The Sustainable Groundwater Management Act and the Common Law of Groundwater Rights—Finding a Consistent Path Forward for Groundwater Allocation

Eric Garner, Russell McGlothlin, Leon Szeptycki, Christina Babbitt & Valerie Kincaid

Abstract

In 2014, the California State Legislature enacted the Sustainable Groundwater Management Act (SGMA), which requires the formation of new local agencies, known as Groundwater Sustainability Agencies (GSAs), to sustainably manage groundwater basins throughout the state. The statute represents the first statewide framework for groundwater management in California. Among other tasks, GSAs, especially those in overdrafted basins, will have to allocate available water among users and set up systems to hold pumpers to their allocated limit. However, SGMA did not change the longstanding framework of groundwater pumping rights established by California courts. This sets up the possibility of conflict between groundwater allocation plans adopted by GSAs and water rights.

This Article analyzes the relationship between SGMA and water rights under the common law. It identifies a path for GSAs to allocate groundwater and limit pumping in a manner best situated to sustain judicial scrutiny. We examine how the common law defines water right priorities for groundwater pumping allocations, as well as areas where the common law provides flexibility. This flexibility allows for creativity in arriving at allocations that fit stakeholders' goals for both sustainable and smart water management. We seek to help GSAs reduce the risk of litigation and increase the likelihood their Groundwater Sustainability Plan (GSP) will survive litigation, without judicial modification. There are considerable measures GSAs can take to manage their litigation risk and enhance the durability of their GSPs, including making groundwater allocations in their GSPs consistent with the principles of water rights and seeking consensus among affected stakeholders. We also seek to provide a framework for courts to work out the appropriate relationship between SGMA and the common law of water rights when litigation occurs.

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Introduction

The Sustainable Groundwater Management Act (SGMA)[1] of 2014 imposes considerable responsibilities on local agencies that are tasked with implementing much of the statute. Groundwater Sustainability Agencies (GSAs)[2] must assess how to meet the statute's sustainability goals, define the path to sustainability in a Groundwater Sustainability Plan (GSP), and submit that plan by 2020[3] or 2022, depending on whether the basin is in critical

1. SGMA was passed in 2014 as three separate bills, SB 1168, SB 1319, and AB 1739. Cal. Water Code § 10720 (2020); *see also SGMA Groundwater Management*, Cal. Dept. of Water Res., https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management [https://perma.cc/5DMP-B9HS].

2. GSAs can be an existing local public agency within a groundwater basin with water supply, water management, or land use responsibilities. A combination of such qualifying agencies may also form a GSA. Cal. Water. Code §§ 10721(j)–(n) (2020).

3. Although GSPs for the critically overdrafted basins were submitted to DWR in

overdraft, to the Department of Water Resources (DWR) for approval. GSAs must then implement that plan in a manner that achieves sustainability within twenty years.[4] In overdrafted basins, GSAs face the challenging task of decreasing historical reliance on groundwater by either reducing pumping, finding new, and likely more expensive sources of water, or a combination of the two.[5]

SGMA provides GSAs with the powers necessary to achieve these results. It authorizes GSAs to set and enforce pumping allocations, permit transfers of allocations, and assess fees on pumping that may be used to fund basin replenishment.[6] However, SGMA leaves unchanged the common law system of water rights, stating "nothing in [the act], or in any groundwater management plan adopted pursuant to [the act], determines or alters . . . groundwater rights under common law."[7] Similarly, the act affirms that a GSA-implemented limitation on pumping "shall not be construed to be a final determination of rights to extract groundwater."[8] The consequence of those clauses is that GSAs cannot change or determine water rights. A dissatisfied groundwater user may challenge in court a GSA's pumping allocation, restriction, or assessment as inconsistent with common law water rights. These complaints will often be litigated within a comprehensive groundwater adjudication—the traditional means of determining contested groundwater rights and management frameworks in California.

GSAs therefore must develop effective solutions to difficult groundwater management challenges while facing the risk of litigation asserting violations of common law water rights. The complexity and uncertainty inherent in the

January 2020, most did not address the issue of allocation at that time. *See* Jezdimirovic et al., *Water Availability for San Joaquin Valley Farms: A Balancing Act*, Public Policy Institute of California, April 20, 2020, https://www.ppic.org/blog/water-availability-for-san-joaquin-valley-farms-a-balancing-act [https://perma.cc/X466-7Q6H]. The full text of Submitted GSPs is available at the Department of Water Resource's SGMA Portal. *See DWR's SGMA Portal*, Cal. Dept. of Water Res., https://sgma.water.ca.gov/portal/gsp/all [https://perma.cc/WK7J-LLQL].

4. Cal. Water Code §§ 10727.2(b)(1)–(3)(A) (2020) (the statute also provides the potential for a five-year extension of this period).

5. The extent of groundwater overdraft, the passage of SGMA as a tool to reduce overdraft, and the need to reduce pumping are all well-documented. *See*, *e.g.*, Christina Babbitt et al., Envtl. Def. Fund, The Future of Groundwater in California: Lessons in Sustainable Management from Across the West (2018), https://www.edf.org/sites/default/files/groundwater-case-study.pdf [https://perma.cc/DY6P-F6EV] [hereinafter Future of Groundwater]; Tara Moran & Dan Wendell, Water in the West, The Sustainable Groundwater Act, Challenges and Opportunities for Implementation (2015), https://waterinthewest.stanford.edu/sites/default/files/WitW_SGMA_Report_08242015_0.pdf [https://perma.cc/X8AG-Y4D2]; Michael Kiparsky, *Unanswered Questions for Implementation of the Sustainable Groundwater Management Act*, 70 Cal. Agric. 165 (2016); Tina Cannon Leahy, *Desperate Times Call for Sensible Measures: The Making of the California Sustainable Groundwater Management Act*, 9 Golden Gate U. Envtl. L.J. 5 (2016).

6. Cal. Water Code §§ 10726.2–10726.4, 10730 (2020).

7. Cal. Water Code § 10720.5(b) (2020).

8. *Id*. § 10726.4(a)(2).

common law amplifies the difficulties facing GSAs. The law of groundwater rights is not a single coherent set of principles; rather, a relatively small number of California Supreme Court cases have developed a highly fact-dependent framework of doctrines and rules. The factual complexities of these issues have made most groundwater basin adjudications contentious, lengthy, and expensive.

Courts hearing these claims must determine the relationship between SGMA and water rights. They must also apply water law principles that are often far from straightforward. And Article X, section 2 of the California Constitution requires all water, including groundwater, be put to "reasonable and beneficial" use.[9] These are not fixed concepts; they change with time and varying circumstance.[10] Creating further uncertainty, the courts' equitable powers require consideration of "physical solutions"—physical groundwater management remedies that harmonize water right priorities with the California constitutional standard to maximize the beneficial use of the resource.[11]

In this Article, we evaluate the key principles, gaps, and ambiguities of groundwater law in California that apply to groundwater allocations, as well as where the law allows for flexibility and creativity. Our goal is to help GSAs reduce the risk of lawsuits and increase the likelihood that their GSPs will survive litigation intact. We make the case that there is much GSAs can do to manage litigation risk and enhance the durability of their GSPs. GSAs can take steps to make groundwater allocations in their GSPs consistent with water rights and can seek to reach a consensus among affected stakeholders. To achieve this, GSAs should develop an understanding of groundwater right

9. *See, e.g.*, Hillside Mem'l Park and Mortuary v. Golden State Water Co., 131 Cal. Rptr. 3d 146, 150 (Ct. App. 2011).

10. People ex. rel. State Water Res. Control Bd. v. Forni, 126 Cal. Rptr. 851, 855 (Ct. App. 1976).

11. "Since the adoption of the 1928 constitutional amendment, it is not only within the power but it is also the duty of the trial court to admit evidence relating to possible physical solutions, and if none is satisfactory to it to suggest on its own motion such physical solution. The court possesses the power to enforce such solution regardless of whether the parties agree." City of Lodi v. East Bay Mun. Util. Dist., 60 P.2d 439, 450 (Cal. 1936); *see also* Rancho Santa Margarita v. Vail, 81 P.2d 533, 562 (Cal. 1938) (holding that "it is the duty of the trial court to ascertain whether there is a physical solution of the problem that will avoid waste and which will not unreasonably or adversely affect the rights of the parties"); Erickson v. Queen Valley Ranch Co., 99 Cal. Rptr. 446, 450 (Ct. App. 1971) (explaining that the California Constitution "declares the state's policy to achieve maximum beneficial use of water and prevention of waste, unreasonable use and unreasonable method of use"); Cal. Am. Water v. City of Seaside, 107 Cal. Rptr. 529, 536–37 (Ct. App. 2010) (finding that "[c]ourts are vested with not only the power but also the affirmative duty to suggest a physical solution where necessary, and they have 'the power to enforce such solution regardless of whether the parties agree.'"); *Hillside Memorial*, 131 Cal. Rptr. 3d at 158 (holding that "[s]ince the adoption of the 1928 constitutional amendment, it is not only within the power, but it is also the duty of the trial court to admit evidence relating to possible physical solutions, and if none is satisfactory to it to suggest on its own motion such physical solution.").

priorities, make key findings required by groundwater rights precedent, and, perhaps most importantly, encourage and facilitate negotiations among stakeholders. Even if such efforts do not yield full consensus, they may reduce the scope of any future litigation in terms of the number of opposing parties and the extent of contested issues. Because some disputes will go to court, we also aim to provide a framework for courts to use when determining the appropriate relationship between SGMA and water rights. Lastly, we identify allocation and management schemes in past groundwater adjudications that courts determined were either consistent with water rights or an acceptable compromise submitted by stipulation among the affected parties.

I. The Legal Pitfalls of Groundwater Allocation Under SGMA

SGMA charges GSAs with achieving "sustainable groundwater management," which is defined as avoiding six specified "undesirable results."[12] Most of the undesirable results are related to the lowering of groundwater levels due to overpumping. The statute gives GSAs a broad range of tools to achieve this sustainability goal, including the power to regulate the quantity of pumping.[13] Basins in which overpumping occurs will have to augment their supply, deploy demand management tools to reduce the amount of groundwater being pumped, or a combination of both strategies.[14] Even if GSAs succeed in supplementing their supplies with managed aquifer recharge or otherwise, basins in severe overdraft will almost certainly need to reduce pumping, sometimes significantly.

The primary strategy for reducing pumping will require setting a limit on the quantity of water that can be pumped within the basin, allocating available groundwater among users, and enforcing each user's allocation.[15] GSAs

12. Cal. Water Code § 10721(x) (2020). The specific undesirable results include the following conditions: (1) chronic lowering groundwater levels; (2) significant and unreasonable reduction of groundwater storage; (3) significant and unreasonable seawater intrusion; (4) significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies; (5) significant and unreasonable land subsidence that substantially interferes with surface land uses; and (6) depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water. *Id.*

13. Cal. Water Code § 10726.4(a)(2) (2020).

14. *See* Jezdimirovic et al, *supra* note 3 ("Fewer plans focus on demand, and those that do give few details on their approach. By our estimates, the plans are too optimistic about the availability of new supplies, and more demand management efforts will be needed.").

15. There are some tools available to reduce pumping other than limits imposed on individual pumpers or groups of pumpers. For example, GSAs could use voluntary buyouts of pumping rights or incentive programs to reduce groundwater use. Given the mandatory nature of SGMA, these programs are still likely to augment regulatory pumping limits, particularly in basins with large scale overdraft. Indeed, adjudications of overdrafted basins have adopted some kind of pumping limit (although in many cases the limits are not absolute, but rather trigger pumping fees if exceeded). Christina Babbitt et al., Envtl. Def. Fund, Groundwater Pumping Allocations under California's Sustainable Groundwater

will likely require the use of groundwater allocations as a tool to regulate and enforce pumping limitations and to assign responsibility for any pumping decrease needed to achieve sustainability. Virtually all adjudicated basins and special act districts that have sought to remedy significant overdraft have developed pumping allocations in some form.[16] Additionally, basins will need to obtain funding if they hope to use managed aquifer recharge, acquire greater supplies of surface water, build water recycling facilities, or implement some other physical solution.[17] One option for funding these additional supplies is to assess charges on users who exceed their pumping allocation. Pumping assessments can be applied in a variety of ways, and in some circumstances, may be used to incentivize reduced pumping without mandatory limits.[18] Finally, pumping allocations are necessary to facilitate groundwater markets, which, if well-designed, can serve as an efficient and voluntary means of reallocating

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Management Act: Considerations for Groundwater Sustainability Agencies 1 (2018), https://www.edf.org/sites/default/files/documents/edf_california_sgma_allocations.pdf [https://perma.cc/VV9A-XFW3] [hereinafter Groundwater Pumping Allocations]; see also *infra* note 17 for a discussion of the tools used by the Orange County Water District.

16. *See infra* notes 202–204 and accompanying text. For a comprehensive discussion of past adjudications in California, see generally Langridge et al., U.C. Santa Cruz, An Evaluation of California's Adjudicated Groundwater Basins (2016). For a discussion of recent (post-2000) adjudications, see Leon Szeptycki et al., *A Flexible Framework or Rigid Doctrine? Assessing the Legacy of the 2000 Mojave Decision for Resolving Disputes over Groundwater in California*, 37 Stan. Envtl. L.J 185, 211–238 (2018) [hereinafter Szeptycki et al.,]. For a comprehensive discussion of the 15 Special Act Districts designated in SGMA and their management strategies, see generally Langridge et al., U.C. Santa Cruz, An Evaluation of California's Special Act Groundwater Districts (2016).

17. Future of Groundwater, *supra* note 5, at 18 (citing the need for funding to support these projects). The phrase "physical solution" is used in water rights cases to "describe a [stakeholder] agreed-upon or judicially imposed resolution of conflicting claims in a manner that advances the constitutional rule of reasonable and beneficial use of the state's water supply." City of Santa Maria v. Adam, 149 Cal. Rptr. 3d 491, 509 (Ct. App. 2012). Physical solutions are "equitable remed[ies] designed to alleviate overdrafts and the consequential depletion of water resources in a particular area, consistent with the [California] constitutional mandate to prevent waste and unreasonable water use and to maximize the beneficial use of this state's limited resource. *Id.* (*quoting* Cal. Am. Water v. City of Seaside, 107 Cal. Rptr. 529, 536–37 (Ct. App. 2010)).

18. The Orange County Water District is a prominent example of a management agency that has set pumping limits and then uses funding from fees assessed for exceeding those limits to pay for managed aquifer recharge. Each pumper has an assigned Basin Pumping Percentage (BPP). If they pump at or below the BPP, they pay a fixed replenishment assessment to fund recharge activities. If they pump in excess of their BPP, they also pay a Basin Equity Assessment (BEA). The BEA is assessed at a level designed to make the pumper's cost of exceeding their BPA equivalent to the cost of importing an equivalent amount of potable replacement water. *See* Greg Woodside & Marsha Westropp, Orange Cty. Water Dist., Orange County Water District Groundwater Management Plan 2015 Update 10–6 (2015), https://www.waterboards.ca.gov/rwqcb8/water_issues/programs/Wastewater/Poseidon/2016_05-02_OCWD_Groundwater_Management_Plan_2015_Update.pdf [https://perma.cc/S7YC-F6JS].

water in the context of an increasingly limited supply.[19] To function smoothly, groundwater markets require that each user has a well-defined, enforceable, and quantified right they can sell or lease.

Allocating water to specific users and limiting the amount they can pump, however, is a legally fraught path. The common law in California gives owners of land above a groundwater basin the right to pump water from that basin and use it on the land that overlies the basin. Municipal water suppliers and other appropriators have the right to pump water that is in surplus to the needs of overlying landowners, and also can perfect prescriptive rights against the overlying landowners in specific circumstances.[20] Courts consider these rights to be a form of real property, and in many overdrafted basins in California, groundwater has been allocated by courts resolving disputes about who holds these rights and how much they can pump pursuant to them.

As noted above, the legislature attempted to dodge the potential conflict between SGMA's mandates and these preexisting water rights by both making clear that nothing in SGMA "determines or alters . . . groundwater rights under common law,"[21] and that any allocations or limits imposed by a GSA do not constitute a determination of those rights.[22] Consequently, if any party files an adjudication, the ultimate decision concerning pumping allocations will rest with the courts, not the GSA.[23]

Pumpers who are dissatisfied with their allocation have several procedural options they can pursue in attempt to enforce their water rights. They may seek judicial review of the GSP in court, urge DWR to demand changes to the GSP, or ask the State Water Resources Control Board (SWRCB or "Board") to enforce their water rights in the event the Board decides to impose an interim plan on the basin. SGMA gives the Board the authority to designate a basin as probationary if it fails to meet certain SGMA obligations and then to adopt an interim plan for the basin.[24] Most notably, any pumper can

19. Groundwater Pumping Allocations, *supra* note 15, at 5.

20. The categories of groundwater rights and their relative priorities are discussed in 51 *infra*.

21. Cal. Water Code § 10720.5(b) (2020).

22. *Id*. § 10726.4(a)(2).

23. Cal. Code Civ. Proc. § 834 (2020).

24. SGMA's language with respect to the Board creates some tension with water right priorities. *See* Cal. Water Code §§ 10735–10735.8 (2020). Subdivision 10735.8(d) of those provisions provides that "[e]xcept as provided in subdivision (e), the interim plan shall be consistent with water right priorities subject to Section 2 of Article X of the California Constitution." *Id.* § 10735.8(d). Subdivision § 10735.8(e) requires the Board to include in the interim plan "a groundwater sustainability plan, or any element of a plan, that the board complies with the sustainability goal for that portion of the basin, or would help meet the sustainability goal for the basin." *Id*. § 10735.8(e). There is an argument that these sections together may obligate the board to adopt a provision of an interim plan that furthers the sustainability goals but is not consistent with water right priorities. Sorting out the applicable statutory interpretation arguments, however, is beyond the scope of this Article.

file litigation outside the SGMA process by seeking judicial determination and enforcement of their pumping rights through a court adjudication.[25]

The prospect of an adjudication running either parallel to the SGMA process or taking place after completion of the GSP is disruptive from the GSA's perspective. The existence of two parallel tracks raises issues concerning the relationship between the court's power and the GSA's, creates a potential for duplicative effort, and raises the possibility that the court will find the GSP inconsistent with groundwater rights and impose a new and different allocation scheme.[26]

Recognizing these problems, a year after the California legislature passed SGMA it adopted legislation to complement SGMA by establishing new civil procedures for the initiation and judicial management of groundwater basin adjudications.[27] The legislation included various provisions designed to limit the extent to which adjudications disrupt the SGMA process and to require courts to ensure a final judgment does not impair sustainable groundwater management required by SGMA.[28] Tracking SGMA, however, the legislation explicitly leaves common law water rights in place.[29] Thus, GSAs are faced with the prospect that a court adjudication may ultimately overturn the allocation of groundwater in their GSPs. This risk is more acute in severely overdrafted basins, where pumpers have more at stake both in terms of their reliance on groundwater and the GSA's need to reduce pumping in the basin.

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25. Indeed, one set of complaining parties has already filed an adjudication that is paralleling the SGMA process for the same basin. That adjudication is in early stages, and it is not yet clear whether the court will preempt the GSA's role in determining the amount of water available to pump and allocating shares of that amount among specific water users. *See* Las Posas Valley Water Rights Coalition, et al. v. Fox Canyon Groundwater Management Agency, et al., No. VENC100509700 (Santa Barbara Cty. Cir. Ct., filed Mar. 27, 2018).

26. A legal challenge to pumping limitations imposed by a GSA will likely not delay necessary efforts to achieve sustainable groundwater management in the basin. Courts in water cases have equitable powers to develop interim rules to implement groundwater management while the case proceeds. The Code of Civil Procedure specifically authorizes a court overseeing a basin adjudication to issue a preliminary injunction to manage the basin if the basin is in a condition of longterm overdraft. Cal. Code Civ. Proc. § 847(a) (2020).

27. *See* Cal. Code Civ. Proc. § 830 (2020).

28. Water Code section 10737.2 provides that, in basins required by SGMA to have a GSP, "the court shall manage the proceedings in a manner that minimizes interference [with preparation of the GSP] and avoids redundancy and unnecessary costs" in developing information needed for both the GSP and the adjudication. Cal. Water Code § 10737.2 (2020). The statute also prohibits courts, in basins required to prepare a GSP, from entering a judgment in an adjudication "unless the court finds that the judgment will not substantially impair the ability of a [GSA], the board, or the department [of water resources] to comply with [SGMA] and achieve sustainable groundwater management." *Id*. § 10737.8. The legislation includes a variety of other provisions to make adjudications and the SGMA process more compatible. *See* Szeptycki et al., *supra* note 16.

29. *See* Cal. Water Code § 10720.5(b) (2020); Cal. Code Civ. Proc. § 830(b)(7) (2020).

Although SGMA implementation will vary considerably across groundwater basins, there are four principal issues that need to be addressed in an allocation, or adjudication, under SGMA, including:

- **What is the source and quantity of the basin's groundwater supply available for extraction (i.e., what is the basin's safe/sustainable yield),[30] including native groundwater and water from other sources?** The identification and quantification of the sustainable yield must be consistent with the GSA's sustainability goals (i.e., the established minimum thresholds and measurable objectives),[31] and must include considerations for any impacts on surface water, potential harm to groundwater-dependent ecosystems,[32] and any outflow requirements to connected basins.[33]
- **Who has a right to use groundwater within the basin, and on what legal basis?** Potential claimants may include those responsible for "developed water,"[34] landowners holding overlying rights,[35] and municipal suppliers and other appropriators that may claim prescriptive rights.[36]
- **How should the basin's available water supply be divided or managed in light of those rights?** First, any developed water needs to be separated and allocated to the developer. The remainder must then be divided between classes of water users (appropriators/prescriptors and overlying landowners)[37] and among members of each class.[38] Several considerations apply to this analysis: whether prescriptive rights could likely be established;[39] whether water for basic health and safety needs to be set aside for disadvantaged communities or other users;

30. *See* discussion of the terms "safe yield" and "sustainable yield" in Part II *infra*.

31. *See* Cal. Water Code § 10721(w) (2020) (defining "sustainable yield" as the "maximum quantity of water . . . that can be withdrawn annually from a groundwater supply without causing an undesirable result"); Cal. Code Regs. tit. 23, § 354.28(c)(2) (2020).

32. *See* Cal. Water Code *§ 10721(x) (*2020) (defining undesirable results to be avoided through groundwater management to include depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses); *see also* discussion of considerations for groundwater-dependent ecosystems at Subparts II.B and VIII.B *infra*.

33. *See* Cal. Code Regs. tit. 23, § 354.28 (2020) (minimum thresholds must avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals); Cal. Code Regs. tit. 23, § 355.4(b)(7) (2020). *See also* discussion of water rights implications of interbasin connectivity and intrabasin connectivity in Part III *infra*.

34. *See* discussion of the law applicable to developed groundwater in Part IV *infra*.

35. *See* overview of overlying rights in Subpart V.A *infra*.

36. *See* overview of the doctrine of prescription and self-help in Subpart V.B *infra.*

37. *See* discussion *infra* at Subpart VI.A.

38. *See id*. at Subpart VI.B.

39. *See* discussion of implications of prescription and self-help for establishing allocations in 29 *infra*. *See also* discussion of considerations for allocating groundwater consistent with the doctrines of prescription and self-help in Part VI, *infra*.

whether considerations of equity or the constitutional mandate for reasonable and beneficial use affect the water allocation;[40] and how to divide water among overlying landowners.

- **Finally, can a "physical solution" optimize the beneficial use and management of the resource without materially or unreasonably increasing the burden on senior water rights holders?** As settlements in past adjudications illustrate, such physical solutions afford a means to introduce creativity and flexibility to improve basin management while maintaining consistency with water right priorities.[41]

By analyzing these questions and making appropriate findings, GSAs can better achieve sustainable management by minimizing the risk of adjudications or other water rights challenges to their GSPs.

II. The Basin's Available Supply

Before allocating its water supply, a GSA must assess the amount of water that is available—namely the sustainable yield and the components of the sustainable yield both within the GSA's boundaries and in the DWR-defined basin. The total supply making up the sustainable yield can consist of different categories of water, including native groundwater and developed water (which are discussed in more detail in IV below). The phrase "sustainable yield" is a SGMA-specific term, whereas "safe yield" is a term used by the courts in past groundwater basin adjudications. GSAs must comply with the term sustainable yield, but doing so is unlikely to create any problems under the common law.

A. *Safe Yield v. Sustainable Yield*

The California legislature created ambiguity by using the term "sustainable yield" in SGMA rather than the term "safe yield," which courts have historically used to allocate water rights. Although they are not synonymous, the fundamental principle of both terms is that they seek to prevent undesirable results. "Safe yield" is the term used by the California courts when adjudicating groundwater rights.[42] The Supreme Court of California defined the term as "the maximum quantity of water which can be withdrawn annually from a ground water supply under a given set of conditions without causing an undesirable result."[43] The courts have explained that the phrase "undesirable results" refers to a gradual lowering of ground water levels, eventually resulting in a depletion of the supply.[44] SGMA defines the term "sustainable yield" as

40. *See* discussion of domestic water use considerations at Subpart V.B *infra; see* discussion of reasonable use and equity considerations generally at Subpart V.B *infra*.

41. *See* discussion of notable trends from past physical solutions at Subpart VIII.B *infra.*

42. City of Los Angeles v. City of San Fernando, 537 P.2d 1250, 1308 (Cal. 1975).

43. *Id.* (citing City of Pasadena v. City of Alhambra, 207 P.2d 17, 30 (Cal. 1949)).

44. *Id.*

"the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result."[45]

Both terms are linked to the concept of avoiding undesirable results and seem indistinguishable in terms of how the yield is measured. In its early interpretation of sustainable yield, DWR defined the term as the avoidance of undesirable results for all six SGMA sustainability indicators (groundwater elevation, groundwater storage, seawater intrusion, water quality, subsidence, and interconnected surface waters).[46] This definition is not inconsistent with previous definitions of safe yield. Although the scope of "undesirable results" is mainly undefined in case law, the common law principle is at least as broad as SGMA's definition.[47] Indeed, the specific undesirable results addressed in an adjudication have historically only been those raised by the pleadings of the litigants. The courts have not rejected any of the SGMA-specific undesirable results; some simply have not yet been fully litigated. The courts will no doubt address the full scope of SGMA-specific undesirable results in future adjudications.

In addition, the common law concept of safe yield is anchored in the constitutional doctrine of reasonable and beneficial use, which requires avoiding undesirable results.[48] Case law does not support the notion that the concept

45. Cal. Water Code § 10721(v) (2020).

46. *See, e.g.*, Karla Nemeth, State of Cal. Dep't of Water Res., Statement of Findings Regarding the Disapproval of the Napa Valley Subbasin Alternative, Alternative Assessment Staff Report Addendum 7 (2019), https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Alternatives/Files/10year/NapaValley/02_Napa_Valley_StatementofFindings_Exhibits__a_y19.pdf?la=en&hash=E9059E03540E8E48176035B3EA2C1B60E5EC4D2D [https://perma.cc/KU9L-93AR]; Karla Nemeth, State of Cal. Dep't of Water Res., Statement of Findings Regarding the Disapproval of the Ojai Valley Alternative 25-6 (2019), https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Alternatives/Files/10year/OjaiValley/02_Ojai_StatementofFindings_Exhibit_a_y19.pdf?la=en&hash=7E76916503BA43F9E1C873D-CF4615808E6624BE6 [https://perma.cc/XN74-UUKH].

47. However, identifying six specific areas where undesirable results must be avoided creates the opportunity for increased regulation. This provides an opportunity for regulated groundwater users to argue that the SGMA sustainable yield definition includes undesirable results that are not recognized by the common law definition of safe yield. If the GSA restricts groundwater extraction to avoid a "SGMA-specific" undesirable result, such as avoiding groundwater quality impacts, groundwater users might argue such a restriction violates their common law right because the common law definition of safe yield does not encompass that specific undesirable result. No case that has addressed this argument, and it is inconsistent with the overall principles of California water law. SGMA indeed includes undesirable results that have not been addressed by court decisions in previously contested adjudication, including the degradation of groundwater quality and impacts on some uses of surface water.

48. *City of San Fernando*, 537 P.2d at 1308(adopting the trial court's finding that safe

of safe yield is fixed in time or that the undesirable results are limited in scope. Instead, because all water use must be reasonable, safe yield is arguably adaptable to address a variety of undesirable results as they arise and evolve over time.[49] Future adjudications of basins covered by SGMA will need to ensure consistency with SGMA's substantive requirements.[50] GSAs have no choice but to draft GSPs that are designed to achieve SGMA's definition of sustainable yield.

Aside from the use of two separate terms, ("safe yield" and "sustainable yield"), there are still significant common law issues that GSAs will have to consider when calculating the sustainable yield. To calculate the safe/sustainable yield, the decisionmaker—a GSA or court—must develop a water budget.[51] SGMA defines the water budget as "an accounting of the total groundwater and surface water entering and leaving a basin including the changes in the amount of water stored."[52] To assess inflow, SGMA's implementing regulations direct GSAs to quantify all flows into the groundwater system by water source type. The inflow categories include subsurface groundwater inflow, infiltration of precipitation, applied water, and surface water systems, such as lakes, streams, rivers, canals, springs and conveyance systems.[53] Although all of those sources of water properly go in the SGMA water budget, simply lumping them together for allocation purposes risks ignoring water rights considerations. As discussed below in IV, the legal rules that apply to allocations of native groundwater are different from the legal rules for allocations of "developed" groundwater attributable to imported water supplies or salvaged water operations. Even though all of these sources can contribute to the basin's sustainable yield under SGMA guidelines, GSAs should segregate them in water budgets because the common law may require separately allocating them among different users.

Adopting careful accounting of water sources should also have a temporal component to recognize that many water rights claims are fundamentally based on historic pumping and basin conditions, particularly claims of

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yield is the "maximum quantity of water which can be withdrawn annually from a ground water supply under a given set of conditions without causing an undesirable result"); City of Barstow v. Mojave Water Agency, 5 P.3d 853, 862 (Cal. 2000).

(holding that a user of overlying groundwater rights is restricted to reasonable beneficial use, "consonant with article X, section 2 of the California Constitution.").

49. *See* Cal. Am. Water v. City of Seaside, 107 Cal. Rptr. 3d 529, 536 (Ct. App. 2010) (explaining that a physical solution entered in an adjudication as "an equitable remedy designed to alleviate overdrafts and the consequential depletion of water resources in a particular area, consistent with the constitutional mandate to prevent waste and unreasonable water use and to maximize the beneficial use of this state's limited resource").

50. Cal. Water Code § 10737.8 (2020).

51. Cal. Code Regs. tit. 23, § 354.18 (2020).

52. Cal. Water Code § 10721(y) (2020).

53. Cal. Code Regs. tit. 23, § 354.18(b)(2) (2020).

prescription.[54] Many GSAs will need to make sustainability calculations in the face of changing conditions. Factors such as surface water diversions, land-use changes, and climate change, will change natural inflow. Additionally, activities that have historically contributed developed water (e.g., imported surface water) and prior abandoned water supplies may change.[55] There is no one approach to address this shifting landscape but doing so will be easier if GSAs explicitly monitor and account for those changing conditions.[56]

Assessments of historical basin inflows may differ from projections of future inflows. For example, the historical abandonment of wastewater following treatment from an upstream sewer treatment plant might cease if the treatment plant operator directs the water to a new beneficial use that does not yield the same basin recharge, such as direct potable reuse. The law does not compel an entity to continue a historic abandonment of nonnative water but instead allows recapture of the supply.[57] Consequently, GSAs must consider the prospect of diminished recharge from alterations in the upstream water abandonment when developing water budget projections for anticipated future safe/sustainable yield calculations.

Although plans for future basin management must be based on reasonable projections of future recharge amounts, water rights determinations must consider historical conditions and future projections. Certain legal issues, such as "prescription" (taking a water right through adverse use) and "subordination," (subordinating the right of a dormant overlying water right holder due to nonuse).[58] will depend on past or present conditions. Other legal matters may not arise until conditions change in the future, such as the calculation of surplus available for appropriative users or the restriction of use among correlative overlying rights holders.

Finally, it is important that GSAs base their sustainable yield determination on an inquiry into the actual impacts likely to result from a given quantity of extraction. In other words, the courts do not establish groundwater

54. *See infra* at Subparts V.A–V.B for a discussion of the doctrine of prescription.

55. Abandoned water is water that is introduced to a basin without an intent to recover it by the party responsible for its introduction. Wood v. Etiwanda Water Co., 81 P. 512, 514 (Cal. 1905).

56. For example, "[o]bservational data and climate predictions provide abundant evidence that freshwater resources (both surface and subsurface water resources) are vulnerable and have the potential to be strongly affected by climate change, with wide-ranging consequences for society and ecosystems." Timothy Green, *Linking Climate Change and Groundwater*, *in* Integrated Groundwater Management: Concepts, Approaches and Challenges, 97, 98 (Jakeman et al. eds., 2016) (citing Kundzewicz et al., *Freshwater resources and their management*, Climate Change 2007: Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. By observing and accounting for shifting climate change factors, among others, groundwater users may take a preemptive rather than reactive approach.

57. Stevens v. Oakdale Irr. Dist., 90 P.2d 58, 62 (Cal. 1939).

58. *See* Subpart V.D *infra* for a discussion of the doctrine of subordination.

extraction limits to maintain any specific groundwater level, but rather to avoid undesirable results.[59] Because of this, both the case law and SGMA recognize the concept of "temporary surplus," which allows for the extraction of groundwater in excess of basin recharge where necessary to cause a strategic lowering of groundwater levels to maximize the beneficial use of the supply. This can avoid waste in places where high groundwater levels and a lack of vacant storage space results in a rejection and loss of potential recharge that could otherwise be captured within the basin for beneficial use.[60]

B. *Reductions to Sustainable Yield for Environmental Flows and Other Equitable Considerations*

In assessing available supply, a GSA also must account for certain societal concerns, which could place additional demands on available groundwater supplies but are largely absent from prior court opinions. One example is significant and unreasonable impacts to surface water flow or groundwater-dependent ecosystems that may be caused by groundwater pumping.[61] The California constitutional mandate compels similar considerations, including that water resources be managed for maximum beneficial use.[62] Courts have increasingly considered ecological impacts as a factor in assessing what constitutes reasonable and beneficial use and management of water.[63] A California court recently held that groundwater pumping that adversely impacted surface flows of a navigable water implicates the public trust doctrine.[64] Lastly, equitable considerations that courts apply in water use disputes and state policy require the consideration of all groundwater supplies and evaluation of whether there is sufficient protection of domestic water for the health

59. *See* City of Los Angeles v. City of San Fernando, 537 P.2d 1250, 1308 (Cal. 1975) (citing City of Pasadena v. City of Alhambra, 207 P.2d 17, 30 (Cal. 1949).

60. *City of San Fernando*, 537 P.2d at 1309; *see also* Kevin M. O'Brien, *The Governor's Commission's Recommendations on Groundwater: Treading Water Until the Next Drought*, 36 McGeorge L. Rev. 435, 453 (2005) ("[T]he constitutional prohibition against waste and unreasonable use would seem to control, at least in situations where the failure to capture basin surplus will result in waste through discharge to a non-usable source, and such discharge is not necessary to prevent other undesirable consequences.").

61. Cal. Water Code § 10721(x) (2020).

62. Cal. Const. art. X, § 2. *See infra* notes 181–182 and accompanying text.

63. *See*, *e.g.*, Hillside Memorial Park and Mortuary v. Golden State Water Co., 131 Cal. Rptr. 3d 146, 159 (Ct. App. 2011) ("In exercising its broad equitable powers in seeking a physical solution, the trial court may and should take into account environmental concerns"); Allegretti v. Imperial Cty., 42 Cal. Rptr. 3d 122, 136 (Ct. App. 2006). *See also* Russell M. McGlothlin & Jena Shoaf Acos, *The Golden Rule* of Water Management*, 9 Golden Gate U. Envtl. L.J. 109, 122 (2016).

64. Envtl. Law Found. v. State Water Res. Control Bd., 237 Cal.Rptr.3d 393, 403 (Ct. App. 2018); *see also* Nat'l Audubon Soc'y v. Superior Court, 658 P.2d 709 (Cal. 1983) (holding that diversion of water even from nonnavigable freshwater streams could be limited by state water regulators under the public trust doctrine, where the diversions reduced the lake level and caused damage to the lake's ecosystem).

and safety of disadvantaged communities.[65] Consideration of these issues is required both by SGMA and the common law, because the underpinning of both is the constitutional mandate for reasonable and beneficial use.

III. The Extent of Connectivity Within the Basin and With Adjacent Basins

An additional issue that may affect the scope of interrelated groundwater rights, and consequently allocations, is the hydrologic scope of commonly connected groundwater supplies, both between different parts of a basin and between basins. SGMA delineates basins using the boundaries established by DWR Bulletin 118.[66] The newly enacted legislation for conducting basin adjudications likewise requires courts use Bulletin 118 boundaries.[67]

If the groundwater supply is connected across basin boundaries, pumpers in the separate basins may have common water rights claims even though they pump from different basins as defined by Bulletin 118. In these circumstances, the law will not necessarily require all water rights in the commonly-connected groundwater system be adjudicated together. The court may require that GSAs account for interbasin subterranean groundwater flows and requisite management to avoid disproportionate burden to pumpers located in either basin due to pumping in the other basin. The court order may take the form of an obligation that GSAs ensure certain subterranean flow quantities between the basins or other forms of physical solutions.

Also, geologic features, such as faults, can effectively preclude groundwater connectivity, thereby separating two hydrogeologically distinct units within a single Bulletin118-defined basin. In these circumstances, separate management areas may be appropriate.

A. *Groundwater Rights Based on Interconnectivity*

SGMA does not change the extent to which users in the downstream basin may be entitled to a specific amount of water flowing into their basin.[68] There is

65. *See San Fernando*, 537 P.2d at 1298; Cal. Water Code §§ 106, 106.3, 106.5 (2020). *See also* further discussion at Subpart V.E *infra*.

66. Cal. Wat. Code § 10722 (2020); Cal. Code Civ. Proc. § 841 (2020).

67. "DWR's Bulletin 118 is an inventory and assessment of the available information on the occurrence and nature of California's groundwater to inform decisions affecting the protection, use, and management of the resource." Cal. Dep't of Water Res., Bulletin 118 Fact Sheet (2019), https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/Bulletin-118-Fact-Sheet_ay_19.pdf [https://perma.cc/ZSK5-K577].

68. *Hudson v. Dailey* defined groundwater rights by the "common supply," based on the concept that hydrologically interconnected water bodies should be treated as the same waterbody for water allocation purposes. 105 P. 748, 752 (Cal. 1909). In *Miller v. Bay Cities Water Co.*, the court defined rights amongst and between water right holders "overlying a common substratum of percolating water." 107 P. 115, 124 (Cal. 1910). In *City of San Bernardino v. City of Riverside*, the court defined rights based on shared supply, stating that

precedent in prior groundwater adjudications for interbasin and interarea flow requirements, including for connected surface waters. For example, a stipulated judgment resulting from litigation among the major pumpers in the Santa Ana River watershed divides that system into three major basins.[69] In light of the significant groundwater-surface water interaction, the stipulation required two of the public water suppliers to ensure minimum base flows at particular points along the Santa Ana River.[70] An agreement between the Puente Basin Water Agency and the Upper San Gabriel Valley Municipal Water District, required a base underflow from the smaller Puente Basin into the Main San Gabriel Basin.[71] The stipulated judgment in the Main San Gabriel Basin adjudication required a base underflow through the Whittier Narrows to ensure adequate water supply for basins further downstream.[72] The physical solution in the Mojave River basin adjudication "require[d] each subarea within the basin to provide a specific quantity of water to the adjoining downstream subarea."[73] Although the parties did not fully litigate the issues in these cases, their resolution is at a minimum instructive, as it recognizes the importance of considering physical connections in legal determinations.

A legal challenge to the stipulated judgment in the Main San Gabriel Basin adjudication resulted in an appellate decision that provides some useful guidance.[74] *Central Basin Municipal Water Dist. v. Fossette*, 235 Cal.App.2d 689 (1965), involved a physical solution whereby "Lower Area" (downstream) users were guaranteed a minimum base flow while forgoing a determination of individual rights so long as the physical solution was in effect.[75] A downstream water district official challenged this regime as arbitrary and capricious, and an improper divestment of Lower Area users' water rights.[76] The Court of Appeal upheld the agreement as proper, concluding based on the judgment's specific

overlying water right holders share in the "same general underground supply of water." 198 P. 784, 788 (Cal. 1921). In *Eckel v. Springfield Tunnel & Development Co*., the court tied overlying groundwater rights to the holding of land "over a common basin, saturated strata, or underground reservoir." 262 P. 425, 427 (Cal. 1927); *see also* Burr v. Maclay Rancho Water Co., 98 P. 260, 263 (Cal. 1908); Barton v. Riverside Water Co. 101 P. 790, 793 (Cal. 1909).

69. City of Chino v. Super. Ct. of Orange Cty., 63 Cal. Rptr. 532, 534 (Ct. App. 1967).

70. Orange Cty. Water Dist. v. City of Chino, No. 117628, slip op. at 11–13 (Cal. Super. Ct., Apr. 17, 1969), http://www.sbvmwd.com/Home/ShowDocument?id=1316 [https://perma.cc/S98P-KMAW] (stipulated judgment).

71. Rowland Water Dist., 2015 Urban Water Management Plan, 6-6 (June 2016), https://www.rowlandwater.com/wp-content/uploads/2016/05/RWD-2015_Final-UWMP_without-App.pdf [https://perma.cc/59RF-3RZ6].

72. Upper San Gabriel Valley Municipal Water District v. City of Alhambra, No. 924128, Exhibit J, ¶ 8 (L.A. Cty. Super. Ct., Jan. 4, 1973, amended June 21, 2012), https://955084b9-ee64-4728-a939-5db8ad0ab8ae.filesusr.com/ugd/af1ff8_18ccf3f1064f4c86a8f3453e0c13dc47.pdf [https://perma.cc/D6SQ-4BPJ].

73. City of Barstow v. Mojave Water Agency, 5 P.3d 853, 859 (Cal. 2000).

74. Cent. Basin Mun. Water Dist. v. Fossette, 45 Cal. Rptr. 651 (Ct. App. 1965).

75. *Id.* at 656–57.

76. *Id.* at 652, 656, 659.

language, the pumpers' individual rights remained protected under the court's continuing jurisdiction.[77] Even though the facts of *Fossette* did not require the court to evaluate the propriety of interbasin flow requirements directly, the court impliedly approved of such a regime, noting that "[t]he adoption by the parties of a reasonable physical solution to the complicated problems relating to their respective rights in the use of the water within the San Gabriel River system" was consistent with prior cases establishing a court's authority to *impose* a physical solution, even absent the agreement of the parties.[78]

Conversely, if two portions of a basin have little or no hydrologic connection, courts have treated such areas separately for purposes of adjudicating groundwater rights.[79] Whether a hydrologic connection exists is a highly fact-specific issue. The California Supreme Court's ruling in *Los Angeles v. San Fernando* 14 Cal.3d 199 (1975), determined that the significance of connectivity is a factual question for the court to decide based on the rate and quantity of flow between subareas, whether pumping in either area affects users in the other area, the existence of geologic barriers, and other factors.

B. *Connectivity Changed by Pumping*

Few courts have directly addressed the issue of how to evaluate connectivity, or lack of connectivity, affected by groundwater pumping. Pumping in an upstream basin can reduce or eliminate the connection to a downstream basin. Pumping in one basin can, under some circumstances, pull water from an adjacent basin and increase connectivity. The common law does not provide much guidance for GSAs facing this issue.

The Court in *San Fernando* came the closest to addressing the issue. In that case, Los Angeles argued that the lack of underflow between two adjacent subareas was due in large part to ongoing pumping[80] and that without that pumping, these two subareas would connect hydrologically to other parts of the San Fernando subarea.[81] The Court rejected this argument, noting that there was "no showing" the City of Los Angeles ever relied on groundwater from those two subareas.[82]

Thus, the Court rejected Los Angeles' claim that it was entitled to groundwater in nearby subareas that would have been interconnected but for the defendants' pumping. However, the court made this determination on a complex and unique set of facts, which included data on subsurface flows and historical conditions. The applicability of this ruling to other cases is uncertain

77. *Id.* at 657–58.

78. *Id.* at 657 (citing City of Lodi v. East Bay Mun. Util. Dist., 60 P.2d 439, 450 (Cal. 1936) and Rancho Santa Margarita v. Vail, 81 P.2d 533, 562–63 (Cal. 1938)).

79. *See e.g.*, Monolith Cement Co. vs. Mojave PUD, 84 Cal.Rptr. 639, 643 (Ct. App. 1970).

80. City of Los Angeles v. City of San Fernando, 537 P.2d 1250, 1287 (Cal. 1975).

81. *Id.*

82. *Id.* at 1288.

and is limited, as each case will depend on the specific data in the subarea and how the principles of equity and reasonableness apply to these specific facts.

C. *Harmonizing SGMA and the Common Law*

With respect to connectivity issues, SGMA is clearer than the common law. Assuming that the common law requires accounting and managing for connectivity, SGMA is consistent with the common law, and by following its requirements GSAs are unlikely to violate water rights. For example, SGMA and its regulations include the following provisions:

- requirement that GSPs describe the basin setting, including the principal aquifers and hydraulic conductivity of the basin;[83]
- requirement that GSPs account for the inflow and outflow of groundwater;[84]
- requirement that DWR evaluate whether a GSP adversely affects the ability of an adjacent basin to achieve sustainability;[85]and
- provision that allows adjacent basins to enter into interbasin agreements to ensure coordination and exchange of information among the Bulletin 118 basins.[86]

Finally, SGMA allows a GSP to include multiple management areas.[87] Management areas allow a GSA to develop different minimum thresholds and measurable objectives within a single GSP.[88] This tool may be helpful if a basin defined by Bulletin 118 includes areas that are hydrologically disconnected and need to be managed separately. To the extent a single GSP has to manage more than one underground waterbody, the use of management areas to distinguish the two waterbodies would promote consistency in groundwater rights.

IV. Developed Water

Water users, managers, and providers in many basins augment their water supply using a variety of water sources, including water imported from other basins, recycled water, and managed aquifer recharge. Many GSAs are likely to include such activities in their GSPs. Although these water sources may be used to augment sustainable yield, in many cases they are subject to separate water rights. They will need to be treated separately for allocation purposes.

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83. Cal. Code Regs. tit. 23, § 354.14 (2020).
84. *Id. § 354.18.*
85. Cal. Water Code *§ 10733(c) (2020).*
86. Cal. Code Regs. tit. 23, § 357.2 (2020).
87. "Management area" refers to an area within a basin for which the GSP may identify different minimum thresholds, measurable objectives, monitoring, or projects and management actions based on differences in water use sector, water source type, geology, aquifer characteristics, or other factors. *Id. § 354.20.*
88. *Id.*

A. *Developed and Salvaged Water*

Water that would not be present within a basin but for human efforts (e.g., water that is imported, is available due to intervention of surface water storage, or is otherwise "developed") is allocated separately from the native yield of groundwater under the common law.[89] In *City of Santa Maria v. Adam*, 149 Cal. Rptr. 3d 491 (Ct. App. 2012), the Court of Appeal explained that the practical reason for the developed water principle is to award the party responsible for the augmented yield with the "fruits of his endeavors in bringing into the basin water that would not otherwise be there."[90]

GSAs will need to include developed water in sustainable yield calculations, but separately account for the developed water when allocating available supplies among users. Generally, a party that causes developed water to exist within the basin with the intention to subsequently recover the water is entitled to the full amount of the developed water that is recoverable and attributable to their efforts.[91]

B. *Imported Water*

The developed water doctrine applies to water that is imported from outside the basin. When this water enters the basin, whether after use or for direct storage, courts have uniformly held that it belongs to the importer of the water so long as they can show an intention to recover the augmented recharge.[92] Although GSAs should include such imported water in their sustainable yield calculations, they cannot allocate it to anyone other than the importer.

The importer does not have to recover the specific molecules of water that it imports. Both the *Glendale* and *San Fernando* opinions from the California Supreme Court found that the importer was entitled to credit for return flows of water it had imported because of its conduct of selling or spreading the water in areas where it would percolate into the groundwater basin. This behavior proved that the importer had not abandoned the water and intended to recapture it.[93] This result did not turn upon the fact that the city's pumping stations happened to be down gradient from where the water was introduced.[94] To the contrary: "[t]he fact that spread water is commingled with other ground water is no obstacle to the right to recapture the amount by which the available conglomerated ground supply has been augmented by the spreading."[95]

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89. *See*, *e.g.*, City of Santa Maria v. Adam, 149 Cal. Rptr. 3d 491, 503, 520–25 (Ct. App. 2012).

90. *Id.* (citing City of Los Angeles. v. City of San Fernando, 537 P.2d 1250, 1295 (Cal. 1975)).

91. *Id.*, at 301–307; City of Los Angeles v. City of Glendale, 142 P.2d 289, 294–95 (Cal. 1943).

92. *Glendale*, 142 P.2d at 294–95.

93. *Glendale*, 142 P. 2d at 294–95; *San Fernando*, 537 P.2d at 1294–95 (citing *Glendale*).

94. *Id.* at 294–296; *San Fernando*, 537 P.2d at 1290–96.

95. *San Fernando*, 537 P.2d at 1296–98 (citing *Glendale*, 142 P.2d at 294–95); CAL.

Case law identifies the importer as the party responsible for the water existing in the basin. If only one entity is involved in transporting and delivering the imported water, as in *Glendale*[96] and *San Fernando*[97], the answer is clear: the right to return flows belongs to that party. The issue is less clear if more than one party is involved in importing the water to the basin and introducing it into the groundwater supply.

An illustration of this situation occurs when a State Water Project contractor buys water from DWR. The contractor is usually a wholesaler, so once it buys the water, it sells it to a retailer who delivers it to customers, who then use the water, generating return flows that enter the basin's groundwater supply. This scenario creates multiple potential "importers:" the contractor, the retailer, and the user. GSPs may deal with the right to the return flows through a contract that specifies the benefiting party. If no contract explicitly assigns the right, courts have treated the retailer as the importer, although the issue has not been raised and resolved directly. In *San Fernando*, the City of Los Angeles purchased water from Metropolitan Water District and sold it to its customers.[98] The Supreme Court found that Los Angeles had the rights to the return flows.[99] Similarly, in *Santa Maria*, the City of Santa Maria purchased State Water Project water from the Central Coast Water Authority, a State Water Contractor.[100] The Court found that Santa Maria had the right to the return flows.[101] In neither case did the wholesaler contend that it had the right to return flows, but in the absence of the contracts being determinative, the resolution in *San Fernando* is the only decision from the courts on the issue.

C. *Salvaged Water*

Salvaged water is water that is saved from waste, such as when winter floodwaters are dammed and held in a reservoir and then released for replenishment into a groundwater basin during dry periods. As is the case with return flows of imported water, a priority right to salvaged water belongs to the party salvaging the water and making it available to use.[102] In *Santa Maria*, the Court reached this conclusion by relying on the case of *Pomona Land and Water. Co. v. San Antonio Land and Water Co*.[103] In *Pomona*, the stream naturally lost 19 percent of its flow to seepage, percolation, and evaporation from an upstream point to the point at which the plaintiffs diverted water downstream. The defendant installed a dam at the upper point, claimed 19 percent of the

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Water Code § 7075 (2020); *Santa Maria*, 149 Cal. Rptr. 3d at 521.

96. *Glendale*, 142 P.2d. 289.
97. *San Fernando*, 537 P.2d. 1250.
98. *Id.*
99. *Id.* at 1294–95.
100. *Santa Maria*, 149 Cal. Rptr. 3d 491.
101. *Id.* at 520–21.
102. *Id.* at 522.
103. Pomona Land & Water Co. v. San Antonio Water Co., 93 P. 881, 882 (Cal. 1908).

flow, and delivered the rest to the plaintiffs in a pipe.[104] The plaintiffs claimed a right to some of the salvaged 19 percent. However, the Supreme Court rejected the claim holding that, so long as the plaintiffs received the water to which they were entitled, the waters that were "rescued" by the defendants "were essentially new waters, the right to use and distribute which belonged to defendant."[105]

Overlying rights and appropriative rights at common law do not extend to water made available by the efforts of another. Thus, a GSA should treat such salvaged water separately from native groundwater and must allocate it to the party who salvaged it.

D. *Recycled Water*

Water users are increasingly looking to recycled water to augment their supply. California Water Code section 1210 states:

> The owner of a waste water treatment plant operated for the purpose of treating wastes from a sanitary sewer system shall hold the exclusive right to the treated waste water as against anyone who has supplied the water discharged into the waste water collection and treatment system, including a person using water under a water service contract, unless otherwise provided by agreement. Nothing in this article shall affect the treatment plant owner's obligations to any legal user of the discharged treated waste water.

No court has yet determined who has the right to water between a treatment plant operator, as described in the statute above, and a party who originally imported the water to the basin. It does seem evident that either the importer or treatment plant owner has the right to treated wastewater as against any native water users.[106] GSAs should treat such water as separate from the native groundwater for allocation purposes.

On the other hand, the return of water to a basin after treatment where the water *originated as native groundwater* prior to its use and treatment arguably should not qualify as developed water independent of the common supply. In *San Fernando*, the California Supreme Court explained that return flows from irrigation with native groundwater did not add water to the system, but only lessened the diminution occasioned by the extractions, and thus did not warrant an exclusive right of recovery.[107] This same logic should arguably apply to the return flow from municipal use of native groundwater in the same manner as applied to return flows from agricultural use of the native groundwater.

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104. *Id.*

105. *Id.* at 883–84.

106. Wastewater Change Petition WW-0045, City of Riverside, Order No. WR 2008–0024 (Cal. State Water Res. Control Bd. May 20, 2008).

107. *San Fernando*, 537 P.2d. at 1294.

V. Determining Who Has a Right to Pump Groundwater and on What Legal Basis

The critical question for GSAs is likely to be: Who gets to pump groundwater and how much do they get to pump? Put another way: Who must cut their use and by how much? These issues have driven lengthy adjudications and have been the focus of the leading California Supreme Court decisions on groundwater rights. In overdrafted basins, GSAs will have no choice but to grapple with these issues.

A. *Overview of Groundwater Rights*

Although state and federal courts generally consider a water right to be a right in real property,[108] there are essential differences between water rights and other property rights. There is no right of absolute ownership to water; the State of California holds all the state's water in trust for the people of the state.[109] Users may only establish a right to *use* water.[110] All water rights are subject to the overriding Constitutional limitation of reasonable use and avoidance of waste, found in Article X, section 2, which can be limited by the public trust doctrine.[111] These general principles apply to both surface water and groundwater, although the actual water rights systems differ.

California applies the "correlative system" of rights to groundwater. This system includes, broadly speaking, three potential types of pumping rights—overlying rights, appropriative rights, and prescriptive rights.

An overlying right is the right of a landowner (an "overlying owner") to pump groundwater from underneath that land for beneficial use on land overlying the basin.[112] This right is exercised by pumping and putting the water to reasonable and beneficial use. Unless the courts have adjudicated the basin or

108. *See* Arizona v. California, 460 U.S. 605, 620 (1983); Dugan v. Rank, 372 U.S. 609, 625 (1963); Ivanhoe Irrigation Dist. v. McCracken, 357 U.S. 275, 290–91, 296–97 (1958); United States v. Gerlach Live Stock Co., 339 U.S. 725, 733–36 (1950) (discussing multiple times in which Congress acknowledged and provided funding to compensate for the taking of water rights); Int'l Paper Co. v. United States, 282 U.S. 399, 407 (1931); State Dep't of Ecology v. Grimes, 852 P.2d 1044, 1054–55 (Wash. 1993) ("A vested water right is a type of private property that is subject to the Fifth Amendment prohibition on takings without just compensation."); *see also* Russell M. McGlothlin & Scott S. Slater, *No Fictions Required: Assessing the Public Trust Doctrine in Pursuit of Balanced Water Management*, 117 U. Denv. Water. L. Rev. 53, 54, 86–89 (2013).

109. Cal. Water Code § 102 (2020); State v. Superior Court of Riverside, 93 Cal. Rptr. 2d 276, 285 (Ct. App. 2000) (explaining that the state's "ownership" of water is not of a possessory or proprietary nature, but rather the power to control and regulate use).

110. City of Barstow v. Mojave Water Agency, 5 P.3d 853, 860, n. 7 (Cal. 2000).

111. *E.g.*, Nat'l Audubon Soc'y v. Superior Court, 658 P.2d 709 (Cal. 1983) (en banc); Envtl. Law Found. v. State Water Res. Control Bd., 237 Cal. Rptr. 3d 393 (Ct. App. 2018).

112. Cal. Water Serv. Co. v. Edward Sidebotham & Sons, Inc., 37 Cal. Rptr. 1, 6 (Ct. App. 1964).

other local regulations apply,[113] an overlying owner requires no discretionary governmental permission to exercise their right and access groundwater.

Overlying rights are a form of "correlative rights," meaning all overlying landowners have equal rights to groundwater in the basin underlying their properties up to the cumulative limit of the sustainable yield of the basin. Each landowner may have to adjust their use based on the needs of other landowners, and if the supply of water is insufficient for all overlying uses, each user is entitled to a fair and just proportion of the sustainable yield.[114] In other words, equity is a leading consideration with respect to allocations of available supply among overlying landowners.[115] The general principle is that overlying rights are based on land ownership and overlying landowners do not forfeit the right through nonuse.[116] If overlying landowners do not pump all of the safe yield of a basin, any surplus is available for appropriation for nonoverlying uses.[117]

An entity can establish an appropriative right to groundwater by using the water for a nonoverlying use.[118] Most appropriative users are municipal water systems, meaning that, in practice, the common law sets up a division between municipal water users (appropriators) and irrigators (overlying landowners). Only surplus water—any portion of the safe yield that overlying landowners do not need for their reasonable beneficial use—may be rightfully appropriated.[119] If overlying landowners are using the full safe yield of the basin for reasonable and beneficial use, then no surplus exists, and no water is available for appropriation.[120] The burden of proof is on the appropriator to prove that a surplus exists beyond the needs of those exercising overlying rights.[121] This gives overlying landowners a potentially superior right to water over municipal water providers and other appropriators. The, courts determine priority between appropriators based on the principle of first-in-time-first-in-right.

This two-tiered division is relatively straightforward, but courts have created a third class of rights that can fundamentally realign priorities. An appropriator can establish *prescriptive* water rights by adverse use, namely, pumping in excess of the safe yield. The use must be 1) hostile and adverse, 2)

113. The California Legislature has empowered a number of local agencies to regulate groundwater withdrawals. *See*, *e.g.*, CAL. WATER CODE Appendix §§ 121-102, et seq. (empowering the Fox Canyon Groundwater Management Agency); *id.* §§ 40-1 (empowering the Orange County Water District).

114. Katz v. Walkinshaw, 74 P. 766, 772 (Cal. 1903); City of Barstow v. Mojave Water Agency. 5 P.3d 853, 863 (Cal. 2000).

115. See *infra* Subpart 0.

116. Wright v. Goleta Water Dist., 219 Cal.Rptr. 740, 749–50 (Ct. App. 1985).

117. *Mojave Water*, 5 P.3d at 863; Corona Foothill Lemon Company v. Lillibridge, 66 P.2d 443, 446–47 (Cal. 1937).

118. City of Pasadena v. City of Alhambra, 207 P.2d 17, 28 (Cal. 1949).

119. City of Santa Maria v. Adam, 149 Cal. Rptr. 3d 491, 502 (Ct. App. 2012).

120. *Id.*; City of Los Angeles. v. City of San Fernando, 537 P.2d 1250, 1307 (Cal. 1975).

121. Allen v. California Water and Telephone Co., 176 P.2d 8, 17–18 (Cal. 1946); Tulare Irrigation Dist. v. Lindsay-Strathmore Irrigation Dist., 45 P.2d 972, 991 (Cal. 1935).

actual, 3) open and notorious, 4) continuous and uninterrupted for a period of five years, and 5) under a claim of right.[122] In basins that have been overdrafted for an extended period and include both overlying landowners and appropriators, appropriative pumpers will likely make claims for prescriptive rights. For GSAs in overdrafted basins, navigating those claims will be critical to the legal durability of their GSPs.

In addition to the potential effects of prescription, in an overdrafted basin, the doctrine of subordination may apply to landowners that have not used their overlying rights. These rights are often referred to as dormant overlying rights. As discussed *infra* in Subpart V.D, this doctrine has been applied to landowners holding dormant riparian rights to surface water, which are analogous to overlying rights to groundwater, but has not yet been applied to dormant overlying rights. However, recent legislation, dicta from the California Supreme Court, the reasonable use doctrine, and equitable principles all lend some support for the doctrine's future application to limit the exercise of dormant overlying rights in the context of a comprehensive groundwater basin adjudication.

B. *Prescription and Self-Help in Overdrafted Basins: The Conflict Between Overlying Pumpers and Appropriators*

The initial allocation issues faced by GSAs in overdrafted basins will often be how to allocate water between the two primary classes of pumpers under the water rights system—overlying landowners and appropriators/prescriptors. In many basins, most overlying pumping will be by irrigators, and most appropriative/prescriptive pumping will be by municipal water suppliers. This division, and the relative priorities of these two classes of pumpers, has generated significant conflict in adjudications. In overdrafted basins, the doctrine of prescription can upend the default priority of overlying landowners. This doctrine is complex and highly fact dependent. GSAs cannot resolve directly priority or prescription disputes as SGMA does not empower them to do so. However, GSAs can take steps to minimize the likelihood of a difference between their GSP's allocation method and what a court determines in an adjudication.

As noted above, to establish prescriptive rights, the appropriator's pumping must be adverse and hostile, open and notorious, under a claim of right, and there must be either actual or constructive notice of the overdraft to the overlying water rights holders. Most of these components have been extensively litigated over the years, including before the California Supreme Court.

The adversity element of prescription is satisfied if the groundwater basin is not in surplus and pumping exceeds the basin's safe yield.[123] This is because withdrawals by appropriators exceeding the safe yield invade

122. *Santa Maria*, 149 Cal. Rptr. 3d at 511–12.
123. *Id.*

overlying groundwater rights. The encroachment gives rise to a right of the overlying landowners to seek injunctive relief from the courts to enjoin the extractions of nonsurplus groundwater by the junior priority appropriators.[124] To the extent that the overlying owners had notice of the overdraft conditions and the pumping by the appropriators, but did not act on their right to seek judicial relief, prescriptive rights may develop on behalf of the appropriators extracting groundwater under such overdraft conditions for a period of at least five consecutive years.[125]

In past adjudications, parties—primarily overlying irrigators—have contested prescription by arguing overdraft has not occurred or notice of overdraft was not adequate to trigger prescription. Three cases provide guidance on what satisfies the notice element of prescription: *City of Pasadena v. City of Alhambra* (1949) 33 Cal.2d 908, *San Fernando*, and *Santa Maria*. In *Pasadena*, the notice was established through "[t]he lowering of the water table resulting from the overdraft [which] was plainly observable in the wells of the parties."[126] The court found the overlying water right holders could see that their well levels were dropping, and thus, the evidence was "clearly sufficient to justify charging appellant with notice that there was a deficiency rather than a surplus."[127]

However, overdrafted basins may not have decreases in the well levels of all overlying landowners. *San Fernando* held that notice may also be constructive. The court held that on remand the trial court should hear evidence as to when overlying landowners "should reasonably be deemed to have received notice of the commencement of overdraft in the basin."[128]

Santa Maria provides the clearest statement on the issue of constructive notice. The trial court found:

> [t]he conditions of depleted water levels within the basin, during the drought years, were themselves well known, or should have been known, to all who used water within the basin. In short, the parties hereto and their predecessors in interest were on notice of the wide fluctuation in the water levels in the aquifer by virtue of the fluctuating well levels, the actions of political leaders, the Acts of Congress, and the public notoriety surrounding the need and the construction of [two surface water supply projects].[129]

The appellate court then held that "the long-term, severe water shortage itself was enough to satisfy the element of notice."[130] The court went on to state

124. *San Fernando*, 537 P.2d at 1307 (citing City of Pasadena v. City of Alhambra, 207 P.2d 17 (Cal. 1949)).
125. *Id.*
126. *Pasadena*, 207 P.2d at 31.
127. *Id.*
128. *San Fernando*, 537 P.2d at 1311.
129. *Santa Maria*, 149 Cal. Rptr. 3d at 513–14.
130. *Id.* at 513.

that a local agency formed to build a supplemental water supply project was enough to put overlying landowners on notice. The opinion clarified:

> At the local level, the [Santa Barbara County Water Agency] was formed in 1945 specifically to respond to persistent water shortage problems. This fact is sufficient on its own to support the conclusion that landowners were, by then, on notice that the Basin was in overdraft.[131]

Thus, constructive notice may be imputed basinwide, not landowner by landowner, depending on the facts of the case.

The issue for public water suppliers establishing that their pumping is open and under claim of right has never been litigated. It seems that if they provide evidence that they were pumping water and delivering it to their customers, these elements are satisfied.

All the elements of prescription must occur for five consecutive years following notice of the adversity to the overlying landowners. The prescriptive right is calculated by the amount of "continuous" pumping throughout the prescriptive period. Generally, courts have used the lowest amount pumped annually during that five-year period, because it represents the baseline amount pumped continuously.[132] Prescriptive rights occur by operation of law, and there is no need to contemporaneously file a lawsuit to establish a prescriptive right at the time of the start of the claimed prescriptive period. Prescription can occur many years before a lawsuit is filed.[133] Any continuous five-year adverse use period is sufficient to vest title in the adverse user, even if the period does not immediately precede the filing of a claim and the overdraft ceases for a time after that.[134] In *Santa Maria*, an appellate court rejected the argument that the statute of limitations or the doctrine of laches barred a claim that arose from activities and conditions that occurred over thirty years prior. The court explained that a prescriptive water right perfects upon completion of the five-year period regardless of whether an action is filed or not.[135]

Parties contesting the validity of prescriptive rights have disputed whether overdraft had occurred, its duration, or how openly it had occurred. A more complex issue, however, might be determining the relative priorities of various pumpers once a court finds prescription. A prescriptive groundwater right assumes the priority of the overlying right from which it was acquired. Thus, once vested, a prescriptive right has a priority above existing appropriative rights—pumping by appropriators that has not risen to the level of prescription—in the basin.[136] The extent of priority of a prescriptive right in relation to an overlying right depends on the pumping of the overlying landowners during

131. *Id.* at 514.

132. *Pasadena*, 207 P.2d at 30.

133. *Santa Maria*, 149 Cal. Rptr. 3d at 514.

134. *See id.*; *Pasadena*, 207 P.2d at 31–33.

135. *Santa Maria*, 149 Cal. Rptr. 3d at 514.

136. *Id.* at 516; *see also* City of Los Angeles v. City of San Fernando, 537 P.2d 1250, 1318 (Cal. 1975).

the prescriptive period, pumping which the courts have deemed "self-help" pumping. The "self-help" doctrine allows the overlying landowners who fail to bring an action during the prescriptive period to retain a portion of their overlying rights against potential prescription by virtue of their pumping.[137]

In order to establish self-help protection against prescription, the overlying landowner must pump groundwater at the same time as the appropriative pumping that perfected prescriptive rights. If overlying landowners exercise self-help pumping, they protect at least some of their rights against prescription.[138] In *Santa Maria*, the overlying landowners failed to prove any self-help pumping during the prescriptive period, and therefore, the court held that their overlying rights were junior to the perfected prescriptive right.[139] Part VII below discusses the basis of calculating prescriptive rights and self-help overlying rights.

C. *Conflicts Among Overlying Landowners: The Law of Correlative Rights*

After the GSAs have determined the sustainable yield, allocated any developed water to those responsible for it, and carved out yield available to prescriptive pumpers, they will need to divide the remainder among the overlying landowners. In comparison to the doctrines of prescription and self-help, discussed *supra*, the legal principles applicable to divisions among overlying landowners is less developed. The law of correlative rights guides this analysis, and the central tenet is dividing the supply among landowners in a reasonable and equitable manner. The case law illustrates that apportionment must follow a fact-specific inquiry and the courts may look to an extensive list of possible considerations oriented toward reasonableness and fairness.

In *Prather v. Hoberg*, 150 P.2d 405 (Cal. 1944), the court explained that there is no legally mandated mathematical formula for dividing water among correlative rights holders, and that "[t]he apportionment should be measured in the 'manner best calculated to a reasonable result,' and the court may adopt any standard of measurement 'that is reasonable on the facts to secure equality.'"[140] In *Tehachapi-Cummings County Water District v. Armstrong*, the appellate court described that in the context of allocating limited groundwater supplies among overlying landowners:

> the amount of water available, the extent of ownership in the basin, the nature of the projected use—if for agriculture, the area sought to be irrigated, the character of the soil, the practicability of irrigation, i.e., the expense thereof, the comparative profit of the different crops which could

137. *See Santa Maria*, 149 Cal. Rptr. 3d at 503; *see also* City of Barstow v. Mojave Water Agency, 5 P.3d 853, 863 (Cal. 2000); *San Fernando*, 537 P.2d at 101; Hi-Desert Cty. Water Dist. v. Blue Skies Country Club, 28 Cal. Rptr. 2d 909, 915 (Ct. App. 1994).

138. *Santa Maria*, 149 Cal. Rptr. 3d at 502.

139. *Id.* at 518–19; *see also Pasadena*, 207 P.2d at 31–33.

140. Prather v. Hoberg, 150 P.2d 405, 411 (Cal. 1944) (citing 1 SAMUEL C. WIEL, WATER RIGHTS IN THE WESTERN STATES § 751, 820 (3d ed. 1911)).

> be made of the water on the land—all these and many other considerations must enter into the solution of the problem.[141]

Although there is little case law addressing allocations among competing overlying landowners, the treatment of riparian rights in the surface water context is analogous and instructive. The courts have considered a myriad of practical and equitable factors in dividing available water supplies among riparians,[142] including, the purpose of use (e.g., domestic v. industrial);[143] the area of irrigable land and the ability to irrigate the land;[144] the economic feasibility of irrigation and the comparative profit of use;[145] and the extent of installed irrigation infrastructure and actual use of the irrigated water.[146]

We note that most of the past cases dealing with allocations among landowners with correlative rights (i.e, riparian or overlying rights) have involved a small set of landowners. It is not clear how a court would practically apply the diverse considerations articulated in these past decisions to divide groundwater within a large groundwater basin involving hundreds of irrigating landowners and potentially even more landowners not using groundwater. The two simplest factors for the court to assess would be the irrigable acreage of each

141. Tehachapi-Cummings Cty. Water Dist. V. Armstrong, 122 Cal. Rptr. 918, 925 (Ct. App. 1975).

142. *See* SCOTT S. SLATER, 1 CALIFORNIA WATER LAW & POLICY, § 9.01 (2020) (ebook) (citing *Prather*, 150 P.2d at 410–11; Rancho Santa Margarita v. Vail, 81 P.2d 533, 550 (Cal. 1938); WELLS A. HUTCHINS, THE CALIFORNIA LAW OF WATER RIGHTS 224 (1956); HAROLD E. ROGERS & ALAN H. NICHOLS, WATER FOR CALIFORNIA § 177 at 242 (1967)). Although it has not been adopted by California courts, the Restatement approach could be instructive because it explains that "determining the reasonableness of a use of water [for an allocation of water among riparians] depends upon a consideration of the interests of the riparian proprietor making the use of any riparian proprietor harmed by it and of society as a whole." RESTATEMENT (SECOND) OF TORTS § 850 (AM. LAW INST., 1979). It lists the following factors as affecting the determination: (1) the purpose of the use; (2) the suitability of the use to the water; (3) the economic value of the use; (4) the social value of the use; (5) the extent and the amount of the harm it causes; (6) the practicality of avoiding the harm by adjusting the use or method of one proprietor or the other; (7) the practicality of adjusting the quantity of the water used by each proprietor; (8) the protection of existing values; and (9) the justice of requiring the user causing the harm to bear the loss. *Id.*

143. *See*, *e.g.*, *Prather*, 150 P.2d at 412 ("Without question the authorities approve the use of water for domestic purposes as first entitled to preference. That use includes consumption for the sustenance of human beings, for household conveniences, and for the care of livestock."); Deetz v. Carter, 3 Cal. Rptr. 321, 323–24 (Ct. App. 1965).

144. *See*, *e.g.*, *Vail*, P.2d at 550; S. Cal. Inv. Co. v. Wilshire, 77 P. 767, 768 (Cal. 1904) ("One may have a tract of land of such character that but little use could be made of the water upon it, while the land of the other may all be so situated that it could be irrigated with profit and advantage."); Wiggins v. Muscupiabe Land & Water Co., 45 P. 160, 164 (Cal. 1896); Harris v. Harrison, 29 P. 325, 327 (Cal. 1892).

145. *See*, *e.g.*, Half Moon Bay Land Co. v. Cowell, 160 P. 675, 678 (Cal. 1916) ("We are satisfied that the court may also consider the practicability of irrigation of the lands of the respective parties, the expense thereof, the comparative profit of the different uses. . . . ").

146. *See*, *e.g.*, Williams v. Rankin, 54 Cal. Rptr. 184, 194 (Ct. App. 1966).

parcel and the historical pumping of each water user. However, exclusive reliance on either factor would not necessarily comport with the reasonable use and equitable factors that precedence demands decisionmakers consider in allocating limited water supplies among holders of correlative right (e.g., riparian or overlying rights). Consideration of historical groundwater irrigation may serve as a partial proxy for the practicality and profitability of irrigation, the historical reliance on groundwater, and the investment in the infrastructure needed to pump it. Nevertheless, under the case law, a court would certainly have the power to examine additional aspects of reasonableness and equity. A court might also consider historical irrigation with surface water, which shows the similar practicality and profitability of irrigation. Awarding partial allocation based on historical surface water use also recognizes an equitable claim: those that have limited their groundwater use based on use of and investment in surface water deserve some allocation.[147] Users of surface water have limited demand upon the basin to those times when surface water is unavailable, and thus, should not be precluded from groundwater access based on their surface water investments.

D. *Unexercised (Dormant) Overlying Rights*

Another issue that GSAs will face is whether, and if so, how, to allocate water to overlying landowners that have never pumped or did not pump during a prescriptive period (dormant overlying landowners). In a nonoverdrafted basin, under the common law, every landowner has similar correlative rights to a portion of the safe yield, regardless of whether they pumped in the past. In an overdrafted basin, however, the dormant overlying rights may be lost or significantly restrained through the doctrines of prescription or subordination. The basic legal theory with regard to these rights is straightforward. In an overdrafted basin, as discussed above, appropriative pumpers can acquire prescriptive rights. Overlying owners maintain some portion of their overlying rights through self-help pumping.[148] Overlying owners that do not pump risk losing their rights, or at least having them become subordinate to those who did engage in prescriptive and self-help pumping.

Dormant overlying rights create policy and management challenges as well. If landowners that have not pumped groundwater recently have a right associated with their land to pump groundwater at some future point, then

147. CAL. WATER CODE §§ 1005.1–1005.4 (2020) might also be cited as a basis of statutory protection against loss of groundwater rights due to a user's decreased reliance on a groundwater basin in favor of reliance on an alternative, nontributary supply. Under sections 1005.1, 1005.2, and 1005.4, a nontributary source includes water imported from another watershed, or water conserved and saved in the watershed by a water conservation plan. *Id.* Cessation of use filings could be relied upon to support groundwater allocation claims both in the development of a GSP under SGMA and in any future groundwater basin adjudication.

148. See Subpart V.B, *supra*.

those dormant rights would create a series of problematic uncertainties. Those uncertainties include when these dormant landowners might start pumping, how much they might pump, and (in an overdrafted basin) who will have to cut back their pumping and by how much to make the needed water available. In addition to causing headaches for water managers, this uncertainty may conflict with the requirement of reasonable use under the Article X, section 2 of the California Constitution, to the extent that it makes it more difficult to comport with the requirement for maximizing the beneficial use of the resource.[149]

These dormant rights also raise fairness questions: Why should all of the pumpers who have relied on and invested in groundwater pumping be subject to the future needs of landowners who have never done so? In other contexts, courts have recognized the need to protect reasonable investment-backed expectations. On the other hand, dormant users could question why their rights should be extinguished, diminished, or put at the back of the line, while those in an overdrafted basin that have overused the resource should be rewarded.

Courts have not provided a final answer to the water rights question of impact of prescription on dormant overlying landowners if the basin is in overdraft. The holding in *Santa Maria* suggested that courts have the authority to limit the rights of overlying landowners, but did not define the extent of that authority:

> [W]hen it is alleged that the water supply is insufficient to satisfy all users the court must determine the quantity needed by those with overlying rights . . . . And it stands to reason that when there is a shortage, the court must determine how much each of the overlying owners is using in order to fairly allocate the available supply among them.[150]

In *City of Barstow v. Mojave Water Agency*, the Court stated that courts may limit correlative overlying rights in an overdrafted basin and also that:

> If Californians expect to harmonize water shortages with a fair allocation of future use, courts should have some discretion to limit the future groundwater use of an overlying owner who has exercised the water right and to reduce to a reasonable level the amount the overlying user takes from an overdrafted basin.[151]

Again, the court did not set out the full scope of this discretion.

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149. *See In re* Waters of Long Valley Creek Stream Sys., 599 P.2d 656, 666 (Cal. 1979) ("[W]ith respect to dormant riparian rights, one authority has observed: 'These rights constitute the main threat to nonriparian and out-of-watershed development, they are the principal cause of insecurity of existing riparian uses, and their presence adds greatly to the cost of obtaining firm water rights under a riparian system. They are unrecorded, their quantity is unknown, their administration in the courts provides very little opportunity for control in the public interest. To the extent that they may deter others from using the water for fear of their ultimate exercise, they are wasteful, in the sense of costing the economy the benefits lost from the deterred uses.') (citing Frank J. Trelease, *A Model State Water Code for River Basin Development* 22 Law & Contemp. Problems 301, 318 (1957)).

150. City of Santa Maria v. Adam, 149 Cal. Rptr. 3d 491, 518 (Ct. App. 2012).

151. 5 P.3d 853, 870 (Cal. 2000); *Id.* at 868 n. 13.

There is a strong argument that courts have the power to restrict dormant overlying rights. In an overdrafted basin, this conclusion seems consistent with, if not required by, the conceptual framework of prescription and self-help. In the face of prescription, it is clear that overlying landowners retain a portion of their rights by self-help pumping.[152] In *Santa Maria*, the Court of Appeal reaffirmed this principle:

> Overlying landowners who fail to seek an injunction preventing an adverse use may nevertheless protect their interests by means of self-help. Self-help in this context requires the landowner to continue to pump nonsurplus water concurrently with the adverse users. When they do, the landowners retain their overlying rights, losing only the amount of the prescriptive taking.[153]

According to the California Supreme Court's opinion in *Pasadena*, if an overlying owner fails to pump, the prescriptive rights have a higher priority:

> If the original owners of water rights had been ousted completely or had failed to pump for a five-year period, then there would have been no interference whatsoever on the part of the owners with the use by the wrongdoers, and the wrongdoers would have perfected prior prescriptive rights to the full amount which they pumped.[154]

The implication of this is that correlative rights of a parcel that has never pumped groundwater during the prescriptive period would be subordinate to prescriptive rights. If the basin remains in overdraft, that position of inferiority would effectively make it impossible to exercise that right.

The doctrine of "subordination" potentially provides a separate basis for limiting pumping allocations to dormant overlying rights. This doctrine arises from California Supreme Court precedent limiting unexercised *riparian* rights to surface water, which are analogous to overlying rights.[155] The Court decided, in *In re Waters of Long Valley Creek Stream System*, that the priority of dormant riparian rights could be subordinated to the rights of presently exercised riparian and appropriate rights in that case.[156] In reaching its holding, the Court relied heavily on Article X, section 2 of the California Constitution, which requires that all water rights must be put to reasonable and beneficial

152. *See id.* at 863.

153. *Santa Maria*, 149 Cal. Rptr. 3d at 502 (citing Hi-Desert County Water Dist. v. Blue Skies Country Club, 28 Cal. Rptr. 2d 909, 915 (Ct. App. 1994); City of Los Angeles v. City of San Fernando, 537 P.2d 1250, 1318 (Cal. 1975); City of Pasadena v. City of Alhambra, 207 P.2d 17, 35 (Cal. 1949)).

154. *Pasadena*, 207 P.2d at 32.

155. *See Mojave Water*, 5 P.3d at 863–64.

156. *In re* Waters of Long Valley Creek Sys., 599 P.2d 656 (Cal. 1979); *see also In re* Water of Hallet Creek Stream Sys., 740 P.2d 324, 336–37 (Cal. 1988) (the State Water Resources Control Board has the authority to subordinate and unexercised riparian right held by the federal government); Jordan v. City of Santa Barbara, 54 Cal. Rptr. 2d 340, 353 (Ct. App. 1996) ("Even riparian rights can be regulated and future unexercised riparian rights may be subject to lower priority over prior authorized appropriative rights.").

uses. The Court noted the effects of uncertainty stemming from unexercised riparian rights in support of its holding:[157]

> As previously discussed, when the [State Water Resources Control] Board determines all rights to the use of the water in a stream system, an important interest of the state is the promotion of clarity and certainty in the definition of those rights; such clarity and certainty foster more beneficial and efficient uses of state waters as called for by the mandate of article X, section 2. Thus, the Board is authorized to decide that an unexercised riparian claim loses its priority with respect to all rights currently being exercised. Moreover, to the extent that an unexercised riparian right may also create uncertainty with respect to permits of appropriation that the Board may grant after the statutory adjudication procedure is final, and may thereby continue to conflict with the public interest in reasonable and beneficial use of state waters, the Board may also determine that the future riparian right shall have a lower priority than any uses of water it authorizes before the riparian in fact attempts to exercise his right . . . . In other words, while we interpret the Water Code as not authorizing the Board to extinguish altogether a future riparian right, the Board may make determinations as to the scope, nature and priority of the right that it deems reasonably necessary to the promotion of the state's interest in fostering the most reasonable and beneficial use of its scarce water resources.[158]

A court could apply this rationale in subordinating an unexercised overlying groundwater right in an overdrafted basin to existing water uses. In other words, a court might find that allowing dormant overlying rights to be exercised in an already overdrafted basin would violate the reasonableness standards that inherently restrict all water rights and would contravene the equitable principles that pertain to divisions of limited water supplies among correlative overlying rights.

At least one case in California has declined to apply the holding from *In re Waters of Long Valley Stream System* to unexercised overlying groundwater rights. In *Wright v. Goleta Water District*, decided in 1986, the Court of declined to subordinate users that had never pumped.[159] The court's rationale was that not all potential water users were party to the case.[160] This reasoning will not apply to future adjudications, which are now deemed *in rem* and

157. The reference to the Board's authority "to determine rights to . . . water of a stream system" in *In re Waters of Long Valley Creek Stream System* is present due to the fact that the case was a statutory stream adjudication by the State Water Resources Control Board. 599 P.2d at 661. In such a surface water adjudication, courts and the State Water Resources Control Board have concurrent jurisdiction over water rights. *Id.* (interpreting CAL. WATER CODE § 2501).

158. *Id*. at 668–69. Note that the court authorizes subordination of an unexercised right to all existing uses of water at the time of the adjudication, although not its extinguishment. *Id*. Subordination of an unexercised correlative right to all existing groundwater uses in an overdrafted basin is, however, a severe limitation of that right.

159. Wright v. Goleta Water Dist., 219 Cal.Rptr. 740, 749–50 (Ct. App. 1985).

160. *Id.* at 749.

comprehensive pursuant to the recent adjudication reform legislation.[161] That legislation also expressly states a court adjudicating a basin "may consider applying the principles established in *In re Waters of Long Valley Stream System*."[162] For GSAs in overdrafted basins, the legislation, while not definitive, adds support for limiting the pumping of dormant overlying rights holders. However, a landowner could raise various equitable claims to counter limitations based on nonuse of groundwater such as reliance on surface water, comparative crop duties, transitions in cropping that temporarily limited water use, and other similar arguments.

The best position for GSAs to take may be that the case law, the adjudication reform legislation, and, above all, Article X, section 2 of the California Constitution, give them the flexibility to deal with dormant users in the most reasonable manner for productive and equitable water management in their basin. GSAs should remain mindful of the competing arguments between the basis for limiting dormant overlying rights, and the correlative nature of, and equitable principles inherent within, overlying rights. GSAs might consider approaches to balance these claims and considerations. For instance, a GSA may choose to allocate some water to dormant overlying owners, by establishing a modest "set-aside pool" which dormant overlying landowners could apply to use. GSAs could also create such a pool from which those in need of water but without adequate allocations could purchase water. Finally, the GSA may further add flexibility of water use by authorizing transfers of allocations between lower and higher value uses. Any of these options may or may not meet the constitutional requirements of reasonableness depending on the circumstances in a particular basin. We further discuss allocation considerations respective of overlying landowners in Parts VI–VII *infra*.

E. *California Water Code Sections 106, 106.3, 106.5*

As an added complexity, prescription is not necessarily the final word in resolving allocations between overlying landowners and municipal water providers. Section 106, 106.3, and 106.5 of the Water Code, however, may allow for some allocation to municipal water suppliers in overdrafted basins even without establishing prescription.

Section 106 of the California Water Code provides: "It is hereby declared to be the established policy of this State that the use of water for domestic purposes is the highest use of water and that the next highest use is for irrigation." Courts have not decided the extent to which this protects public water supply agencies' ability to pump groundwater, and in particular, whether the statute gives such agencies any priority over overlying pumpers. One court held that allowing overlying landowners to produce all the water they need for reasonable and beneficial uses before a public water supply agency can pump would

161. Cal. Code Civ. Proc. §§ 830-52 (2020).
162. Cal. Code Civ. Proc. § 830(b)(7) (2020).

lead to an "especially harsh result from the perspective of these preferred water users" and that the court would be compelled to reject that result.[163]

Water Code section 106.5 provides:

> It is hereby declared to be the established policy of this State that the right of a municipality to acquire and hold rights to the use of water should be protected to the fullest extent necessary for existing and future uses, but that no municipality shall acquire or hold any right to waste water, or to use water for other than municipal purposes, or to prevent the appropriation and application of water in excess of its reasonable and existing needs to useful purposes by others subject to the rights of the municipality to apply such water to municipal uses as and when necessity therefore exists.

Water Code section 106.3 (a) states that: "[i]t is hereby declared to be the established policy of the state that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes."[164] A court has never interpreted the meaning of this section, but it will undoubtedly become an issue as SGMA is implemented and pumping is limited. Notably, Water Code section 106.3 applies to all state agencies, including DWR, " . . . when revising, adopting, or establishing policies, regulations, and grant criteria when those policies, regulations, and criteria are pertinent to the uses of water described in this section."[165] Although this issue has not been raised in DWR's review of GSPs, it is possible that section 106.3 applies to the Department's review of GSPs, and any GSP which fails to protect drinking water uses could be found in violation of the statute.

Additionally, the extent of the meaning of "domestic" use in sections 106 and 106.5 is unclear, and the statute fails to specify what water uses the term encompasses. Section 106.3 does not use the term "domestic" at all. This omission is significant. The rationale for affording particular protections to human consumptive needs is fairly apparent, but whether that protection extends to domestic uses such as outdoor watering not needed to prevent health hazards is less clear.

In contrast to these provisions, over a century of case law states that an overlying right has priority over an appropriative right. No court has yet confronted a situation where a public water supplier cannot prove a prescriptive right and is at risk of having its pumping substantially reduced. Further, in many instances, the concern is not whether the public water supplier can access water, but rather, the expense of doing so. The statutes may be satisfied if

163. City of Santa Maria v. Adam, 149 Cal. Rptr. 3d 491, 517 (Ct. App. 2012).

164. Cal. Water Code § 106.3 (2020).

165. *Id.*; *See also Groundwater Management and Safe Drinking Water in the San Joaquin Valley: Analysis of Critically Over-drafted Basins' Groundwater Sustainability Plans*, Water Foundation, June 2020, 7, https://waterfdn.org/wp-content/uploads/2020/06/Groundwater-Management-and-Safe-Drinking-Water-in-the-San-Joaquin-Valley-Brief-6-2020.pdf [https://perma.cc/M856-MX3S] (looking at how implementation of some of the first GSPs in critically overdrafted sub basins in the San Joaquin Valley would affect domestic uses, such as local drinking water wells).

municipalities have the option of purchasing allowances from overlying pumpers, although the reasonableness doctrine and equitable considerations will be issues. The legal doctrine of "intervening public use," for example, allows a public water supplier to effectively convert an injunctive relief action into a condemnation action and compensate a senior overlying user for the loss of some or all of their right in lieu of injunctive relief.[166]

F. *The Role of Reasonable Use and Equity in Allocating Groundwater*

Two final complexities in groundwater rights law provide flexibility but also uncertainty. First, the overriding limitation on all water rights in California is, as required by Article X, section 2 of the California Constitution, that they must be exercised reasonably and put to a beneficial use. Thus, an overarching limitation on the extent of a water right is reasonableness. Second, a determination of water rights by a court is always tempered to some degree by equity. The California Supreme Court has explained this: stating "the trial court is sitting as a court of equity, and as such, possesses broad powers to see that justice is done in the case . . . Each case must turn on its own facts, and the power of the court extends to working out a fair and just solution, if one can be worked out, of those facts."[167]

Relying on this equitable power, the California courts have the power to impose a physical solution as an alternative to an injunction enforcing water right priorities provided that the equitable physical solution does not impose material expense on senior priority water rights holders.[168] Courts use equitable powers to impose some degree of fairness and have not clearly defined those powers. For instance, consider the sequence of California Supreme Court opinions on groundwater law from *Pasadena* to *San Fernando* to *Mojave*.[169] In *Pasadena*, the court allocated groundwater among overlying landowners and appropriators proportionally based on historical pumping during a prior base period. This doctrine came to be known as "mutual prescription."[170] In *San Fernando*, the court cast doubt on mutual prescription as a form of equitable allocation, explaining that "[t]he allocation of water in accordance with prescriptive rights mechanically based on the amounts beneficially used by each party for a continuous five-year period . . . does not necessarily result in the most equitable apportionment of water according to need. A true equitable apportionment would take into account many more factors."[171] The Court also

166. Peabody v. City of Vallejo, 40 P.2d 486, 496 (Cal. 1935).

167. Rancho Santa Margarita v. Vail, 81 P.2d 533, 563 (Cal. 1938).

168. *Mojave Water*, 5 P.2d at 869 (citing City of Lodi v. East Bay Municipal Utility District, 60 P.2d 439 (Cal. 1936)).

169. For a lengthier discussion of the progression of these cases, see Szeptycki, et al., *supra* 16, at 191–211.

170. City of Pasadena v. City of Alhambra, 207 P.2d 17, 32 (Cal. 1949).

171. City of Los Angeles v. City of San Fernando, 537 P.2d 1250, 1298 (Cal. 1975); *see also* City of Barstow v. Mojave Water Agency, 5 P.3d 853, 866 (Cal. 2000).

included a footnote discussing equitable apportionment of water by the United States Supreme Court in state versus state water disputes, and the balancing of legal and equitable considerations that inform such apportionments.[172]

Twenty-five years later in *Mojave*, the court considered a stipulated judgment whereby the stipulating parties agreed to proportionately allocate groundwater production rights among the users based primarily on principles of equity and without consideration of common law water right priorities.[173] The stipulating parties asked the court to impose the stipulated judgment on all parties, including a group of landowners who objected to the stipulation on the grounds that they possessed senior overlying rights. Additionally, the stipulating parties argued that the proportional allocation was legally justified on equitable factors, citing to the footnote from *San Fernando* discussed above.[174] The trial court ruled in their favor.[175] On review, the Court of Appeals disagreed and sided with the objecting landowners.[176] The California Supreme Court affirmed the Court of Appeals decision, holding that while the trial court has the power to order a physical solution, "an equitable physical solution must honor water right priorities to the extent those priorities do not lead to unreasonable use."[177] The Court declined to follow either the proportional allocation followed by *Pasadena* or the equitable principles outlined in footnote 61 of *San Fernando* and in doing so made clear that "[c]ase law simply does not support applying an equitable apportionment to water use claims unless all claimants have correlative rights; for example, when parties establish mutual prescription. Otherwise, cases like *San Fernando* require courts making water allocations to adequately consider and reflect the priority of water rights in the basin."[178]

The *Mojave* opinion did not provide much detail regarding what it means to "honor" or "adequately" consider priorities. In the case before it, the Court found that the trial court had "simply ignored" water right priorities, and held that this violated the plaintiffs' water rights.[179] The Court left the door open for the application of equitable principles provided that the court's pumping allo-

172. *San Fernando*, 537 P.2d at 1298 n.61.

173. *Mojave Water*, 5 P.3d at 870–71.

174. *See id*. at 866 (showing how the parties also argued that potentially senior overlying landowners had been given some preferential consideration in certain aspects of the allocation scheme, but these where relatively minor compared to actual seniority, such as choosing relatively high periods of water use to set their baseline allocation); *see also* Szeptycki et al., *supra* 16, at 207.

175. *Mojave Water*, 5 P.2d at 859–62 (discussing trial court proceedings).

176. *Id.*

177. *Id.* at 864; *see also* Hi-Desert Cty Water Dist. v. Blue Skies Country Club, Inc., 28 Cal. Rptr. 2d 909, 919 (Ct. App. 1994) ("[W]e are mindful of the constitutional mandate to protect the parties' rights in a manner that minimizes waste while maximizing beneficial use of the water in controversy. . . . ").

178. *Mojave Water*, 5. P.3d at 853 (citing *San Fernando*, 537 P.2d at 1318 n.100).

179. *Id.* at 868.

cation "adequately consider[s] and reflect[s] the priority of water rights in the basin."[180] It did not overrule the outcomes of *Pasadena* and *San Fernando* but rather pointed to them as illustrating that equity also plays a role in allocation decisions so long as water right priorities are not disregarded.[181]

From the perspective of a GSA, it is difficult to discern the collective meaning of these three decisions. It is likely that future court decisions will further develop the relationship between reasonableness, equitable flexibility and water rights. The only clear mandate is that the starting point for any allocation has to be some assessment of, and adherence to, the relative water right priorities. Exactly what this means and the degree of flexibility to use other principles to allocate water is less clear.

All stakeholders should remain mindful that the overarching principle of California water law is the California Constitution's mandate that all water be put to reasonable and beneficial use. Due in part to this mandate, two principles emerged from the case law. First, a senior water rights priority cannot justify an unreasonable use of water. Thus, for example, courts have upheld curtailments of stream withdrawals for frost protection by landowners whose collective withdrawals impose a significant adverse impact on instream habitat.[182] Second, as a manifestation of the reasonable and beneficial use doctrine, courts are duty-bound to consider competing beneficial uses of water when developing a physical solution, if feasible, while protecting senior priority water rights.[183]

In sum, the doctrine of reasonable use and equitable considerations provides some flexibility with any physical solution adopted through adjudication in allocating water between water rights holders of different classes. The only constraints on the flexibility are that allocation schemes must adequately consider and reflect the priority of senior water rights holders and cannot force senior holders to bear a material and an unreasonable expense to make groundwater available to lower priority users.[184] However, the degree of flex-

180. *Id.* (citing *San Fernando*, 537 P.2d at 1318 n.100).

181. *Id.*

182. *See* People *ex rel.* State Water Res. Control Bd. v. Forni, 126 Cal. Rptr. 851 (Ct. App. 1976); *see also* Light v. State Water Res. Control Bd., 173 Cal. Rptr. 3d 200, 217–18 (2014). Both of these cases held that withdrawal of water for vineyard frost protection was unreasonable but noted that "what is reasonable use or reasonable method of use of water is a question of fact to be determined according to the circumstances in each particular case." *Forni*, 126 Cal. Rptr at 855. Application of the reasonable use doctrine as a basis for limiting water use by senior water rights holders is discussed in greater detail by Professor Brian Gray in Chapter 4 of Sustainable Water: Challenges and Solutions from California. Brian E. Gray, *The Reasonable Use Doctrine in California Water Law and Policy*, in Sustainable Water: Challenges and Solutions from California 83–107 (Allison Lassiter, 2015).

183. *Mojave Water*, 5 P.3d at 869 (citing Peabody v. City of Vallejo, 40 P.2d 486, 498–99 (Cal. 1935) and City of Lodi v. East Bay Mun. Util. Dist. 60 P.2d 439, 450 (Cal. 1936)).

184. The California Supreme Court in Mojave explained:

> We agree that, within limits, a trial court may use its equitable powers to implement a physical solution. (*citing Peabody*, 40 P.2d 486 [court has power to make

ibility and the different ways of making that flexibility consistent with water rights is an issue that needs further development by the courts and will vary with the circumstances of a particular basin.

VI. Potential Means of Allocation and Legal Risks

When allocating water, GSAs must make two fundamental decisions. The first is how to allocate water between the two primary classes of water rights holders: overlying landowners and appropriators. These two primary classes are often irrigators and municipal water suppliers. The second is how to allocate water between members of the same class. In many overdrafted basins, the most challenging decision GSAs will face is how to allocate water between large numbers of overlying irrigators. Embedded in both decisions is the problem of how to allocate the burden of reducing pumping.

A. *Division Between Overlying Landowners and Appropriators/Prescriptors*

The division of water between overlying landowners and appropriators is at the heart of many legal and political risks for GSAs. Landowners are likely to claim their right to pump groundwater is bundled with their property rights, and they will resist any diminishment of that right by contesting any allocation to appropriators. Municipal water suppliers must satisfy a fixed, and potentially growing, demand for water. Subordinating their pumping to the rights of overlying landowners would eliminate or limit their ability to provide water. This may force them to raise water rates to either fund acquisition of new supplies, if available, or to purchase or condemn groundwater rights from overlying landowners. To protect their interests, such suppliers are, in an adjudication, likely to assert both prescriptive rights and any rights they might have as a public water provider under the water code. This is the dynamic that has driven most adjudications.

> reasonable regulations for water use, provided they protect the one enjoying paramount rights]). In City of Lodi v. East Bay Mun. Utility Dist. (1936) 7 Cal. 2d 316, 341, 60 P.2d 439, this court recognized a trial court's power to enforce an equitable solution even if all parties do not agree to it, but cautioned against unreasonably burdening any party. The court observed that a physical solution is generally a practical remedy that does not affect vested rights. "Under such circumstances the 1928 constitutional amendment, as applied by this court in the cases cited, compels the trial court, before issuing a decree entailing such waste of water, to ascertain whether there exists a physical solution of the problem presented that will avoid the waste, and that will at the same time not unreasonably and adversely affect the prior appropriator's vested property right. In attempting to work out such a solution the policy which is now part of the fundamental law of the state must be adhered to." (citation omitted.) In other words, "a prior appropriator . . . cannot be compelled to incur any material expense in order to accommodate the subsequent appropriator." (citation omitted.).
>
> *Mojave Water*, 5 P.3d at 868.

Although the permutations of prescription can be baffling and have, in some cases, spawned decades of litigation, the core principle is that landowners may lose overlying rights to appropriators if the overlying landowners do not take legal action to constrain appropriations of nonsurplus groundwater during overdraft conditions that continue for at least five years. Prescription and self-help mean the overlying pumpers and prescriptive appropriators get a proportional share of the safe yield based on their relative pumping during the prescriptive period. There are numerous complications, such as what levels of prescriptive-pumping was continuous, whether the five-year requirement has been met, and, as discussed in V.D, the status of dormant overlying landowners. However, in a basin that has experienced pronounced and protracted overdraft, where appropriators are likely to establish prescriptive rights, an initial baseline allocation between overlying landowners and appropriators is a starting point consistent with the common law. Considerations for calculating prescriptive rights and overlying rights protected by self-help are set forth in Part VII.

Potential arguments parties could make in contesting allocations could be that the terms of prescription were not met, that the GSA chose the wrong period of pumping to make the initial allocation of pumping rights, or that the GSA used the wrong baseline pumping levels for one group or another. If these claims come up in the GSP process, the GSA can evaluate them and make adjustments accordingly. GSAs will need to work with stakeholders to choose the right baseline period and pumping levels and to justify its choices.

Although a baseline allocation between overlying landowners and appropriators is the starting point for this approach, GSAs will also have to decide how to ramp-down pumping in an overdrafted basin and whether to have both groups ramp-down at the same rate. In some cases, it may be more costly for one group to ramp-down, or one set of water users may have more ready and economical access to alternative sources of water. In an adjudication, the court would have equitable authority to order a physical solution if uniform ramp-down rates would have disproportionate and unfair effects, or if they would result in an unreasonable use of water, provided that the physical solution respects water right priorities.

A GSA should be able to adjust ramp-down rates based on these principles as well. In doing so, it will need to do two things to maximize the chances of their GSPs surviving litigation. First, the GSA will need to start with the basic allocation based on historic pumping levels that approximates prescription and self-help. Second, if its proposed ramp-down rates place greater burdens on one class of pumpers than another, it will have to make findings as to why such an adjustment is consistent with the law. Proceeding with an initial division among overlying landowners and appropriators in such a manner, consistent with water right priorities, will help to immunize the GSP against legal challenge.

B. *Division Among Users of the Same Class*

Dividing available groundwater between the two major classes of pumpers is only the starting point. In most instances, GSAs will also have to allocate available groundwater among pumpers of the same class. In some situations, there may be a small number of water users in an individual class. Some basins may only have one or two appropriators, typically municipal providers.[185] In most larger basins, however, there may be several appropriators and numerous overlying landowners. Allocations of water among individual pumpers in these basins will be challenging and will present legal risks.

Dividing among overlying owners presents a greater challenge.[186] They are both more numerous and more diverse. Many basins are also home to irrigators growing a wide range of crops. In addition, some irrigators have only relied on groundwater during periods when surface water is in short supply.

As GSAs have begun allocation discussions, at least four principals have emerged for dividing groundwater among overlying landowners: gross acreage of land; net irrigated acreage of land (whether irrigated by groundwater or surface water); historic or current pumping levels; and some hybrid of these approaches with considerations for evaluating other broad economic or equitable principles. Below, we analyze these strategies for allocating groundwater.[187] Importantly, each of these approaches has legal vulnerabilities and GSAs should consider how the common law applies to each of these approaches.

C. *Gross Acreage*

The simplest approach a GSA can take is to allocate water available to overlying pumpers based on the gross acreage held by each overlying landowner. This approach has some rough consistency with the underlying rationale of the correlative rights system; it acknowledges a water right for every landowner and treats each parcel equally.

Nonetheless, this approach may not be consistent with California case law regarding water rights. First, in an overdrafted basin where water is divided between appropriators and overlying landowners, the gross acreage approach risks contravening rules regarding prescription and self-help, at least with respect to the portion of the yield affected by the prescription doctrine. Both of these doctrines rely on pumping levels and assign some level of priority based on pumping during a prescriptive period. Second, if subordination of dormant overlying rights is a likely litigated outcome, the gross acreage approach would grant allocation to dormant landowners that would not receive present pumping rights under a basin adjudication. Third, such

185. Szeptycki et al., *supra* note 16, at 212–13.

186. Indeed, relatively few past adjudications have involved allocations among numerous overlying landowners with a diverse range of crops and other overlying users.

187. For a thorough discussion of modes of allocation from a groundwater sustainability perspective, see GROUNDWATER PUMPING ALLOCATIONS, *supra* note 15.

an allocation would not necessarily be equitable, in that it would allocate the same amount of water to irrigators that have historically relied on groundwater and made investments in pumping it and to those that have not. Fourth, the allocation may be inconsistent with the fundamental goals of reasonable and beneficial use. Some land in a basin may be of poor quality for irrigation and assigning an equal share to such land would not promote beneficial use.

D. *Net Irrigated Acreage Approach*

Rather than allocating water based on gross acreage owned, a GSA might consider allocations based on the number of irrigated acres owned by each pumper in the basin, whether irrigated by groundwater or surface water. This approach is consistent with a key aspect of the correlative rights system as it is based on the amount of land, but it is more equitable than the gross acreage approach because it accounts for investments in, and reliance on, pumping and irrigation infrastructure. It also recognizes that surface water users may have an equitable claim. In essence, they need groundwater from time to time and should not have their groundwater pumping rights penalized based on their investment in, and reliance on, surface water.

An additional appeal of this method is its consistency with the goals of reasonable and beneficial use. Historical irrigation may well be the best evidence of the value of water use on land. In addition, allocating the same amount of groundwater for each irrigated acre avoids one of the pitfalls of allocating water based on historical pumping: awarding those who have historically overpumped, overirrigated, or otherwise failed to use water as efficiently as possible. If the per acre allocation is less than an irrigator's historic pumping amount (or so the argument goes), they will have to find ways to adapt to a scarcer water future by either increasing efficiency, irrigating less land, or buying water from another rights holder.

However, this approach shares many of the legal vulnerabilities of the gross acreage approach. First, like the gross acreage approach, it fails to account for the mechanics of prescription and self-help pumping in those circumstances where prescriptive claims are likely viable. Second, it may be inconsistent with the subordination doctrine if a court would otherwise deem the use of surface water in lieu of groundwater as tantamount to dormancy with respect to the properties' groundwater rights. Third, allocating equal allocation to all irrigated acreage may appear inequitable considering landowners that have surface water alternative supplies are granted equal allocation as landowners that solely rely on groundwater.

E. *Historic Groundwater Pumping*

A third approach is to allocate water based on historic pumping amounts. In some past adjudications, courts and settling parties have chosen a specific period of time as a starting point and allocated a baseline amount to water users based on their pumping during that period. Some of these decisions have

then mandated a ramp-down in pumping over time, so each user's pumping goes down proportionately, and their share of the safe yield approximates their share of overall pumping during the chosen period.[188] Other stipulated adjudication outcomes have set allocations based on historical pumping amounts but provided for differential ramp-down rates depending on the legal nature of the underlying right.

The historical pumping approach is attractive because, of all available metrics, it most accurately reflects the doctrines of prescription, self-help, and subordination. By starting with shares of historical pumping as a way to calculate shares of sustainable yield, the approach also credits water uses that have been historically valued. This approach may serve as a rough measure of beneficial use, assuming relatively efficient use of water in the basin. Finally, it rewards parties that have invested in irrigation and irrigation infrastructure.

On the other hand, the approach is vulnerable to challenge on the grounds that it violates the doctrine of reasonable use and equitable principles inherent in the correlative rights doctrine. Those with historically less groundwater use, and consequently a lower allocation, may challenge the fairness of awarding a higher allocation to landowners that have irrigated the most water-thirsty crops. They could also contest that it rewards comparatively inefficient allocation methods or high-water use from baseline periods no longer consistent with current trends. Another argument might be that this approach fails to appreciate and accommodate lower water use resulting from crop transition, investments in irrigation efficiency, and surface water substitution. Finally, relying on historical pumping alone in an overdrafted basin would cut off dormant overlying landowners. Depending on the circumstances of the Basin, the GSA would have to decide if it will make a share of the safe yield available in the future for these potential rights claimants.

As discussed above, the approach would also require GSAs to adequately manage several legal and practical issues that are more complicated than acreage, including choosing a baseline pumping period as a starting point and collecting data about pumping levels.

F. *Hybrid Approach*

Any approach that focuses on a single factor has legal vulnerabilities. As a result, in many basins, the best approach may be a hybrid one that integrates multiple factors to reach an allocation. As the discussion above illustrates, each allocation approach incorporates certain elements of the common law: correlative rights for the gross-acres approach; equity for the irrigated acreage approach; and prescription, self-help, and subordination for the historical pumping approach. It may be possible to combine and balance these competing

188. City of Barstow, et al v. City of Adelanto, et al., No. 208568 (Riverside Cty. Super. Ct., Jan. 10, 1996) [hereinafter Mojave Basin Area Adjudication]; *Antelope Valley Groundwater Cases*, No. 1-05-CV-049053 (Santa Clara Cty. Super. Ct., Dec. 23, 2015) [hereinafter *Antelope Valley Adjudication*].

considerations. Doing this may also serve to promote compromise and settlement, as it would consider the specific interests and objections of various groundwater users and avoid creating classes of 'losers' that are systematically disadvantaged by one of the unitary approaches above.

GSAs may take two avenues to such an approach. One route is to start with a basic division using one of the principles above (e.g., historic pumping), then set up a system for modifying that initial allocation based on a set of predetermined factors. The factors could incorporate the other two basic approaches (e.g., gross acreage or irrigated acreage). Other economic or equitable considerations might include investments in groundwater irrigation, degree of reliance on groundwater, water conservation efforts, and the extent of any historic overpumping (which the GSA would have to define).

A second route is to start with a diverse set of factors, including gross acreage, irrigated acreage, and historic pumping. The GSA would then create a more integrated system to allocate water based on these factors. The specific factors and the way they might be evaluated should reflect basin-specific considerations and comparative equities.

Both approaches generally comport with the common law and provide a framework for negotiating specific allocations. Finally, both frameworks could avoid creating specific classes of aggrieved pumpers particularly disadvantaged by one of the more unitary approaches. By promoting negotiation about the allocation framework, and incorporating input from classes of pumpers, the approach also may promote settlement and compromise, and limit the number of pumpers with an inclination to sue.

VII. Basic Allocation Under the Common Law

The various common law rules, most notably prescription, self-help, and subordination, result in a formula that is relatively straightforward in general, but may be difficult to apply in certain cases. Other principles can potentially temper the formula, including statutes related to domestic water supply and the constitutional mandate of reasonable use. Nonetheless it does represent a framework that a court is likely to apply, or at least start with, in a fully litigated adjudication that considers the myriad of legal principles discussed above.

As discussed above, the initial steps include "sizing" the safe yield[189] available for extraction[190], carving out any developed water to be granted to those responsible for developing or salvaging it, and making any appropriate accommodations for domestic use, essential health and safety, and

189. We use the term "safe yield" in this analysis, borrowing the term used by the courts in past precedent. However, we believe the judicial term "safe yield" is functionally equivalent to the term "sustainable yield" as used in SGMA. *See supra* Subpart VI.A.

190. *See supra* Subpart II.B (discussing calculation of safe/sustainable yield, including reductions to avoid significant and unreasonable impacts to surface water bodies and groundwater dependent ecosystems as well as outflow commitments to hydrogeologically connected basins).

environmental needs. The court will then need to determine the volume of prescriptive pumping to use when calculating prescriptive rights. Prescriptive rights are based on the amount *continuously* pumped by appropriators during the prescriptive period. This will likely mean the lowest volume of pumping in any year by the appropriators during the prescriptive period because that volume represents the baseline amount that was continuously pumped for five years without interruption. We will refer to this going forward as the "amount of prescriptive pumping."

Overlying pumpers can protect a portion of their right if they engage in self-help pumping, as described in Subpart IV.B, above. The next step of the formula thus is to calculate the prescriptive right and the amount of overlying rights protected from prescription by self-help. The California Supreme Court in *San Fernando* required the prescriptive right amount to be the same percentage of the safe yield as the amount prescriptive pumping bore to the total pumping during the prescriptive period. The prescriptive right cannot exceed the amount of prescriptive pumping.[191] Therefore, if the amount of prescriptive pumping amounted to 40 percent of the total pumping during the relevant year, prescriptive rights holders are entitled to 40 percent of the safe yield. The court would divide the remaining 60 percent of the safe yield among overlying landowners.

A separate question is what number to use for the total pumping figure that will serve as the denominator in calculating the percentage of pumping that was prescriptive pumping. There is no clear precedent on the question of whether to use the lowest annual, average annual, or highest annual pumping levels. It would be odd to use as the numerator the amount of prescriptive pumping during the lowest year and use as the denominator a total pumping figure from a different year. To avoid this, we believe a court will be inclined to use the same year.

At this stage in the process, the court will have a percentage of safe yield allocated to prescriptive pumpers and a percentage allocated to overlying landowners. Next, the court would need to divide the water allocated to the respective classes among the members of each class. Because prescription is determined by historic pumping, giving each prescriptor a share equal to their proportion of historic pumping will be the basic principle for dividing allocation among prescriptors. Dividing the overlying landowners' share among individual landowners is more complex. As explained next, the division among overlying landowners would depend, in part, on how much of the safe yield was being pumped by prescriptors.

191. City of Los Angeles v. City of San Fernando, 537 P.2d 1250, 1318 (Cal. 1975)("The effect of the prescriptive right would be to give to the party acquiring it and take away from the private defendant against whom it was acquired either (1) enough water to make the ratio of the prescriptive right to the remaining rights of the private defendant as favorable to the former in time of subsequent shortage as it was throughout the prescriptive period [citation omitted] or (2) the amount of the prescriptive taking, whichever is less. . . . ").

The first possible scenario occurs when the amount of prescriptive pumping is greater than the safe yield. Under this scenario, the amount of the safe yield affected by prescription and self-help would be 100 percent. The division here would straightforwardly follow the logic above. Prescriptors would receive a percentage of the safe yield equivalent to their percentage of overall pumping during the baseline year. The remainder would be divided among the overlying landowners.

The court might consider two potential arguments for how it should perform this second division. The first argument is that because the cumulative overlying right that is protected against prescription is solely a result of self-help pumping, the overlying landowners that pumped water during the prescriptive period should receive an individual pumping right proportional to the amount that their individual self-help pumping bore to the total self-help pumping. Presumptively, under this argument both the individual self-help pumping and the total self-help pumping would likewise be calculated based on the lowest annual self-help pumping during the prescriptive period. The second argument, however, is to apply equitable factors in making this allocation, on the theory that the division is among correlative rights holders, and that such a division must be made on a fair and equitable basis (as discussed in Subpart V.C).

The second scenario arises when the amount of prescriptive pumping is less than the safe yield. This scenario is different from the first because the doctrines of prescription and self-help only affect the allocation of a portion of the safe yield. To elaborate, the *maximum* amount of the safe yield that may conceivably be granted to the appropriators based on operation of prescription is the amount of the prescriptive pumping (i.e., the prescriptive right would equal the prescriptive pumping if there were no diminishment based on self-help pumping by overlying landowners). In other words, the amount of prescriptive pumping is the maximum extent to which the appropriator's pumping invaded the priority of the overlying right. A portion of this amount is protected by self-help pumping by the overlying landowners. The court must allocate the remainder of the safe yield that was not affected by prescription and self-help (i.e., the difference between the safe yield and the amount of prescriptive pumping) among the overlying landowners based on the law of correlative rights. This scenario will occur in many of the basins where the majority of the pumping is for agriculture, like in the San Joaquin Valley.

In this scenario, there would, in effect, be two separate "buckets" of water to allocate among overlying landowners. Like the first scenario, the court would quantify the total prescriptive right pursuant to the formula discussed above. It would allocate this portion of the safe yield to appropriators with prescriptive rights. Then, the court would subtract the total prescriptive right from the total amount of prescriptive pumping; the difference will be the amount of overlying right protected through self-help pumping by the overlying landowners.

This portion of the yield must be divided pursuant to the competing arguments discussed above (e.g., proportional pumping by self-help pumpers and/or the law of correlative rights). The court will then need to divide the final portion of the yield—that portion not allocated under prescription or self-help pumping—among all overlying owners based on the law of correlative rights, that is, reasonableness and equitable considerations.

Therefore, we observe that in the scenario where the amount of prescriptive pumping is less than the safe yield, the amount of safe yield granted to an overlying owner may result from a combination of, (i) their proportional share of safe yield pumping (their portion of the safe yield allocated pursuant to self-help); and (ii) their share of the remainder of the safe yield allocated pursuant to the law of correlative rights (reasonableness and equity).

VIII. Physical Solutions and Notable Trends from Past Adjudications

Past basin adjudication judgments have adopted some aspect of most of the approaches outlined above, either through a direct resolution of groundwater rights or, more typically through a physical solution that incorporates groundwater rights and elements designed to promote fairness and reasonable use. These past judgments provide possible guidance for GSAs in several areas.

A. *The Role of GSAs in Promoting Compromise and Settlement*

The California Supreme Court has "encouraged the trial courts to be creative in devising physical solutions to complex water problems to ensure a fair result consistent with the constitution's reasonable-use mandate."[192] As long as an actual controversy exists, the trial courts have the power to enter judgments declaring the rights of the parties,[193] and impose physical solutions where appropriate.[194] "Each case must turn on its own facts, and the power of the court extends to working out a fair and just solution, if one can be worked out, of those facts."[195]

The levels of cooperation and creativity in past judgments provide particularly relevant lessons for GSAs. GSAs provide a different venue for negotiation than litigation, and they are in a unique position to bring together stakeholders to seek groundwater sustainability solutions outside of a litigation context. In its development of a GSP, the GSA must consider and document stakeholder input.[196]

192. City of Santa Maria v. Adam, 149 Cal. Rptr. 3d 491, 503, 509 (Ct. App. 2012) (citing Tulare Dist. v. Lindsay-Strathmore Dist. 45 P.2d 972, 1057 (Cal. 1935)).

193. Cal. Code Civ. Proc. § 1060 (2020).

194. *Santa Maria*, 149 Cal. Rptr. 3d at 509 (citing City of Lodi v. East Bay Mun. Dist. 60 P.2d 439, 450 (Cal. 1936)).

195. Rancho Santa Margarita v. Vail, 81 P.2d 533, 563 (Cal. 1938).

196. Cal. Water Code § 10727.8(a); Cal. Code Regs. tit. 23 art 1 § 354.10(c) (2020).

The common law framework laid out in this Article provides limits that GSAs need to understand. That framework is not just a limitation; it can also provide a basis for acknowledging important rights as a starting point for compromise and even consensus. Groundwater adjudications and other litigation are expensive, lengthy, and have uncertain outcomes. Most water users (and their lawyers) understand that. This reality, combined with SGMA's mandate, provides strong incentives to compromise. Acknowledging the backdrop of water rights can help keep water users at the table, and potentially limit their desire to litigate. Indeed, in a number of adjudications, litigants have arrived at creative and sustainable plans for groundwater management. These settlements, and the physical solutions they implement, offer examples of tools and approaches that may work for GSAs.

The court judgments discussed below also point to ways to make GSPs more durable. Water users who support a GSP may cooperatively seek to have its terms affirmed by court order in what is sometimes called a "friendly" adjudication.[197] The resulting judgment, if approved by DWR, can then serve as an alternative to a GSP.[198] This option creates certainty and durability in that it adjudicates water rights within the basin and removes, or at least significantly diminishes, the specter of the basin management plan being subsequently disrupted or modified by future water rights litigation. However, achieving this result requires creating a GSP that is reasonably consistent with water rights, and is acceptable enough to potential opponents that they do not go to the expense of litigating it.[199]

Many adjudications have involved partial settlements. In the cases that have been most actively litigated, the conflict often arose from some subgroup of water users challenging a settlement reached among other stakeholders as infringing on their water rights.[200] Even in the *Mojave* case, where the challenging water users prevailed and the courts refused to enforce the settlement against them, the court bound all the consenting parties to the settlement despite certain inconsistencies with the common law of groundwater rights.[201] In that situation, the settlement moved forward with most water users participating.

197. The term "friendly" here simply means that the settlement would be presented to the court at the same time the adjudication is filed, in the hopes of moving quickly to a stipulated settlement based on the GSP. A recent and pending example is the Borrego Springs Basin in eastern San Diego County. In that basin, to avoid a contested adjudication, the local water district, serving as the GSA, negotiated with the other major water users to develop a complete settlement and stipulated judgment to resolve the conflict. The parties are now processing the stipulated judgment through the superior court within a comprehensive adjudication pursuant the Cal. Code Civ. Proc. §§ 830-52 (2020). *See infra* note 205.

198. *See* Cal. Water Code §§ 10733.6 and 10737.4 (2020).

199. *See* Cal. Code Civ. Proc. § 850 (2020).

200. *See*, *e.g.*, *Mojave Water*, 5 P.2d at 860–61; City of Santa Maria v. Adam, 149 Cal. Rptr. 3d 491 (Ct. App. 2012).

201. Even in *Mojave Water*, which was intensely litigated, the only issue was whether

Judgments with physical solutions have included a variety of elements and approaches to basin management. Typically, physical solutions afford the opportunity for greater flexibility than a rigid restriction of use based on water right priorities. Negotiation of an agreeable physical solution also provides a path for GSA groundwater allocations to be locked-in by courts in a "friendly" adjudication.

Despite covering groundwater basins in different geographical areas, there are some consistent and notable trends in the physical solutions developed in past adjudication judgments across California. As discussed below, they are particularly similar in how they allocate pumping rights and the burden of bringing the basin into balance. They also often provide for the ability to transfer water rights and water allocations and create classes of water users. Additionally, they use different forms of watermaster governance for ongoing basin management according to a court's continuing jurisdiction. Significantly, they generally ignore two critical issues currently facing GSAs: allocating water for wetlands, streamflow, and other groundwater-dependent ecosystems, and providing water for disadvantaged communities that currently depend on declining or contaminated aquifers. With a few exceptions, such issues have generally not factored into past adjudications because the active parties did not present them to the court, but GSAs will need to address these issues in developing allocation regimes.

B. *Method of Assigning Rights and Pumping Allocations*

Three significant judgments in the Mojave, Tehachapi, and Central Basins followed a nearly identical method of quantifying how much each party is authorized to pump.[202] Each of these basins initially allocated a base water right to each party. In all three of these basins, historical pumping played a significant role as the basis for these allocations. However, in Tehachapi, the appellate court remanded to the trial court with the instruction that current reasonable and beneficial need should be the basis for the allocations.[203] The allocations were subsequently resolved by stipulation so it is not clear how great a difference the instruction from the appellate court would have made. These judgments also establish a secondary amount that represents the percentage of a party's base water right that they can pump in any given year. The

the settlement could be enforced against a relative handful of water users who opposed it. Although the court ruled it could not, the water management plan set out in the settlement survived and is being implemented to this day. In fact, a number of the parties that challenged the settlement in court ended up participating in it so they could sell their pumping right under the terms of the settlement. Szeptycki et al., *supra* note 16, at 210.

202. Langridge et al., U.C. Santa Cruz, An Evaluation of California's Adjudicated Groundwater Basins 69, 105, 188 (2016). For a more detailed discussion of the Mojave physical solution and a number of other physical solutions, see Arthur L. Littleworth & Eric L. Garner, California Water, Ch. 6 (3d ed. 2019).

203. Tehachapi-Cummings County Water Dist. v. Armstrong, et al., 122 Cal. Rptr. 918, 1001 (Ct. App. 1975).

percentage of the base water right each party can pump in a given year depends on hydrology and the determination of the safe yield, which can be redetermined from time to time if conditions change. In Mojave and Central Basins, the initial percentage decreases over time, so all pumpers share the burden of the reduction to balancing pumping with safe yield. The stipulated judgment recently negotiated in the Borrego Springs Basin takes a similar approach.[204] These cases provide a useful framework for GSAs seeking to create a market for both permanent allocations and annually available water.

C. *Reduction in Existing Use*

As described above, overdrafted basins involved in an adjudication need to reduce existing uses, often called "ramp-down," augment the basin's yield with increased recharge, or both. In calculating the necessary ramp-down or augmentation, it is necessary to balance future pumping amounts with the sustainable yield. In past adjudications, the courts have adopted a common-sense approach to ramp-down and applied flexibility where appropriate; they allow a gradual decrease in production to reach safe yield. Three examples are: the Seaside Basin Judgment, which provides for a 10 percent reduction every third year to match extraction quantities to safe (sustainable) yield after fifteen years; the Mojave Basin Judgment, which sets forth a five percent reduction annually; and the Antelope Valley Basin Judgment, which allows a ramp-down over a seven year period to reach safe yield.[205]

D. *Creating Classes of Users*

Another approach for allocating water rights can be seen from the Main San Gabriel, Chino, and Seaside Basins.[206] The settlements in these three basins organize groundwater rights and allocations by creating classes of water users and assigning corresponding rights and limitations to each class, including differing ramp-down burdens. Some settlements treat these classes differently, to recognize their differing priorities and the most viable avenues for reduced

204. The stipulated judgment assigns to each pumper a "Base Production Allocation." As ramp-down in cumulative allowed annual extraction occurs over a twenty-year period, the "Annual Allocation" that each pumper can extract is set an increasingly lower percentage of the pumper's Base Production Allocation. The percentage reductions cease once the cumulative Annual Allocations are commensurate with the Basin's sustainable yield. *See* Proposed Stipulated Judgement, Borrego Water Dist. v. All Persons Interested In the Comprehensive Adjudication, 37-2020-00005776-CU-TT-CTL, 19, 8 (unfiled, S.D. Super. Ct.), http://nebula.wsimg.com/57625e844750a9b9f27c5cc9bb80e348?AccessKeyId=D-2148395D6E5BC38D600&disposition=0&alloworigin=1 [https://perma.cc/BL6M-N9WV].

205. Cal. Am. Water v. City of Seaside, et al., No. M66343 (Monterey Cty. Super. Ct., March 27, 2006, amended Feb. 9, 2007) [hereinafter *Seaside Basin Adjudication*], http://www.seasidebasinwatermaster.org/Other/Amended%20Decision0207.pdf [https://perma.cc/NQH3-VVGG]; Mojave Basin Area Adjudication *supra* note 188; *Antelope Valley Adjudication supra* note 188.

206. Langridge et al., *supra* note 202, at 88, 158; *Seaside Basin Adjudication supra* note 205, at § III.B.

pumping. These cases provide guidance for GSAs who need to treat classes of users differently for purposes of allocating water or the burden of ramp-down.

E. *Governance and Management*

Previous judgments provide some basin governance examples to GSAs. Most appoint a "watermaster," but the entity(s) serving that role varies. Some judgments designate a single existing public agency as the basin's watermaster.[207] Other judgments use different forms of watermasters. In the Central Basin, the watermaster consists of, (1) an "administrative division" managed by the Water Replenishment District of Southern California; (2) a "water rights panel" containing seven elected water rights holders; and (3) a storage panel comprised of the Water Replenishment District of Southern California and the water rights panel. In the Main San Gabriel Basin, the watermaster is a nine-person board. In the Chino Basin, the watermaster has an advisory committee representing all pumpers and the watermaster board has nine directors. In the Seaside Basin, the watermaster has thirteen voting positions held among nine representatives, including various public and private stakeholders.

F. *Carryover*

Most judgments contain provisions authorizing at least a portion of the basin's water users to "carryover" part of their unpumped allocation from year-to-year to be withdrawn in the future. The purpose is to allow a pumper the flexibility to bank unused allocations in the basin to offset use in excess of the pumpers' annual allocation during years in which demand for groundwater is higher. This accommodates fluctuations in demand for groundwater from year-to-year. Some basins, such as the Central Basin, permit all water users to carryover portions of their unused allocations into the future. Others, such as the Chino and Seaside Basins, limit the ability to carryover water to specified classes of water users; initially, only appropriative pumpers could carryover in both cases, but Seaside gives overlying landowners the option to convert to a "Standard Production Allocation," which affords carryover, storage, and transfer opportunities Many carryover provisions limit how long water can be carried over and subsequently withdrawn. For example, in the Tehachapi Basin, a water user can carryover water in an amount not to exceed 25 percent of its annual pumping allocation for two years. In the Main San Gabriel Basin, the physical solution provides that parties can carryover their unused shares of the operating safe yield for one year.

G. *Transfers*

Most judgments have provisions permitting some parties to transfer their rights to other parties. In the Mojave Basin, all water users can transfer their base allocation and their annual production rights within management areas.

207. Mojave Basin Area Adjudication *supra* note 188; Tehachapi-Cummings County Water Dist. v. Frank Armstrong, et al., Civil No. 97209 (Kern Cty. Super. Ct., Dec. 29, 1971).

In the Central Basin, all classes of water users can transfer or lease their allocated rights throughout the basin. Some judgments limited who can transfer their allocated water rights. In the Chino Basin, the physical solution generally prohibits overlying agricultural water users from transferring their allocations. The Main San Gabriel Basin also prevents overlying groundwater rights holders from transferring their allocations. The Seaside physical solution allows holders of "Standard Production Allowance" (i.e., appropriators) to transfer their allocation, but also provides that holders of "Alternative Production Allowance" (i.e., overlying landowners) can transfer their allocation if they convert it to a Standard Production Allowance (the type of allowance held by appropriators) and thereby incur the burden of ramp-down and basin management expenses that are otherwise only born by the holders of Standard Production Allocation.

H. *Allocations for Endangered Species and Flow Requirements*

GSAs are required to manage their basins to avoid significant and unreasonable impacts on beneficial uses of surface water, and the Mojave and Main San Gabriel judgments offer methods that GSAs can consider to address this requirement. The Mojave Basin physical solution contains protections for assuring that the water needs of endangered and other species, and of the riparian habitat, in the Mojave Basin Area are satisfied by setting groundwater level standards in several areas along the Mojave River. When groundwater level standards are not met, a trust fund established by the physical solution provides money for purchasing water, constructing wells, or conducting projects proposed by the California Department of Fish and Wildlife. The Main San Gabriel adjudication also adheres to outside regulatory requirements by ensuring the watermaster implements local agreements that include flow requirements.

I. *Consideration of Disadvantaged Community Water Supplies*

None of the aforementioned judgments or past case law address the issue of protecting water supplies for disadvantaged communities (DACs). Water supply for these communities is a significant issue in many basins covered by SGMA. GSAs should consider the interests of DACs in the development of allocation regimes or other infrastructure or management efforts. Such efforts may mitigate significant and unreasonable impacts on DACs. This may take the form of ensuring adequate and affordable groundwater supplies to municipal suppliers of DACs, connecting shallow wells serving DACs to suppliers with deeper wells, or even deepening wells where necessary and appropriate. There are arguments that these measures are consistent with water rights. The mandate for reasonable and beneficial use, principles of equity, and sections 106, 106.3, and 106.5 of the California Water Code might be cited as support for establishing provisions to ensure more secure and affordable domestic water supplies for DACs.

J. *Summary*

Reaching a judgment and physical solution without fully litigating every issue requires compromise by the parties. A dominant incentive for compromise is that the parties have much greater control over the contents of the physical solution if they can agree on a solution that is acceptable to the court, rather than if the court is left to make its own decision. This will be particularly true as future basin management takes into account the needs of DACs and the environment. While prior judgments and physical solutions provide guidance on many issues, there is little or no precedent to guide courts on how to properly include the needs of the environment and DACs. This means that there is greater uncertainty for existing users and this should provide an even stronger incentive for compromise and agreement.

Conclusion

As we have discussed, allocations of authorized groundwater pumping will no doubt be an essential tool to achieve sustainable management in many basins. Groundwater allocations will, in turn, implicate the law of water rights. This area of law is complex, fact-dependent, and sometimes subject to ambiguous and even conflicting precedent. GSAs cannot avoid the legal risks and uncertainty that water rights introduce. They should seek to thoroughly understand the diversity of legal principles that apply to the specific facts at hand and discuss and educate stakeholders on applicable law. Perhaps, most importantly, they should encourage and facilitate broad dialogue to explore opportunities for compromise approaches to allocations that generally reflect water law principles. Such efforts will ideally achieve consensus and avoid legal challenges. If certain issues must be litigated, these efforts may reduce the breadth of opposition, thereby expediting the process and best situate the GSA's allocation program to sustain a legal challenge on the merits.