gov/waterplan/docs/cwpu2013/Final/04\\_Vol1\\_Ch03\\_Ca\\_Water\\_Today.pdf](http://www.water.ca.gov/waterplan/docs/cwpu2013/Final/04_Vol1_Ch03_Ca_Water_Today.pdf).

3. *See id.*

4. *See generally* U.S. DEP'T OF THE INTERIOR, RUNOFF ESTIMATES FOR CALIFORNIA, <https://ca.water.usgs.gov/california-drought/california-drought-runoff.html> (last visited Nov. 12, 2017).

5. *See generally* U.S. DEP'T OF THE INTERIOR, CALIFORNIA DROUGHT, <https://ca.water.usgs.gov/data/drought/> (last visited Nov. 12, 2017).

6. U.S. DEP'T OF THE INTERIOR, WHAT IS DROUGHT?, <https://ca.water.usgs.gov/california-drought/what-is-drought.html> (last visited Nov. 12, 2017).

years and as a result, California was classified as suffering under drought conditions.<sup>7</sup> Estimates suggest that this drought period affected more than thirty-three million Californians.<sup>8</sup> In January 2014, California Governor Jerry Brown signed an executive order that declared a drought state of emergency.<sup>9</sup> The Governor lifted that order in April 2017, but preserved the water conservation methods required in executive orders between 2014 and 2017.<sup>10</sup> Even in many non-drought years there is insufficient precipitation to provide the amount of water needed for the many competing uses that Californians desire.<sup>11</sup> Consequently, the state relies on a complex system of water redistribution throughout the state to address urban, agricultural, and ecosystem water uses.<sup>12</sup> The U.S. Geological Survey ("USGS") chose the Central Valley as one of its first aquifers to study because of the extreme competition for groundwater use in the area.<sup>13</sup> The Central Valley consists of the Sacramento Valley, Delta and Eastside Streams, San Joaquin Basin, and Tulare Basin.<sup>14</sup>

One of California's primary sources of water is groundwater.<sup>15</sup> The pumping of groundwater provides fifty percent of the water on average in the Central Valley.<sup>16</sup> Historically, there has been a minimum amount of regulation on the removal of groundwater from the San Joaquin Basin.<sup>17</sup> As a result, some report that the aquifer is at its lowest level in recorded history.<sup>18</sup> Furthermore, there

7. U.S. DEP'T OF THE INTERIOR, 2012-2016 CALIFORNIA DROUGHT: HISTORICAL PERSPECTIVE, <https://ca.water.usgs.gov/california-drought/california-drought-comparisons.html> (last visited Nov. 12, 2017).

8. See Samantha Karas, *California Drought Update: Storm Brings Flooding And Rain, But Drought Far From Over*, INT'L BUS. TIMES (Jan. 9, 2017, 11:06 AM), <http://www.ibtimes.com/california-drought-update-storm-brings-flooding-rain-drought-far-over-2472244>.

9. Governor Brown Declares a Drought State of Emergency, OFFICE OF GOVERNOR EDMUND G. BROWN JR. (Jan. 17, 2014), <https://www.gov.ca.gov/news.php?id=18368>.

10. Exec. Order No. B-40-17, EXECUTIVE DEP'T STATE OF CAL. (Apr. 7, 2017), [https://www.gov.ca.gov/wp-content/uploads/2017/09/4.7.17\\_Exec\\_Order\\_B-40-17.pdf](https://www.gov.ca.gov/wp-content/uploads/2017/09/4.7.17_Exec_Order_B-40-17.pdf). Governor Brown lifted the drought state of emergency except in Fresno, Kings, Tulare, and Tuolumne Counties in the Central Valley of California. *Id.* The governor explicitly encouraged residents to continue successful water conservation practices. *Id.*

11. See PUB. POL'Y INST. OF CAL., *Just the Facts: Water Use in California*, <http://www.ppic.org/publication/water-use-in-california/> (last visited Mar. 11, 2018) (water in California is used by three overlapping and competing areas: environment, agriculture and urban).

12. CAL. DEP'T OF WATER RES., CALIFORNIA WATER TODAY 3-17 (2013), [http://www.water.ca.gov/waterplan/docs/cwpu\\_2013/Final/04\\_Vol1\\_Ch03\\_Ca\\_Water\\_Today.pdf](http://www.water.ca.gov/waterplan/docs/cwpu_2013/Final/04_Vol1_Ch03_Ca_Water_Today.pdf).

13. U.S. DEP'T OF THE INTERIOR, CENTRAL VALLEY GROUNDWATER AVAILABILITY (Dec. 23, 2016), <https://ca.water.usgs.gov/projects/central-valley/central-valley-groundwater-availability.html>.

14. *Id.*

15. DEVIN GALLOWAY & FRANCIS S. RILEY, SAN JOAQUIN VALLEY, CALIFORNIA: LARGEST HUMAN ALTERATION OF THE EARTH'S SURFACE, <https://pubs.usgs.gov/circ/circ1182/pdf/06SanJoaquinValley.pdf> (last visited Mar. 11, 2018); U.S. DEP'T OF THE INTERIOR, DROUGHT & GROUNDWATER, <https://ca.water.usgs.gov/california-drought/california-drought-groundwater.html> (last visited Mar. 11, 2018).

16. U.S. DEP'T OF THE INTERIOR, CALIFORNIA DROUGHT (Mar. 2, 2018), <https://ca.water.usgs.gov/california-drought/what-is-drought.html>.

17. See John J. Perina, *A Dry Century in California: Climate Change, Groundwater, and a Science-Based Approach for Preserving the Unseen Commons*, 45 ENVTL. L. 641-46 (2015); Matt Weiser, California poised to restrict groundwater pumping, THE SACRAMENTO BEE (Sep. 15, 2014, 12:00 AM), <http://www.sacbee.com/news/local/article2609723.html>.

18. See, e.g., U.S. DEP'T OF THE INTERIOR, CALIFORNIA'S CENTRAL VALLEY GROUNDWATER STUDY: A POWERFUL NEW TOOL TO ASSESS WATER RESOURCES IN CALIFORNIA'S

are other impacts from the unregulated withdrawal of water from the aquifer. For instance, an article in the *San Jose Mercury News* noted the San Joaquin Valley land is subsiding because of overdrawing of water from the aquifer.<sup>19</sup>

The state legislature passed California's SGMA in 2014 to initiate regulation of groundwater.<sup>20</sup> SGMA mandates that local agencies overseeing critically overdrafted groundwater basins, such as the San Joaquin Valley Aquifer, develop or coordinate plans to preserve groundwater.<sup>21</sup> If local agencies do not assume responsibility for sensibly managing the groundwater, the Department of Water Resources ("DWR") is authorized to do so. The authors will explore (1) what SGMA requires of the plans, (2) who is developing the plans for the Central Valley, (3) and what effects such plans will have on residential, agricultural, and commercial real estate when they are implemented.

II. Legal History of Water and Water Rights in California

## II. LEGAL HISTORY OF WATER AND WATER RIGHTS IN CALIFORNIA

A comparative study of water regulation systems throughout the world recommended several desirable components for a sovereign's water regulation system.<sup>22</sup> While U.S. readers might expect that the sovereign in the United States would be the federal government, in the case of water, states continue to have strong sovereign powers.<sup>23</sup> The federal government exercises some regulatory activities regarding water, but limits itself to interstate and international waters.<sup>24</sup> Hence, the states have primary control over water use and ownership.

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CENTRAL VALLEY (Nov. 29, 2016), <https://pubs.usgs.gov/fs/2009/3057/> (explaining that there has been a dramatic decrease in groundwater in California's Central Valley since 1960); Dan Charles, *As Rains Soak California, Farmers Test How To Store Water Underground*, NAT'L PUB. RADIO, Jan. 12, 2017, <https://www.npr.org/sections/thesalt/2017/01/12/509179190/as-rains-soak-california-farmers-test-how-to-store-water-underground>; Lisa M. Krieger, *New study: Despite drought-reducing rains, central California continues to sink*, SAN JOSE MERCURY NEWS, Feb. 9, 2017, <http://www.mercurynews.com/2017/02/09/central-california-continues-to-sink>; Ryan Sabalow, *Tensions, Threats as California's New Groundwater Law Takes Shape*, THE SACRAMENTO BEE, Nov. 24, 2015, <http://www.sacbee.com/news/state/california/water-and-drought/article45802360.html>.

19. Lisa M. Krieger, *California Drought: San Joaquin Valley Sinking as Farmers Race to Tap Aquifer*, SAN JOSE MERCURY NEWS, Mar. 29, 2014, [http://www.mercurynews.com/drought/ci\\_25447586/california-drought-san-joaquin-valley-sinking-farmers-race](http://www.mercurynews.com/drought/ci_25447586/california-drought-san-joaquin-valley-sinking-farmers-race).

20. Sustainable Groundwater Management Act of 2014, CAL. WATER CODE §10720 *et seq.*, (West 2018) [hereinafter SGMA] (the Sustainable Groundwater Management Act was a combination of three bills: Assemb. B. 1739, 2013-2014 Leg. (Cal. 2014); S.B. 1168, 2013-2014 Leg. (Cal. 2014); and S.B. 1319, 2013-2014 Leg. (Cal. 2014)).

21. See generally CAL. DEP'T OF WATER RES., SUSTAINABLE GROUNDWATER MANAGEMENT (SGM), <https://ca.water.usgs.gov/sustainable-groundwater-management/> (last visited Mar. 14, 2018).

22. See SALMAN M. A. SALMAN & DANIEL D. BRADLOW, THE WORLD BANK, REGULATORY FRAMEWORKS FOR WATER RESOURCES MANAGEMENT: A COMPARATIVE STUDY (2006).

23. See U.S. CONST. art. I, § 8, cl. 3. The federal government has authority to regulate interstate and international commerce, but not intrastate commerce. Water that is navigable and runs interstate can easily be regulated by the federal government, but federal control over intrastate waters is more limited. While groundwater may indeed be stored in an aquifer that crosses state lines, the regulation of groundwater has traditionally been left to the states.

24. *Id.*, see, e.g., 42 U.S.C. § 300f (2012). It should be admitted that there is indeed quite a bit of federal regulation of water, even water that does not travel across state lines. For instance, the Environmental Protection Agency maintains standards for levels of identified pollutants found

California's water regulation system has some of the basic components of a water management system, but it has only recently, with passage of SGMA, begun to regulate groundwater extraction.<sup>25</sup> California has a complicated water rights and distribution system, as described by the University of California Berkeley historian Norris Hundley, Jr.<sup>26</sup> Article X of the California Constitution provides the framework for California's water regulatory system. First, it provides that the state has the right of eminent domain regarding water: it is not the owner.<sup>27</sup> Second, it limits water uses to those that are reasonable and beneficial and forbids wasting water.<sup>28</sup> Third, it provides for limited municipal rights to tidelands.<sup>29</sup> Finally, "appropriated" water uses are "public" and subject to state regulation.<sup>30</sup>

California enacted a water code in 1943, which expanded the constitution's basic provisions.<sup>31</sup> Its divisions include state power over water (I); dams and reservoirs regulations (III); wells, conduits, and streams (IV); flood control (V); conservation of water resources (VI); quality (VII); water regulatory agencies (X - XXI); and special provisions for specific areas.<sup>32</sup> Because SGMA concerns sustainable utilization of California's groundwater, it is now part of this Water Code in Division VI.<sup>33</sup>

The state water system ties some water rights to land while other water rights require permits for use, depending on such factors as: (1) when the water rights were recognized; (2) the type of water such as percolating groundwater, subterranean streams, or surface water; (3) the legal theory identifying the water rights, such as the riparian doctrine granting owners of land abutting a watercourse right to use water; (4) judicial determination; or (5) definitions in California water statutes.<sup>34</sup> Much of the legal water rights system is based on scientific knowledge of the mid-19th century.<sup>35</sup> The authors advocate for an updated system based on current, proficient science and relying on experts such as climatologists, geologists, and ecologists.

Knowledge about the legal regulation of water use, especially prioritization of desired uses, is also critically important. Now, the regulators of the San Joaquin Aquifer must examine how to meet the state's sustainability mandate regarding the three primary categories of use: (1) agricultural; (2) residential;

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in water.

25. See Joshua Emerson Smith, *State Taking Greater Control Over Groundwater*, THE SAN DIEGO UNION-TRIBUNE, Apr. 30, 2016, <http://www.sandiegouniontribune.com/news/environment/sdut-state-groundwater-regulations-2016apr30-htmlstory.html>.

26. See generally NORRIS HUNDLEY, JR., *Preface to THE GREAT THIRST: CALIFORNIANS AND WATER: A HISTORY* (University of California Press 2001).

27. CAL. CONST. art. X, § 1.

28. *Id.* art. X § 2.

29. *Id.* art. X § 3.

30. *Id.* art. X § 5.

31. See generally CAL. WATER CODE §§ 100-113 (West 2018).

32. *Water Code*, CAL. LEGIS. INFO., <http://leginfo.legislature.ca.gov/faces/codesTOCSelect.d.xhtml?tocCode=wat> (last visited Mar. 18, 2018).

33. SGMA, *supra* note 20.

34. See generally GARY W. SAWYERS, A PRIMER ON CALIFORNIA WATER RIGHTS 2-10, [http://aic.ucdavis.edu/events/outlook05/Sawyer\\_primer.pdf](http://aic.ucdavis.edu/events/outlook05/Sawyer_primer.pdf) (last visited Dec. 14, 2017).

35. See generally Joseph L. Sax, *We Don't Do Groundwater: A Morsel of California Legal History*, 6 U. DENV. WATER L. REV. 269, 270-73, 279 (2003).

and (3) commercial. Regarding agriculture, in the past individuals who have sufficient resources have been permitted to dig deeper wells.<sup>36</sup> However, those days may be over, but much depends on the decisions the local planners make.<sup>37</sup> In residential areas, some subdivisions have already experienced rising and falling property values based on the depth of the aquifer directly under the land.<sup>38</sup> SGMA's mandates may call into question the accuracy of prior feasibility studies that supported the development of some subdivisions. In the commercial arena, some industries in addition to agriculture have specific water needs and desires, such as golf courses "needing" large amounts of generously watered sod from groundwater. These too may be influenced by SGMA's mandates.<sup>39</sup>

Water law is designed to identify rights and provide access to a resource that is required for human existence. About 97.5 percent of the water on earth is saline, the vast majority of which is in the oceans.<sup>40</sup> The remaining 2.5 percent of water is freshwater, which consists of groundwater (30%), glaciers and icecaps (69%), and other freshwater sources such as lakes, rivers, swamps, and moisture in the soil and atmosphere (1%).<sup>41</sup>

California sells more agricultural products (based on the total value of the products) than any other state.<sup>42</sup> Approximately five percent of the state is water.<sup>43</sup> Because of the limited availability of natural water and limited rainfall in California, most agricultural land must be irrigated.<sup>44</sup> To provide access for agricultural, industrial, human, and environmental uses, water is distributed through complicated state regulatory systems.<sup>45</sup>

Water, as it is in nature, differs from many other types of real and personal property in that it constantly flows, and thus any "ownership" is not linked to a specifically identifiable water, but rather is based on access to a quantity of water.<sup>46</sup> Water can be defined in different ways, depending on its form and location: purchased bottled water is treated as chattel, whereas surface water in a

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36. U.S. DEP'T OF THE INTERIOR, *supra* note 18; Charles, *supra* note 18. During the drought, when state and federal water deliveries were significantly reduced, farmers with dry wells dug deeper wells. *Id.*

37. *See generally* CAL. WATER CODE §§ 10920-10936, 12924 (West 2018).

38. *See* WATER §113; *see generally* Perina, *supra* note 18, at 653-54 (describing the California history of local control and supports SGMA's continuation of local control based on differences in basins and local needs).

39. *See* CAL. WATER CODE §113; *see generally* Perina, *supra* note 18, at 653-54.

40. U.S. DEP'T OF THE INTERIOR, THE WORLD'S WATER, <https://water.usgs.gov/edu/earth-wherewater.html> (last visited August 14, 2017).

41. *Id.*

42. *See* NATIONAL AGRICULTURAL STATISTICS SERVICE, CENSUS STATE PROFILE: CALIFORNIA (2016), [https://www.nass.usda.gov/Quick\\_Stats/Ag\\_Overview/stateOverview.php?state=CALIFORNIA](https://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=CALIFORNIA) (last visited Jan. 29, 2018).

43. U.S. GEOLOGICAL SURVEY, HOW MUCH OF YOUR STATE IS WET? <https://water.usgs.gov/cdu/wetstates.html> (last visited Jan. 29, 2018).

44. *See* U. S. GEOLOGICAL SURVEY, CALIFORNIA WATER USE (2010), [https://ca.water.usgs.gov/water\\_use/2010-california-water-use.html](https://ca.water.usgs.gov/water_use/2010-california-water-use.html).

45. Kuljit Singh, *Unilateral Curtailment of Water Rights: Why the State Water Resource Control Board is Overstepping Its Jurisdiction*, 25 SAN JOAQUIN AGRIC. L. REV. 115, 122-23 (2016).

46. David B. Anderson, *Water Rights as Property in Tulare v. United States*, 38 MCGEORGE L. REV. 461, 471-72 (2007).

river is defined by the riparian rights law.<sup>47</sup> California's water law is also complicated because it includes historical remnants, such as "first in time, first in right,"<sup>48</sup> English common law riparian rights,<sup>49</sup> and a regulatory scheme, first effectively adopted in 1914, which imposes a permitting process on surface water rights.<sup>50</sup> The legally codified artificial distinction between surface and groundwater makes it more difficult to enforce a scientific approach to water rights.<sup>51</sup>

## A. SURFACE WATER AND SURFACE WATER RIGHTS

"[S]urface water includes underflow of streams, underground streams, and any other subsurface flow that is identified with a defined bed, bank or channel."<sup>52</sup> The California Supreme Court defines surface water as: "[w]ater diffused over the surface of land, or contained in depressions therein, and resulting from rain, snow, or which rises to the surface in springs."<sup>53</sup> There are four types of surface water rights, all of which can be intermixed and difficult to separate: (1) riparian; (2) pre-1914 appropriative; (3) post-1914 appropriative; and (4) prescriptive.<sup>54</sup>

### 1. Riparian Rights

Riparian rights arise where real property abuts a water source (typically a river or stream).<sup>55</sup> The concept of riparian rights is an offshoot of the law of trespass and defines what rights accompany real property ownership.<sup>56</sup> Historically, riparian rights have been more senior than appropriative rights and could

47. *Id.* at 476-79; *see generally* Marc Reisner, *CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER*, Revised Edition (1993) (chronicling the development of water law in the west, with a focus on California's water law); *Keys v. Romley*, 412 P.2d 529, 531 (Cal. 1966); *Everett v. Davis*, 115 P.2d 821, 823 (Cal. 1941); *San Gabriel Valley Country Club v. Los Angeles Cty.*, 188 P. 554, 556 (Cal. 1920) ("It should | | be observed at the outset that the present case is not concerned with surface waters. Such waters in the legal sense are those which fall on the land by precipitation from the skies or arise in springs and spread over the surface of the ground without being collected into a definite body.").

48. Roderick E. Walston, *California Water Law: Historical Origins to the Present*, 29 WHITTIER L. REV. 765, 768-69 (2008).

49. *Id.* at 766-67.

50. *Id.* at 771-72.

51. Sax, *supra* note 35, at 270-71; Perina, *supra* note 17, at 652; ROMUALDO P. ECLAVEA ET AL., CAL. JUR. 3D WATER § 46 CLASSIFICATION OF WATERS (2017).

52. SAWYERS, *supra* note 34, at 1.

53. *Keys*, 412 P.2d at 531; *see also San Gabriel Valley Country Club*, 188 P. at 556 ("Such waters in the legal sense are those which fall on the land by precipitation from the skies or arise in springs and spread over the surface of the ground without being collected into a definite body."); *see also Everett*, 115 P.2d at 823 ("Surface waters are those falling upon, arising from, and naturally spreading over lands produced by rainfall, melting snow, or springs.").

54. *See Pleasant Valley Canal Co. v. Borrer*, 61 Cal. App. 4th 742, 751-54 (Cal. Ct. App. 1998); Singh, *supra* note 45, at 117-18; *see Walston, supra* note 48, at 765; STATE WATER RES. CONTROL BD., THE WATER RIGHTS PROCESS, [https://www.waterboards.ca.gov/waterrights/board\\_info/water\\_rights\\_process.shtml](https://www.waterboards.ca.gov/waterrights/board_info/water_rights_process.shtml) (last visited Feb. 2, 2018).

55. *Lux v. Haggin*, 10 P. 674, 749 (Cal. 1886) (explaining that riparian rights evolve from the state's adoption of English common law within which such rights are recognized); BARTKIEWICZ ET AL., A SUMMARY OF THE CALIFORNIA LAW OF SURFACE WATER AND GROUNDWATER RIGHTS, 1-2 (2006), <https://www.co.sutter.ca.us/pdf/pw/wr/gmp/WaterRightsSummary.pdf>.

56. Anderson, *supra* note 46, at 480; *see Walston, supra* note 48, at 768; GOVERNOR'S



not be lost by nonuse or waste.<sup>57</sup> California voters, concerned about the water waste (and non-use) that could occur from the unlimited priority of riparian rights holders, adopted a constitutional amendment to limit riparian rights holders' rights to reasonable and beneficial uses.<sup>58</sup> Under California law (and based on English common law), riparian rights apply only to the parcel that currently abuts the stream, so that if the parcel is divided, only the part of the parcel abutting the stream is entitled to riparian rights.<sup>59</sup> Once a parcel loses those rights, they cannot be recovered (unless specified in the deed).<sup>60</sup> Riparian rights owners must exercise their rights in a way that is consistent with the rights of other riparian rights holders, because no riparian rights holder has priority over another.<sup>61</sup>

## 2. Pre-1914 Appropriative Rights

Appropriative water rights are based on water captured and used or sold outside the land from which it is produced.<sup>62</sup> Prior to 1914, water taken from non-riparian land could be diverted without a permit because there was no permitting system in place—this has been summarized as the first in time, first in right basis to claim water rights.<sup>63</sup> Some water diverters attempted to preserve their rights by posting a notice of the diversion and actually diverting the water.<sup>64</sup>

## 3. Post-1914 Appropriative Rights

Beginning in 1914, the Division of Water Resources (predecessor to the State Water Resources Control Board ("SWRCB")) required permits for water diversion and water storage.<sup>65</sup> To receive the permit, the applicant had to prove,

COMMISSION TO REVIEW CALIFORNIA WATER RIGHTS LAW, GOVERNOR'S COMMISSION TO REVIEW CALIFORNIA WATER RIGHTS LAW: FINAL REPORT 6 (1978).

57. *Millview Cty. Water Dist. v. State Water Res. Control Bd.*, 177 Cal. Rptr. 3d 735, 742-44 (Cal. Ct. App. 2014).

58. CAL. CONST. art. X § 2 (formerly Art XIV § 3, as adopted November 6, 1928, amended November 5, 1974); *Tulare Irrigation Dist. v. Lindsay-Strathmore Irrigation Dist.*, 45 P.2d 972, 985 (Cal. 1935).

59. STATE WATER RES. CONTROL BD., THE WATER RIGHTS PROCESS, [https://www.waterboards.ca.gov/waterrights/board\\_info/water\\_rights\\_process.shtml](https://www.waterboards.ca.gov/waterrights/board_info/water_rights_process.shtml) (last visited Mar. 19, 2018).

60. See STATE WATER RES. CONTROL BD., WATER RIGHTS: FREQUENTLY ASKED QUESTIONS, [https://www.waterboards.ca.gov/waterrights/board\\_info/faqs.html](https://www.waterboards.ca.gov/waterrights/board_info/faqs.html) (last visited Mar. 19, 2018).

61. *Fall River Valley Irrigation Dist. v. Mt. Shasta Power Corp.*, 259 P. 444, 448 (Cal. 1927); *Herminghaus v. S. Cal. Edison Co.*, 252 P. 607, 613 (Cal. 1926); *Vernon Irrigation Co. v. City of Los Angeles*, 39 P. 762, 764 (Cal. 1895); see generally John B. Clayberg, *The Genesis and Development of the Law of Waters in the Far West*, 1(2) MICH. L. REV. 91, 91 (1902) (explanation of the development of early riparian rights).

62. *City of Pasadena v. City of Alhambra*, 207 P.2d 22, 28 (Cal. 1949).

63. See CAL. WATER CODE § 1225 (West 2018); *People v. Shirokow*, 605 P.2d 859, 864 (Cal. 1980); *Irwin v. Phillips*, 5 Cal. 140, 146-47 (1855); GOVERNOR'S COMMISSION TO REVIEW CALIFORNIA WATER RIGHTS LAW, GOVERNOR'S COMMISSION TO REVIEW CALIFORNIA WATER RIGHTS LAW: FINAL REPORT 7 (1978); Russell R. Kletzing, *Prescriptive Water Rights in California: Is Application a Prerequisite*, 39 CALIF. L. REV. 369, 374 (1951).

64. See *Singh*, *supra* note 45, at 119; STATE WATER RES. CONTROL BOARD, THE WATER RIGHTS PROCESS, [https://www.waterboards.ca.gov/waterrights/board\\_info/water\\_rights\\_process.shtml](https://www.waterboards.ca.gov/waterrights/board_info/water_rights_process.shtml).

65. See *Tulare Water Co. v. State Water Comm'n*, 202 P. 874, 875 (Cal. 1921); see CAL. WATER CODE § 1250 *et seq.* (West 2018); see CAL. WATER CODE § 150 *et seq.* (West 2018);

through a public process, a beneficial use and the availability of unappropriated water.<sup>66</sup> In the 1943 amendment to the Water Code, the California legislature authorized forfeiture of unused, unappropriated water.<sup>67</sup> Appropriator's rights were given more support with the constitutional amendment mandating that all water users put their water to reasonable and beneficial uses.<sup>68</sup>

#### 4. Prescriptive Rights

Prescriptive rights are created through open, notorious, continuous, and adverse use for five years.<sup>69</sup> The use must be adverse to that of another water user.<sup>70</sup> The SWRCB is not required to recognize prescriptive rights; thus prescriptive rights holders must rely on a Water Board proceeding or a court decision to confirm their rights.<sup>71</sup> Prescriptive rights cannot be created against upstream water users in California.<sup>72</sup>

### B. GROUNDWATER AND GROUNDWATER RIGHTS

Prior to SGMA, there was no statewide regulatory scheme to manage groundwater rights—the regulatory scheme specifically applied only to surface water.<sup>73</sup> Court decisions rather than regulations confirmed groundwater rights.<sup>74</sup> This distinction between groundwater and surface rights began with the court decision in *Katz v. Walkinshaw*, in which the California Supreme Court established rules for determining groundwater rights.<sup>75</sup> Generally, counties did not regulate this groundwater on the local level, except for limited regulation of drilling standards and water quality.<sup>76</sup> More recently, some counties have started to develop local groundwater management plans under their police powers.<sup>77</sup> SGMA will put at least some of these county regulations on hold, to the extent they may conflict with the process outlined by SGMA regulations.<sup>78</sup> Until SGMA is fully operational, and until agencies have adopted or approved GSPs, the judiciary controls access to water. In 1903, the California Supreme Court

Kletzing, *supra* note 63, at 370.

66. *Sec Irwin*, 5 Cal. at 140 (explicitly acknowledging that appropriative water rights were superior rights); CAL. WATER CODE § 1240 (West 2018); *see generally* Clayberg, *supra* note 61; Wells Hutchins, *California Ground Water: Legal Problems*, 45 CALIF. L. REV. 688 (1957).

67. WATER § 1011(a) (amended 1999) (revision occurred because of the California courts' consistent recognition of riparian holders right to any use, not just beneficial use, having priority over appropriative rights); Hutchins, *supra* note 66, at 690.

68. Hutchins, *supra* note 66, at 689.

69. *Sec, e.g., Smith v. Hawkins*, 42 P. 453, 454 (Cal. 1895).

70. *Yankee Jim's Union Water Co. v. Crary*, 25 Cal. 504, 509 (1864); Hutchins, *supra* note 66, at 690.

71. CAL. WATER CODE § 746 (West 2018); *Shirokow*, 605 P.2d at 873.

72. Hutchins, *supra* note 66, at 690.

73. WATER § 1200 ("Whenever the terms stream, lake or other body of water, or water occurs in relation to applications to appropriate water or permits or licenses issued pursuant to such applications, such term refers only to surface water, and to subterranean streams flowing through known and definite channels.")

74. *Sec STATE WATER RES. CONTROL BD., THE WATER RIGHTS PROCESS*, [https://www.waterboards.ca.gov/waterrights/board\\_info/water\\_rights\\_process.shtml](https://www.waterboards.ca.gov/waterrights/board_info/water_rights_process.shtml) (last visited Mar. 23, 2018).

75. 141 Cal. 116, 117, 134-37 (1903).

76. SAWYERS, *supra* note 34, at 4.

77. *See id.*

78. *Sec, e.g., WATER § 10723.2.*

in *Katz* ruled that absolute ownership of land defined under the common law, from the “center of the earth” to the “upper reaches of the atmosphere” was unrealistic and inappropriate for arid land.<sup>79</sup> This decision resulted in the development of three categories of groundwater rights: (1) overlying rights; (2) appropriative rights; and (3) prescriptive rights.<sup>80</sup>

### 1. Overlying Rights

Overlying rights are the rights of a landowner to access a reasonable amount of water underneath the land of that owner.<sup>81</sup> The establishment of the reasonable amount requirement provided that each owner whose land overlaid underground water had equivalent access to that water, making overlying landowners' rights similar to riparian rights.<sup>82</sup> Thus, holders of overlying rights have rights as long as their water use is reasonable and beneficial.<sup>83</sup> The drought has created significant problems for this type of right to groundwater due to landowners pumping deeper and more frequently.<sup>84</sup> These rights apply to any reasonable, beneficial use of the water.<sup>85</sup> Overlying rights holders have priority over appropriative rights holders, but they are subject to any claims by prescriptive rights holders who have fulfilled the necessary conditions.<sup>86</sup> Apparently, no approval by the state regulatory agency is required.<sup>87</sup>

### 2. Appropriative Rights

Appropriative rights holders are landowners or individuals who: (1) use water, but do not have land overlying the water used; or (2) have overlying land, but use the water for other, non-overlying land.<sup>88</sup> Courts permit appropriative

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79. *Katz*, 141 Cal. at 122; *see also* United States v. Causby, 328 U.S. 256, 260-61 (1946) (rejecting the common law land ownership doctrine of ownership from the center of the earth to the upper reaches of the atmosphere).

80. SAWYERS, *supra* note 34, at 5-6.

81. Wesley A. Miliband, *Regulating Groundwater in California: Will Groundwater Sustainability Agencies Change the Landscape?* 45 ENVTL. L. REP. NEWS & ANALYSIS 11104, 11105 (2015).

82. *City of Pasadena*, 207 P.2d at 28; *Peabody v. City of Vallejo*, 40 P.2d 486, 492 (Cal. 1935); *Hutchins*, *supra* note 66, at 689.

83. *Katz*, 141 Cal. at 134.

84. *See, e.g.*, Ryan Sabalow et al., *Farmers Say, 'No Apologies,' As Well Drilling Hits Record Levels In San Joaquin Valley*, THE SACRAMENTO BEE (Sep. 25 2016, 4:00 AM), <http://www.sacbee.com/news/state/california/water-and-drought/article103987631.html>; Matt Richtel, *California Farmers Dig Deeper for Water, Sipping Their Neighbors Dry*, THE N.Y. TIMES (June 5, 2015), <https://www.nytimes.com/2015/06/07/business/energy-environment/california-farmers-dig-deeper-for-water-sipping-their-neighbors-dry.html>; Bettina Boxall, *Overpumping of Central Valley groundwater creating a crisis, experts say*, L.A. TIMES (March 10, 2015), <http://www.latimes.com/local/california/la-me-groundwater-20150318-story.html>.

85. *See* STATE WATER RES. CONTROL BD., THE WATER RIGHTS PROCESS, [https://www.waterboards.ca.gov/waterrights/board\\_info/water\\_rights\\_process.shtml](https://www.waterboards.ca.gov/waterrights/board_info/water_rights_process.shtml) (last visited Mar. 23, 2018).

86. *City of Pasadena*, 207 P.2d at 28-29.

87. *Millview Cty. Water Dist.*, 229 Cal. App. 4th at 907; *see* Gabrielle Kavounas, *California's Curse: Perpetual Drought and Persistent Land Development*, 53 SAN DIEGO L. REV. 1055, 1066 (2016); *see also* Kletzinger, *supra* note 63, at 369-70.

88. *Millview County Water Dist.*, 229 Cal. App. 4th at 888.

rights uses of surplus water by an owner of overlying land.<sup>89</sup> Courts further define surplus water as water that is more than the overlying landowner needs, as long as it does not cause an overdraft condition.<sup>90</sup> Uses of this surplus water can be public or private, as long as the use is reasonable and beneficial.<sup>91</sup>

### 3. Prescriptive Rights

Prescriptive rights are rights that are created when there is an overdraft condition, which occurs when the water user is taking water that is not surplus.<sup>92</sup> An application need not be filed in order to establish prescriptive rights under the Water Code.<sup>93</sup> Courts define an overdraft condition as an annual withdrawal of more water than is available so that the basin's water level gradually decreases.<sup>94</sup> No new appropriative rights can be created during an overdraft condition.<sup>95</sup> However, if an appropriator continues to pump beyond the safe yield of water and does so for five years in conflict with the rights of other holders, then the appropriator is rewarded with prescriptive rights to that water.<sup>96</sup> If, however, the basin comes out of the overdraft condition before the appropriator completes the five years of withdrawal, the prescriptive rights do not attach.<sup>97</sup> A court proceeding is normally necessary to confirm prescriptive rights.<sup>98</sup> These rights cannot exist against the interests of the state, public agencies, or public utilities.<sup>99</sup>

### 4. Adjudicated Water Rights

Adjudicated water rights occur when either the state Water Board or the courts are compelled to resolve disputes among competing water right holders.<sup>100</sup> These decisions clarify the nature and extent of the rights, including the amount of water each right holder is permitted to extract.<sup>101</sup> Sometimes, in the

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89. Hutchins, *supra* note 66, at 690.

90. *See id.* at 690-91.

91. Wright v. Goleta Water Dist., 174 Cal. App. 3d 74, 89 (1985); *Pcbody*, 40 P.2d at 493-94.

92. *City of Pasadena*, 207 P.2d at 28-29; *Moore v. Cal. Or. Power Co.*, 140 P.2d 798, 804-07 (Cal. 1943); *Seneca Consol. Gold Mines Co. v. Great W. Power Co.*, 287 P. 93, 95, 97 (Cal. 1930) (finding that prescriptive right to store existed in priority over riparian rights holders in the lower river); *Miliband*, *supra* note 81, at 11105.

93. *See Kletzing*, *supra* note 63, at 369-37. Some commentators argue that prescriptive water rights cannot be created after the enactment of the 1913 Water Code section 1225, which states, "No right to appropriate or use water subject to appropriation shall be initiated or acquired except upon compliance with the provisions of this division." *Id.* Courts in California and other western states have been divided as to whether a permit is required to create prescriptive rights. *Id.*

94. *SAWYERS*, *supra* note 34, at 6.

95. Hutchins, *supra* note 66, at 690 (noting that users of non-surplus overlying water, when such use is open, notorious, and for five years, would create a prescriptive right in that water).

96. *E. Clemens Horst Co. v. Tarr Mining Co.*, 163 P. 492, 494-95 (Cal. 1917); *Kletzing*, *supra* note 63, at 376.

97. Hutchins, *supra* note 66, at 690-91 (discussing that, as long as there is a surplus, the water use is appropriative rather than prescriptive, and thus the surplus would stop the creation of prescriptive water rights).

98. *Id.* at 688 (noting that since the prescriptive right is not recorded, one claiming such right must demonstrate that it has fulfilled the requirements).

99. *Shirokow*, 605 P.2d at 865 (Cal. 1980); *BARTKIEWICZ ET AL.*, *supra* note 55, at 3.

100. *SAWYERS*, *supra* note 34, at 9.

101. *See id.* at 5.

interest of equitably distributing water rights, a court may act inconsistently with the priority rules of water law and may maintain continued jurisdiction over water use in a particular dispute.<sup>102</sup>

### C. CORE PRINCIPLES RELATED TO WATER USE IN CALIFORNIA

Article X, section 2 of the California Constitution requires all water be put to reasonable and beneficial uses.<sup>103</sup> California's Water Code section 275 gives administrative agencies the power to take all necessary actions to prevent waste, unreasonable use, unreasonable methods of use, or unreasonable methods of diversion of water.<sup>104</sup>

A second core principle is that no one "owns" water; instead, they own water rights.<sup>105</sup> The State holds legal title to water, but does so as part of a public trust to manage water for the benefit of the public.<sup>106</sup> Those benefits include economic, recreational, aesthetic, and environmental uses.<sup>107</sup> This is embodied in the Public Trust Doctrine.<sup>108</sup> In 1983, the California Supreme Court held that the State was a trustee of water to be held for navigation, fishing, recreation, ecology, and aesthetics; no one could appropriate water harmful to those interests.<sup>109</sup> The State could also reconsider allocation decisions.<sup>110</sup>

### D. WATER CONTRACTS, DISTRICTS AND MUNICIPAL WATER COMPANIES

An individual or entity other than the water right holder can hold the water subject to those rights.<sup>111</sup> For example, some water is held and delivered by district or mutual water companies.<sup>112</sup> The right to receive the water is separate from the water rights that permit diversion of the water in the first place.<sup>113</sup> Those who deliver the water may have legal rights in the water they deliver, or they may have contract rights to the water.<sup>114</sup> Water delivered through the Central Valley Project, for example, is "owned" by the United States and the recipients contract with the United States for water.<sup>115</sup> With mutual companies, the right to receive water is based on the stock owned in the mutual company and is separate from the land to which the water is delivered.<sup>116</sup>

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102. *Id.* at 7-8.

103. CAL. CONST. art. X, § 2.

104. See BARTKIEWICZ ET AL., *supra* note 55, at 1.

105. *Copeland v. Fairview Land & Water Co.*, 131 P. 119, 121 (Cal. 1913); *Stanislaus Water Co. v. Bachman*, 93 P. 858, 862 (Cal. 1908); see also Miliband, *supra* note 81, at 11105.

106. SAWYERS, *supra* note 34, at 10-11.

107. *Id.* at 10.

108. *Id.*

109. *Nat'l Audubon Soc'y v. Super. Ct.*, 658 P.2d 709, 719, 721 (Cal. 1983).

110. *Id.* at 728.

111. See SAWYERS, *supra* note 34, at 10-11.

112. *Id.* at 11.

113. *Id.*

114. *Id.*

115. *Id.*

116. *Id.* at 11-12.

### E. ADJUDICATION OF WATER RIGHTS

The current SWRCB was established in 1967.<sup>117</sup> It is responsible for administering the Water Code.<sup>118</sup> In June 2015, SWRCB issued curtailment letters to the West Side Irrigation District, Central Delta Water Agency, South Delta Water Agency, and Woods Irrigation Company.<sup>119</sup> The letters, titled “Notice of Unavailability of Water and Need for Immediate Curtailment,” informed the recipients that they must immediately cease exercising their pre-1914 appropriative and/or permit license rights.<sup>120</sup> The plaintiffs filed an ex parte application for a stay or temporary restraining order against the SWRCB’s action.<sup>121</sup> Superior Court Judge Chang ruled that absent a stay, the plaintiffs would suffer irreparable harm to their crops.<sup>122</sup> Judge Chang ruled that the orders violated the due process rights of the plaintiffs.<sup>123</sup> The SWRCB argued that the letters were advisory rather than mandatory, but the Court concluded the letters were coercive.<sup>124</sup> Based on that ruling, the SWRCB withdrew the curtailment letters it had sent statewide.<sup>125</sup>

### F. CALIFORNIA’S WATER DELIVERY SYSTEM

California’s water woes are a result of its natural climate. California is located in a geographic area where it rains or snows approximately four months each year, between late fall and early spring.<sup>126</sup> Northern California has sufficient rain and snow as an extension of the northwestern United States.<sup>127</sup> Central and Southern California are located in the deserts of the arid and semi-arid Southwest.<sup>128</sup> California satisfies its annual water needs through a series of complex water delivery systems so Californians can have access to water where they desire.<sup>129</sup> The federal government constructed these systems through the Bureau of Reclamation and the Army Corps of Engineers, in conjunction with the state government acting through its Central Valley Water Project and the State Water Project.<sup>130</sup> This water distribution system required building multiple lakes to

117. See Cal. State Water Res. Control Bd., *Porter-Cologne Water Quality Control Act*, at i (2018), [http://www.waterboards.ca.gov/laws\\_regulations/docs/portercologne.pdf](http://www.waterboards.ca.gov/laws_regulations/docs/portercologne.pdf).

118. CAL. WATER CODE § 174 (West 2018).

119. See *W. Side Irrigation Dist. v. Cal. State Water Res. Bd.*, No. 34-2015-80002121, 45 ELR 20147, at \*1 (Cal. App. Dep’t Super. Ct. Aug. 3, 2015); see also, Singh *supra* note 45, at 116.

120. *W. Side Irrigation Dist.*, 45 ELR 20147, at \*1-2.

121. *Id.* at \*1.

122. *W. Side Irrigation Dist. v. Cal. State Water Res. Bd.*, No. 34-2015-80002121, at \*2 (Cal. App. Dep’t Super. Ct. July 10, 2015).

123. *W. Side Irrigation Dist.*, 45 ELR 20147, at \*3.

124. *Id.* at \*2-4.

125. David Smith, *California Water Board Rescinds Water Curtailment Language*, THE SISKIYOU DAILY NEWS (July 20, 2015, 10:09 AM), <http://www.siskiyoudaily.com/article/20150720/NEWS/150729982>.

126. B. LYNN INGRAM & FRANCES MALAMUD-ROAM, *THE WEST WITHOUT WATER* 17 (2013).

127. *Id.* at 16.

128. *Id.*

129. *Id.* at 8.

130. See Roderick E. Walston, *California Water Law: Historical Origins to the Present*, 29 WHITTIER L. REV. 765, 765, 783-84 (2008).

store water and multiple canals and pumping systems to transport the water throughout the state.<sup>131</sup> Municipalities, irrigation districts, and private companies contract to receive water deliveries through this system.<sup>132</sup>

Some communities also tap into natural underground waters, or underground aquifers.<sup>133</sup> These aquifers contain water that has accumulated below ground for thousands of years.<sup>134</sup> During droughts, the aquifers are the primary source of water.<sup>135</sup> As a result, users have drained aquifers—some to the point of overdraft.<sup>136</sup> This overdrafting causes, among other things, land subsidence and seawater intrusion.<sup>137</sup>

The lack of water most of the year results in a water rights system based on riparian rights (those with land adjacent to a waterway have the right to access water) and appropriative rights (right to divert water subject to the rights of riparian rights holders).<sup>138</sup> Riparian rights holders do not need permits, licenses, or government approval to take water that would naturally flow by the land.<sup>139</sup> The rights of appropriative rights holders were initially created based on “first come, first served,” for access to water.<sup>140</sup> To assert those rights, the appropriator would file a claim and post a notice<sup>141</sup> which resulted in numerous legal conflicts.<sup>142</sup> The California legislature adopted the Water Commission Act of 1914 to establish more order in the appropriative use of surface water.<sup>143</sup> The act established permitting requirements for access to surface water and was administered by what is now known as the Water Board.<sup>144</sup> These post-1914 rights are junior to riparian rights holders.<sup>145</sup>

Groundwater has not traditionally been subject to the same restrictions as surface water.<sup>146</sup> The Water Board’s permitting process did not require permits for overlying landowners who extracted percolating groundwater for beneficial use.<sup>147</sup> Because the Water Board did not regulate groundwater, groundwater basins in the Central Valley have become critically overdrafted, primarily through a combination of the drought and its attendant reduction in the amount

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131. *Id.* at 783–84.

132. *See id.* at 783.

133. INGRAM & MALAMUD-ROAM, *supra* note 126, at 45.

134. *Id.*

135. *See, e.g., id.*

136. *Id.*

137. CAL. DEP’T OF WATER RES., *Critically Overdrafted Basins*, <https://www.water.ca.gov/Programs/Groundwater-Management/Bulletin-118/Critically-Overdrafted-Basins> (last visited Feb. 27, 2018).

138. Cal. State Water Res. Control Bd., *The Water Rights Process*, CAL. ENVTL. PROT. AGENCY, [https://www.waterboards.ca.gov/waterights/board\\_info/water\\_rights\\_process.shtml](https://www.waterboards.ca.gov/waterights/board_info/water_rights_process.shtml) (last visited Feb. 27, 2018).

139. *Id.*

140. *Id.*

141. *Id.*

142. *Id.*

143. *Id.*

144. Cal. State Water Res. Control Bd., *supra* note 138.

145. *Id.*

146. *Id.*

147. *Id.*

of surface water deliveries.<sup>148</sup>

### III. SGMA'S BACKGROUND AND PROVISIONS

In 1943, the California legislature passed the Porter-Cologne Water Quality Control Act, more commonly known as the Water Code.<sup>149</sup> The legislature's purposes behind the Act were to facilitate the efficient use of water and to encourage transfer of water and water rights where such transfer is "consistent with the public welfare of the place of export and the place of import."<sup>150</sup> In 2015, the legislature amended the statute to add language consistent with the Sustainable Groundwater Management Act ("SGMA"), by adding the following language:

[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. Sustainable groundwater management is best achieved locally through the development, implementation, and updating of plans and programs based on the best available science.<sup>151</sup>

Water Code section 10750 et seq., effective in 2001, permitted agencies to develop groundwater management plans.<sup>152</sup> The statute required public hearings and, if fifty percent or more of the landowners in the plan area object, the plan could not be implemented.<sup>153</sup> However, the statute did not require communities to develop groundwater management plans.<sup>154</sup> A relatively small percentage of communities adopted groundwater management plans under the section.<sup>155</sup>

In January, 2014, California Governor Jerry Brown declared a drought state of emergency.<sup>156</sup> In that proclamation, the Governor directed state agencies to educate citizens about the drought and water conservation. He also urged local communities to implement their contingency plans for water emergencies, requested that state agencies implement water reduction plans, and requested that the Water Board: (1) expedite its processing of water transfers and its funding for water supply enhancement; (2) notify certain water rights holders that their rights could be curtailed; (3) modify requirements for water releases from storage; (4) evaluate groundwater levels; and (5) monitor land subsidence and other effects of overdrafting.<sup>157</sup> This proclamation provided specific directives to the

148. See INGRAM & MALAMUD-ROAM, *supra* note 126, at 8, 45.

149. CAL. WATER CODE § 1 (West 2018).

150. *Id.* § 109(a).

151. *Id.* § 113

152. *Id.* § 10750(a).

153. *Id.* §§ 10753.5(a), 10753.6(c)(1)-(2).

154. SEN. FRAN PAVLEY, S. COMM. ON NAT. RES. AND WATER, S.B. 1168 B. ANALYSIS, 2013-14 Reg. Sess., at 2 (Cal. 2014).

155. See *id.* (noting that plans were adopted by only 149 of California's 482 municipalities).

156. *Governor Brown Declares Drought State of Emergency*, OFF. OF GOVERNOR EDMUND G. BROWN JR., (Jan. 17, 2014), <https://www.gov.ca.gov/2014/01/17/news18368/>.

157. *Id.*



Departments of Water Resources, Fish & Wildlife, and Forestry & Fire Protection.<sup>158</sup>

In April 2014, Senator Fran Pavley, Chair of the Senate Committee on Natural Resources and Water, introduced Senate Bill 1168, the Sustainable Groundwater Management Act.<sup>159</sup> Senator Pavley argued that now was the time to develop a state-wide groundwater management policy because there were different entities throughout the state managing groundwater. In January of that year, the Governor released his California Water Action Plan, which in part focused on the importance of groundwater.<sup>160</sup>

#### A. SGMA REQUIREMENTS

California's most recent drought precipitated SGMA's passage.<sup>161</sup> SGMA's purpose was to integrate the management of surface and underground water in California.<sup>162</sup> Failure to fully integrate water management in the past has resulted in excess groundwater extraction, wells that have run dry, and a reduction in water quality, among other things.<sup>163</sup> Excessive groundwater extraction is a primary cause of land subsidence.<sup>164</sup>

The first priority under SGMA is critically overdrafted basins.<sup>165</sup> Under SGMA, "[a] basin is subject to critical overdraft when continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts."<sup>166</sup> The San Joaquin Valley Aquifer is classified as critically overdrafted.<sup>167</sup> SGMA encourages local communities to create groundwater management agencies to develop plans to manage and store groundwater based on the needs of their local communities.<sup>168</sup> However, if a local community does not propose a plan and submit it to the DWR by January 31, 2020, then the state is to develop the plan for that community.<sup>169</sup> SGMA also identifies the critically overdrawn basins requiring special water management strategies.<sup>170</sup> In the Central Valley, those include Merced, Chowchilla, Madera, Delta-Mendota, Kings, Westside, Kaweah, Tulare Lake,

158. *Id.*

159. *See* S.B. 1168 B. ANALYSIS, *supra* note 154, at 4.

160. *Id.* at 1-4.

161. Micah Green, *Rough Waters: Assessing the Fifth Amendment Implications of California's Sustainable Groundwater Management Act*, 47 U. PAC. L. REV. 25, 25-26 (2015).

162. S.B. 1168, 2013-2014, Reg. Sess. § 1(a)(1) (Cal. 2014).

163. *Id.* § 1(a)(3).

164. *Id.*

165. The statute even categorizes the basins as high priority through very low priority. CAL. WATER CODE §§10720.7(a)(1), 10722.4(a). Although the primary focus is the critically overdrafted basins, Groundwater Sustainability Agencies ("GSAs") can be formed for other basins. A number of the basins listed on the SGMA Portal are not critically overdrafted. *See All Posted GSA Notices*, CAL. DEP'T OF WATER RESOURCES, <http://sgma.water.ca.gov/portal/gsa/all> (last visited Feb. 27, 2018); *see infra* Appendix C.

166. *Critically Overdrafted Basins*, *supra* note 137. *See* Appendix A for a map and list of critically overdrafted basins.

167. *See infra* Appendix A.

168. *See* S.B. 1168 § (a)(1), (3).

169. CAL. WATER CODE § 10735.2(a)(2)-(3) (West 2018).

170. *Id.* § 10720.7.

Tule, and Kern County.<sup>171</sup> Fresno County has created a workgroup to assist the County Board of Supervisors in complying with the requirements of SGMA.<sup>172</sup> This group has been meeting since April 2015, and its agenda may be useful for examining relevant research.<sup>173</sup> According to the group, Fresno County overlies five groundwater subbasins, nearly all of which are in the critically over-drafted status, including Kings, Westside, Madera, Pleasant Valley, and Delta-Mendota.<sup>174</sup> In order to adopt a Groundwater Sustainability Plan under SGMA, the county will be required to coordinate among more than fifty stakeholders.<sup>175</sup>

SGMA promotes sustainable groundwater plan development by local agencies.<sup>176</sup> For those agencies to begin their work, the first task is to review existing water rights to determine if they were created under statutes, such as the Water Code, or if the rights were created by court order, management, or decree.<sup>177</sup> SGMA requires notice to local agencies, cities, counties, schools, and military installations, among other entities, prior to legislative action that adopts or significantly amends a general plan.<sup>178</sup>

The California Department of Water Resources ("DWR") has proposed two sets of SGMA regulations to aid local agencies in developing water sustainability management plans.<sup>179</sup> The second set of regulations was open for public comment until March 25, 2016. According to David Gutierrez, Sustainable Groundwater Management Program Director for the Department of Water Resources, the regulations require each local agency to follow a process in adopting the regulations instead of attempting to mandate universal requirements for the sustainable water management plans.<sup>180</sup> Gutierrez explained that the draft regulations had to be flexible because local agencies have diverse basins and management styles.<sup>181</sup> Additionally, he explained that flexibility was important because although the plans spanned twenty years into the future, the DWR is taking a longer view of fifty years into the future, and that new information and new circumstances could require modification of the plans.<sup>182</sup>

Among other requirements, the DWR expects water budgets to guide development of the water sustainability management plans, even while acknowledging that water budgets are difficult to develop and implement.<sup>183</sup> The plans

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171. *See infra* Appendix A.

172. *Sustainable Groundwater Management Act*, COUNTY OF FRESNO: ANNOUNCEMENTS (Sept. 14, 2017), <http://www.co.fresno.ca.us/Home/Components/News/News/222/1556>.

173. *Id.*

174. *Id.*

175. *2016 General Plan Annual Progress Report*, COUNTY OF FRESNO (Mar. 2017), <http://www.co.fresno.ca.us/home/showdocument?id=19253>.

176. CAL. WATER CODE § 113 (West 2018).

177. CAL. GOV'T CODE § 65350.5 (a)-(c) (West 2018).

178. *Id.* § 65352(a).

179. *SGMA Implementation: An Overview of the Draft Groundwater Sustainability Plan and Alternatives Regulation*, MAVEN'S NOTEBOOK (Feb. 24, 2016), <http://mavensnotebook.com/2016/02/24/sgma-implementation-an-overview-of-the-draft-groundwater-sustainability-plan-and-alternatives-regulation/>.

180. *Id.*

181. *Id.*

182. *Id.*

183. *Id.*

will be evaluated by the DWR based on standards related to “undesirable results” and “measurable objectives” in the management of each basin.<sup>184</sup> Each plan must also include contingency plans for emergencies.<sup>185</sup> Ideally, the local agencies will develop thoughtful contingency plans prior to facing an actual emergency.<sup>186</sup> Finally, collection and exchange of data between the DWR and Groundwater Sustainability Agencies (“GSAs”) are key components of the regulations.<sup>187</sup>

Under SGMA, there are three key entities: (1) the DWR, which passes the regulations that implement SGMA and reviews plans submitted by local GSAs; (2) local GSAs; and (3) the State Water Resources Control Board (“SWRCB”), which enforces the plans.<sup>188</sup> One of the preliminary requirements is that local agencies coordinate when there are several agencies developing a GSP for one basin or when there are several agencies developing plans for multiple basins within a local area.<sup>189</sup> Section 10726.2 establishes the powers of the GSAs.<sup>190</sup> Local agencies must either follow or be consistent with DWR’s Best Management Practices for GSP development.<sup>191</sup>

Most governmental regulatory schemes in the United States are subject to limitations, and SGMA is no exception. For example, under SGMA, GSAs may not require domestic well users to install meters on their wells.<sup>192</sup> However, GSAs do have authority to “charge fees, conduct investigations, register wells, require reporting, and take other actions to sustainably manage the basin.”<sup>193</sup>

## B. PROGRESS UNDER SGMA

The DWR has currently identified 431 groundwater basins: twenty-four of which are further subdivided into a total of 108 subbasins. This creates 515 distinct groundwater systems in the state.<sup>194</sup> California Water Code section 10721(n) says that local public agencies, such as those with water supply, water

184. *Id.*

185. *SGMA Implementation*, *supra* note 179.

186. *Id.*

187. *Id.*

188. *Id.*

189. CAL. WATER CODE § 10727.6.

190. *Id.* § 10726.2.

191. *SGMA Implementation*, *supra* note 179. *See* Section III.D. for a discussion of DWR’s Best Management Practices.

192. *Domestic Well Users and the Sustainable Groundwater Management Act (SGMA)*, CAL. DEPT OF WATER RES. (Mar. 2016), <http://www.water.ca.gov/groundwater/sgm/pdfs/DomesticWellUsersBrochure.pdf>.

193. *Id.*

194. WATER EDUC. FOUND., *THE 2014 SUSTAINABLE GROUNDWATER MANAGEMENT ACT: A HANDBOOK TO UNDERSTANDING AND IMPLEMENTING THE LAW* (2015), <http://www.watereducation.org/sites/main/files/file-attachments/groundwatermanagementhandbook.pdf>. The DWR also noted that “[m]any of the subbasin boundaries were developed or modified with public input, but little physical data. Because they should not be considered precise boundaries, a detailed local study should determine whether any specific area lies within a groundwater basin boundary.” *Final Existing Information and Data Gaps for Natural Resources in the SCAG Region*, S. CAL. ASS’N OF GOV’TS (April 2014), <http://sustain.scag.ca.gov/Sustainability%20Portal%20Document%20Library/SCAG%20Inventory%20Natural%20Resources%20GIS%20Database.s.pdf>.

management, or land use responsibilities, can form GSAs.<sup>195</sup> Under SGMA, the deadline for formation of GSAs for critically overdrafted basins was June 30, 2017.<sup>196</sup> June 30th was also the deadline for agencies claiming overlapping jurisdiction to try and resolve the conflict themselves.<sup>197</sup> SWRCB may intervene if the GSAs cannot reach an agreement.<sup>198</sup> Additionally, the legislature and governor can act to create agencies.<sup>199</sup> As of January 8, 2018, 266 unique local agencies filed applications with the DWR under SGMA, and GSAs were formed for 141 basins.<sup>200</sup> Information about the GSAs for critically overdrafted basins is summarized in Appendix C. Critically overdrafted basins must achieve sustainability by January 31, 2040.<sup>201</sup> The authors will discuss one particular overdrafted basin in this Article.

### C. THE NORTH KINGS GROUNDWATER SUSTAINABILITY AGENCY ("NORTH KINGS GSA")

The North Kings Subbasin is one of the critically overdrafted basins in California.<sup>202</sup> The North Kings GSA covers approximately 312,200 acres.<sup>203</sup> Parties

195. CAL. WATER CODE §§ 10721(n), 10723(a) (West 2018).

196. *Id.* §§ 10735.2(a)(1), 10724(b)(2). For a detailed timeline of SGMA dates, see Appendix B.

197. See WATER §§ 10723(d), 10723.6(a), 10723.8(a)(1), 10724, 10735.2(a)(1); *Groundwater Sustainability Agency Frequently Asked Questions*, CAL. DEP'T OF WATER RES. (Jan. 7, 2016), [https://www.water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/DWR\\_GSA\\_FAQ\\_2016-01-07.pdf](https://www.water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/DWR_GSA_FAQ_2016-01-07.pdf).

198. See Cal. State Water Res. Control Bd., *State Intervention (The State Backstop)*, CAL. ENVTL. PROT. AGENCY, [https://www.waterboards.ca.gov/water\\_issues/programs/gmp/intervention.shtml](https://www.waterboards.ca.gov/water_issues/programs/gmp/intervention.shtml) (last visited Feb. 26, 2018).

199. For example, Governor Brown signed two Kings Subbasin SGMA Bills on September 16, 2016. *Kings River Region SGMA Updates, September 2016*, KINGS RIVER REGION GROUNDWATER INFO PORTAL (Sept. 2016), [http://www.kingsgroundwater.info/\\_documents/SGMA/Outreach/newsletters/2016-09%20Kings%20River%20Region%20SGMA%20Updates.pdf](http://www.kingsgroundwater.info/_documents/SGMA/Outreach/newsletters/2016-09%20Kings%20River%20Region%20SGMA%20Updates.pdf). The two bills were Senate Bill 37, Kings River East Groundwater Sustainability Agency Act and Senate Bill 564, North Fork Kings Groundwater Sustainability Agency Act. *Id.* The statutes create Groundwater Sustainability Agencies, describe board membership, and establish the initial boundaries of the basins. *Id.*

200. These numbers include all the GSAs and basins to date, and not just the critically overdrafted basins. *All Posted GSA Notices*, *supra* note 165. Under the SGMA, the SWRCB is charged with tracking the unmanaged areas. It has created an unmanaged area map. *State Intervention Compliance Map*, CAL. ST. WATER RES. CONTROL BD. [https://www.waterboards.ca.gov/water\\_issues/programs/gmp/](https://www.waterboards.ca.gov/water_issues/programs/gmp/) (last updated Nov. 7, 2017). Although GSAs have been formed for 141 basins, this does not mean that the basin is completely covered. Telephone Interview with Mark Nordberg, Senior Engineering Geologist, Sustainable Groundwater Management Program, Cal. Department of Water Resources (January 16, 2018). Mark Nordberg stated that his records indicated 263 GSAs. *Id.*

201. WATER § 10727.2(b); Gary Serrato, Executive Officer and Secretary, North Kings Groundwater Sustainability Agency, Water Panel at 2017 Gazarian Agricultural Symposium (Apr. 12, 2017) (presentation slides are on file with authors and *University of Denver Water Law Review*).

202. The Kings Subbasin contains about 976,000 acres. Serrato, *supra* note 201. There are six GSAs in the Kings Groundwater Subbasin. *Groundwater Sustainability Plan*, NORTH KINGS GROUNDWATER SUSTAINABILITY AGENCY, <https://www.northkingsgsa.org/groundwater-sustainability-plan/> (last visited Feb. 27, 2018).

203. *Kings River Region SGMA Updates, December 2016*, KINGS RIVER REGION GROUNDWATER INFO PORTAL (Dec. 2016), [http://kingsgroundwater.info/sgma\\_updates\\_dec\\_2016/](http://kingsgroundwater.info/sgma_updates_dec_2016/).

interested in the North Kings Subbasin held individual and joint meetings. For example, Fresno County held meetings of its SGMA working group from April 30, 2015 through March 1, 2018.<sup>204</sup> During these meetings the working group received reports, heard public comments, and discussed implementation and coordination with other GSAs. The joint meetings resulted in the formation of the North Kings Groundwater Sustainability Agency,<sup>205</sup> which held its initial Board of Directors meeting on November 16, 2016.<sup>206</sup> During that meeting, the Board took a number of steps including: (1) electing a chair and vice chair; (2) appointing interim legal counsel; (3) adopting an initial budget for the remainder of the fiscal year;<sup>207</sup> (4) adopting a request for proposals for legal counsel;<sup>208</sup> (5) adopting a request for qualifications for technical engineering consultants; (6) approving an organizational structure; and (7) adopting a conflict of interest code.<sup>209</sup> The Board agreed to contract with the Fresno Irrigation District (“FID”) to act as its Administrator/Fiscal Agent.<sup>210</sup> One of the key concerns was obtaining directors’ and officers’ liability insurance.<sup>211</sup> The founders anticipated litigation as the North Kings GSA proceeds with developing and implementing its sustainability plan.<sup>212</sup> On December 7, 2016, the North Kings GSA held its “noticed public hearing” pursuant to California Water Code section 10723(b)<sup>213</sup> and adopted a resolution to become a GSA.<sup>214</sup>

The North Kings GSA submitted the notification package to the DWR on January 13, 2017.<sup>215</sup> The ninety day waiting period ended April 13, 2017,<sup>216</sup> and the DWR now recognizes it as the “exclusive” GSA for the basin.<sup>217</sup> It plans to submit its GSP in May 2019.<sup>218</sup> The Agency is exploring the following strategies for groundwater sustainability, which it will implement along with others:

204. *See Sustainable Groundwater Management Act, supra* note 172.

205. *About*, NORTH KINGS GROUNDWATER SUSTAINABILITY AGENCY, <https://www.northkingsgsa.org/about/> (last visited Feb. 27, 2018).

206. *The Board of Directors of the North Kings Groundwater Sustainability Agency Joint Powers Authority Minutes for the November 16, 2016, at 6:00 P.M.*, NORTH KINGS GROUNDWATER SUSTAINABILITY AGENCY, [https://www.northkingsgsa.org/wp-content/uploads/2017/05/20161116\\_NK\\_GSA\\_BoardSummary.pdf](https://www.northkingsgsa.org/wp-content/uploads/2017/05/20161116_NK_GSA_BoardSummary.pdf) (last visited Feb. 27, 2018) [hereinafter *North Kings Board Meeting*]. The authors personally observed the meeting of the Board of Directors of the North Kings GSA.

207. The proposed budget for the remainder of the fiscal year was for \$345,328.38. *Id.* Adoption of the proposed budget permitted the GSA to bill the participants for the part of the budget that they agreed to pay. *See id.* (The North Kings Groundwater Sustainability working group went through many iterations of the budget. *See id.* Some of the smaller agencies informed the working group that they could not afford the amounts initially assigned to them. *See id.*).

208. The GSA hopes to locate counsel with expertise on water issues. *See id.*

209. *North Kings Board Meeting, supra* note 206.

210. *Id.*

211. *Id.*

212. *See id.*

213. The Board provided public notice consistent with California Government Code § 6066. *Id.*; *North Kings Groundwater Sustainability Agency*; CAL. DEPT WATER RES., <http://sgma.water.ca.gov/portal/gsa/print/65> (last visited Feb. 26, 2018).

214. *Kings River Region SGMA Updates, December 2016, supra* note 203.

215. The DWR also posted it on its web site on that date. *All Posted GSA Notices, supra* note 165.

216. *See id.*

217. *Id.*

218. Serrato, *supra* note 201.

Continue conjunctive use such as utilizing surface water (flood irrigation) on fields;

Construct additional recharge and banking facilities;

Utilize and reoperate existing Flood Detention Basins;

Continue joint efforts to manage and capture flood flows;

Improve operational efficiency and transfers; and

Increase water supply.<sup>219</sup>

The North Kings GSA filed its Initial Notification indicating its intent to develop a GSP with the DWR on April 21, 2017.<sup>220</sup> Under SGMA, the deadline for the actual GSPs for critically overdrafted basins is January 31, 2020.<sup>221</sup>

#### D. BEST MANAGEMENT PRACTICES

California Water Code section 10729(d)(1) states that, “[b]y January 1, 2017, the department shall publish on its Internet Web site best management practices for the sustainable management of groundwater.”<sup>222</sup> Subsequently DWR created a Best Management Practices (“BMPs”) Webpage to post draft and final versions of BMPs.<sup>223</sup>

DWR decided to publish both BMPs and Guidance Documents.<sup>224</sup> The BMP categories include: (1) Monitoring Protocols, Standards, and Sites (December 2016); (2) Monitoring Networks and Identification of Data Gaps (December 2016); (3) Hydrogeologic Conceptual Model (December 2016); (4) Water Budget (December 2016); (5) Modeling (December 2016); and (6) Sustainable Management Criteria (draft dated November 2017).<sup>225</sup>

The DWR released its November, 2017, draft Best Management Practice publication on Sustainable Management Criteria (“SMC”) (BMP #6).<sup>226</sup> As the

219. *Id.*

220. *All Submitted GSP Initial Notifications*, CAL. DEP’T WATER RES., <http://sgma.water.ca.gov/portal/gsp/init/all> (last visited Feb. 27, 2018).

221. *See infra* Appendix B.

222. WATER § 10729(d)(1). DWR claimed to have completed this step in its August 16, 2017 SGMA Update. *Sustainable Groundwater Management (SGMA) Update*, WATER EDUC. FOUND. (Aug. 16, 2017), [http://www.watereducation.org/sites/main/files/file-attachments/springhorn\\_sgma.pdf](http://www.watereducation.org/sites/main/files/file-attachments/springhorn_sgma.pdf).

223. *Best Management Practices and Guidance Documents*, CAL. DEP’T OF WATER RES., <https://www.water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents> (last visited Feb. 27, 2018). DWR released final drafts of BMPs 1-5 in December, 2016. *Id.*

224. *Id.*

225. *Id.*

226. *Best Management Practices for the Sustainable Management of Groundwater, Draft*,

DWR notes,

This BMP characterizes the relationship between the different sustainable management criteria – *the sustainability goal, undesirable results, minimum thresholds, and measurable objectives* – and describes best management practices for developing these criteria as part of a Groundwater Sustainability Plan (GSP).

[. . .] This BMP does not impose new requirements, but describes best management practices for satisfying the requirements of SGMA and the GSP Regulations.<sup>227</sup>

The formal time period for public comments on the draft ran from November 7, 2017 to January 8, 2018.<sup>228</sup> Public comments will be considered as the DWR staff write the final version.<sup>229</sup> The final draft was not released as of April 22, 2018.<sup>230</sup>

DWR's Guidance Documents are less technical than the BMPs.<sup>231</sup> They were prepared for topics unique to SGMA, and include: (1) Preparation Checklist for GSP Submittal (December 2016); (2) GSP Annotated Outline (December 2016); (3) Engagement with Tribal Governments (draft dated June 2017),<sup>232</sup> and (4) Stakeholder Communication and Engagement (January 2018).<sup>233</sup> DWR also created a Stakeholder Communication and Engagement Digital Toolkit to assist GSAs in communicating with stakeholders and interested parties.<sup>234</sup>

#### IV. Land Valuation as it Relates to Access to Water

Stan Xavier, an agricultural real estate expert, noted the importance of perceived water supply in the valuation of agricultural land.<sup>235</sup> Potential purchasers

CAL. DEP'T OF WATER RES. (Nov. 2017), [http://www.water.ca.gov/groundwater/sgm/pdfs/BMP\\_Sustainable\\_Management\\_Criteria\\_2017-11-06.pdf](http://www.water.ca.gov/groundwater/sgm/pdfs/BMP_Sustainable_Management_Criteria_2017-11-06.pdf).

227. *Id.* at 1.

228. *Public Comment Period - Best Management Practices: Sustainable Management Criteria*, CAL. DEP'T OF WATER RES., <https://www.water.ca.gov/Programs/California-Water-Plan/Water-Plan-Participation/Calendar-and-Meeting-Materials> (last visited April 27, 2018).

229. *See id.* Public comments have posted on the DWR web page. *Best Management Practices and Guidance Documents*, *supra* note 226. The DWR also has the public comments on Best Management Practices 1-5 and on the Draft Guidance Documents. *Public Comment Period - Best Management Practices 1-5*, CAL. DEP'T OF WATER RES., <https://www.water.ca.gov/News/Events/Upcoming-Events/Groundwater-Management/2017/Public-Comment-Period—Best-Management-Practices-1-5—Sustainable-Groundwater-Management> (last visited April 27, 2018).

230. *Best Management Practices and Guidance Documents*, *supra* note 226.

231. *See id.*

232. This report is still in draft form. *Guidance Document of the Sustainable Management of Groundwater, Engagement with Tribal Governments, Draft*, CAL. DEP'T OF WATER RESOURCES (June 2017) [http://www.water.ca.gov/groundwater/sgm/pdfs/GD\\_Tribal\\_Final\\_2017-06-28.pdf](http://www.water.ca.gov/groundwater/sgm/pdfs/GD_Tribal_Final_2017-06-28.pdf).

233. *Best Management Practices and Guidance Documents*, *supra* note 226.

234. *Assistance and Engagement*, CAL. DEP'T OF WATER RES., <https://www.water.ca.gov/Programs/Groundwater-Management/Assistance-and-Engagement> (last visited Feb. 27, 2018).

235. Stan Xavier Jr., President and CEO of Correia-Xavier, Inc. has an extensive background and over 30 years experience in appraising agricultural real estate. *Stanley Xavier Jr. Biography*, CORREIA-XAVIER, INC., <http://www.c-x.com/stanley-xavier-jr.html> (last visited Feb. 27, 2018). Xavier presented *Agricultural Land Values and Trends "Chasing Water"* at the 2017 Gazarian Agricultural Symposium on April 12, 2017. Stanley Xavier Jr., President and CEO, Correia-Xavier, Inc., *Agricultural Land Values and Trends "Chasing Water"* (Apr. 12, 2017) [hereinafter *Chasing*

consider their perception of the availability, cost, and quality of the water when they contemplate purchase of a parcel.<sup>236</sup> The real estate market is reacting to perception.<sup>237</sup> It is common for markets to react to perception and the real estate market is no exception. Some farmers are purchasing land of lower soil quality and in less suitable climates because of their perception that the water supply will be good.<sup>238</sup> Since California is in the early stages of implementing SGMA, many potential purchasers are standing on the sidelines and unwilling to purchase agricultural land.<sup>239</sup> It is likely this suppressed prices in 2016 and 2017.<sup>240</sup> There are some risk-takers, but they are probably few in number.<sup>241</sup>

Appraisers look at a number of factors, including the sales of comparable property.<sup>242</sup> A parcel without a good water supply does not sell.<sup>243</sup> This affects the average price per-acre because such prices are based on sales.<sup>244</sup> Xavier bases his data on property that changes hands and continues to be used in the same manner as before a sale, *e.g.*, almond orchards that remain almond orchards after a sale.<sup>245</sup> Xavier also uses income and cap rates, which are impacted by the cost of water.<sup>246</sup> As SGMA is implemented, agriculture will have to modify its management practices to accommodate changes in the availability and cost of water.<sup>247</sup> The GSAs and their regulations are also going to affect the market price of water, and, consequently, the market price of land.<sup>248</sup>

## V. Conclusion

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Water]. Copies of Xavier's slides are on file with the authors and the *University of Denver Water Law Review*.

236. *See generally* Chasing Water, *supra* note 235. In many areas of California, the primary market drivers of the value of agriculture land are how profitable the permanent plantings are and the "amount, stability of supply, quality and cost" of water. Cal. Chapter ASFMRA, *Trends in Agricultural Land & Lease Values*, CAL. STATE BD. OF FOOD AND AGRIC. (July 7, 2015), [https://www.cdfa.ca.gov/State\\_Board/pdfs/Presentations/1ErikRoget.pdf](https://www.cdfa.ca.gov/State_Board/pdfs/Presentations/1ErikRoget.pdf). In other areas, water is a secondary driver of value. *See id.* Also, the authors of these reports warn that there will be rapid changes in irrigation water supplies. *Id.* They state that ground water regulation is "imminent" and could change perceptions about markets for agricultural land. *Id.*

237. *See generally* Chasing Water, *supra* note 235; *Trends in Agricultural Land & Lease Values*, *supra* note 236.

238. *See* Chasing Water, *supra* note 235. Michael Ming, a broker for Alliance Ag Services LLC, predicted that Kern County agricultural land could decline in value up to twenty percent or more depending on its source of water. Ming attributes this to the increased risks as the water districts work to comply with SGMA. Ming also describes dire economic consequences to the region under SGMA. *See* Lois Henry, *Declining Agricultural Land Values Tied to Water*, BAKERSFIELD.COM (Apr. 24, 2017) [http://www.bakersfield.com/news/declining-agricultural-land-values-tied-to-water/article\\_54be6087-633e-522f-9905-52080f31ec81.html](http://www.bakersfield.com/news/declining-agricultural-land-values-tied-to-water/article_54be6087-633e-522f-9905-52080f31ec81.html); Michael Ming, *Bakersfield Real Estate Forecast Breakfast, What Is the Outlook for 2017?*, INST. OF REAL ESTATE MANAGEMENT, [http://iremchapter85.com/images/downloads/2017\\_Forecast\\_Breakfast/agriculture\\_irem\\_presentation\\_mike\\_ming.pdf](http://iremchapter85.com/images/downloads/2017_Forecast_Breakfast/agriculture_irem_presentation_mike_ming.pdf) (last visited Feb. 27, 2018).

239. *See generally* Chasing Water, *supra* note 235; *Trends in Agricultural Land & Lease Values*, *supra* note 236, slides 23, 48.

240. *See* Chasing Water, *supra* note 235.

241. *See id.*

242. Joseph Dobrian, *Appraising Rural Properties*, MCKISSOCK LEARNING (Mar. 21, 2017), <https://www.mckissock.com/blog/appraisal/appraising-rural-properties/>.

243. Chasing Water, *supra* note 235.

244. *See id.*

245. *Id.*

246. *See id.*

247. *See id.*

248. *See id.*



It is challenging to develop a systematic and sustainable water system in California, and yet developing that system is essential. The complexities of California's water regulation system, estimating water availability, prioritizing rights, and predicting availability of water in the future contribute to the difficulty. The implementation of SGMA and the establishment of the GSAs are bound to bring litigation. The authors hope the courts will allow the GSAs to make progress by implementing rational, science-based, groundwater policies.<sup>249 250</sup>

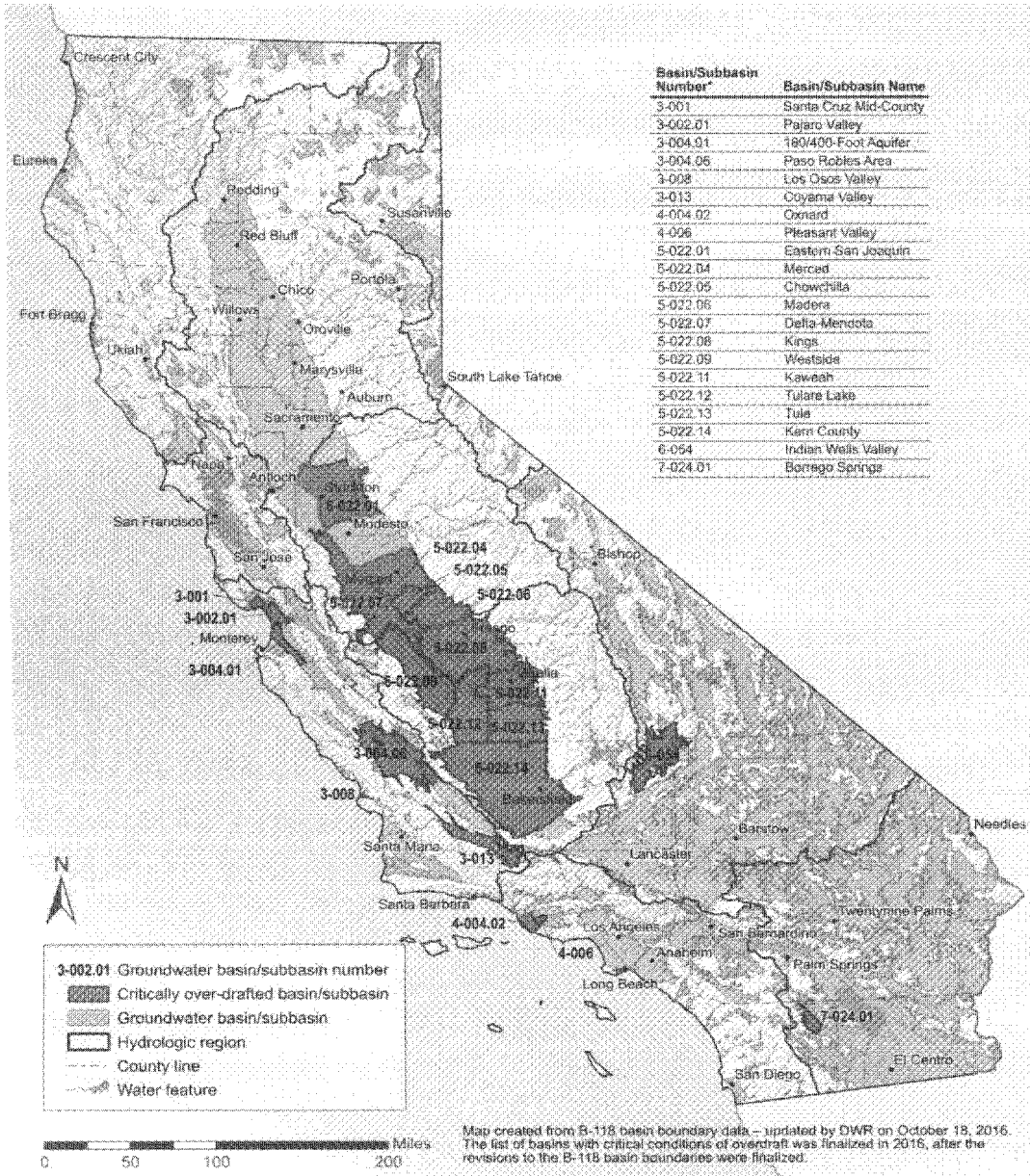
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249. *As of May 2018, the Department of Water Resources Groundwater Management Program released a draft prioritization of groundwater basins required by SGMA. The 2018 SGMA Basin Prioritization is scheduled to be finalized by fall 2018 after a sixty day public comment period.*

250. *At the time of publication, the Department of Water Resources extended the submission period for Basin Boundary Modifications from June 30, 2018 to August 20, 2018.*

# APPENDIX A<sup>251</sup>

## Groundwater Basins Subject to Critical Conditions of Overdraft



Map created from B-118 basin boundary data – updated by DWR on October 18, 2016. The list of basins with critical conditions of overdraft was finalized in 2016, after the revisions to the B-118 basin boundaries were finalized.

Prepared by California Department of Water Resources for *Bulletin 118, Interim Update 2016*.

251. CAL. DEP'T OF WATER RES., BULLETIN 118, INTERIM UPDATE 2016: CALIFORNIA'S GROUNDWATER WORKING TOWARD SUSTAINABILITY, CAL. DEP'T OF WATER RES. 15 (2016), [https://www.water.ca.gov/LegacyFiles/groundwater/bulletin118/docs/Bulletin\\_118\\_Interim\\_Update\\_2016.pdf](https://www.water.ca.gov/LegacyFiles/groundwater/bulletin118/docs/Bulletin_118_Interim_Update_2016.pdf).

## APPENDIX B

### TIMELINE FOR

### CALIFORNIA'S SUSTAINABLE GROUNDWATER MANAGEMENT ACT

### (SGMA)<sup>252</sup>

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252. *Groundwater Legislation Timelinc*, CAL. STATE WATER RESOURCES CONTROL BD. (Dec. 2014), [https://www.waterboards.ca.gov/water\\_issues/programs/gmp/docs/sgma/timeline.pdf](https://www.waterboards.ca.gov/water_issues/programs/gmp/docs/sgma/timeline.pdf).



**APPENDIX C<sup>253</sup>****FORMATION OF GSAS AND THE CREATION OF GSPs FOR  
CRITICALLY OVERDRAFTED BASINS UNDER SGMA<sup>254</sup>**

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253. This appendix is limited to the twenty-one critically overdrafted basins and subbasins identified by DWR as of January 2016. *See supra* Appendix A. There may be additional critically-overdrafted basins, but DWR does not have sufficient data or information to determine that they are critically-overdrafted. *See Basin Prioritization*, CAL. DEP'T OF WATER RES., <https://www.water.ca.gov/Programs/Groundwater-Management/Bulletin-118/Basin-Prioritization> (last visited Feb. 28, 2018).

254. The table is accurate as of January 8, 2018. It is based on data from the California Department of Water Resources regarding the Critically Overdrafted Basins identified in Appendix A. *See All Posted GSA Notices*, *supra* note 165; *All Submitted GSP Initial Notifications*, *supra* note 220; *see also* Appendix A.

Basin Number <sup>255</sup>	Basin/Sub-basin Name <sup>256</sup>	GSA Name <sup>257</sup>	Exclusive <sup>258</sup>	Date GSA Posted Formation Notice on DWR Web Site <sup>259</sup>	Date of Initial Notification to DWR Indicating GSA's Intent to Develop a GSP <sup>260</sup>
3-001	SANTA CRUZ MID-COUNTY	Santa Cruz Mid-County Groundwater Agency	Yes	06/02/2016	

255. CAL. DEP'T OF WATER RES., *supra* note 249, at 15.

256. *Id.* at 12. The list of Basin/Subbasin Names is based on DWR's January 2016 list. *Id.* The reader should note that there are multiple GSAs listed under some of the basin names.

257. In some situations, a proposed GSA filed multiple times on the DWR's website using slightly different names or attached numbers to their filings (e.g. number "2"). Telephone Interview with Mark Nordberg, *supra* note 200. These are not necessarily different agencies. The DWR's role is to receive the filings. It did not correct or change the GSA's name. *Id.* In some cases, the GSA used a slightly different name when it indicated its intent to develop a GSP. *Id.* DWR intends to consolidate the filings to form a GSA and the filings of intent to develop a GSP. *Id.* It had not done so at the time of this research.

258. This column signifies whether the GSA is recognized as the exclusive agency over the area. "Yes" indicates that it is. There is a 90-day-waiting period before an agency can be recognized as an exclusive agency. *See All Posted GSA Notices, supra* note 165. If the GSA is in the waiting period, this column will designate when the waiting period ends. *See id.* "Overlap" indicates that more than one agency has asked to control the same basin or portion of a basin. *Groundwater Sustainability Agencies, CAL. DEP'T OF WATER RESOURCES, <https://www.waterboards.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Groundwater-Sustainable-Agencies>* (last visited Feb. 27, 2018). If there is an overlap, the agencies have until June 30, 2017 to resolve the overlap. If they are unable to resolve the overlap, the State Water Resource Control Board (SWRCB) *may* intervene. *See CAL. WATER CODE* §§ 10723(d), 10723.8(a)(1), 10735.2; *Groundwater Sustainability Agency Frequently Asked Questions, supra* note 197. There are two GSAs in the 180/400 Foot Aquifer Basin (Number 3-004.01) that overlap. *All Posted GSA Notices, supra* note 165. The Salinas Valley Basin Groundwater Sustainability Agency requested advice from the SWRCB on a number of issues related to the overlap. Letter from Salinas Valley Basin Groundwater Sustainability Agency to Michael A.M. Lauffer, Chief Counsel, State Water Resources Control Bd. (June 9, 2017) [https://www.waterboards.ca.gov/water\\_issues/programs/gmp/docs/eligibility/svbgsa\\_quest.pdf](https://www.waterboards.ca.gov/water_issues/programs/gmp/docs/eligibility/svbgsa_quest.pdf). These issues primarily involve whether a government entity can form a GSA which exercises jurisdiction over basins outside its jurisdictional boundaries. *Id.* Some of the other entities involved in the overlap responded. Letter from City of Greenfield to Michael A.M. Lauffer, Chief Counsel, State Water Resources Control Bd. (June 22, 2017) [https://www.waterboards.ca.gov/water\\_issues/programs/gmp/docs/eligibility/greenfield\\_quest.pdf](https://www.waterboards.ca.gov/water_issues/programs/gmp/docs/eligibility/greenfield_quest.pdf); Letter from Clark Colony Water Co. to Michael A.M. Lauffer, Chief Counsel, State Water Resources Control Bd. (June 9, 2017) [https://www.waterboards.ca.gov/water\\_issues/programs/gmp/docs/eligibility/clark\\_quest.pdf](https://www.waterboards.ca.gov/water_issues/programs/gmp/docs/eligibility/clark_quest.pdf). Lauffer responded by answering some of their questions and encouraging them to work together to resolve the overlap issues. Letter from Michael A.M. Lauffer, Chief Counsel, State Water Res. Control Bd. (Nov. 2, 2017) [https://www.waterboards.ca.gov/water\\_issues/programs/gmp/docs/eligibility/20171102\\_response.pdf](https://www.waterboards.ca.gov/water_issues/programs/gmp/docs/eligibility/20171102_response.pdf).

259. A number of the GSAs filed prior to the date indicated in this column. *All Submitted GSP Initial Notifications, supra* note 221.

260. There have been slight changes in the names of some GSAs from the time of filing as a GSA and the Initial Notification of Intent to Create a GSP. *See id.* When the GSA has not yet

Basin Number <sup>255</sup>	Basin/Sub-basin Name <sup>256</sup>	GSA Name <sup>257</sup>	Exclu-sive <sup>258</sup>	Date GSA Posted For-mation No-tice on DWR Web Site <sup>259</sup>	Date of Ini-tial Notifica-tion to DWR Indi-cating GSA's In-tent to De-velop a GSP <sup>260</sup>
3-002.01	PAJARO VALLEY	Pajaro Valley Water Manage-ment Agency	Yes	09/24/2015	
3-004.01	180/400 FOOT AQUIFER	Marina Coast Water District - Marina - 180/400 Aquifer	Yes	02/24/2017	
		Marina Coast Water District - Ord - 180/400 Aquifer Subbasin	Overlap	02/24/2017	
		Salinas Valley Basin Groundwa-ter Sustainability Agency	Overlap	04/27/2017	
3-004.06	PASO ROBLES AREA	San Miguel Com-munity Services District	Yes	12/22/2016	
		City of Paso Ro-bles	Yes	02/14/2017	
		Heritage Ranch Community Ser-vices District	Yes	03/08/2017	
		Salinas Valley Basin Groundwa-ter Sustainability Agency	Yes	04/27/2017	
		Shandon-San Juan Groundwa-ter Sustainability Agency	Yes	06/12/2017	
		Paso Basin - County of San	Yes	06/14/2017	

filed an Initial Notification of Intent, this column is blank. *See id.* GSPs are developed pursuant to Water Code § 10727.8 and GSP Regulations § 353.6. *Groundwater Sustainability Plans*, CAL. DEPT OF WATER RESOURCES, <https://www.water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Groundwater-Sustainability-Plans> (last visited Feb. 27, 2018).

Basin Number <sup>255</sup>	Basin/Sub-basin Name <sup>256</sup>	GSA Name <sup>257</sup>	Exclu- sive <sup>258</sup>	Date GSA Posted For- mation No- tice on DWR Web Site <sup>259</sup>	Date of Ini- tial Notifica- tion to DWR Indi- cating GSA's In- tent to De- velop a GSP <sup>260</sup>
		Luis Obispo Groundwater Sustainability Agency			
3-008	LOS OSOS VALLEY	County of San Luis Obispo - Los Osos Fringe Area	Yes	05/01/2017	
3-013	CUYAMA VALLEY	Cuyama Basin Groundwater Sustainability Agency - CBGSA	Yes	06/12/2017	12/01/2017
4- 004.02	OXNARD	Fox Canyon Groundwater Management Agency	Yes	02/11/2015	02/24/2017
		Camrosa OPV Management Area GSA	Yes	06/28/2017	
		Oxnard Basin Outlying Areas	Yes	06/28/2017	
4-006	PLEASANT VALLEY	Fox Canyon Groundwater Management Agency	Yes	02/11/2015	02/24/2017
		Camrosa OPV Management Area GSA	Yes	06/28/2017	
		Pleasant Valley Basin Outlying Areas	Yes	06/28/2017	
5- 022.01	EASTERN SAN JOAQUIN	City of Manteca	Yes	01/04/2017	
		Linden County Water District	Yes	09/29/2016	
		Stockton East Water District	Yes	10/22/2015	
		City of Stockton	Yes	12/29/2015	



Basin Number <sup>255</sup>	Basin/Sub-basin Name <sup>256</sup>	GSA Name <sup>257</sup>	Exclusive <sup>258</sup>	Date GSA Posted Formation Notice on DWR Web Site <sup>259</sup>	Date of Initial Notification to DWR Indicating GSA's Intent to Develop a GSP <sup>260</sup>
		Lockeford Community Service District	Yes	12/29/2015	
		San Joaquin County - ESJ	Yes	01/05/2016	
		Woodbridge Irrigation District	Yes	01/13/2017	
		City of Lodi	Yes	02/09/2016	
		North San Joaquin Water Conservation District	Yes	03/01/2016	
		City of Lathrop	Yes	02/24/2017	
		Central San Joaquin Water Conservation District	Yes	03/14/2017	
		Central Delta Water Agency	Yes	03/02/2017	
		South Delta Water Agency	Yes	03/14/2017	
		Oakdale Irrigation District Eastern San Joaquin Sub-basin Groundwater Sustainability Agency	Yes	03/22/2017	
		South San Joaquin Groundwater Sustainability Agency	Yes	04/18/2017	
		Eastside San Joaquin Groundwater Sustainability Agency	Yes	05/10/2017	
		San Joaquin County No. 2	Yes	01/05/2016	

Basin Number <sup>255</sup>	Basin/Sub-basin Name <sup>256</sup>	GSA Name <sup>257</sup>	Exclusive <sup>258</sup>	Date GSA Posted Formation Notice on DWR Web Site <sup>259</sup>	Date of Initial Notification to DWR Indicating GSA's Intent to Develop a GSP <sup>260</sup>
5-022.04	MERCED	Merced Subbasin GSA	Yes	03/28/2017	
		Turner Island Water District - 1	Yes	03/22/2017	
		Merced Irrigation-Urban Groundwater Sustainability Agency (MIUGSA)	Yes	05/31/2017	
5-022.05	CHOWCHILLA	Chowchilla Water District	Yes	12/27/2016	10/05/2017
		County of Madera - 1	Yes	02/09/2017	11/21/2017
		County of Merced - County of Merced Chowchilla Subbasin GSA	Yes	03/13/2017	
		Triangle T Water District GSA	03/15/2018	12/15/2017	
5-022.06	MADERA	Madera Irrigation District	Yes	04/13/2016	08/04/2017
		Root Creek Water District	Yes	07/22/2016	11/20/2017
		Gravelly Ford Water District	Yes	07/22/2016	
		Madera Water District	Yes	08/03/2016	
		City of Madera	Yes	09/29/2016	
		New Stone Water District	Yes	12/22/2016	
		County of Madera - 2	Yes	02/09/2017	
5-022.07	DELTA-MENDOTA	San Joaquin River Exchange	Yes	12/29/2015	11/07/2017

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		Contractors Water Authority			
		West Stanislaus Irrigation District - 1	Yes	02/25/2016	
		Patterson Irrigation District	Yes	03/28/2016	
		Aliso Water District	Yes	05/11/2016	
		Farmers Water District	Yes	06/22/2016	
		City of Newman	Yes	12/13/2016	
		Grasslands Groundwater Sustainability Agency	Yes	01/13/2017	
		City of Patterson	Yes	03/03/2017	
		City of Mendota	Yes	02/03/2017	
		County of Madera - 3	Yes	02/09/2017	
		City of Los Banos	Yes	02/09/2017	
		West Stanislaus Irrigation District - 2	Yes	02/25/2016	
		Central Delta-Mendota Region Multi-Agency GSA	Yes	03/30/2017	
		Northwestern Delta-Mendota GSA	Yes	03/14/2017	
		Turner Island Water District - 2	Yes	03/27/2017	
		Merced County - Delta-Mendota	Yes	03/28/2017	
		Widren Water District GSA	Yes	03/29/2017	
		City of Firebaugh	Yes	05/18/2017	

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		City of Gustine	Yes	06/23/2017	
		Fresno County - Management Area A	Yes	05/25/2017	
		DM-II	Yes	06/15/2017	
		Ora Loma Water District	Yes	05/30/2017	
		Fresno County - Management Area B	Yes	05/30/2017	
		City of Dos Palos GSA	Yes	06/29/2017	
5-022.08	KINGS	James Irrigation District	Yes	02/09/2016	01/30/2017
		Kings River East Groundwater Sustainability Agency	Yes	04/13/2016	06/02/2017
		North Kings Groundwater Sustainability Agency	Yes	01/13/2017	04/21/2017
		North Fork Kings Groundwater Sustainability Agency - NFKGSA	Yes	02/24/2017	12/12/2017
		Central Kings Groundwater Sustainability Agency	Yes	03/20/2017	
		McMullin Area GSA	Yes	04/21/2017	08/24/2017
		South Kings Groundwater Sustainability Agency	Yes	06/06/2017	
		Tulare County GSA	09/18/2017	06/20/2017	

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5-022.09	WESTSIDE	Westlands Water District	Yes	08/03/2016	12/22/2016
		Fresno County - Westside Sub-basin	Yes	05/30/2017	
5-022.11	KAWEAH	Mid-Kaweah Groundwater Subbasin Joint Powers Authority	Yes	10/01/2015	10/10/2017
		Greater Kaweah Groundwater Sustainability Agency	Yes	05/01/2017	
		East Kaweah Groundwater Sustainability Agency	Yes	06/06/2017	10/30/2017
		Tulare County GSA	09/18/2017	06/20/2017	
5-022.12	TULARE LAKE	Tri-County Water Authority - 5	Yes	09/13/2016	12/06/2017
		Tri-County Water Authority - 6	Yes	09/13/2016	
		Tri-County Water Authority - 7	Yes	09/13/2016	
		Alpaugh Irrigation District	Yes	12/15/2016	
		Mid-Kings River Groundwater Sustainability Agency	Yes	02/09/2017	
		Tri-County Water Authority - Kings 2017	Yes	03/09/2017	
		South Fork Kings Groundwater Sustainability Agency - SFKGSA	Yes	03/22/2017	07/11/2017

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		Southwest Kings Groundwater Sustainability Agency	Yes	03/29/2017	
		El Rico Groundwater Sustainability Agency	Yes	06/29/2017	
5-022.13	TULE	Tri-County Water Authority - 1	Yes	03/18/2016	12/06/2017
		Alpaugh Groundwater Sustainability Agency	Yes	06/17/2016	
		Delano-Earlimart Irrigation District	Yes	09/13/2016	08/18/2017
		Tri-County Water Authority - 2	Yes	06/30/2016	
		Tri-County Water Authority - 3	Yes	06/30/2016	
		Tri-County Water Authority - 4	Yes	07/22/2016	
		Lower Tule River Irrigation District	Yes	08/05/2016	08/01/2017
		Pixley Irrigation District	Yes	08/16/2016	08/01/2017
		Eastern Tule Groundwater Sustainability Agency	Yes	03/08/2017	07/21/2017
		Tulare County GSA	09/18/2017	06/20/2017	
5-022.14	KERN COUNTY	Buena Vista Water Storage District	Yes	03/10/2016	
		Kern River Groundwater Sustainability Agency	Yes	04/21/2016	05/19/2017

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		Greenfield County Water District	Yes	04/21/2016	
		West Kern Water District	Yes	08/03/2016	
		Pioneer Groundwater Sustainability Agency	Yes	02/24/2017	
		Olcese GSA - Olcese WD	Yes	03/08/2017	
		Henry Miller Water District	Yes	05/01/2017	
		Semitropic Water Storage District	Yes	05/15/2017	
		Kern Groundwater Authority Groundwater Sustainability Agency	Yes	05/30/2017	
		Cawelo Groundwater Sustainability Agency	Yes	06/12/2017	10/02/2017
		McFarland Groundwater Sustainability Agency	Yes	06/29/2017	
6-054	INDIAN WELLS VALLEY	Indian Wells Valley Groundwater Authority	Yes	01/04/2017	10/20/2017
7-024.01	BORREGO SPRINGS	Borrego Valley Groundwater Sustainability Agency	Yes	03/29/2017	03/22/2017