

**REVIEW OF THE LAWS ESTABLISHING THE
SWRCB'S PERMITTING AUTHORITY OVER
APPROPRIATIONS OF GROUNDWATER CLASSIFIED
AS SUBTERRANEAN STREAMS AND THE SWRCB'S
IMPLEMENTATION OF THOSE LAWS.**

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There will always be great difficulty in fixing a line, beyond which the water in the sand and gravels over which a stream flows and which supply or uphold the stream, ceases to be a part thereof and becomes what is called percolating water.

Hudson v. Dailey, 156 Cal. 617, 627-28 (1909)

INTRODUCTION

1. A Brief Description of Groundwater: The Law and the Reality

The law in California requires that water be identified as in one of three categories: surface water, percolating groundwater, and “subterranean streams flowing through known and definite channels” (subterranean streams).¹ For purposes of this Report, the significance of these categories is the following: Only surface water and subterranean stream water are within the permitting jurisdiction of the State Water Resources Control Board (the Board or SWRCB).² Appropriation of those waters requires a Board permit, and is subject to various permit conditions.³

To put the matter as simply as possible, the above categories do not accord with scientific understanding of the occurrence and distribution of water on and in the earth. To hydrogeologists, water is a continuum. The same water may sometimes be found on the surface of the earth and at other times underground. Water moves by the force of gravity, and whether it is surface water or groundwater at any particular moment depends on the slope (known as gradient) and direction of the medium through which it is moving at a given moment, on obstacles it encounters, and on the topography of the land. Moreover, from a technical perspective, the distinction between percolating groundwater and subterranean streams is meaningless, or nearly so. Water that actually flows like a surface stream beneath the earth’s surface, as in lava tubes or limestone caverns, is very rare in California. Virtually all underground water percolates through the ground. It may move more or less rapidly; it may be moving parallel or perpendicular to a surface stream; it may be narrowly confined or broadly diffused underground. From a geological perspective, these factors are simply crude and partial descriptions of the enormously varied behavioral characteristics of subsurface water, depending on a variety of factors, such as the varied

¹ When the term “subterranean stream” is used in this Report, it will generally be shorthand for the statutory phrase in Water Code § 1200: “subterranean streams flowing through known and definite channels.”

² The term jurisdiction, or permitting jurisdiction, used throughout the Report requires a cautionary note. Water Code § 1200 defines the scope of Board authority for those provisions in Part II of the Water Code that require Board approval of diversions from a stream, lake, or other body of water. Insofar as there is controversy involving the Board’s authority to impose conditions on groundwater in connection with other activities within its authority (e.g., approvals under Water Code § 1211 where percolating groundwater was a source of some of the treated waste water), nothing in this Report is intended to suggest a position on such matters.

³ There are other important distinctions, but they are not within the scope of this Report, e.g., riparian uses require no permit (Water Code § 1201), and percolating groundwater is not subject to statutory adjudications (Water Code § 2500).

transmissivity of the material in which it is found, the varied obstacles it encounters, and the diverse gradients over which it travels in its movement through the earth. In addition, at various points in time or space, groundwater may be in hydraulic connection with a surface stream, or it may be confined, at least for some distance, beneath a quite impermeable layer. Water underground may, at one place, or during one season, seep into a river through its banks (a gaining river), and at another place or time seep out from the banks into the underground (a losing river). It all depends on whether the saturated area of the ground is above or below the river bank at that point.

The categories that statutes and judicial opinions use, such as “underflow,”⁴ “subflow,”

⁴ The term “underflow”, though commonly used – and thus necessarily employed repeatedly in this Report – is an unfortunate usage, for several reasons. First, and foremost, it is not a technical term of art used by hydrogeologists. They understand groundwater and surface water to be part of a continuum (at times interrupted), and there is no hydrological line of demarcation between groundwater that is, for example, percolating toward a stream, and groundwater that has become part of the stream as “underflow”. As the Arizona Department of Water Resources has explained, “[i]n the ideal, subflow [or underflow] can be visualized as just another part of the stream that lies out of view below the surface. As part of the stream, it also has distinct bed and banks which define its extent. This ideal concept of subflow does exist in narrow bedrock canyon streams where both the surface and subsurface components of the stream are contained within hardrock boundaries. But as these bedrock canyons descend from the mountains, the valleys become alluvial valleys between mountain ranges, where the subterranean component of streams becomes unbounded.” Technical Assessment of the Arizona Supreme Court Interlocutory Appeal Issue No. 2 Opinion, In Re The General Adjudication of the Gila River System and Source, Arizona Department of Water Resources (December 15, 1993) (typescript), at 38.

In addition, as noted hereafter in the text, the term has been commonly picked up from a headnote in *Los Angeles v. Pomeroy*, 124 Cal. 597, 57 P. 585 (1899), writ of error dis. sub nom. *Hooker v. Los Angeles*, 188 U.S. 314, 23 S.Ct. 395, 47 L.Ed. 487 (1903) and is often cited in a way that gives an inaccurate sense both of the trial judge’s instructions, and the Supreme Court’s decision, in that case.

As a legal term, underflow has been defined in various ways. It is said to be water in the soil, sand and gravel immediately below the bed of the open stream (*Verdugo Canon Water Co. v. Verdugo*, 152 Cal. 655, 663, 93 P. 1021 (1908)), which supports the surface stream in its natural state or feeds it directly (*Huffner v. Sawday*, 153 Cal. 86, 92, 94 P. 424 (1908); *San Bernardino v. Riverside*, 186 Cal. 7, 14, 198 P. 78 (1921)). *Pomeroy* is cited for the view that underflow requires that the surface and subsurface be in contact and that the subsurface flow shall have a definite direction corresponding to the surface flow, 124 Cal. 597, 617, 636-37, 57 P. 585 (1899). A commonly cited definition of underflow is taken from Wells A. Hutchins, *The California Law of Water Rights* (1956), at 422: “The underflow or subflow of a surface stream consists of water in
(continued...)

“subterranean streams,” and “percolating groundwater,” bear little if any relationship to these geological realities. Indeed, these water law terms are geographic conceptions fundamentally at odds with science’s understanding of water’s movements. The legal categories seem to assume, for example, that there is a fixed space within which water is the “underflow” of a stream, and beyond that space the water is something else. From a hydrogeological perspective, such geographic categories are dubious at best. From a scientific perspective, efforts to fit water into the law’s categories by using these technical-sounding classifications give the enterprise a somewhat daffy air. Is the water moving parallel to the stream, or perpendicular to it? Is the aquifer more like a lake in shape, or more like a river? Is water percolating through the ground rapidly enough to be treated as “flowing” water?

How then does one intelligently examine a statutory provision like Water Code § 1200? This Report is founded on a simple premise. It is that the provision was enacted to achieve some legislative purpose, and that however unscientific or outdated the statutory language may be, it is nonetheless likely that the legislators had some real problem in mind that they were seeking to address. As we shall see, those who drafted the legislation that became the Water Commission Act were not ignorant of the interactive relationship between groundwater and surface water. They knew perfectly well that much “percolating groundwater” was on its way to or from a surface stream, and they knew that water appeared, disappeared and reappeared on the surface as streams flowed. It was, after all, 1913 and not 1319 in which they were drafting legislation. So it seems appropriate to pose the following as the basic question: what were the drafters of § 42 of the Water Commission Act,⁵ the original version of today’s Water Code § 1200, trying to do, and how might their goal best be accomplished today? Whether that goal remains a desirable one today is a separate question – a question for today’s legislature.

2. Questions Addressed in this Report

Six specific questions have been posed as the scope of work for this Report. They are:

⁴(...continued)

the soil, sand, and gravel immediately below the bed of the open stream, which supports the surface stream in its natural state or feeds it directly. To constitute underflow, it is essential that the surface and subsurface flows be in contact and that the subsurface flow shall have a definite direction corresponding to the surface flow. The underflow may include the water moving not only in the loose, porous material that underlies the bed of the surface stream, but also the lateral extensions of the water-bearing material on each side of the surface channel. But it must be moving in a course and confined within a space reasonably well defined, so that the existence and general direction of the body of water moving underground may be determined with reasonable accuracy.”

⁵ The relevant sentence reads: “Whenever the terms stream, stream system, lake or other body of water or water occurs in this act, such term shall be interpreted to refer only to surface water, and to subterranean streams flowing through known and definite channels.”

1. What is the scope of the State Water Resources Control Board's (SWRCB) water right permitting authority over groundwater?
2. What is the current legal test for determining whether groundwater is subject to the SWRCB's permitting authority?
3. Under this legal test, what physical characteristics should the SWRCB evaluate in distinguishing subsurface waters subject to the SWRCB's permitting authority from subsurface waters that are percolating groundwater?
4. What factors has the SWRCB considered in its past decisions regarding groundwater classifications?
5. Should the legal test for determining what subsurface waters are subject to the SWRCB's permitting authority be changed? If so, what legal test would be appropriate?
6. Can quantifiable criteria be established to implement the legal test? What are the quantifiable criteria?

The bulk of this report consists of underlying data and analysis that inform the answers offered to questions 1, 2, 3 and 4. That material is divided into three parts: Part I consists of a review of the judicial decisions that dealt with subsurface water, and that formed the case law background to the Water Commission Act of 1913. Part II comprises a legislative history of the 1913 Act, and reference to subsequent legislation dealing with Board jurisdiction over groundwater. Part III discusses the Board's interpretation of the subterranean stream language of Water Code § 1200 and its predecessor provisions from the beginning to the present time.

Question 5 calls for judgment about a question that must ultimately be resolved legislatively. Part IV of this Report discusses approaches that have been taken in some other western states to deal with the integration of surface water and subterranean water management, and to suggest some changes that the California legislature may wish to consider. Part V discusses other opportunities to manage subsurface water that may be available under existing law and that may be pursued in the absence of legislative change. Part VI is a response to Question 5.

Question 6 asks whether quantifiable criteria can be articulated to implement the subterranean stream provision of the law. Based on the conclusions drawn in this report about the meaning of the provision, an effort has been made to provide such criteria. The proposed criteria have been developed following consultation with the Technical Advisory Committee appointed by the Board. But they do not implement (and there was not) a Committee recommendation. The proposed criteria are mine.

3. Responses to the Questions Posed by the Board

1. What is the scope of the State Water Resources Control Board's (SWRCB) water right permitting authority over groundwater?

Water Code § 1253 grants the SWRCB permitting authority over unappropriated water. Water subject to appropriation is defined in Water Code § 1201 as “[a]ll water flowing in any natural channel” except water that is or may be needed for use upon riparian land or water that is otherwise appropriated.⁶ Unappropriated water is defined in Water Code § 1202. The term “water” as utilized in the preceding cited provisions is limited by Water Code § 1200 to “surface water, and to subterranean streams flowing through known and definite channels.” Thus the Board’s permitting authority over groundwater extends only to the water of unappropriated subterranean streams flowing through known and definite channels, except as it is or may be reasonably needed for useful and beneficial purposes upon lands riparian to the channel through which it is flowing, that is, to use on land overlying a subterranean stream.⁷

2. What is the current legal test for determining whether groundwater is subject to the SWRCB’s permitting authority?

The California Supreme Court has not provided a judicial interpretation of the statutory definition of groundwater subject to the Board’s permitting jurisdiction. While the Board looks to the decision in *Los Angeles v. Pomeroy*, which distinguished between subterranean streams and percolating groundwater, as authority, that case is not a judicial interpretation of Water Code §1200, or of its predecessor statutory provision.

The current legal test, as articulated by the Board in its 1999 decision in the *Garrapata Creek* case,⁸ requires the following physical conditions to exist in order for groundwater to be classified as a subterranean stream flowing through a known and definite channel, and thereby to be subject to the Board’s permitting authority: (1) a subsurface channel must be present; (2) the channel must have relatively impermeable bed and banks; (3) the course of the channel must be known or capable of being determined by reasonable inference; and (4) groundwater must be flowing in the channel.

In the *Garrapata Creek* decision, the Board also stated that while a subterranean stream includes “underflow” (which is not a statutory term, though it is commonly used), it is not necessary that

⁶ There is an exemption for small domestic appropriations, which are acquired by registration, Water Code § 1228, et seq.

⁷ See note 264, *infra*.

⁸ D. 1639 (1999). Board decisions are referred to in this report by the capital letter D., followed by the decision number and the date.

groundwater be underflow to establish the existence of a subterranean stream flowing through a known and definite channel. Underflow was described as having the following physical characteristics: (1) underflow must be in connection with a surface stream; (2) underflow must be flowing in the same general direction as the surface stream; and (3) underflow must be flowing in a watercourse and within a space relatively well defined.⁹

The Board noted both some differences, and some common elements, between a subterranean stream and underflow. A subterranean stream, it said, need not be interconnected with a surface stream. Both a surface stream and underflow, however, must flow in a watercourse. A watercourse must consist of a bed, banks or sides, and water flowing in a defined channel.

Some elements of the current legal test utilized by the Board are more fully defined than others. The standard of “relatively impermeable bed and banks” of a channel is described as material “sufficiently impermeable at the point of diversion to prevent the transmission of all but relatively minor quantities of water through the channel boundary.” The Board does not utilize a quantitative measure of difference in permeability. The test is not that the bed and banks be “absolutely impermeable.”

There is no similarly spelled-out definition of what constitutes a “channel,” of what is required for a channel to be “known and definite,” or of how it is determined whether water is “flowing” in a channel. At least some of these criteria have been the subject of considerable controversy in other cases, notably the so-called *Pauma and Pala* case (In the Matter of Application 30038 et al.), in which a Draft Decision was issued on October 25, 1999, as well in some earlier cases noted in the body of this Report. However, the Board’s current interpretation of these elements remains to be fully spelled-out. Concern has been expressed that the Board may be taking an excessively broad view of what constitutes a channel and of the existence of flow; and that by focusing as much as it does on the presence of bed and banks, though they may be distant from a stream, the Board may be moving toward a too expansive definition of a subterranean stream. It has been suggested that these interpretations, or proposed interpretations, are at odds both with the statutory mandate and with long-standing Board practice.

3. Under this legal test, what physical characteristics should the SWRCB evaluate in distinguishing subsurface waters subject to the SWRCB’s permitting authority from subsurface waters that are percolating groundwater?

I understand this question to ask for an analysis of meaning of the subterranean stream provision of Water Code § 1200; and, based on that analysis, to propose an appropriate test for

⁹ This definition actually comes from Instructions XVI and XVII of the trial judge’s instructions in *Pomeroy*, and is not characterized there as a definition of “underflow,” a term which appears only once in *Pomeroy*, in connection with the Court’s comment on Instruction X, see 124 Cal., at 630.

implementing the subterranean stream provision of Water Code § 1200. As spelled out in detail in Part II of this Report, analysis of the background of the 1913 Water Commission Act, and in particular the evolution of the subterranean stream provision of that Act, indicates that evaluation of “physical characteristics” is not the key to a proper interpretation of the statutory provision.

My analysis reveals that the legislative purpose was to protect the integrity of the permitting agency’s jurisdiction over surface stream appropriations by preventing unpermitted taking of groundwater that appreciably and directly affects surface stream flows. The concern was essentially to close a loophole that would have been left if any taking of water from a subsurface location would leave the permitting agency powerless in the face of wells or tunnels that were effectively underground facilities for withdrawing stream water. At the same time, it is clear that the legislation was not intended to create permitting jurisdiction over all groundwater whose pumping would in any way, or at any time, affect surface streams. The statute was without doubt meant to leave much tributary groundwater as part of a separate legal regime outside the permit system that was being established. While the “subterranean stream” language in the Water Commission Act was almost certainly intended to focus on areas that were very proximate to the surface stream (the subterranean aspects of surface streams), such as what is called underflow or subflow, it should be kept in mind that modern-day high-powered pumps were not extant at that time. The central concern was impact, however, not proximity.

My conclusion is that the legislation was designed to create an impact test (impact of pumping on surface stream flows), rather than seeking to identify a physical entity with a specific shape, despite the conventional “subterranean stream” language the law picked up from the old treatises. I conclude that a test designed to identify appreciable and direct impact of groundwater diversion on a surface streams represents a more faithful implementation of the legislative purpose than any catalog of physical characteristics.¹⁰

While any test of impact necessarily involves a judgment about the boundaries of inclusion and exclusion, so does any test based on geography or on physical characteristics, whether it involves flow direction, permeability of an asserted bed and banks, identification of a channel, or whether certain groundwater is or isn’t “underflow.” Since the groundwater and surface water within a watershed essentially constitute a continuum, any test intended to separate one part of the groundwater from another (“percolating” vs. “flowing”), or to distinguish groundwater from surface water, inescapably requires a judgment that reflects a purposive goal, rather than reflecting a technical line of demarcation that hydrogeologists or other scientific experts utilize and for which there is a technically accepted definition. Indeed, even in states where groundwater and surface water management is fully integrated, policy-dominated judgments must be made

¹⁰ Insofar as such a test would enlarge Board jurisdiction somewhat, it raises the perplexing question of how to deal with longstanding uses, formerly considered outside the Board’s jurisdiction, but now deemed to be jurisdictional. As to “grandfathering” existing uses, see text at notes 211, *infra*.

about the point at which pumping impacts on surface streams are sufficiently attenuated in time or impact that they should not be considered.¹¹

The response to Question 6, below, offers a suggested approach for the Board in drawing the required line distinguishing subsurface waters subject to the SWRCB's permitting authority from subsurface waters that the law classifies as percolating groundwater.

4. What factors has the SWRCB considered in its past decisions regarding groundwater classifications?

Two factors have been found wherever the Board has taken jurisdiction of what is determined to be a subterranean stream: a finding of (1) bed and banks; and (2) water flowing along the line of a surface stream (though sometimes very slowly). A third factor – the presence or absence of a channel – has been a subject of controversy from the beginning. In addition, in almost all cases where the Board took jurisdiction, hydraulic connectivity showed that the pumping would impact a surface stream. Connectivity is a factor that is always taken account of, and appears to be influential, though the Board has not articulated surface stream impact as itself a test of jurisdiction. There are, however, cases where the Board has taken jurisdiction where there was no finding of such connectivity and impact, and cases where it has declined jurisdiction where that element was present.

The classic case for finding jurisdiction is where subsurface water is pumped from a narrow alluvial valley enclosed by a steep rocky canyon, and where the subsurface water is moving along a closely confined path paralleling the line of a surface stream. The 1926 *Sheep Creek* case exemplifies such circumstances,¹² and one can find similar cases down through the decades.¹³ Described as the underflow of the surface stream, the subsurface flow in that case was “very slow”, but it was said to be definite, and was within a channel – a closely confined path – formed by the walls of a canyon that ranged from ¼ mile to 1 mile in width. Though the decision contains no finding of relative impermeability, it quotes the language of “impervious sides and bed” from the *Pomeroy* headnotes as describing the setting in the case. As to impact, it also quotes the *Pomeroy* headnotes, which speak of “caus[ing] the water of the stream to leave its bed to fill the void caused by such [groundwater] diversion.”

¹¹ See text at notes 235, 263, *infra*.

¹² Decision No. 3883, D. 119 (1926), discussed text at note 173, *infra*.

¹³ E.g., *Stony Creek* (Colusa County), Order WR 80-11 (1980), discussed in text at note 177, *infra*; *Laguna Creek* (Santa Cruz County), Memo from Charles NeSmith, Associate Engineering Geologist, Files 262.0 (44-16-01), *Water Rights Complaint – California Department of Fish and Game vs. Stephenson Ranch (Santa Cruz Biotechnology) Regarding Diversions from Laguna Creek in Santa Cruz Country (August 23, 2001)*.

The most troublesome cases for the Board seem to have been those where the claim is that there is no “channel,” though the other factors – bed and banks, and flow, as well as impact on a surface stream – have been present. The record of the very first subterranean stream case, in 1924, contains a staff report recommending against taking jurisdiction because the groundwater is in a broad valley described by the staff as “an underground lake.” The Board did, however, assert jurisdiction, perhaps because neither side objected (indeed, it seems the two contending sides wanted the Board to resolve their conflict).

In 1938, a case involving the San Luis Rey River again raised the question whether the fact that the subsurface water was found within a broad valley that was not channel-like, i.e., narrowly confined, was jurisdictionally disqualifying.¹⁴ The Board held that it was not. The Board took jurisdiction, stating, “while the underground water is concluded to be a definite stream, yet the bottoms along the river constitute reservoirs of some magnitude just as are found in a surface stream in its wide, deep and slow moving reaches.”¹⁵ The Board took special note of the hydraulic connection, or impact factor, noting that the “stream and the underground water function as a closely related unit.”

The issue arose again in 1960, in the *Cache Creek* case, where doubts were raised about the width of the asserted channel and the resulting asserted lack of flow.¹⁶ The Board formally rested its finding of no jurisdiction on the slowness of the flow and the breakup of the canyon walls by side canyons. In the course of its decision, the Board asked, “[w]hen is a given area a stream, and when is it an underground basin? Does the word ‘flowing’ include water that is moving very slowly? When a given area containing slowly moving water has impermeable sides and bottom, must those impermeable sides and bottom be construed as the bed and banks of a stream...?”¹⁷ In that case, the answer was “no”. The circumstances suggested that the pumping was not impacting the surface stream, which may have influenced the decision against jurisdiction.

Hydraulic connection between the subsurface water and the surface stream, such that pumping is seen as significantly impacting the surface stream, is commonly an indication that the Board will find jurisdiction in an otherwise marginal case – as in the 1938 case noted above involving the San Luis Rey River; or in the more recent *Carmel River* case (though the jurisdictional finding there was uncontested);¹⁸ and it may be explanatory of the 1999 Draft decision in the *Pauma and Pala*

¹⁴ D. 432 (1938), discussed in text at note 195, *infra*.

¹⁵ D. 432, at 14-15.

¹⁶ D. 968 (1960), discussed in note 178, *infra*.

¹⁷ *Id.*, at 3.

¹⁸ Order No. WR 95-10 (1995), discussed in text at note 189, *infra*.

case.¹⁹

On the other hand, the Board has taken jurisdiction of cases where there was no evidence of hydraulic connection (the pumping was from a confined aquifer), and where the presence of anything ordinarily thought of as a channel was doubtful.²⁰ And it has denied jurisdiction for lack of a “known and definite channel,” even where pumping might be depleting the stream.²¹ The common explanatory element in these two cases is “bed and banks.” In the former case, bed and banks were found; and in the latter there was nothing that could qualify as bed and banks. If there is a single dominating factor in the Board’s current jurisdictional decisions, it seems to be a focus on the presence or absence of a bed and banks. The presence of something that qualifies as a bed and banks seems to generate a rather generous attitude toward finding a channel, and the presence of flow. The presence of a hydraulic connection between the subsurface water and a surface stream appears as an added factor in favor of a jurisdictional finding.

5. Should the legal test for determining what subsurface waters are subject to the SWRCB’s permitting authority be changed? If so, what legal test would be appropriate?

In theory, there is no doubt that hydraulically connected groundwater and surface water ought to be managed in a single integrated system, and that has been the general direction in which many states have moved. There are several models that offer California useful ideas.²² But this State has a long and deep history of resistance to such integration, and the prospects of achieving legislative change that wouldn’t be piecemeal or riddled with destructive exceptions seems very dim within the foreseeable future. In addition, California’s exception of riparian uses (which cases indicate includes overlying applications of groundwater) from its permitting system provides another reason to doubt the prospects of full integration of administration under a Board permitting system.²³ For these practical reasons, I suggest that efforts at improving management of groundwater be directed elsewhere than at legislation to enlarge the Board’s permitting jurisdiction over what is now called percolating groundwater.

¹⁹ Discussed in text following note 158, *infra*.

²⁰ D. 1589 (1982), Chorro and Morro Creeks.

²¹ Pilarcitos Creek, San Mateo County, SWRCB letter of Jan. 9, 2001 (363:CLC:262.0(41-08-03)), at 2. Earlier, the Board refused jurisdiction of a well within 18 feet of a creek pumping tributary water, because the groundwater was seeping, not flowing with the stream. It told the protestant it would have to go to court to protect its stream rights against the pumping. Decision A. 6017, D. 225 (1929) (Metcalf Creek, San Bernardino County).

²² Nebraska, Oregon, and Colorado, discussed in text following note 250, *infra*, offer a variety of promising examples.

²³ See note 264 and Part VI, *infra*.

Instead, I suggest a three-prong approach: (1) Improvement of the existing method for implementing Water Code § 1200, along the lines proposed in this Report; (2) Active use by the Board of its existing jurisdiction under Water Code § 275 to deal with waste, unreasonable use, unreasonable methods of use, and implementation of the public trust, which offers considerable authority to protect surface resources from groundwater diversions;²⁴ and (3) Additional attention to basin-wide management, using as a model the more successful managed Southern California basins.²⁵ Comprehensive basin management comprehends not only regulation of groundwater and surface water, but other techniques that are becoming increasingly important, such as conjunctive use, control of subsidence and saltwater intrusion, aquifer quality control, pump taxes or other fees to limit use and support importation of new supplies, etc. While recognizing the difficulty and cost of settling rights within an entire basin, the successful precedents established in some California basins seem to offer the best hope for achieving genuine comprehensive management in this State, taking account of California's historic experience with efforts at groundwater law reform.

6. Can quantifiable criteria be established to implement the legal test? What are the quantifiable criteria?

Perhaps. As was noted above, and will be explained in detail in the body of the Report, the legislative purpose underlying the subterranean stream language of Water Code §1200 was to protect the surface stream permitting jurisdiction from subversion by those who might directly benefit from the stream without having to obtain a permit like other surface diverters, while not subjecting all groundwater, or even all tributary groundwater, to the permitting system they were establishing. The legislative goal was to pose the question, when should a well be treated as essentially a subterranean component of a surface stream; that is, which wells are appreciably and directly (both in place and time) impacting the surface stream?²⁶ That is not a question technical experts can answer, though experts can tell us what we are likely to include or exclude within any line that we draw in an effort to be true to the legislative intent.

In an effort to find workable criteria that would approximate the legislative goal as closely as

²⁴ See, however, note 287, *infra*.

²⁵ See generally William Blomquist, *Dividing the Waters: Governing Groundwater in Southern California* (1992).

²⁶ Because I conclude that this was the legislative intent, the so-called “bed and banks” test of jurisdiction is inappropriate, nor can legislative intent be implemented by efforts to define what constitutes a “definite channel[,]” or when groundwater water is “flowing” through such a channel, notwithstanding the literal language of the statute. It should be emphasized that the literal terms of a statute sometimes simply do not describe legislative intent. See *Andrus v. Charlestone Stone Products Co.*, 436 U.S. 604 (1978) (holding that groundwater is not a “valuable mineral” within the meaning of the General Mining Law of 1872, 30 U.S.C. § 22).

possible, experts on the Technical Advisory Committee were consulted. The following does not represent their recommendations, either individually or collectively. Indeed, there was no single view taken by the Committee, which is perhaps a reflection of the difficulty in this context of sorting out technical from interpretive and policy perspectives.

It may well be that no shorthand criteria will prove generally applicable in a satisfactory manner. Technical Advisory Committee members often emphasized how various stream conditions can be from place to place, and from season to season; and how much difference it makes whether there are few or many wells in an area, etc. As one member put it, any simple test must confront the fact that “there is a significant problem in studying surface water-groundwater interactions because the evidence is not readily visible, the hydraulics are complex and dynamic, the impacts can be felt over a broad area with no single point of diversion from the stream, and because of the time delay between pumping and impact.”²⁷

What follows – with all due cautions – are criteria I suggest for the use of presumptions to assist in determining jurisdiction.²⁸ No doubt they will benefit from refinements based on experience, and from adaptations reflecting conditions in differing river systems.²⁹ They are not entirely quantitative, in particular the terms such as “thickness” or “substantial” used below. The purpose of these terms is to provide guidance to the Board as it seeks to implement the legislative will. It may find, based on its experience, or with further technical assistance, that in some river systems or areas it can appropriately utilize a numerical value as a guide, and thus evolve toward a more fully quantitative test of presumptive jurisdiction.³⁰ Ultimately, however, as noted above, and as will be discussed more fully in the body of the Report, the legislative purpose was to protect its permitting authority over surface stream waters from subversion, that is, to identify those

²⁷ Memo from Kit H. Custis, DOC-Division of Mines and Geology, Dec. 28, 2001, at 2.

²⁸ I received a number of helpful memos from Technical Advisory Committee Members, both suggesting how to determine certain measures (e.g., a stream recharge area), noting concerns with various suggested quantitative criteria, and offering alternative criteria. These memos are reprinted in Appendix E.

²⁹ The occurrence, movement, and availability of groundwater are all determined by the availability of a water supply and by the rock types that constitute the local geology. In California the available water supply from precipitation and surface runoff, and the geology vary considerably from place to place within the state. This variation in water supply and geology requires that any consideration of groundwater issues must include a detailed understanding of both the local water supply and the local geology. A technical approach used to determine the relationship between groundwater extraction and stream flow must be suitably designed to fit the local groundwater hydrology and the local geology.

³⁰ My assumption is that if the Board pursues this approach it will implement it through formal regulations, following appropriate public processes.

groundwater diversions that in some “substantial” way undermine that authority. No magic number can do that job.

1. A well 1,000 feet or less from a designated surface stream recharge area is presumptively within the Board’s jurisdiction,³¹ if either (a) a substantial percentage of the well’s annual flow is extracted from the stream recharge area (determined by using the Jenkins method or some similar reproducible method); or (b) the well produces substantial stream depletion determined as of the period of the most critical flows of the stream system it impacts. The Board shall bear the burden of making these determinations.
2. If either (a) the well is screened below a clay layer of such thickness, and where conditions denote lateral continuity, indicating lack of well impact on the stream; or (b) the well does not create a measurable drawdown at the edge of the stream recharge area, indicating lack of hydraulic influence from the stream, the presumption of jurisdiction shall be rebutted. A party opposing a presumption of jurisdiction shall bear the burden of rebutting the presumption.
3. Whenever a well is found to be presumptively jurisdictional, any well owner may have individual pump tests performed to determine actual well impacts, for the purpose of rebutting any of the foregoing presumptions. Such tests shall be of reasonable duration and intensity. The costs of any such tests shall be borne by the party ordering the tests.
4. Whenever a well is found to be presumptively non-jurisdictional, the Board (within the scope of its ability under existing law to gather information)³² or any protestant may have individual pump tests performed to determine actual well impacts, for the purpose of rebutting any of the foregoing presumptions. Such tests shall be of reasonable duration and intensity. The costs of any such tests shall be borne by the party ordering the tests.
5. Following any such tests, and after considering the evidence before it, the Board shall make a final determination of jurisdiction.
6. The jurisdictional presumptions of ¶ 1, above, shall not apply in cases of

³¹ According to technical experts I consulted, in water table situations when setting observation wells in pump tests, drawdown is near zero at that distance, an experience that has been confirmed by modelling. Drawdown, or changes in the water table adjacent to the stream recharge area, is an indicator of hydraulic influence of the well’s pumping.

³² See note 287, *infra*.

long-standing hydrological disconnection.³³

It should be noted that a determination that a well is jurisdictional does not mean that it is in fact adversely affecting uses of the surface stream. It only means that the well is sufficiently within the impact-orbit of the stream, that the Board has jurisdiction to consider well impacts in the same way that it considers impacts from proposed surface diversions.

PART I:

THE LEGAL BACKGROUND OF THE WATER COMMISSION ACT

1. The Pomeroy Case

If there is any point about which all sides in the debates over subterranean streams agree, it is that one has to look to the decision in *Los Angeles v. Pomeroy*³⁴ for legal guidance in deciding whether certain subsurface waters are, or are not, a subterranean stream under California law.³⁵ Before turning to that much-cited case, a few preliminary comments are in order. First, the *Pomeroy* decision is not a legally binding precedent. It was decided prior to the enactment of the governing statute³⁶ and its predecessor provision,³⁷ and therefore it does not represent the

³³ See text at note 211, *infra*.

³⁴ 124 Cal. 597, 57 P. 585 (1899), writ of error dis. sub nom. *Hooker v. Los Angeles*, 188 U.S. 314, 23 S.Ct. 395, 47 L.Ed. 487 (1903).

³⁵ For example, in a statement at a public workshop held by the SWRCB on April 24, 2000, the Department of Water Resources stated that “the appropriate legal test to be applied in distinguishing between percolating water and subterranean streams was set forth by the California Supreme Court in *Los Angeles v. Pomeroy* more than 100 years ago.” Statement of the Department of Water Resources, State Water Resources Control Board Workshop, 24 April 2000, at 1. See also *Id.*, at 6: “In determining the legal classification of groundwater, the Board and its predecessors have relied on the California Supreme Court’s 1899 decision in *Los Angeles v. Pomeroy* which established the distinction between subterranean streams and percolating groundwater.”

³⁶ Water Code § 1200. See also §1221: “This article shall not be construed to authorize the board to regulate groundwater in any manner.” As this provision makes clear, under the Water Code a “subterranean stream flowing through known and definite channels” is not legally

(continued...)

Supreme Court’s interpretation of the legislature’s intent in enacting the Water Commission Act in 1913. Second, it may well be that *Pomeroy* has been more often plucked for its quotable language than studied for its meaning and context (many commentators quote the language of its headnotes rather than the text of the opinion), and that at least some of what has been attributed to it over the years may be misleading. Third, any effort to ascertain the significance of *Pomeroy* to the 1913 law needs to take account of subsurface water law developments in the California Supreme Court between 1899 and 1913. Fourth, and finally, it is important to understand what the legislature was trying to do when it enacted the statutory provision in question, rather than just assuming it meant to codify the *Pomeroy* opinion. The following pages explore each of these matters.

Pomeroy was an eminent domain valuation case. In order to improve its municipal water supply system, Los Angeles had condemned a narrow strip of land comprising 315 acres, averaging some ¼ mile in width,³⁸ adjacent to the Los Angeles River just above where it passes through the narrows out of the San Fernando Valley, between the eastern extremity of the Cahuenga Mountains and the Verdugo hills. The question in the case was how to value the land taken. It was determined that Los Angeles had a paramount pueblo right to the water of the Los Angeles River. If the water beneath the condemned land was water of the Los Angeles River, the City was entitled to it and the condemnation award could not include the sales value of the water under the land for use elsewhere. Notably, the case had nothing to do with state regulatory jurisdiction over groundwater. The question was simply whether the water beneath the defendants’ land was part of the Los Angeles River (Los Angeles wins), or whether it was part and parcel of the condemned land (defendants win).

The physical situation in the case was that the water of the Los Angeles River had its source in the mountains surrounding the San Fernando Valley, water that went underground into the alluvium of the Valley, and then by gravity flow found its way to the River. The Court acknowledged that all, or virtually all, the groundwater from the San Fernando Valley watershed found its way into the Los Angeles River. The defendants’ land lay on both sides of the River, and the subsurface water beneath it was “in intimate contact” with the surface flow, and flowing in the same direction

³⁶(...continued)
considered “groundwater”.

³⁷ The original statute read: “Whenever the terms stream, stream system, lake or other body of water or water occurs in this act, such term shall be interpreted to refer only to surface water, and to subterranean streams flowing through known and definite channels.” Statutes 1913, ch. 586, § 42 (Approved June 16, 1913, in effect August 10, 1913).

³⁸ 124 Cal., at 604, 606.

at a rate about 1/1000 the rate of the surface stream.³⁹ The Court held that the evidence sustained a finding that this subsurface flow was a subterranean stream. The bulk of the Court's opinion examines the question whether the law with respect to subterranean streams was correctly stated in the trial judge's instructions to the jury.

The narrow question in the case was whether the subsurface water in question was part of the surface stream of the Los Angeles River. For that reason the instructions speak to evidence relating to the question whether the water in question was an immediate subsurface element of the surface stream, that is, what is usually called underflow.⁴⁰ For example, the trial judge told the jury that if it found the water moving underground was "in the same general direction as the surface stream and in connection with it,"⁴¹ then the water should be considered as part of the watercourse. That instruction, and its approval by the Supreme Court, does not decide one way or another whether the presence of subsurface water flowing in the same direction as the surface stream is a necessary element of any subterranean stream.⁴² There is, however, at least one thing the Court does make clear. Nothing in the case is intended as a determination that all tributary

³⁹ The court said the surface stream flowed 2-3 feet/second, and the subsurface flow was 14-17 miles/year. *Id.*, at 617. This was probably a misstatement, see Statement of Dennis E. Williams, State Water Resources Control Board Workshop, 24 April 2000, transcript, at 58 ("...Pomeroy...estimated...groundwater was flowing...200 to 250 feet per day....Groundwater flows a few feet per day").

⁴⁰ In defining "underflow," reference is usually made to the elements mentioned in Instruction XVI in the *Pomeroy* decision: groundwater must be connected to the surface stream, flow in the same direction as the surface stream, be confined to a reasonably well-defined space, and be moving in a course. *Los Angeles v. Pomeroy*, 124 Cal., at 623-624.

⁴¹ 124 Cal., at 624.

⁴² *Pomeroy* quoted from Kinney's first edition, published in 1894, Clesson S. Kinney, A Treatise on the Law of Irrigation (1894), § 48, 69-70. Kinney had a rather formal and elaborate conception of subterranean streams, which he spelled out at length in his second edition (Clesson S. Kinney, A Treatise on the Law of Irrigation, vol. II (1912), at § 1161, pp. 2106-07). He included known and unknown, dependent and independent, subterranean streams. Underflow is the classic example of what he calls a known, dependent subterranean stream. While what Kinney had primarily in mind were simply the subsurface elements of more-or-less perennial surface streams, according to him a subterranean stream may also be entirely independent of any surface stream, so long as it ascertainably has the channel-like characteristics of surface streams. Such flows, which Kinney calls "independent [of surface] streams" may be identified by "the topographical features of the country." Kinney, 2d ed., at § 1165, at 2117. Kinney cites for this point *McClintock v. Hudson*, 141 Cal. 275, 74 P. 849 (1903).

underground water should be classified as a subterranean stream.⁴³

Taken all in all, *Pomeroy* can be read broadly or narrowly, and neither reading can be said definitively to be right or wrong. The case itself deals only with the underflow of a gaining stream,⁴⁴ but it purports to set out more generally “the proper definition of a subterranean stream”, which it does by quoting from Clesson Kinney’s treatise on the law of irrigation.⁴⁵ In so doing, it employs terms that are capable of variable interpretations, but which the Court either does not define, or defines ambiguously. For example, the Court does not indicate what sort of movement is required for subsurface water to be “flowing,” a matter of some importance since virtually all groundwater is in motion to some extent. It says a channel must be “defined,” and defined means

⁴³ 124 Cal., at 631-32. As the issue is sometimes raised whether the legal definition of a subterranean stream might embrace the whole of the Central Valley or any other broad alluvial valley enclosed by mountains and thus arguably having a bed and banks, the instructions in *Pomeroy* are striking: Having just described a “watercourse,” as above, the trial judge goes on to say that “[w]ater moving by force of gravity in a valley or basin of wide extent,...and moving generally through the whole or through a large portion of the basin...composed of alluvial or other deposit lying throughout the entire basin...do not constitute a watercourse....” *Id.*, at 627. The Supreme Court underlines this point, noting that the trial judge “was not giving, or intending to give, a definition which would make the whole San Fernando basin a subterranean stream. The instructions...are applicable...exclusively to the comparatively narrow outlet of the valley...between the rocky and comparatively impervious mountain sides on either hand... [including] water moving in a definite direction...[and] sides and bed to the channel in which it is moving...” *Id.*, at 631-32. Well before *Pomeroy*, California court cases had already decided to reject integrated management of surface and groundwater, even where knowledge of the hydrological impact was clear and undisputed, *Gould v. Eaton*, 111 Cal. 639, 645, 44 P. 319 (1896), and despite a view that such a rule was not required by precedent, and was unwise. *Southern Pacific Railroad Co. v. Daffier*, 95 Cal. 615, 619-20, 30 P. 783 (1892). Explicit reference to these precedents in *Pomeroy* makes clear that the *Pomeroy* Court was not seeking to use the subterranean stream category to bring about integration of surface rights with uses of tributary groundwater.

⁴⁴ There seem to be no early cases finding a subterranean stream that involved anything other than underflow. For example, only a few months after the *Pomeroy* decision, the Court held that the subterranean flow in the bed of the San Gabriel River was underflow constituting a subterranean stream, and not percolating water that belonged to the owner of the soil. *Vineland Irrigation Dist. v. Azusa Irrigating Co.*, 126 Cal. 486, 494, 58 P. 1057 (1899).

⁴⁵ See note 42, *supra*.

“contracted and bounded,”⁴⁶ but it does not further define those terms. Whatever contracted and bounded means, the Court acknowledged that in the *Pomeroy* case the “contracted and bounded” area was as much as two and a half miles in width,⁴⁷ which is hardly what most people would think of as a contracted channel. Moreover, one is left unsure whether it is essential to the decision that within such a channel “there was a subsurface flow corresponding with the surface flow....”⁴⁸ If so, that would significantly narrow the potential for a broad area of an alluvial valley to qualify as a bounded and contracted channel. As to the “sides and bed” to the channel,⁴⁹ the Court describes them as “comparatively impervious,”⁵⁰ giving no further definition to that characterization.

The plain fact is that while the outcome in *Pomeroy*, in favor of Los Angeles, made good sense, the decision’s legal effort to define a part of the groundwater continuum as a “subterranean stream” was both a hydrogeological and a public policy fiasco. Virtually everyone acknowledges this. What is less often noted is that the *Pomeroy* test was soon abandoned by the California Supreme Court. In fact, it is almost certainly the case that the *Pomeroy* court itself realized that the subterranean stream category it had fashioned was an unfit tool for water management. After all, the judges in the *Pomeroy* case were perfectly well aware that the water in the Los Angeles River, and its underflow, and all the rest of the surface and subsurface water in the San Fernando Valley, was part of single, continuous system. The *Pomeroy* Court acknowledged that fact explicitly. It knew full well that the “percolating” water outside of the acreage in the case was on its way to those lands where it would be magically transformed into “subterranean stream” water. Why, then, did it write the opinion it did? After all, unlike today’s Board and courts, it had no subterranean stream language in a statute that it was bound to interpret and implement. It was making law in the common law tradition.

⁴⁶ 124 Cal., at 633.

⁴⁷ *Id.*, at 632.

⁴⁸ *Id.*, at 634.

⁴⁹ *Id.*, at 632.

⁵⁰ *Ibid.* Despite the common use of the word “impermeability” in discussions of the *Pomeroy* case rule, neither the instructions, nor the Supreme Court opinion uses that word. The Supreme Court, attributes to the trial court a standard of “a well-defined channel with impervious sides and banks” *Id.*, at 631 (emphasis added), though the word “impervious” never appears in the trial court’s instructions. The trial court said only that the sides and banks “may consist of any material which has the effect of confining the waters within circumscribed limits.” *Id.*, at 623 (Instruction XV). In any event, in the very next paragraph the Supreme Court describes the channel as being the “comparatively impervious mountain sides on either hand.” *Id.*, at 632. See note 146, *infra*.

2. The Pomeroy Case in its Historical Context

The traditional common law definition of subterranean streams was very narrow and essentially limited to flows in limestone regions.⁵¹ Why didn't the Court in *Pomeroy* leave it at that, and instead adopt a common sense test based on whether the water in question was tributary to the surface river, and whether its pumping would adversely affect the rights Los Angeles held in the river? That would have been a straightforward, hydrologically and legally rational approach, and would have avoided the need to wrestle with the obviously unwieldy concept of a "subterranean stream."

We now know the answer. It was provided a few years later by the trial judge in *Pomeroy*, Lucien Shaw. Shaw subsequently became a Justice of the California Supreme Court, and wrote several important groundwater opinions, including the decision in *Katz v. Walkinshaw*.⁵² The explanation is ironic in the extreme, because the justification for what the Court did in *Pomeroy*, and for the rule it fashioned – which still dominates California groundwater law a century later – was repudiated by the California Supreme Court in 1903. Why did the Court do what it did, and what happened next? The answer is fascinating.

In 1899, when *Pomeroy* was decided, it was still widely believed that the common law doctrine of absolute ownership was the law governing groundwater in California.⁵³ Under that doctrine, a landowner could pump and bear no responsibility for the impact on other pumpers, however great the damage to them, so long as he was not actuated by malice.⁵⁴ Indeed, the trial judge in *Pomeroy* drew on the decision in *Hanson v. McCue*⁵⁵ in his instructions, a California case that cited absolute ownership as the governing rule for groundwater. If that was the law, then a landowner overlying such water, so long as not actuated by malice, could pump and use the water without regard to its impact on others. Under the rule stated in the *Hanson* case in 1871, only if the landowner was pumping from a subterranean stream could he be restrained from harming

⁵¹ The conventional cases spoke of those genuine underground flows "in limestone regions." And the courts recognized that "[u]nderground currents of such a description are exceptional in their nature...." *Haldeman et al v. Bruckhart*, 45 Pa. 514, 518 (1863).

⁵² 141 Cal. 116, 74 P. 766 (1903).

⁵³ See *City of San Bernardino v. City of Riverside*, 186 Cal. 7, 14, 198 P. 784 (1921).

⁵⁴ The English common law rule for groundwater is generally traced back to the 1843 decision in *Acton v. Blundell* 12 M. & W. 324 (Meeson and Welsby), reprinted in CLII The English Reports 1223 (Exchequer Division VIII, 1915). There was recognized a subterranean stream exception to this rule, *Chasemore v. Richards*, 7 H.L. Cas. 349, 1 Engl. Rul. Cas. 729, 754 (1859), but the presence of such streams was considered quite exceptional.

⁵⁵ 42 Cal. 303, 10 Am.Rep. 299 (1871).

another who had a right to the water with which his pumping interfered. The *Hanson* case seems to be the first California decision to use the sort of formulation that appeared in *Pomeroy* and then later showed up in California statutory law: “a subterranean stream of a defined character, and flowing in a defined channel”.⁵⁶

Under the absolute ownership legal rule articulated in the *Hanson* case, if the water under the defendants’ land in *Pomeroy* was percolating groundwater, the landowner could pump it no matter that it was draining water from the Los Angeles River. If absolute ownership was the law in California, it was essential to determine if the water in question was, or was not, percolating groundwater. Only if it was not, and was instead “subterranean stream” water, could Los Angeles be secure in its rights in the Los Angeles River. The assumption that absolute ownership was the law governing groundwater is thus what created the need for a subterranean stream doctrine.⁵⁷ The irony of *Pomeroy* is that absolute ownership wasn’t the law in California after all.

Though the *Pomeroy* Court understood the hydrological realities in the case before it, it accepted the premise that underlay Judge Shaw’s instructions, which was that percolating groundwater was subject to the absolute ownership rule. On that premise, either Los Angeles had to lose a case that the Court undoubtedly believed that the city deserved to win, or the Court had to look to a legal theory that solved the immediate problem before it, but created a hydrologically untenable distinction among groundwater at different stages of its voyage down through the San Fernando Valley. The *Pomeroy* Court chose to decide in favor of a result that protected Los Angeles’ treasury at the expense of a coherent legal theory. Since *Pomeroy* did not actually involve a dispute over water, it left to another day the question how much protection Los Angeles would be given against pumpers generally in the San Fernando Valley, that is, how much tributary groundwater would be found to be “subterranean stream” water.

⁵⁶ 42 Cal., at 308. It is perhaps worth noting that in its characterization of subterranean streams, the Court in *Hanson* seems to have had in mind something much more like a true river underground: “Underground currents of water... are known to exist in considerable volume, particularly in limestone regions.” *Ibid.* But “limestone in California is insignificant as a water-bearing formation.” California’s Ground Water, Dept. of Water Resources Bulletin No. 118 (Sept. 1975), at 15. “[D]efinite underground streams are few and of rare occurrence,” Samuel C. Wiel, II Water Rights in the Western States (3d ed., 1911), § 1077, at 1011-12.

⁵⁷ To be sure, any jurisdiction that had separate legal regimes for groundwater and surface water (even if absolute ownership was not the groundwater rule), had to have some way to draw a line between what was groundwater and what was surface water. It was early recognized that some water, though physically beneath the surface of the earth, was functionally so much part and parcel of the surface stream that it was prudent, not to say essential, to manage it integrally with the surface stream. But, as we shall see, that did not mean one needed the artifice of a “subterranean stream” doctrine such as that fashioned by Kinney.

3. Doing the Job Pomeroy Failed to Do:
Katz v. Walkinshaw and Los Angeles v. Hunter

Only four years after the *Pomeroy* decision, a far more famous case was decided by the California Supreme Court, *Katz v. Walkinshaw*.⁵⁸ The facts were simple enough. Plaintiff was pumping groundwater and using it on his overlying land. Defendant was pumping groundwater from under his nearby land, and taking it off the overlying land for use. Plaintiff claimed that defendant's pumping dried up his wells, and that he was entitled to relief. The defendant asserted that California followed the absolute ownership doctrine of groundwater law, that "each landowner owns absolutely the percolating waters in his land, with the right to extract, sell, and dispose of them as he chooses, regardless of the results to his neighbor..."⁵⁹ Plaintiff denied that absolute ownership was the law in California, but he had a second theory as well. He also claimed that they were both pumping from an underground stream, and so, in any event the law governing percolating groundwater, even if it was absolute ownership, didn't apply.

What makes the case especially significant for our purposes is that the Court found it need not decide whether the water in question was a subterranean stream or percolating groundwater, because absolute ownership wasn't the law of percolating groundwater in California. Thus the defendant would lose whether the water in question was percolating water or the water of a subterranean stream. Of course everyone today knows that *Katz v. Walkinshaw* is the case that declared the correlative rights doctrine as the law governing competing groundwater pumpers.⁶⁰ What is not so well remembered is that the decision broke sharply with tradition and precedent, rejecting claims that absolute ownership must be the law of percolating groundwater because that was the common law rule, because California had adopted the common law, and because a previous Supreme Court decision (*Hanson v. McCue*) had said it was the law (though in dictum). The rejection of the common law absolute ownership rule in *Katz* was at the time considered "novel and of the utmost importance"⁶¹ and the case was decided by the Court upon rehearing, following exhaustive briefing.

The relevance of the groundbreaking decision in *Katz* is that it made the doctrinal gymnastics of the *Pomeroy* case unnecessary, and reduced the subterranean stream category to a virtual

⁵⁸ 141 Cal. 116, 74 P. 766 (1903).

⁵⁹ 141 Cal., at 121.

⁶⁰ Perhaps not everyone. One still finds people quoting the absolute ownership language that appeared in Instruction XII in *Pomeroy*, which the Supreme Court expressly disavowed as the law in *Katz v. Walkinshaw*, 141 Cal., at 132. See letter to State Water Resources Control Board from William H. Baber III, for the Subterranean Streams...Workshop (April 18, 2000), at 2.

⁶¹ 141 Cal., at 120.

irrelevance. If landowners pumping groundwater – even percolating groundwater – must respect the rights of other water-rights holders whom their pumping injures, then it makes no difference in a case like *Pomeroy* whether the water in question was a subterranean stream or percolating water. Since Los Angeles had a paramount right to the waters of the Los Angeles River, any diversion of groundwater that impaired that right would be a violation of Los Angeles’ right under the rule of *Katz v. Walkinshaw*.

Essentially what *Katz* did was to determine that the resolution of conflict between contending water users should be based on the impact of one use upon another, rather than upon some *ex-ante* classification of the source. This change was calculated to bring the legal rules into congruence with the hydrological realities; and in doing so to eliminate the legal fiction that groundwater movement was unknowable in favor of case-specific factual inquiries: was the water’s movement known or practically determinable? If so, what were the impacts? And if there were impacts, were they legally redressable?

If the *Katz* decision had preceded *Pomeroy*, the subterranean stream concept in California law might well have faded into the mists of legal history. As the Court put it in *Katz*, “averment[s] that ...water constitute[s] part of an underground stream may be regarded as surplusage.”⁶² That statement is especially notable because the author of the *Katz* opinion was none other than Lucien Shaw, who had been the trial court judge in *Pomeroy*. It was Judge Shaw’s instructions that were the subject of the decision in *Pomeroy*. And it was Shaw who relied on the absolute ownership doctrine from *Hanson v. McCue* in his instructions,⁶³ which may have been the very thing that led the *Pomeroy* Court to rely on the subterranean stream finding, and to equivocate about the status of all the rest of the percolating, tributary groundwater in the San Fernando Valley. Yet four years later it was this same Lucien Shaw, now a Justice (and later Chief Justice) of the California Supreme Court, who wrote the opinion in *Katz v. Walkinshaw* stating that the “subterranean stream” category was effectively “surplusage.” Indeed, in a law review article he wrote many years later, Shaw restated the holding of *Pomeroy* in terms that brought it into line with *Katz* and subsequent decisions. That case, he said, stood for the proposition that “persons having rights in a natural stream were threatened with injury by extraction of the percolating [!] water which sustained and supported the stream in its flow.”⁶⁴

Why, then, did Shaw give the instruction he did in *Pomeroy*, which made the distinction between a subterranean stream and percolating ground water so important? Shaw gave the explanation in his opinion in *Katz*. Speaking of himself, he said: “Inasmuch as the writer of this opinion [in *Katz*] was also the writer of the instruction under consideration [in *Pomeroy*], it may be proper to say

⁶² *Id.*, at 121.

⁶³ Instruction No. XII, at 124 Cal., at 622 (“absolute owners”).

⁶⁴ Lucien Shaw, The Development of the Law of Waters in the West, 10 Cal. L. Rev. 443, 458 (1922) (exclamation added).

that he did not give the instruction because he approved that part of it restating the doctrine of *Hanson v. McCue*. The instruction was given because [it] had been requested by the appellants in the case, and [Los Angeles] consented that that part should be given in substance rather than take the chances of a reversal of the case, should the supreme court hold its refusal to be erroneous [that is, should the supreme court approve the absolute ownership doctrine].”⁶⁵ In short, Los Angeles was worried that absolute ownership might be held to be the law of percolating groundwater in California, and if it were, then Los Angeles could only prevail if the water under the land being condemned was not percolating groundwater, but was part of a subterranean stream. To be on the safe side, it agreed to the instruction, and the *Pomeroy* Court, unwilling or unready to repudiate the absolute ownership doctrine, assumed its validity, and was thus obliged to draw the subterranean stream/percolating groundwater distinction.

It wasn’t until Shaw’s opinion in *Katz* that the Court decisively repudiated absolute ownership. Any doubt that the subterranean stream issue was no longer considered significant to groundwater litigation in California was removed in subsequent Supreme Court decisions. In a case decided less than a month after *Katz*, Justice Shaw wrote: “The case of *Katz v. Walkinshaw*...establishes a rule with respect to waters percolating in the soil, which makes it to a large extent immaterial whether the waters in this land were or were not a part of an underground stream, provided the fact be established that their extraction from the ground diminished to that extent, or to some substantial extent, the waters flowing in the stream.”⁶⁶ Then in 1909, in another groundwater case, the Court said: “There is no rational ground for any distinction between such percolating waters and the waters in the gravels immediately beneath and directly supporting the surface flow, and no reason for applying a different rule to the two classes,...if, indeed, the two classes can be distinguished at all.”⁶⁷

That same year the Court decided *City of Los Angeles v. Hunter*.⁶⁸ *Hunter* dealt with the question raised but left in limbo in *Pomeroy*: What right did landowners in the San Fernando Valley further

⁶⁵ 141 Cal., at 131.

⁶⁶ *McClintock v. Hudson*, 141 Cal. 275, 281, 74 P. 849 (1903). The Court made this statement in response to a claim by a surface riparian user that a neighboring landowner was unlawfully interfering with the plaintiff’s right by pumping and taking water offsite for use, because the groundwater being pumped was a “subterranean stream” drawing from the surface stream.

⁶⁷ *Hudson v. Dailey*, 156 Cal. 617, 628, 105 P. 748 (1909). The category had not wholly disappeared, it seems. See *Arroyo Ditch & Water Co. v. Baldwin*, 155 Cal. 280, 100 P. 874 (1909), though the *Arroyo Ditch* decision’s use of the subterranean stream category is at odds with the great weight of California Supreme Court opinions of that era.

⁶⁸ 156 Cal. 603, 105 P. 755. Notably the decision in the *Hunter* case was written by Justice Frederick W. Henshaw, who participated in both *Pomeroy* and *Katz*.

from the stream than those in *Pomeroy* (though still within the several-miles-wide banks area identified in *Pomeroy*), have to pump tributary groundwater that diminished flows in the Los Angeles River? The facts were these: Los Angeles brought suit against owners of some 5,000 acres in the San Fernando Valley who were pumping water asserted to be tributary to the Los Angeles River, to quiet title to its paramount right to use of the waters of the River. The principal claim of the defendants was “[t]hat the waters are strictly percolating waters, not belonging to the subterranean flow of the stream, but if concededly on the way to join and swell such flow, still percolating waters, to the use of which, as owners of the land, they have an absolute indefeasible right.”⁶⁹

The Court rejected this claim, holding it was immaterial whether the waters in question were considered percolating or not. Since “[t]hese waters percolate...in the sense that they form a vast mass of water confined in a basin filled with detritus, always slowly moving downward to the outlet [which is the Los Angeles River],”⁷⁰ then insofar as Los Angeles has paramount rights to the use of all the waters of the River, “none of these so-called percolating waters may be withdrawn to the invasion and injury of such right.”⁷¹ It was held unnecessary, as in *Katz* and *McClintock*, to classify the water either as percolating or as a subterranean stream.

When Kinney, on whose 1894 treatise the *Pomeroy* Court had relied, published his second edition in 1912 he acknowledged the change that had occurred. Citing the more recent California cases, such as *Los Angeles v. Hunter*, he explained that only a limited class of percolating waters, “diffused percolating waters,” “are considered as a part of the very soil itself and belong to the realty in which they are found.” Picking up the test of *Hunter*, he explained that “these [percolating] waters are those which, as far as known, do not contribute or are not tributary to the flow of any definite stream or body of surface or subterranean waters.”⁷² Though unwilling to let loose of the old terminology, Kinney acknowledged that the groundwater question was becoming a matter of evidence based on the ability to determine hydrological relationships, rather than a formal classification based on the geography of the water’s movement:⁷³

It is plain to see that, as the years go by, the class of diffused percolating waters will be growing smaller and smaller. This is due the scientific investigations of the movements of percolating waters through the ground, and also to the discoveries which are constantly

⁶⁹ *Id.*, at 605.

⁷⁰ *Id.*, at 607.

⁷¹ *Id.*, at 608.

⁷² Clesson S. Kinney, *A Treatise on the Law of Irrigation*, vol. II (1912). See 2 Kinney § 1188, pp. 2152 (emphasis added).

⁷³ *Id.*, at 2153.

being made that certain waters which were once considered mere percolations flowed in defined subterranean channels which have become known....In time, if the courts are as active in establishing new rules governing subterranean waters within the next few years as they have been in the past ten years, which rules have but kept pace with the scientific investigations upon the subject, this class of subterranean waters will pass from the class of those flowing in unknown courses to those flowing in known courses, and the “secret incomprehensible influences,” and “practical uncertainties” will become comprehensible influences and practical certainties.

The newer California judicial approach that Kinney acknowledged, which focused on whether groundwater was known to be contributing to a surface stream, as the line of demarcation, continued into modern times. In 1943, in *Los Angeles v. Glendale*,⁷⁴ the Supreme Court stated unequivocally that Los Angeles’ pueblo right in the Los Angeles River extended to all the groundwater in the San Fernando Valley upon which the flow of the River depended; and it made clear, by citing *Hunter* as authority, that it did not view that case as limited to groundwater in the southeast corner of the Valley within the bed and banks area described by *Pomeroy*. The Court said:⁷⁵

It has long been established that as successor to the pueblo of Los Angeles, the city of Los Angeles has a right, superior to that of a riparian or an appropriator, to satisfy its needs from the waters of the Los Angeles River [omitting citations]. Because the flow of the river is dependent on the supply of water in the San Fernando Valley, it has also been held that the pueblo right includes a prior right to all of the waters in the basin. (Los Angeles v. Hunter, 156 Cal. 603 [105 P. 755]).

In 1975, in *Los Angeles v. San Fernando*,⁷⁶ the Supreme Court reaffirmed *Glendale* explicitly. But it did something else as well. It made clear that the scope of Los Angeles’ pueblo right grew out of the scope of the waters of the Los Angeles River, and that the scope of the Los Angeles River was determined by the extent of the groundwater that was tributary to the River. In other words, for determining pueblo rights, the Los Angeles River consists of its surface flow and the groundwater tributary to it. The Court decided that the subterranean extent of the Los Angeles River is measured by the tributary nature of the groundwater in the San Fernando Valley, the very thing that *Pomeroy* said it was *not* deciding. Revealingly, both the *Glendale* and *San Fernando* cases cite *Hunter*, not *Pomeroy*, as authority for the expansive view of the subterranean extent of

⁷⁴ 23 Cal.2d 68, 142 P.2d 289 (1943).

⁷⁵ *Id.*, at 73 (emphasis added).

⁷⁶ 14 Cal.3d 199, 537 P.2d 1250 (1975).

the Los Angeles River.⁷⁷ It is important in this respect to note that *Glendale* and *San Fernando* do *not* simply say that pueblo rights extend to groundwater beneath the pueblo boundaries. The Court conceived of the pueblo right as including within the surface stream its tributary groundwater – the “waters of the Los Angeles River and the waters supplying it.”⁷⁸ The cases are about “rights in the Los Angeles River,”⁷⁹ “the river to which the pueblo right attaches.”⁸⁰ That, of course, is a fundamentally different view from that inherent in the 1894 Kinney classification of waters, and in the boundary that the Court in *Pomeroy* was at pains to identify, when it said that its decision was not meant to embrace the entire San Fernando Valley.

But – and this is the most important “but” in this Report – as it turned out, the legislation upon which Water Code § 1200 rests did not follow in the path that Justice Shaw and the California Supreme Court’s subsequent pueblo rights cases set out for it. Instead, by a circuitous path, the legislature was led back to the distinction and the formulation that the *Pomeroy* Court had used. How that happened is the subject of the next section of this Report.

PART II:

THE STATUTORY RESPONSE

1. The Water Commission Act of 1913

Prior to 1911, all appropriation rights to surface water were acquired under sections 1410 to 1422 of the Civil Code, which essentially was a law requiring filing of a notice of appropriation. Failure to comply made appropriators vulnerable to subsequent claimants who had complied. There was no state administration of water rights. Groundwater was simply pumped by overlying landowners without any state administration or regulation. In 1911 the legislature established a State Conservation Commission to make a study of the need of laws for the preservation and control of the use of the natural resources of the State (one of which was water), to report to the Governor and to recommend measures to the legislature.⁸¹ George C. Pardee, a progressive Republican,

⁷⁷ 23 Cal.2d, at 73. See also 14 Cal.3d, at 248.

⁷⁸ 14 Cal.3d, at 212.

⁷⁹ *Id.*, at 241, n. 23.

⁸⁰ *Id.*, at 251.

⁸¹ Ch. 408, Statutes of 1911 (April 8, 1911). At the same time the legislature established a State Board of Control (the next year its work was taken over by the State Water Commission),
(continued...)

who had been Governor of California in 1903-07, was appointed chairman of the Commission. The other two members were Francis Cuttle and J.P. Baumgartner. The Report of the Commission, transmitted on January 1, 1913,⁸² and its legislative proposal for water, was the source for the bill that ultimately became the Water Commission Act. Section 42 of that Act is, with very slight changes, today's Water Code § 1200. The inspiration for the enactment of a comprehensive water law was an extraordinary document, Report of Irrigation Investigations in California, done under the direction of Elwood Mead.⁸³

The original legislative draft prepared by the Conservation Commission explicitly provided a permit system both for surface and for underground waters, and the two categories were dealt with in separate, similar⁸⁴ sections of the draft bill. Just as the bill recognized riparian uses of surface water, and did not subject them to permitting, so it recognized the right of overlying landowners to use underground water on overlying land without permitting. But it did require those seeking either surface stream appropriations, or groundwater appropriations for use off the overlying land, to obtain appropriation permits. In addition, the bill specifically granted the Commission authority to protect those with surface stream rights against off-tract underground pumpers "where it is claimed that such development and carrying away of water is diminishing the supply of water of such riparian owner or appropriator of water from the streams of water or underground water."⁸⁵

⁸¹(...continued)

which had authority to accept applications for the use of water for power purposes, which could grant term licenses for 25 (later extended to 40) years. Ch. 41, Extra Session, 39th Legislature (Jan. 2, 1912). See Report of the State Water Commission of California, Published April 1, 1914 (Sacramento, State Printing Office, 1914), at 7.

⁸² Report of the Conservation Commission of the State of California, January 1, 1913, Transmitted to the Governor and the Legislature January 1, 1913 (1912), at 19-42. No official version of the Commission's legislative recommendation is extant. A version found in the Charles David Marx Papers, at Stanford University, SC 161, Series VIII, Box 1, and reproduced here as Appendix A, is undoubtedly the Commission's bill, as explained more fully below.

⁸³ Bulletin No. 100, U.S. Department of Agriculture, Report of Irrigation Investigations in California (Washington, D.C., Government Printing Office, 1901). Elwood Mead, a pioneer in western water law, was the first state engineer of Wyoming, and later Commissioner of the Federal Bureau of Reclamation.

⁸⁴ There was some odd lack of parallelism. While the bill required registration of proposed riparian uses and abolished unused surface riparian rights after four years of nonuse, no such limitations were imposed on overlying uses of groundwater.

⁸⁵ Sec. 17.

In short, the Commission bill sought to get rid of distinctions between groundwater and surface water legal regimes, and to institute integrated, parallel systems. But because it still recognized underground water and surface water as distinct categories, it had not really rid itself of the question, what is groundwater, and what is surface water, despite its attempt to do so.⁸⁶ Section 8 of the bill, which provided “Underground water, for the purpose of this act, is defined as any water that occurs or is found beneath the surface of the ground,” generated a lengthy and fascinating discussion in hearings held by the Commission. The predictable question was, if a surface stream moves underground for a certain distance, and then again rises to the surface, may one put a pump in the below-surface area and then be subject to the underground water provisions of the act, rather than the surface water provisions?⁸⁷ The Commission debated the question, is there water that “occurs or is found beneath the ground” that should not be treated as underground water, but as surface water?

The following excerpts from a hearing held on the Commission’s original bill on May 28, 1912, are exceptionally revealing of how those involved in the development of the 1913 legislation were thinking about the issue at the time:

The Chair of the Commission, former Governor George Pardee, was going through the Commission’s draft bill section by section, and read out Section 8: “Underground water, for the purpose of this Act, is defined as any water that occurs or is found beneath the surface of the ground.”

....

⁸⁶ Samuel Wiel, a prominent San Francisco attorney and writer on water law, was in active consultation with the Commission, and had suggested, unsuccessfully, a “consolidated” system. Wiel says that his “suggestions were not acted upon by the Commission and form no part of the bill presented to the legislature, nor of the statute passed.” Samuel C. Wiel, *A Short Code of Underground Water*, 2 Cal. L. Rev. 25 (1914). Wiel’s notion was that “[a] definite body of water upon the surface, and the underground water proximately connected therewith in natural occurrence, constitute a consolidated underground and surface water-supply” and that rights should “extend to the whole and every part of a consolidated surface and underground water-supply...without distinction between the surface part and the underground part.” *Id.*, at 26.

⁸⁷ It is not clear what exactly the differences in result would have been, since in general the bill sought to integrate the two sources, but the bill seems to have anticipated at least one difference: Under § 17 of the bill, groundwater appropriators making off-tract uses are made subordinate to surface-stream riparians whose supply their appropriations diminish. However, there is nothing in the bill that makes surface-stream appropriators subordinate to overlying on-tract users of groundwater when the surface-stream appropriations diminish their supply, though groundwater appropriators appear to be thus subordinated under § 15(a).

MR. KEECH:[⁸⁸]....The sub-surface stream is deemed to be part of the stream; one minute it is in the open and another minute it is below the surface. The vested rights in a stream under the riparian law is the stream consisting of the running open water on the surface and also of the sub-surface water in the same bed.

MR. BAUMGARTNER: As we have handled “Stream flow” in the Bill, does it interfere with the sub-surface stream?

MR. KEECH: You have handled “stream” so far under the term of riparian rights only, and the riparian rights include that sub-surface flow and is sustained by the courts, and sustained by constitutional provision. Now you propose to take out and destroy it as a stream flow and put in and classify underground water with sub-surface flow.

MR. Pardee: How would this do: [Underground water...is defined as any water that occurs or is found beneath the surface of the ground] outside limits of defined stream.

....

MR. CUTTLE: All I seek is to determine what is underground stream and what is percolating water.

MR. KEECH: ...This sub-surface flow is an all important matter and it is so radical a departure from the law that I do not think it would stand. I think you have attempted to incorporate riparian law in accordance with the decisions of the courts, but now you take that underground flow right out of the rule and class it with water with which it has never been classed; and since you provide for both kinds of water, why have you made that radical change?

MR. PARDEE: Put right at the end of the sentence “exterior to banks of streams.”
[“Underground water, for the purpose of this Act, is defined as any water that occurs or is found beneath the surface of the ground exterior to banks of streams.”]

⁸⁸ Hearing of May 28, 1912, 2 p.m., beginning at 8, see Appendix D, *infra*. Stenographic transcripts of these hearings were found in Oakland in the Pardee Home Museum Papers, Water Conservation, Box 29. They are attached in full here (including those portions that deal with matters other than groundwater) as Appendix D.

The cast of characters in the hearings is as follows: Pardee is the Chair of the Conservation Commission, and, as noted above, Francis Cuttle and J.P. Baumgartner were the other two Commission Members. E.E. Keech was a lawyer practicing in Santa Ana, who represented water users in San Bernardino, Riverside, and Los Angeles Counties. Samuel Wiel, as noted above, was a very prominent San Francisco lawyer and a prolific writer on water law. Frank H. Short of Fresno was a prominent water lawyer who represented Central Valley agricultural interests. Mr. Tait was probably C.E. Tait, who was senior irrigation engineer, in the office of public roads and rural engineering, at the U.S. Department of Agriculture. He was a member of a Commission that issued a report on the utilization of the Mojave River for irrigation in Victor Valley in 1917. I have not been able to identify Mr. Lane. He might have been Franklin K. Lane, who was Secretary of the Interior in President Wilson’s Cabinet, and previously a water lawyer in San Francisco. However, Lane was a member of the Interstate Commerce Commission, and in D.C. from 1905-1913, when he became Interior Secretary.

MR. KEECH: I should say [except] “Sub-stream flow.” You have not defined stream flow, but nevertheless it is defined under the law. You have not defined stream, but that is a term known to the law. Either would be satisfactory to me.

MR. PARDEE: You want it confined to the banks of a stream?

MR. KEECH: Yes, that is all right.....

[It was then suggested that confining sub-stream flow to the banks of the stream was too narrow a definition, narrower than the Court had already determined in *Los Angeles v. Pomeroy*].

MR. KEECH: What would you say?

MR. SHORT: I would say stream flow and nothing more.

...

MR. TAIT: I would say just [...water that occurs or is found beneath the surface of the ground] “other than stream flow”.

MR. CUTTLE: Would not this difficulty crop up of determining what is underground stream flow or percolating water?

MR. SHORT: You cannot get rid of this difficulty. The rights of one kind of water is of one nature, and of the other kind of water of another nature. You want to leave the stream unimpaired and call all the other kind of water underground water.

...

MR. WIEL: I suggest this Bill have two or three chapters, underground water and stream flow, –and provide that no water that directly effects a surface flow shall be affected by this [underground] chapter....

MR. SHORT: My suggestion would be that the Act, the general scope, should apply to all waters now unappropriated as stream flow, and to all underground waters other than stream flow. When you say that you have done the best you can.

It is clear from this colloquy that the men who drafted the Conservation Commission’s bill understood that any line separating groundwater from surface water was a human construct made for some managerial purpose, rather than a line separating two distinct hydrological entities. Notably, no one made reference to the formalism of Kinney, or to traditional conceptions of “subterranean streams.” They seem to have understood perfectly well that water was a continuum. They conceived their task as drawing a functionally useful, if hydraulically arbitrary, line at what was effectively part of the stream flow. Their purpose was to define what uses would come within the bill’s provisions dealing with “underground water” (such as § 13), and which with “appropriators of waters from the streams” (such as § 17). As Samuel Wiel (the leading water law authority of his day, and a participant in the above-quoted colloquy), put it, for that purpose what was needed was a definition sufficient to protect streams against pumping that “directly effects a surface flow.”⁸⁹

⁸⁹ Wiel personally opposed drawing any distinction between ground and surface water, though that was never the position of the Commission. In this same colloquy Wiel said, “I would
(continued...)

Both the Commission's original bill, and the above discussion, demonstrates that these water experts, as of 1913, did not at all think that groundwater was too mysterious in its ways to be subject to legal control. The commonly heard notion that people back then still believed groundwater was too occult and mysterious to be managed is simply wrong.⁹⁰ As we shall see shortly, the legislative reluctance to institute integrated management was fundamentally based on legal reservations, not technical or managerial ones.

By the time the Commission's bill was introduced in the Assembly some seven months later, it had been extensively revised.⁹¹ Though we have the bills themselves, and the votes on various amendments, the full history of the legislation's development during the legislative session is lost (or at least has not yet been found), though we do have numerous newspaper reports on the bill's progress through the legislature. Most importantly, we have the bill originally drafted by the Commission, and a full transcript of the hearings (from which the above excerpts were taken) in which many – probably most – of the most influential figures participated. It appears that there was another somewhat modified version that appeared between the time of the Commission draft and the first introduced bill, and there is a law review commentary discussing it in some detail,⁹² but the draft itself has not been found. From the commentary, it appears to have been very similar to the bill introduced in the Assembly. As can best be gleaned from the law review text, that draft contained nothing new or significant relating to groundwater.

No explicit evidence of authorship has been found as to any of the bill drafts or amendments, but an undated document supporting the law, written just prior to the time it was submitted to a public referendum in 1914, has been found among Governor Pardee's papers. That document says "This Water Commission Law was drawn by the State Conservation Commission, aided by a

⁸⁹(...continued)

not make any distinction between stream flow and underground water, make no distinction whatever, but take water supply. If water supply is partially underground and partially on the surface, there is no reason why people should not enjoy it whether underground [or] in the stream. There should be a right in the supply regardless of whether underground or surface." pp. 12-13. To which Mr. Keech replied, that such a proposal "...is a departure from this Bill and is a radical construction." p. 13.

⁹⁰ The usual source for this belief is an 1850 Connecticut case, in which the court said groundwater influences "are so secret, changeable and uncontrollable, we cannot subject them to the regulation of law, nor build upon them a system of rules, as has been done with streams upon the surface." *Roath v. Driscoll*, 20 Conn. 533, 541 (1850).

⁹¹ The original Commission bill, and the bill as first introduced, are set out in full as Appendices A and B-1.

⁹² A.E. Chandler, *The Water Bill Proposed by the Conservation Commission of California*, 1 Cal. L. Rev. 148 (1913).

number of prominent attorneys, among whom may be mentioned Judge Curtis H. Lindley, of San Francisco; Judge Farraher, of Siskiyou; E.E. Keech, of Santa Ana.” In Pardee’s hand there is an insert at this point saying “Mention any others you may think of.”⁹³

Assembly Bill No. 642, was introduced on January 23, 1913, by Assemblyman W.A. Johnstone.⁹⁴ The bill seems to follow Wiel’s advice given in the hearings (though not his more general groundwater proposals in his 1914 law review article).⁹⁵ The bill makes no distinction between surface water and ground water, but simply covers “water” generally. It establishes a permit system for the appropriation of all water which has never been appropriated or applied to riparian use,⁹⁶ recognizes existing appropriations, and abolishes unused riparian rights after five years from the time the bill is enacted.⁹⁷ In result this is not different in substance from what the original Commission bill sought to do, as it would have created an appropriation permit system for both groundwater and surface water, though unlike the original Commission draft, it did not take up groundwater and surface water in separate provisions. By creating a unified system of appropriation applicable to all water, the bill as introduced avoided the need to define or to distinguish surface water from underground water, the issue that had so troubled the Commission members and their advisors during the hearing quoted above. Section 42 of the introduced bill simply says “The word ‘water’ in this act shall be construed as embracing the term ‘or use of water’; and the term ‘or use of water’ in this act shall be construed as embracing the word ‘water’”.

That approach did not last for long. The very first amendment to the bill, dated April 2, added the following sentence to Section 42: “Whenever the terms stream, stream system, lake or other body of water occurs in this act [and those were the operative terms for water in the bill], such term shall be interpreted to refer only to surface water.” Surprisingly, this significant change from both

⁹³ A copy of the letter is on file with Joseph Sax. A book by Franklin Hichborn, *Story of the Session of the California Legislature of 1913* (San Francisco, Press of the James H. Barry Company, 1913), at 153, also says “Francis Cuttle...had much to do with the framing of the measure.” (Hichborn covered the legislature for the Sacramento Bee).

⁹⁴ Johnstone became Chair of the State Water Commission in 1915, succeeding Professor Charles David Marx of Stanford University. Johnstone and Pardee knew each other, and some correspondence between them (though not on this subject) is among the Pardee papers.

⁹⁵ See note 86, *supra*.

⁹⁶ In what is probably an unintended omission, it does not explicitly recognize overlying on-tract uses of groundwater, the analogue of riparian rights on a stream. But the bill never mentions groundwater, underground water, or subsurface water in any form. It is simply implicitly incorporated in the overall definition of water.

⁹⁷ §§ 11, 34.

the Commission draft and the bill as introduced, sweeping away governance of groundwater, appears to have generated no controversy, and to have been acceptable to the supporters of the bill.⁹⁸ The most likely reason is that they had been persuaded that subjecting groundwater to the same permitting system as surface water exceeded the state's authority. And thereby hangs a most significant tale.⁹⁹

While I have found nothing documenting the thinking of those who drafted the amendment, there is some highly revealing material in the Commission's hearings during the previous year, and no doubt those who participated in the Commission's hearings also participated in the development of the bill as it moved through the legislature. On the same day that the colloquy excerpted above took place, there was also a discussion of the scope of legislative permitting authority over groundwater. The Commission's discussion had moved on from § 8 to § 11 of the bill. That section, dealing with groundwater, provided:¹⁰⁰ "Owners of overlying land shall have the right to use such underground water on such overlying land only, and such use shall be for useful and beneficial purposes only, and may be had without appropriating the same or filing notice of appropriation." Section 13 said: "The right to appropriate underground water for use on other than overlying land may be acquired by filing application for appropriation of such underground water with the said Water Commission...and complying with all conditions required from appropriation of water from streams of water...." And § 27 of the bill gave the Water Commission broad discretion to impose conditions through adoption of rules and regulations that limited the extent and purposes for which appropriations could be made.

These provisions generated a lively discussion about the nature of a landowner's existing property right to use groundwater. All agreed that beneficial overlying uses should be recognized, and that any uses had to respect the rights of others, as *Katz v. Walkinshaw* had held. The question was whether the legislature had the authority to subject non-overlying uses to a discretionary permit system parallel to that which would apply to surface streams. The claim effectively was that there was an important legal difference between the status of surface streams, whose unappropriated water belonged to the public, and underground water in which – though subject to correlative rights – the overlying owner held a property interest. If there was a pre-existing property right

⁹⁸ Hichborn, *supra* note 93, at 150, notes that amendments proposed by the Conservation Committee were adopted "without difficulty."

⁹⁹ One bit of evidence in support of the view that the concern was about the scope of state authority is that when this amendment was adopted, the title of the bill was also changed. A sentence was added to the beginning of the title saying "To Regulate the Use of Water Which Is Subject to Such Control by the State of California, and in That Behalf."

¹⁰⁰ During the hearing Governor Pardee suggested the following change: "Owners of overlying land shall have the right to use such underground water on such overlying land only, and such use shall be for useful and beneficial purposes only, provided such use is for domestic purposes only." Hearing, 2 p.m. (May 28, 1912), at 17.

(even though it was not the absolute ownership of the common law, and was correlative with other rights as per *Katz*), then arguably the effort to give a Commission fully discretionary permitting authority – to deny a permit for some reason other than to protect another’s water rights – was at odds with the landowner’s property interest in groundwater beneath his land.

Wiel started the discussion, saying “[i]f you give somebody the right to appropriate water you assume the right to take it away from them.”¹⁰¹ And Frank Short added, “Here [in the bill] it says they cannot take water from land and put it upon other land. Now [under existing law], they have the unrestricted right to take water from any land and put it upon any other land...”¹⁰² Then, following some further discussion of this point, Short made the following statement:¹⁰³

MR. SHORT: ... A man has as much right to extract water as coal[,] oil or any other part of the substance of this land, and the only limitation in the doing of that is he must not take it in such a way as to injure his neighbor. That is the settled right in property. Over the water percolating the ground he has the power the same as over other property; it is no more a jurisdiction over the underlying, percolating water than it is over any other substance in the ground. ...

MR. LANE: ...The only question is, would it be unconstitutional as restricting the use of property, if it required the owner of lot A to get a permit before he could transport it to lot C. That goes to the constitutionality and not to the question of policy.¹⁰⁴

...

MR. PARDEE: Who owns the water underground?¹⁰⁵

MR. SHORT: The land owner.

MR. PARDEE: The ownership of the corpus of the water?

MR. SHORT: Sure, yes sir. When you say that something which is now permitted by law cannot be done, and do say that something different can be done in a different way, it seems to me the Legislature would have no authority to do that.

...

¹⁰¹ Hearing, 2 p.m. (May 28, 1912), at 18.

¹⁰² *Id.*, at 19.

¹⁰³ *Id.*, at 21.

¹⁰⁴ *Id.*, at 21-22.

¹⁰⁵ *Id.*, at 26-27.

MR. SHORT: If the law gives the right, as the law now is, we would not object to restriction possibly, but to say it is unlawful without appropriation to take water from overlying land to some other land, it would prohibit the use of underground water.

...

MR. SHORT: What we object to is that we cannot use water where we now have the right to its use, and this law would do away with a right that now exists.¹⁰⁶

MR. CUTTLE: Write a section for that.

MR. SHORT: All right, I will do that.¹⁰⁷

...

This discussion suggests that Short, who was an influential representative of Central Valley agricultural interests, had raised doubts in the minds of the legislation's supporters about the constitutionality of imposing a discretionary permit system on the use of groundwater on non-overlying land.¹⁰⁸ Of course, the Commission had never intended to require a permit for use on

¹⁰⁶ *Id.*, at 28-29.

¹⁰⁷ *Id.*, at 29. While no documentation of Short as a draftsman has been found, Short did write a letter to the Commission several months after the hearings, in which he again indicated his concern about the underground water provisions: "What I especially wish to impress, however, is that there appears to be no sufficient or controlling reason for attempting to change the laws with respect to subterranean or underground waters at all, as at present decided, it is perfectly well understood, clearly definite and sufficient for all purposes...and I wholly fail to see that anything further is desirable. I have given this subject considerable thought and study since the proceedings before the Commission, and I am more than ever convinced that the proposed legislation as to underground waters, except in so far as it relates merely to the exercise of public authority thereover [he had elsewhere distinguished authority to regulate to protect others' rights, for example, versus discretionary permitting to determine whether water could be taken at all] should be entirely eliminated as wholly unnecessary and hurtful." Letter dated July 18, 1912, Frank H. Short to State Water Commission, at 4-5, in Pardee Home Museum Papers, Water Conservation, Box 29 (copy on file with Joseph Sax).

¹⁰⁸ Short's view drew on language that percolating water belongs to the owner of the soil, common in cases decided when absolute ownership was still thought to be the rule in California; e.g., *Gould v. Eaton*, 111 Cal. 639, 644 (1896). It appears to have been taken as authoritative, despite the decision in *Katz v. Walkinshaw*, note 58 *supra*, and even though in 1911 (two years previously) California had amended Section 1410 of the Civil Code to read: "All water or the use
(continued...)"

overlying land (which was considered a parallel to riparian uses of surface water).¹⁰⁹ Therefore, it was not surprising that an amendment to limit the coverage of the bill to surface waters¹¹⁰ was proposed during the legislative debate. There seems to have been no controversy over this amendment,¹¹¹ suggesting that Short's legal argument was persuasive. It should be emphasized that Short's claim was a limited one. He did not assert that there was no regulatory authority over non-overlying uses of groundwater, or that such uses could not be integrated with surface water rights. He was simply objecting to giving a permitting agency discretionary authority to deny altogether such a use, except where it was necessary to protect some other right in that water, such as a correlative right by another groundwater user.¹¹² Short was thus apparently making a claim that the plenary power and proprietary interest in surface waters (which belonged to the people of the State) did not extend to groundwater; and that property rights in groundwater were, though not absolute, nonetheless an extant incident of landownership. Though such a claim would hardly be likely to prevent a grant of discretionary permitting authority under contemporary understanding of state legislative authority,¹¹³ it apparently was persuasive to legislators back in 1913.¹¹⁴ And it seems to explain why California decided to grant permitting jurisdiction over

¹⁰⁸(...continued)

of water within the State of California is the property of the people of the State of California, ..." Cal. Stats. 1911, c. 407, p. 821. See Cal. Water Code § 102.

¹⁰⁹ They certainly knew the recent decision in *Hudson v. Daily*, 156 Cal. 617, 628, 105 P. 748 (1909), in which that very issue arose.

¹¹⁰ The amendment read: "Whenever the terms stream, stream system, lake or other body of water occurs in this Act, such term shall be interpreted to refer only to surface water." Assembly Bill No. 642, amendment of April 12, 1912, § 42.

¹¹¹ Hichborn, *supra* note 93, at 150. Regarding the April 30th amendment, see note 116, *infra*.

¹¹² While § 15 of the water bill, as introduced, gave the commission discretion ("The...commission may in its discretion allow...the appropriation of unappropriated water..."), the enacted version omitted discretion even over surface water appropriations ("The...commission shall allow...the appropriation of unappropriated water...").

¹¹³ Since a version of the language that appears today as Water Code § 102 had been enacted in 1911, Short may have been pressing the point a bit far even back then..

¹¹⁴ A review of contemporary newspaper accounts in the Fresno Republican, Oakland Enquirer, Sacramento Bee, San Francisco Daily News, and San Francisco Call, has turned up no indication of any controversy over changes in the bill regarding groundwater coverage. For example, the Oakland Enquirer of April 21, 1913, p. 6, has an article entitled "Conservation Bill (continued...)"

surface water, but not over groundwater.¹¹⁵

In any event, the result of the legislative decision created the need to distinguish groundwater from surface water, again raising the problem that had come up during the discussion of the Commission's original draft. What, if any, water beneath the surface of the earth should be included in the term "surface water," and subject to permitting jurisdiction? Certainly, no one wanted a user to be able to circumvent the law simply by diverting from a reach of a surface stream where the water sank below the surface before emerging again, or by sinking a well in a riverbank. This issue was addressed on April 30, when the following underscored language was added to Section 42: "Whenever the terms stream, stream system, lake or other body of water or water occurs in this act, such term shall be interpreted to refer only to surface water, and to subterranean streams flowing through known and definite channels."¹¹⁶

This, of course, is the *Pomeroy* language that was ultimately enacted as the Water Commission Act of 1913, and that remains today, with only insubstantial change, as Water Code § 1200. Strikingly, the subterranean stream language appeared for the first time at a late stage in the evolution of the law. It never came up in the Commission's report, in its original bill, in any of three Commission hearing sessions on the bill, or in the bill as first introduced in the Assembly, even though, as we have seen above, efforts to distinguish surface water and underground water

¹¹⁴(...continued)

Amended and Strengthened". It says "[t]here was a preliminary hearing given to the elaborate measure in the Assembly a few days ago, but there was a continuance of the subject granted for the purpose of making changes which were considered advisable. The committee worked Saturday as also last night on the subject, with the result that it was the opinion of some of the assemblymen who had opposed certain features when the bill was before the Assembly, the measure had been strengthened in a satisfactory manner and that a number of the features which had not appealed favorably to some of the members of the lower house had been so rewritten as to satisfy the most insistent of the critics. The amendments were ordered printed and the measure, as amended, will come up for passage in a few days...." Similarly, *id.*, April 22, 1913, p. 3: "...the amendments proposed yesterday...were of a minor character, none of them touching any of the main features of the proposed enactment." Of course the bill was still too strong for its opponents, *id.*, April 27, 1913, p. 19; April 29, 1913, p. 1.

¹¹⁵ While the legal concern expressed was limited to discretionary permitting authority (that is, e.g., a right to deny an appropriation altogether in the public interest), the legislative result, of course, was to deny any permitting jurisdiction at all over (percolating) groundwater, and that has remained the law.

¹¹⁶ Though the language was offered by Assemblyman Henry Ward Brown of San Mateo (California Assembly Journal, 40th Sess., 1913, April 30, 1913, p. 2336), an opponent of the bill, it appears to have generated no objection, either by proponents or opponents. Brown was a lawyer, and a graduate of Hastings College of the Law.

engaged the bill's drafters at some length in the May 28th hearings the previous year. None of the suggested phrasing put forward in that hearing, such as "surface water and sub-stream flow" or "surface water and subsurface water within the banks of streams" or "surface water and underground stream flow" appeared in the final bill as enacted.

Why did the bill's drafters use the *Pomeroy*/Kinney language, rather than one of the formulations that had been suggested in the previous year's hearings? No documentation has been found to answer this question, or to explain the reasoning for any of the other amendments made to § 42 of the bill.¹¹⁷ The likeliest explanation is that rather than seeking to devise their own language to identify the subsurface water that should be included within the surface water system (and recognizing from the previous year's hearing the difficulty of fashioning satisfactory language), they simply plugged in familiar language that was already a part of water law terminology, "subterranean stream [etc.]." The use of that language – so patently inapt and inept to us today – seems to have generated not a word controversy in a bill that was otherwise so controversial and divisive that it only became law by virtue of a public referendum.¹¹⁸

There is nothing to suggest that the drafters intended to codify the *Pomeroy* case, or any particular reading of it. Nor, it seems, did they concern themselves with the geologic perplexities they were creating in treating groundwater and surface water as separate entities. Most likely, once they were persuaded that there were constitutional problems in creating an integrated system (which is what the Commission and the Johnstone bill had originally sought), they simply reconciled themselves to a bifurcated system, and sought to make sure that they had prevented the most egregious opportunities for people to subvert the surface water permitting system. The subterranean stream language of *Pomeroy* was the only established verbal tool for doing so, as it clearly covered what had been described in the hearings as "sub-surface flow" of surface

¹¹⁷ A (highly opinionated) discussion of the controversy over the bill can be found in Hichborn, *supra*, note 93 at 137-73, but it deals almost exclusively with the maneuvering of various factions, rather than with the specifics of the amendment process. Hichborn says there were two legislative meetings on the bill (pp. 145, 165). No transcript or other record of them has been found, but there is a lengthy report in the Sacramento Bee of March 19, 1913 (at 1) of the first meeting, held on March 18, 1913. A letter from Assemblyman Johnstone to Governor Pardee, dated April 4, 1914, gives the final votes on the bill and a brief discussion of two proposed Senate amendments (not dealing with groundwater), commenting "[t]hese are interesting to indicate hidden influences in the consideration of the measure." Pardee Papers, Pardee House Museum, Water Conservation, box 29 (copy on file with Joseph Sax).

¹¹⁸ See Amendments to Constitution and Proposed Statutes with Arguments Respecting the Same, to be Submitted to the Electors of the State of California at the General Election on Tuesday, November 3, 1914 (State Printing Office, 1914)

streams¹¹⁹, or what Wiel had earlier described as a line that would protect streams against pumping that “directly effects a surface flow.”

In short, all the evidence we have indicates that the legislative language was designed to exclude groundwater generally, except for that which was functionally part and parcel of a surface stream – in the sense of pumping that directly affected surface flow. Probably – though there is no evidence one way or another – the legislators would also have meant to include true subterranean streams, such as flows in limestone caverns or lava tubes, which would be “independent” subterranean streams under Kinney’s classification. But even in 1913, it was clear that such features were few and of rare occurrence in California.

The Water Commission legislation was extremely controversial, though not on the subterranean stream issue. Its far more significant provisions sought to control monopolization of water by riparian landowners (a matter that would ultimately be resolved by a Constitutional Amendment several decades later),¹²⁰ and to get rid of unused riparian rights (a provision held unconstitutional,¹²¹ but ultimately effectively achieved by California Supreme Court interpretation).¹²² The bill passed the Assembly by a vote of 44-30, and the Senate version by 28-6. The Assembly then concurred on a 41-10 vote (41 votes being required for passage). The bill was signed by the Governor on June 16, 1913, but then was subjected to a referendum following an all-out effort by the law’s opponents. It was approved by the people on November 3, 1914 by a margin of 50.7% to 49.3%,¹²³ and became effective on December 19, 1914.

2. Subsequent Legislative Developments

Almost as soon as the Water Commission law was enacted, proposals emerged to revise it and to create an integrated management system for surface and groundwater. As early as 1916, the report of a legislatively created Water Problems Conference recommended that groundwater be

¹¹⁹ Hearing, 2 p.m. (May 28, 1912), at 8 et seq.

¹²⁰ California Constitution, Art. X, Section 2. See *Herminghaus v. Southern California Edison Co.*, 200 Cal. 81, 252 P. 607 (1926).

¹²¹ *Tulare Irr. Dist. v. Lindsay-Strathmore Irr. Dist.*, 3 Cal.2d 489, 531, 45 P.2d 972, 989 (1935).

¹²² *In re Waters of Long Valley Creek Stream System*, 25 Cal.3d 339, 158 Cal.Rptr. 350, 599 P.2d 656 (1979).

¹²³ A Study of Ballot Measures: 1884-1986, Compiled by the Office of the Secretary of State, March Fong Eu, Sacramento, CA (n.d.).

made appropriable and “placed under the control of the State Water Commission.”¹²⁴ In 1917, the State Water Commission’s annual report cited “the need of ground water legislation,” and opined that “surface and ground water supplies are so intimately related physically that one can not be completely regulated and administered without similar control of the other....[T]he fact that the water passes beneath the surface and is for a time hidden from view to again reappear farther down the stream, does not offer a logical reason for its exemption from control and regulation.”¹²⁵

In 1957, the State Water Plan observed that “[w]hile it is not an immediate problem, it is evident that effective administration of the development and utilization of ground water resources, either by the State or by local agencies, or by both, will become mandatory as the stage of full water development is approached. When it becomes necessary to operate the major ground water basins for import-export purposes as envisioned under The California Water Plan, requisite authority to do so must exist....The following items are suggested for consideration in this connection: ... The requirement of permits and licenses for the appropriation of ground water.”¹²⁶

In 1971, the Chair of the Assembly Committee on Water made two very modest legislative proposals: including groundwater in the existing statutory adjudication procedures, and requiring pumpers statewide (and not just in four southern counties)¹²⁷ to file statements of the amounts they were pumping. His suggestions did not get enacted. Two years later, Ronald Robie, a respected water law expert who became Director of the Department of Water Resources (and later a judge), gave an address in which he said, “...’ad hoc’ solutions are not satisfactory. I find it curious that although regulation of surface waters is properly a responsibility of the State, groundwater regulation is somehow viewed as a ‘local’ concern....The result is uncoordinated

¹²⁴ Report, State Water Problems Conference, November 25, 1916, at 65. The Report said “[t]he conference therefore has recommended legislation which will recognize the doctrine of prior appropriation as applied to underground water, so that the one who first develops it shall be entitled to so much water as is necessary for the beneficial use of the project to which it is applied....[T]he appropriation of underground water, like the appropriation of surface water, should be placed under the control of the State Water Commission, but...no owner of land of 160 acres or less, should be compelled to apply to the Water Commission for permission to develop the water lying under his own land for use upon that land....” *Id.*, at 65-66.

¹²⁵ Report of the State Water Commission of California, Published January 1, 1917 (Sacramento, State Printing Office, 1917), at 74.

¹²⁶ Bulletin No. 3, The California Water Plan, State of California, Department of Water Resources, Division of Resources Planning (May 1957), at 221.

¹²⁷ Water Code § 5000(c). Carley V. Porter, What’s in the Legislative Cards for Ground Water, Proceedings of the 8th Biennial Conference on Ground Water, University of California Water Resources Center (1971), at 63, 65-66.

administration of interrelated resources.”¹²⁸

Four years later, the background study for the Governor’s Commission to Review California Water Rights Law posed the question, “Should permits be required for new wells where critical groundwater problems exist or are threatened? For new wells in all basins? For all wells, new and existing, where critical groundwater problems exist or are threatened? For all wells in all basins?”¹²⁹ The Commission itself, however, acknowledged what had become the political reality when it came to groundwater law reform. After noting that “[m]ost other western states have integrated groundwater into state-level appropriation permit systems,” it noted that “California’s experience with groundwater management...differs from that of other western states.” It therefore concluded “that local management, if it is properly undertaken, offers the best opportunity for workable and effective control,” and to make clear that it was not calling for anything like a general permitting system, it said “the Commission...intends that proposed legislation not require any unnecessary management actions in areas without critical long-term overdraft, subsidence, or water quality problems.”¹³⁰

The Governor’s Commission correctly read the California legislative situation. No pleas for integrated management of surface and groundwater generated statutory change. In a progress update ten years later, attorney Kevin O’Brien reported “[t]he California Legislature has flirted with the concept of ground water management during the past several legislative sessions. To date, no comprehensive ground water management legislation has been adopted.”¹³¹

On the contrary, the legislature made clear its disinclination to enact comprehensive legislation or to expand the Board’s permitting jurisdiction over groundwater.¹³² The subterranean stream

¹²⁸ Ronald B. Robie, Carley Porter Memorial Luncheon Address, in Proceedings, Ninth Biennial Conference on Ground Water, University of California, Water Resources Center (1973), at 146.

¹²⁹ Governor’s Commission to Review California Water Rights Law, Anne J. Schneider, Groundwater Rights in California, Background and Issues (Staff Paper No. 2, July, 1977), at 96.

¹³⁰ Final Report, Governor’s Commission to Review California Water Rights Law (December 1978), at 166, 167.

¹³¹ Kevin M. O’Brien, The Governor’s Commission Revisited: Ten Years of Not So Benign Neglect in California Ground Water Law, in Johannes J. DeVries, ed., Sixteenth Biennial Conference on Ground Water, University of California, Water Resources Center (1988), at 50 (citations omitted)..

¹³² A useful, succinct review of legislative activity appears in Anne J. Schneider, Groundwater Management Options – Vision vs. Reality, in, Water Rights, Water Wrongs:

(continued...)

provision of Water Code § 1200 remains virtually unchanged from what it was in 1913. Indeed, in a variety of statutory provisions as well as legislative studies, the legislature’s posture toward statewide groundwater management has been set down unambiguously:

- In 1962, an Assembly Interim Committee Report, concluded: “In most areas of the State, the key to the solution of ground water problems lies in local attitudes and political feasibility...Water agencies expressed a strong desire to solve their problems themselves and to manage ground water basins locally. The committee agrees that local management is desirable and ...provides simplified solutions to many of the ground water basin management problems.”¹³³
- In 1984, in legislation granting area-of-origin rights to a variety of water systems as against future export projects initiated after a certain date, the legislation was careful to distinguish between surface water appropriations dated by the time of “applications [before the Board] to appropriate,” and groundwater appropriations, dated by the time they are “initiated” [outside of any permitting process].¹³⁴
- Because the Article containing the area-of-origin law was codified in the midst of a chapter of the Water Code that deals with the Board’s administrative responsibilities, the legislature added § 1221, stating “This article shall not be construed to authorize the board to regulate groundwater in any manner.”
- The provision that grants the Board authority over general adjudications of stream systems specifically excludes “an underground water supply other than a subterranean stream flowing through known and definite channels.”¹³⁵

¹³²(...continued)

Learning From the Past, Looking to the Future, Forum Sponsored by the San Francisco Estuary Project, the Water Education Foundation, the Commonwealth Club of California and Friends of the San Francisco Estuary, Nov. 2, 1999, at 41-46.

¹³³ Assembly Interim Committee on Water, California Legislature, Ground Water Problems in California (vol. 26, Assembly Interim Committee Reports No. 4, Dec. 1962), at 8, 46.

¹³⁴ Water Code §§ 1215, 1216.

¹³⁵ Water Code § 2500.

- In one instance where it did give authority to adjudicate a river, the Scott River, including interconnected groundwater, the legislature specified that the decision was “necessary...for a fair and effective judgment of ...rights” in that particular river, but declared it “necessary that the provisions of this section apply to the Scott River only.”¹³⁶ Ironically, the studies that led to the Scott River legislation demonstrate that the legislature has been fully and unambiguously informed of the inadequacies of the bifurcated (groundwater and surface water) system it had created.¹³⁷
- Even where the legislature has wanted the Board to act generally as to groundwater – as with water quality adjudications – it has been careful to require it to go to court,¹³⁸ and to defer to local public agencies.¹³⁹
- Where the legislature wants to include “percolating groundwater” within the coverage of a statute, it does so explicitly, as in a law requiring recordation of certain groundwater extractions. In that law, the definition section says “[g]round water’ means water beneath the surface of the ground whether or not flowing through known and definite channels.”¹⁴⁰
- Finally, the legislature has made clear its view that its preferred way of dealing with groundwater is through local, basin-specific management, a

¹³⁶ Water Code § 2500.5.

¹³⁷ “[P]umping of groundwater as well as underflow reduces the surface flow of the various streams and the main stem of Scott River....It became apparent...that underground water was an important part of the water supply problem in the stream system and that in order to properly determine the rights to water from the stream system, interconnected underground water should be included.” State Water Resources Control Board, Division of Water Rights, Report of Investigation Pursuant to Petition for Adjudication, Scott River, Siskiyou County (December 1971), at 5-6. See also California State Water Resources Control Board, Report on Hydrogeologic Conditions, Scott River Valley, Scott River Adjudication (November 1975).

¹³⁸ Water Code § 2100.

¹³⁹ Water Code § 2101(b).

¹⁴⁰ Water Code § 5000(a); see also Water Code § 1005.4. Water Code § 12922 expresses the public interest in protecting groundwater basins from critical conditions of overdraft depletion, sea water intrusion or degraded water quality, but it is just a declaration of the public interest, not a grant of jurisdiction to the Board.

position it has held quite consistently over many years.¹⁴¹

This brief review makes clear that the legislature has repeatedly been made aware of the Board's limited jurisdiction over groundwater under Water Code § 1200, and has shown no inclination to expand that jurisdiction beyond the legislative goals that led to the language in the 1913 statute.

PART III:

THE BOARD'S CURRENT IMPLEMENTATION OF THE LAW GOVERNING SUBTERRANEAN STREAMS FLOWING THROUGH KNOWN AND DEFINITE CHANNELS

As noted at the beginning of this Report, in answer to Question 2, the Board's interpretation of Water Code § 1200,¹⁴² treats the decision in *Los Angeles v. Pomeroy*¹⁴³ as stating the governing

¹⁴¹ Water Code §§ 10750-10756; Assembly Interim Committee on Water, California Legislature, *Ground Water Problems in California* (vol. 26, Assembly Interim Committee Reports No. 4, Dec. 1962), at 47-48.

¹⁴² Over the years, the Board guidance document, with titles that are variations of "General Information Pertaining to Water Rights," has had a provision dealing with "Appropriation of Underground Water," but that provision has never sought to define the scope of the statutory construct "subterranean stream" in any detail, nor does it give much hint of how the Board approaches uncertain cases. The 1923 version says "...attention is called to the fact that the jurisdiction of this office is limited by the following sentence in section 42 [now section 1200] of the ...Act: [quoting]...It is therefore unnecessary to apply if the waters to be developed are merely percolating waters." (p. 27). In 1925, it added: "... the Division does not encourage the filing of applications to appropriate from springs or wells upon one's own land, unless there is a possibility that someone else may...establish an adverse claim." (p. 30-31). By 1956, the following language, appeared: "Whether underground water is moving in 'subterranean streams...' is determined by the facts in each case. Where this is the case, such water is subject to appropriation under the Water Code....If it is proposed to use ground water on nonoverlying land, and the source of the water is a subterranean stream...an application...is required." (p. 40). The current version, dated January 2000, has changed yet again, omitting reference to case-by-case analysis, but adding reference to "ground water basin." It states that "jurisdiction...is limited...to 'subterranean streams...' , and explains that "[u]nderground water not flowing in a subterranean stream, such as water percolating through a ground water basin, is not subject to the SWRCB's (continued...)

law.¹⁴⁴ It reads that decision as requiring the following physical conditions to exist for groundwater to be classified as a subterranean stream flowing through a known and definite channel.¹⁴⁵

¹⁴²(...continued)

jurisdiction. Applications to appropriate such water, regardless of use, should not be submitted.” (p. 8).

¹⁴³ 124 Cal. 597, 57 P. 585 (1899), writ of error dis. sub nom. *Hooker v. Los Angeles*, 188 U.S. 314, 23 S.Ct. 395, 47 L.Ed. 487 (1903).

¹⁴⁴ In fact that case was decided before the first statute, the predecessor to Water Code § 1200, was enacted, and *Los Angeles v. Pomeroy* was not a statutory interpretation case, so strictly speaking it is not a binding interpretation of the statute. Technically, the Board recognizes this and says in its *Garrapata* decision (*supra* note 8, at 3) that the decision in *Los Angeles v. Pomeroy* sets forth “the distinction between subterranean streams and percolating groundwater,” and thus is relied on to define the requirements for finding a “subterranean stream....” under the statute. It may seem surprising that no Supreme Court case after 1914 has authoritatively interpreted the subterranean stream language of the Water Code. One theory is that since the Court has shown itself willing to protect surface stream rights against groundwater pumping, and *vice versa*, the scope of Board permit jurisdiction over groundwater has simply not loomed large in terms of protecting rights. See, e.g., *Eckel v. Springfield Tunnel & Dev. Co.*, 87 Cal.App. 617, 262 P. 425 (3^d Dist. Ct. App. 1927); *McClintock v. Hudson*, 141 Cal. 275, 74 P. 849 (1903); *Miller v. Bay Cities Water Co.*, 157 Cal. 256, 107 P. 115 (1910).

¹⁴⁵ D. 1639 (1999) (*Garrapata*). This statement of the Board’s interpretation of Water Code § 1200 is repetitive of the material responding to Question 2, text at note 8 *supra*. It is included here so that the main body of the Report can stand alone.

While interpretation of its jurisdiction over groundwater is based on the Board’s understanding of the mandate of Water Code § 1200, it was for some time Board policy to accept a permit application for groundwater that did not meet the Water Code standard for a subterranean stream if the applicant affirmatively wished to have a permit. The Board explained this policy many years ago: “Applications are occasionally received for waters to be developed from wells or other works drawing from a body of broadly diffused percolating water. In such instances, if the applicant desires, the application is allowed in order to establish a public record of the initiation of the use of the water.” Third Biennial Report of the State Water Commission of California, 1919-1920 (Sacramento, California State Printing Office, 1921), at 17. As it explained in its Rules as early as 1925, note 142, *supra*, this could be a means to prevent others from obtaining adverse possession rights. Though there is no current written policy on this matter, Board staff reports that – depending on available resources – the Board would take a look at the facts, and would not accept an application that clearly involves percolating groundwater. As a practical matter, resources are not usually available to make field examination of unprotected

(continued...)

- A subsurface channel must be present.
- The channel must have relatively impermeable bed and banks.
- The course of the channel must be known or capable of being determined by reasonable inference.
- Groundwater must be flowing in the channel.

The Board also takes the position that while in *Los Angeles v. Pomeroy* the Court stated that the bed and banks of a subterranean stream must be impermeable,¹⁴⁶ it should recognize that all geologic materials are permeable to some extent. Therefore, the Board interprets the law so that if the rock forming the bed and banks is relatively impermeable compared to the aquifer material filling the channel, it infers that a subterranean stream exists.

In addition, underflow is not considered coextensive with the definition of subterranean stream, but only as one category thereof.¹⁴⁷ The Board notes that underflow was defined in *Los Angeles v. Pomeroy* as having the following physical characteristics:

- Underflow must be in connection with a surface stream.
- Underflow must be flowing in the same general direction as the surface stream; and
- Underflow must be flowing in a water course and within a space reasonably well defined.

Under these definitions, according to the approach the Board takes, all underflow constitutes a subterranean stream within the meaning of *Los Angeles v. Pomeroy*, but something can qualify as a subterranean stream without being underflow. Thus, underflow is viewed as a subset of a subterranean stream flowing in through a known and definite channel. Under, the Board's interpretation of the law it is not necessary that groundwater be underflow to establish the

¹⁴⁵(...continued)
applications.

¹⁴⁶ The Board is aware that the term actually used in *Los Angeles v. Pomeroy* is "impervious," not impermeable, but it treats them as synonymous, and uses impermeable because it is used more commonly in scientific literature. Draft Decision, In the Matter of Applications 30038 [et al.], Waste Management, Inc., et al., Applicants; Yuima Municipal Water District, Protestant; Pauma Valley Water Co., Interested Party (Nov. 23, 1999), at 6 n.2 (*Pauma and Pala* case). As is noted in the discussion of *Los Angeles v. Pomeroy*, it is doubtful that the Court intended to impose a test of impervious or impermeable. In fact it only found the channel there to be "comparatively impervious." See note 50, *supra*.

¹⁴⁷ *Garrapata*, *supra* note 8, at ¶ 3.3.1. This position had been set out the previous year in a Memo from the Office of the Chief Counsel, Memo dated Sept. 18, 1998, from Barbara J. Leidigh, Senior Staff Counsel, to Ed Dito, Division of Water Rights, regarding permitting of underground water in the Russian River Valley, at 4.

existence of a subterranean stream flowing through a known and definite channel. However, a review of many cases reveals that the most frequently encountered groundwater cases in which the Board takes jurisdiction are in fact “underflow” cases,¹⁴⁸ and that, at least in early cases, if groundwater (though tributary to a stream) didn’t flow along it as underflow, jurisdiction was denied.¹⁴⁹

1. Recent Board Decisions

a. Garrapata Creek

The 1999 *Garrapata* decision¹⁵⁰ is illustrative of a contemporary case in which the Board determines whether a subterranean stream is present.

In non-technical terms, the physical situation in the case was the following. Garrapata Creek is a perennial surface stream near the coast that empties into the Pacific Ocean. The stream drains a watershed about 10 miles square that consists of a rather steep canyon rising on both sides of the stream. The canyon consists of solid rocky walls that meet below the bottom of the Creek in a sort of U-shape. In the canyon bottom adjacent to the stream is an area of relatively flat land that experts describe as “an unconsolidated deposit of cobbles, gravel, sand and clay,” or technically “alluvium.” The source of this alluvium is material eroded from the rocky canyon and carried down by the Creek. The area of the alluvium represents the meandering course that the river has taken over time, and at flood stages, laying down a river valley above the bedrock.

Compared to the rocky canyon walls, this alluvium, which is about 50 feet thick in the Garrapata Creek watershed, is highly permeable, so that a well drilled into the alluvium below the water table produces water when pumped. Such a well was drilled into the alluvium near Garrapata Creek.

¹⁴⁸ Illustratively, a case involving shallow wells near, and within the floodplain of, the Big Sur River in Monterey County, was one where “The Division [of Water Rights] conducted a field investigation of the complaint [by the Department of Parks and Recreation asserting adverse impacts to public trust resources in the river and lagoon areas] and found that [an individual’s] wells divert from the underflow of the Big Sur River,” and that therefore an application to appropriate was required for uses on nonriparian lands. Letter dated Jan. 17, 2001, from Harry M. Schueller, Chief, Division of Water Rights, SWRCB, to Mr. James Hill, ref. no. 363:CLC:262.0(27-06-01), at 1. The case is also typical in that the wells were found to be impacting the River. A hydrologic investigation report “concluded that water pumped by the ...wells is induced river seepage. Therefore, [the] wells are hydrologically connected to the Big Sur River.” Letter dated Dec. 27, 2000, from Lewis Moeller, Chief, Hearing Unit, to Mr. James J. Hill, re: Water Right Application 30166 of James Hill (El Sur Ranch)...,” at 1.

¹⁴⁹ Decision A. 6017, D. 225 (1929) (Metcalf Creek, San Bernardino County).

¹⁵⁰ *Garrapata*, *supra* note 8.

The real question of interest in the case was whether, and to what extent, such a well impacted flows in the surface stream, but the prior question for the Board was whether it had jurisdiction over the pumping at all, and that question turned on whether the groundwater being pumped came from a “subterranean stream” within the meaning of Water Code § 1200.

To determine its jurisdiction, the Board said it had to answer four questions: (1) is there a subsurface channel; (2) if so, does it have relatively impermeable bed and banks; (3) is the course of the channel known or capable of being determined by reasonable inference; and (4) is groundwater flowing in the channel. Interestingly, only questions 1, 3, and 4 are drawn from the statutory language of Water Code § 1200 – channel, known and definite, and flowing. The second question – relating to bed and banks – is derivative. The definition of a channel requires that it be confined, the source of the bed and banks requirement. That requirement in turn produces the need for a judgment about how “impermeable” a bed and banks has to be.

As to three of the four questions posed by the Board in *Garrapata*, there was no dispute.¹⁵¹ Both sides in the case apparently agreed that the narrow area of alluvium at the bottom of the canyon paralleling the Creek was a channel. They agreed as well that groundwater was flowing in the channel, and that the groundwater was flowing “toward the ocean, in the same fashion as the surface stream...though flowing with much less velocity than the surface stream.”¹⁵²

The principal point of contention in the case was whether the alluvium from which the well was pumping had “relatively impermeable” bed and banks, which the Board defined as follows: “is the [material comprising the bed and banks] sufficiently impermeable at the point of diversion to prevent the transmission of all but relatively minor quantities of water through the channel boundary....[T]he test is not that the bed and banks be absolutely impermeable, but rather, relatively impermeable compared to the alluvium filling the channel.” The Board conceded this was a subjective test, as no appellate court or Board decisions have quantified differences in permeability.¹⁵³ The Board concluded that the relative impermeability test was met because “the

¹⁵¹ *Id.*, at ¶ 3.3.2..

¹⁵² *Ibid.*

¹⁵³ There is at least one case in which a court treated the juncture of older (less permeable) and younger (more permeable) alluvium as the determinant of a bed and banks. *United States v. Fallbrook Public Utility Dist.*, 347 F.2d 48, 56 (9 Cir. 1965). Notably, technical experts agree that “the diversity of California’s geology make the use of a ‘young’ versus ‘old’ formation type distinction inappropriate in a statewide application.” Memo from Kit Custis, Senior Engineering Geologist, to Department of Fish and Game, Sept. 14, 2001 (on file with Joseph Sax); “...whether the sediments surrounding the stream are younger or older alluvium is irrelevant in my mind.” Memo from Karen R. Burow, U.S.G.S. to Technical Advisory Committee, Aug. 31, 2001 (on file with Joseph Sax); “...the assumption...that there is an erosional inner alluvial valley in most basins (continued...) ”

alluvium was recharged principally through the shallow percolation of rainfall through the zone of weathered bedrock, colluvium and soil, and through infiltration from surface flow in Garrapata Creek,” and not from openings in the bedrock constituting the canyon walls and bottom.”

The test of impermeability of bed and banks would seem to be a further refinement of the question whether there is a channel, or what the statute calls a “known and definite channel.” However, nothing in the statute itself requires a measure of impermeability. The Board seems to have adopted a stepped analysis: the law requires a channel; a channel must have bed and banks;¹⁵⁴ bed and banks are defined by capacity to confine flow.

The Board’s seeming emphasis on “bed and banks” and on relative impermeability as the standard for testing the statutory requirement of a channel may be highly significant. The central controversy over the scope of “subterranean stream” in the statute centers on whether the Board is likely to take jurisdiction over groundwater pumping in broad alluvial valleys where it has not ordinarily exercised its jurisdiction in the past, rather than taking jurisdiction only over pumping in the near vicinity of surface streams.¹⁵⁵ If the Board were to take the view that a channel must fit

¹⁵³(...continued)

that is filled with ‘younger alluvium’. California streams and rivers do not necessarily follow this assumption.” Memo from Dr. Steven Bachman, to Joseph Sax, Aug. 15, 2001 (on file with Joseph Sax).

The Board in *Garrapata* utilized several tests to support its finding of “relative” impermeability: (1) evidence that the type of rock in question that comprised the bed and banks was of low permeability, as little as 1% or 2% compared to sand and gravel, which ranged around 20%; (2) sampling of the actual rock in the watershed which was found to have little faulting, and of the faulting found much of it was filled with clay, indicating little capacity for water to permeate through it; (3) well tests into the bedrock demonstrated very low pumping capacity, another measure of relative impermeability (being several orders of magnitude lower than a well in the alluvium); (4) modeling suggesting that water reaching the surface stream did not come through the bedrock, but from the alluvium; (5) consideration of chemical differences between well water and water in the surface stream was not indicative that stream water came from some other source than the alluvium (i.e., through fractures in the bedrock). *Garrapata*, *supra* note 8, at ¶ 3.3.2.

¹⁵⁴ *Hutchinson v. Watson Slough Ditch Co.*, 16 Idaho 484, 488, 101 P. 1059, 1061 (1909): “water flowing in a definite channel, having a bed and sides or banks”

¹⁵⁵ In *United States v. Fallbrook Public Utility Dist.*, 347 F.2d 48, 56 (9 Cir. 1965), the court distinguished a case involving the Santa Ana River system (*Orange County Water Dist. v. City of Riverside*, 173 Cal.App.2d 137, 174, 343 P.2d 450 (4th Dist. Ct. App. 1959)) in which “the basins were huge subterranean lakes” that were “relatively stationary,” and where it was determined they did not constitute a jurisdictional subterranean stream, as contrasted with the

(continued...)

the definition of being like “a trench, furrow, or groove” or “a tubular passage”¹⁵⁶ – that is, something essentially long and narrow – it would doubtless be drawn toward the more restricted view of its jurisdiction that some urge, sticking to the immediate confines of the channels of surface streams. On the other hand, if a channel can be quite broad and un-furrow-like, so long as it is enclosed by relatively impermeable beds and banks, subterranean stream jurisdiction could be quite extensive.

Garrapata, however, is not a very good test case, for two reasons: First, there was no dispute over the presence of a channel and flow; and second, and more importantly, it is the type of case that engenders the least controversy about the meaning and application of Water Code § 1200. There is general agreement that where a stream is contained within a narrow bedrock canyon in which the streambed occupies most of the canyon bottom, a so-called “bed and banks” test is an appropriate measure of jurisdiction, because the presence of a “channel” is indisputable. The understanding is that the relatively narrow band of alluvium within the highly impermeable canyon walls and bottom is (1) essentially the buried portion of the stream, where the subterranean water in the alluvium is moving with the stream (usually relatively rapidly down a fairly steep gradient); (2) is in hydraulic contact with the stream; and (3) pumping of such water is likely to have a direct impact on the surface stream.

In such circumstances, assuming a highly impervious enclosure, the subsurface water fits everyone’s legal definition of a “subterranean stream flowing through known and definite channels,” and satisfies even those who claim that the “subterranean stream” definition should be limited to what is called the underflow of surface streams. The groundwater in such situations is seen as constituting the immediate subterranean component of the surface stream (even though it is understood that water constitutes a continuum and technically speaking there are no such distinct boundaries). In addition, so long as the pumping is within the alluvium, and the alluvium is essentially isolated by the bedrock from all water sources except the stream, the pumping is likely to be immediately impacting the surface stream, which creates the strongest claim for regulatory intervention.

In such situations, it is generally accepted that the Board need only ask two questions: (1) is the alluvium within “bed and banks” that essentially isolate it? and (2) is the pumping from this isolated alluvium?¹⁵⁷ Controversy begins when the Board is seen as limiting its inquiry to these questions

¹⁵⁵(...continued)

coastal basin of the Santa Margarita River system. The court noted also that its finding of a subterranean stream was supported by hydraulic connectivity, stating that the “wells...lie not on the fringes of the Coastal Basin but within or closely adjacent to the river itself.” 347 F.2d, at 56.

¹⁵⁶ American Heritage Dictionary (3rd ed., 1992), at 320.

¹⁵⁷ Another recent narrow bedrock canyon case, still at the staff decisional level, contains a (continued...)

when it deals with cases other than those set in narrow bedrock canyons, and something other than underflow is involved.¹⁵⁸ That is exactly what happened in the hotly-disputed *Pauma and Pala* case.

b. Draft Decision, Pauma and Pala Basins

A draft decision issued in 1999, and still not made final, is illustrative both of the interpretive difficulty that Water Code § 1200 can present, and of the fractious disputes it can generate over the way in which the Board should be exercising its jurisdiction. The Board received applications from several mutual water companies to appropriate water from a subterranean stream in the upper part of the San Luis Rey River in San Diego County. The applications were protested both by a water district and a water company which divert water in that same area, but which never applied for appropriative water rights. The protestants contended that they were pumping percolating groundwater, and that the water the applicants sought to pump was percolating groundwater as well.

The *Pauma and Pala* case presented a factual situation that differs at least in degree from the great majority of subterranean stream cases that have come before the Board during the past three-

¹⁵⁷(...continued)

report by the staff geologist stating, “in accordance with...*Garrapata Creek*, the beds and banks of a subterranean stream are determined by a sufficient difference in the permeability of local rock materials such that the subterranean stream is reasonably confined to the known and definite channel.” Memo from Charles NeSmith, Associate Engineering Geologist, Files 262.0 (44-16-01), Water Rights Complaint – California Department of Fish and Game vs. Stephenson Ranch (Santa Cruz Biotechnology) Regarding Diversions from Laguna Creek in Santa Cruz Country (August 23, 2001), at 5.

¹⁵⁸ The notion that underflow is just one category of subterranean stream is not new, however. See D. 968 (1960) (Cache Creek Tributary), at 3-4.

The issue whether surrounding mountain ranges other than in a narrow canyon could qualify as “bed and banks” was being explored within the Board Staff in the year preceding preparation of the *Pauma and Pala* draft decision. Memo from the Office of the Chief Counsel, *supra* note 147, at 5. It had presumably been noted that there were many permits for groundwater diversions in the Russian River Valley. The Memo reported that while there were hundreds of groundwater permits on the main stem of the Russian River, 70 to 80 percent were for underflow, and that there had been no controversy about the propriety of groundwater permitting in the Russian River Valley. The Memo concluded with a statement of “... reasons why permits are necessary. First, the characteristics of much of the Russian River are similar to the Los Angeles River as described in *Pomeroy*. There are mountains along the sides of the valley that contribute runoff and may represent the bed and banks...” *Id.*, at 4-5. The Memo concludes that under *Pomeroy*, “the bed and banks can be established by reasonable inference, and may consist of the surrounding mountain ranges...” *Id.*, at 6.

quarters of a century. It was neither a conventional underflow-type case,¹⁵⁹ nor did it involve subsurface water moving through a long and narrow alluvial valley enclosed by steep canyon walls, and constituting channel flow in the conventional sense of the term.

The case arose when Waste Management of California, Inc. filed an application to appropriate groundwater for use at a proposed solid waste landfill. The point of diversion was to be a well located some 50 to 100 feet from the San Luis Rey River. While the applicant believed that the water beneath the proposed site may be percolating water, it filed for a permit to preserve its priority of right in the event the proposed diversion was found to be from a subterranean stream within the meaning of Water Code § 1200. A number of other applications were also filed to appropriate water from wells in the Pala and Pauma Basins. The applications were protested by other water users who had not sought permits for their diversions, who asserted that the water applied for was percolating groundwater.

The water-bearing alluvial areas in the Pauma and Pala Basins along the San Luis Rey River are 6.5 to 7.5 miles long and from 0.5 to 3.0 miles wide,¹⁶⁰ with narrows at both their upstream and downstream ends. The basins have several other unusual features as well. Because the downstream movement of the subsurface water was partially blocked by a rise in the underlying bedrock (presumably the reason for the lateral spread), the movement of the water within the basin was particularly slow, making it appear – in the view of some protestants in the case – more like an underground lake or reservoir than a stream.

The protestants focused on these unusual features in concluding that the Pauma Basin could not qualify as a subterranean stream within the meaning of Water Code § 1200. Essentially their legal points were: (1) that the water was too slow-moving to constitute flow (sometimes not moving downstream at all when pumping lowered the water table); (2) that the shape of the basin meant it

¹⁵⁹ The Board geologist's memorandum recommendation to the Board concluded, however, that "the groundwater in the alluvial aquifer of the Pala basin is...underflow of the San Luis Rey River " based on a finding that "the subterranean channel is a flow boundary, groundwater in the alluvium is confined to a well defined space and is moving in a course... and [] the direction of groundwater flow is generally in the same direction as the... River." Memorandum to files of Julie Laudon, Associate Engineering Geologist, re: Application 30038 (January 21, 1992).

¹⁶⁰ A U.S. Geological Survey Report shows the Pauma Basin as approximately 7-7.5 miles long, 50% of which is about 1 mile wide and with alluvium 650-750 feet thick; and 50% of which is 2-2.5 miles wide and between 400-450 feet thick. The Pala Basin is approximately 6.5 miles long, 50% of which is 1.5-2 miles wide and 250-500 feet thick; 35% of which is .5-.75 miles wide and about 250 feet thick; and 15% of which is 2.5-3 miles wide and about 200 feet thick. Hydrologic – and Salt – Balance Investigations...Lower San Luis Rey River Area, San Diego County, California, U.S. Geological Survey Water-Resources Investigations 24-74 (October, 1974) (the "Moreland" Report).

wasn't a stream flowing through a channel – that is, that it wasn't longish and narrowish enough to be a channel; (3) that the enclosing bedrock was not sufficiently impermeable (they used the term “absolutely impermeable”) to constitute a channel's bed and banks; and (4) that the water within the asserted channel was not all moving parallel to the stream.

The Board's draft decision found nonetheless that there was groundwater flowing in a known and definite channel. It said that “[a]s with surface streams, which may include deep lakes impounded by a rim of bedrock or other obstructions, there may be constrictions in a channel or wider and deeper areas in the channel of a subterranean stream.”¹⁶¹ The fact that the watercourse is wide or narrow, or balloons out at points, was not deemed determinative.¹⁶² What seems to have been crucial was evidence that water was moving along a particular path, though that path need not have had any particular form, nor been narrowly confined.

While the flow of the water within the basin was not uni-directional, it ultimately moved downstream. There was testimony that “at the margins of the valley, groundwater is flowing roughly perpendicular to the bed of the channel, but that as it reaches the middle of the valley, the direction of the groundwater flow turns and flows downstream.”¹⁶³ The draft decision concluded that “[t]he net groundwater flow direction is downstream,”¹⁶⁴ as part of its finding that there was water flowing through a known and definite channel. There were also some clay layers within the basin that partially confined some of the water in the alluvium, which one expert witness suggested

¹⁶¹ Draft Decision (Nov. 23, 1999), at 26. This was the position taken by the Board in an earlier decision dealing with the Bonsall Basin on the same river downstream of the Pauma Basin, where the subterranean stream question had arisen and been decided in favor of jurisdiction despite evidence that the bedrock of the narrows had partially obstructed underground flow. D. 432 (1938), reaffirmed in Order of the State Water Rights Board, dated June 26, 1962. The case is discussed in text at note 195, *infra*.

¹⁶² Cf. the 9th Circuit's *Fallbrook* decision, *supra* note 155, distinguishing the Santa Ana (*Orange County Water Dist.*) case on precisely this ground, 347 F.2d, at 56.

There is language in a number of cases – such as *Pomeroy*, 124 Cal. at 631-32; *Los Angeles v. Hunter*, 156 Cal. at 607; and *Eckel v. Springfield Tunnel & Dev. Co.*, 87 Cal.App. 617, 622 (3d Dist. Ct. App. 1927); as well as the pre-rehearing opinion of Justice Temple in *Katz v. Walkinshaw*, 141 Cal. at 139-140, indicating that water in a lake-like basin is percolating water, though the precise question of the significance of size and shape of a basin has never been before the California Supreme Court.

¹⁶³ Draft Decision, at 31.

¹⁶⁴ *Ibid.*

made it “a quiescent basin”¹⁶⁵ rather than a stream, but the draft found a subterranean stream nonetheless, noting that the clay layer was not continuous and that there was continuity between the alluvium above and below it.

The draft then concluded that the bedrock in the hills enclosing the valley constituted the bed and banks of the channel. The standard the draft applied was that there must be a bed and banks that are “relatively impermeable compared to the overlying aquifer material.”¹⁶⁶ While there was considerable testimony about the permeability of the crystalline rock that constituted the bedrock as a result of fractures in it, the draft decision concluded that as a whole it was not water bearing despite local fracturing, and that it passed the “relative impermeability” test.

One may look at the concerns of the protestants in two different ways. One perspective would focus on their concern about a perceived expansiveness in the interpretation of the terms “flowing” and “channels” in Water Code §1200: a very generous test of flow; the sufficiency of a finding that the “net groundwater direction is downstream,” as opposed to a claimed requirement that the hydraulic gradient of any water flow be parallel to the surface flow of the stream; and the application of the bed and banks test to a rather broad alluvial valley, rather than just a “narrows” type area.

Another perspective on the dispute is that the protestants believed the pumping was not significantly affecting the surface stream, and that the Board was deviating from its actual functional approach, which was to employ the subterranean stream definition only to protect surface streams from pumping that immediately and directly affects them. Focus on such impact seems not to have been central to the *Pauma and Pala* analysis, at least for the Board’s geologist, who testified as follows:¹⁶⁷

Water rights professionals often use the term ‘underflow’ as jargon for a subterranean stream. However, the two terms can indicate different physical conditions. The most important difference between a subterranean stream and underflow is that interconnection with a surface stream is not a defining characteristic of a subterranean stream, but it is for underflow. Thus, not all subterranean streams constitute the underflow of surface streams.

A confined aquifer in the vicinity of a surface stream, otherwise meeting the subterranean stream standard, but the pumping of which has no direct impact on the stream, would, under this view, come within the Board’s permitting jurisdiction. (The deeper underlying issue may be a difference

¹⁶⁵ *Id.*, at 32.

¹⁶⁶ *Id.*, at 23.

¹⁶⁷ Quoted in the Legal Brief of the Division of Water Rights in the *Pauma and Pala* case, at 6 (December 1, 1997).

of view about how to deal with cases of long-standing hydrological disconnection, where decades of pumping have dramatically changed the groundwater/surface water relationships, an issue noted at the very end of Part III of this Report, below).

While contemporary connection to a surface stream is not a factor under the language of Water Code § 1200, it appears to have been an element in every subterranean stream case in California I have been able to find,¹⁶⁸ going all the way back to *Pomeroy*. Thus, while the Board staff was – strictly speaking – correct in saying, as it does in a proposed amendment to the draft decision, that

...this decision follows established precedent, does not change existing law, does not expand the test regarding what constitutes a subterranean stream, and does not expand the permitting authority of the SWRCB¹⁶⁹

in practice the position taken in the *Pauma and Pala* draft embraces a more inclusive view of subterranean streams than the Board has utilized in the past.

What the protestants see in the *Pauma and Pala* case is the prospect of the Board administratively expanding its *de facto* jurisdiction in a way that could lead to its regulating groundwater pumping quite broadly (how broadly no one can say, as the fears are about something that might happen, not something that has happened), utilizing a Pauma-and-Pala-like expansive definition of a “flow[] through [a] known and definite channel.” The Board, on the other hand, says it is just implementing the statute, and that (contemporary) connectivity with a surface stream is simply not an element of a subterranean stream under the terms of the statutory provision. Both positions are right! They are simply right about different things.

The *Pauma and Pala* draft opines that underflow is a subcategory of subterranean streams, but that underflow does not exhaust the category of subterranean streams. The significance of this view, it would seem from reading the draft decision, is that a subterranean stream need not be “in connection with” a surface stream,¹⁷⁰ need not be flowing in the same direction as a surface stream, and need not be “within a space reasonably well defined.”¹⁷¹

¹⁶⁸ See, e.g., D. 1585 (1982), at 34 (Salinas River), Order WR 82-12 (1982). A possible exception is D. 1474 (1977), at 13, 1977 WL 22457 at 6. See also D. 1474, at 7,10, 1977 WL 22457 at 3,5.

¹⁶⁹ Draft amendment to the draft decision (dated Jan. 24, 2000, from Assistant Chief Counsel Andrew H. Sawyer).

¹⁷⁰ Presumably this is what hydrogeologists mean when they speak of hydraulic continuity.

¹⁷¹ Insofar as the draft decision purports to rely on *Pomeroy*, it should at least be noted for the record that *Pomeroy* never says that underflow is only one subset of a subterranean stream;

(continued...)

All this is only to suggest that it is not unreasonable to claim that the *Pauma and Pala* draft decision involves an interpretive expansion of the Board’s longstanding approach to Water Code § 1200.

2. Older Board Decisions

Most older subterranean stream cases involved streams in narrowly constricted canyons, or (similarly to *Pomeroy*) groundwater under a narrow strip of land at the entry or exit of a broad alluvial valley, where the groundwater was moving parallel to the stream.¹⁷² While the Board has never set down a standard for determining whether water is “flowing” within a channel, or for the shape of the channel, nonetheless, in all but one case, the channel in the case before the Board was more “riverlike” than “lakelike,” and the flow of the water seems to have been essentially unimpeded through relatively coarse younger alluvium. The one notable exception is a downstream portion of the same river involved in the *Pauma and Pala* case, the San Luis Rey River in San Diego County. The channel-shape issue also arose in an old case involving the Tia Juana River, discussed below. In general, however, older subterranean stream cases involve water within the immediate orbit of a surface stream.

While the following discussion in the text focuses on only a handful of illustrative cases, numerous other related decisions are identified and noted in the footnotes.

a. Sheep Creek, San Bernardino County

A 1926 decision, involving Sheep Creek in San Bernardino County, is typical of many of the older cases.¹⁷³ The subsurface water in question was described by the Board as “underflow” (a term

¹⁷¹(...continued)

and the trial judge’s instructions never *say* that without the three elements of underflow, subsurface water can still be a subterranean stream. See 124 Cal., at 624, Instructions XVI and XVII.

¹⁷² While movement parallel to the stream was mentioned as a supportive evidentiary fact in *Pomeroy*, it was not stated as a requirement.

¹⁷³ Decision No. 3883, D. 119 (1926). Examples of typical cases are D. 1142 (1963) (“applicant...to drill a well adjacent to the Russian River”); D. 1110 (1963) (“[t]he remainder of the supply to the well is derived from the underflow of the...Russian River ... and it is to this extent only that the appropriation is within the Board’s jurisdiction.”); D. 1337 (1969) (“the Board...finds that the applicant’s well does not draw upon the underflow of either...River...and that the source is not within the jurisdiction of the Board.”) See also Staff Memo from Lewis Moeller to Files, re: Report of Investigation Big Sur River in Monterey County, April 12, 1992 (“Staff concludes that both the...[w]ells are pumping from the underflow of the Big Sur River and (continued...)”) (continued...)

found in many Board decisions).¹⁷⁴ It was underground water moving through an area about 660 feet wide, and 200 feet in depth, under and along the line of the surface stream, down a gradient of about 300 feet per mile, within a canyon ranging from ¼ mile to 1 mile in width and 4 miles in length. Though the Board made no finding about permeability, it concluded that “the underground flow passes through a known and definite channel and although the rate of the flow may be very slow and may be said to ‘percolate’ through the gravels, it is nevertheless flowing toward the desert through a definite channel formed by the walls of the canyon on either side.”¹⁷⁵

The features which make this seem a familiar subterranean stream case are that the subsurface water is moving parallel and proximate to a surface stream within a rather narrow valley of highly permeable younger alluvium that is relatively long and narrow (channel-like).¹⁷⁶ The groundwater is following the lines of former surface channels created by the river’s historic meandering as it exited a canyon, which lines are broadly parallel to the stream across the alluvial fan, so that the dominant groundwater movement is parallel to the surface stream course through the valley, and moves downgradient with the stream. These are places where abundant groundwater is found, and as pumping continues and the water table declines, the river becomes a losing stream, to the detriment of downstream surface water uses.

¹⁷³(...continued)
not from percolating groundwater.”), p. 4.

¹⁷⁴ A Memo from the Office of Chief Counsel, *supra*, note 147, says “the SWRCB has been issuing permits to appropriators of water from the underflow of the Russian River...since the 1920’s...70 percent to 80 percent are for underflow...[though] it appears that there was no controversy [as to whether the water was a subterranean stream].” Memo, at 4. The Memo, *id.*, also cites cases that “refer to the underground portion of a stream as ‘underflow:’ (See *Anaheim Union Water Co. v. Fuller* (1907) 88 P. 978...; *Hudson v. Dailey* (1909)105 P. 748; *Perry v. Calkins* (1911)113 P. 136 ; *Larsen v. Apollonio* (1936) 55 P.2d 196.” In fact neither *Hudson* nor *Larsen* use the term “underflow”.

¹⁷⁵ D. 119, *supra* note 173, at 11.

¹⁷⁶ E.g., Lagunitas Creek, in Marin County: a well 50 feet from the edge of a creek in alluvial deposits at the lower end of a relatively narrow valley, in sand and gravel with high permeability and hydraulic connections with the surface waters. See Order WR 95-17, In the Matter of Fishery Protection [etc.], Order Amending Water Rights [etc.], at 28-29. Other examples are San Simeon Creek and Santa Rosa Creek in San Luis Obispo County, coastal streams narrowly confined, where applications were filed to appropriate underflow, and the Board took jurisdiction, though without any explicit finding of a subterranean stream, D. 1624 (1989) (Santa Rosa Creek) and D. 1477 (1977) (San Simeon Creek). See also Santa Ynez River, D. 1486 (1978) (application to appropriate underflow).

b. Stony Creek, Colusa County

Stony Creek in Colusa County was involved in a court case that was referred to the Board as referee by the Superior Court in 1978. The referee report,¹⁷⁷ adopted by the Board, is considerably more detailed than most Board decisions, and it describes a case exactly like the situation mentioned above: a surface stream exiting a narrows into a valley from ½ to 1 mile wide where the alluvial fan containing younger and highly permeable alluvium is enclosed by considerably less permeable, older alluvium surrounded by bedrock. A well drilled into the recent alluvium some 1,300 feet from the stream channel is determined by pumping tests and chemical analysis of the water to be getting its recharge directly out of the sides of the surface stream, and with little if any influence from other sources. The physical setting comfortably fits the legal understanding of a California subterranean stream – subsurface water moving along a known and definite, closely confined path. It also is conformable to a hydrological standard for integrating management of subsurface pumping that directly impacts surface flows with the management of the affected surface stream, and could be read as indicating that a test of whether water is jurisdictional is whether the surface stream is directly contributing to the water being pumped.¹⁷⁸

¹⁷⁷ Order WR 80-11, Order Adopting Report of Referee, in *County of Colusa v. Westcamp* (Superior Court, County of Colusa, No. 14932) (State Water Resources Control Board, June 19, 1980).

¹⁷⁸ Impact alone, however, is not understood to be sufficient, where there is nothing that can be characterized as a channel. For example, in a recent situation where a complaint was filed and a staff investigation was made (Pilarcitos Creek, San Mateo County), the Board staff recommended declining jurisdiction. In that situation, the alluvial land flanking the stream was not enclosed by a rocky canyon or bowl. Instead, the river flowed down from mountains on the east and emptied into the Pacific Ocean. Over the years the river had meandered north and south and created a fairly broad alluvial plain which sloped down toward the ocean. The claim was that pumping from the alluvium caused water from the surface stream to move out from its bed into the alluvium to replace the pumped water, and as a result flows in the stream declined, causing, among other things, damage to the fishery resources in the stream. The staff concluded that jurisdiction should be declined on the ground that inasmuch as “the alluvial aquifer in the area of the ...well field is not bound by a known and definite channel, water extracted from the aquifer is not subject to the Board’s permitting jurisdiction.” It noted that subsurface water must be “bound by definable beds and banks” to sustain jurisdiction, and that no information was submitted by the complainants to support such a finding. Memo from Cori Condon, SWRCB, to Joseph Sax, Feb. 9, 2001, at 13 (on file with Joseph Sax).

See also D. 968 (1960), involving an underground source tributary to Cache Creek in Kern County. Plainly the source was tributary to the surface stream, but the Board found no jurisdiction because of the slowness of the flow (“substantially less than 100 feet a day”) (*note*: 100 feet a day is actually very rapid movement for groundwater, groundwater typically moves about 1,000 feet per year, so this may be a misprint. See note 39, *supra*); the width of the
(continued...)

In its decisions in cases such as this one, the Board does not expressly attach any significance to the width of the canyon; as in *Pomeroy* itself, one is left to wonder whether rocky hills miles apart enclosing a significantly wider alluvial valley, are to be understood to be the banks of a subterranean stream.¹⁷⁹ The Board seems not to have taken such an expansive view of its jurisdiction, as the decisions appear in fact (if not in theory) to give considerable weight to a well's capacity to have a direct and essentially immediate impact on the surface stream, rather than simply following out the expansive implications of the "bed and banks" formulation.¹⁸⁰

c. Chorro and Morro Creeks, San Luis Obispo County

Though impact of pumping on a stream seems to be present (and important) in most cases where

¹⁷⁸(...continued)

canyon (1,600-3,000 ft); and the breakup of the canyon walls by side canyons. In its decision, the Board asked, "[w]hen is a given area a stream, and when is it an underground basin? Does the word 'flowing' include water that is moving very slowly? When a given area containing slowly moving water has impermeable sides and bottom, must those impermeable sides and bottom be construed as the bed and banks of a stream...?" In this matter, the answer was "no," and the Board did not examine the asserted impact on the surface stream at all.

¹⁷⁹ See text at note 47, *supra*.

¹⁸⁰ D. 1595 (1983) (Springs Tributary to the Klamath River), at 9. The Board took jurisdiction upon finding that the flow "contributes to the [surface] River," even though "[t]he [subsurface] channel is not pronounced." It did not make an analysis either of the presence of bed and banks, or of relative permeability.

Even in the case involving what may be its most expansive interpretation of a subterranean stream, the San Luis Rey River below Monserate Narrows (see D. 432, at 10, discussed in text at note 195, *infra*), the functional relationship between pumping and the surface stream seems to be paramount. For example, the 1962 Board Order in that case noted: "The conclusion is inescapable that during periods of normal rainfall and runoff the stream and underground water function as a closely related unit with the effects of surface flow extending from bank to bank." In the matter of Permit 5227 et al., Order Extending Time to Complete Application of Water to Beneficial Use Under Permits 5228 and 5229, State Water Rights Board, June 26, 1962, at 13 (emphasis omitted).

That also seems to have been the understanding of the courts in the early days. Though not a Board jurisdictional case, *City of San Bernardino v. City of Riverside*, 186 Cal. 7, 14, 198 P. 784 (1921), has interesting language. The Court, citing *Pomeroy*, *inter alia*, says: "When a stream runs over porous material saturated with water, and the underground waters support the stream, either by upward or lateral pressure, or feed it directly, persons having rights in the stream will be protected against a depletion thereof by adverse diversions of such underground waters, if they are injured thereby. There may be a point of distance from the stream at which a diversion of such underground water will have so little effect on the stream that it will not be actionable."

the Board takes jurisdiction, there are exceptions where the Board has taken jurisdiction despite the absence of hydrological connection. For example, in a 1982 case, involving Chorro and Morro Creeks in San Luis Obispo County, the staff finding was that the Board should take jurisdiction because “the extent and direction of underflow can be readily defined within the...watershed” and “the bed and banks can be ascertained ...,” even though it seemed doubtful that the wells were impacting the surface stream because the area from which they were pumping was overlain by a thick layer of low permeability silts and clays.¹⁸¹ As the report put it, “[l]ocal water level data indicate that these silts and clays hydraulically separate the basal aquifer from the surficial channel deposits of” the surface stream.¹⁸² The report concluded that “[t]here is no definitive information pertaining to whether subsurface water in that area may be found in direct hydraulic continuity with surface flows of the river.”¹⁸³ Subsequently the Board took jurisdiction on the ground that there was a subterranean stream flowing through known and definite channels.¹⁸⁴

Though finding that the subsurface flow was within well-defined beds and banks of rocks, the Board did not indicate the distance between the banks. One expert witness described the width of the recent alluviums as ranging from 1,000 to 3,000 feet.¹⁸⁵ A map included as Figure 1 in the subsequent substantive decision in the case indicates (with what precision is unknown) that the watershed boundaries were about .5 miles on one side of certain of the wells in question, and perhaps as much as 2.5 miles on the other side.

d. Tia Juana River, San Diego County

An unsigned memorandum by an attorney for the Board’s predecessor, the Division of Water Rights, Department of Public Works, prepared on January 16, 1924 in regard to what was

¹⁸¹ Internal Memo from Gil Torres to Mr. Walt Pettit, Division of Water Rights, regarding “Applications 24239 [et al.], Chorro and Morro Creeks, City of Morro Bay, San Luis Obispo County” (Jan. 7, 1977), at 1, 2. In the substantive decision in the case, however, it was determined that at least some of the wells were causing a direct reduction of streamflow of about 0.1 cfs in Chorro Creek from pumping a well at 0.53 cfs. D. 1633 (1995), at 11. The Board made clear that though the term “underflow” was used in the case it was not meant to have a restrictive meaning, but was used to refer to the broader category of subterranean stream flowing through known and definite channels, *Id.*, at 2, n.1.

¹⁸² Internal Memo, *supra* note 181, at 1.

¹⁸³ *Ibid.*

¹⁸⁴ D. 1589 (1982).

¹⁸⁵ Transcript of testimony of John F. Mann, Jr., Before the State Water Resources Control Board, Division of Water Rights, In the Matter of Applications 24239 [et al.], Chorro and Morro Creeks, Jan. 12-13, 1977, at 76.

described as the first application received for a permit to appropriate underground water, urged the Board to take a limited view of its jurisdiction, focusing on the actual facts of *Pomeroy* for guidance, rather than the more inclusive language in some of the headnotes. He said that it was inappropriate to use the general words in headnotes 15 and 16 of *Pomeroy* to justify taking jurisdiction over “a catchment basin, a detritus filled valley, or an underground reservoir or lake constituted of water filling a porous formation of gravels....[S]uch basins or reservoirs are not subterranean streams merely because they have a bottom and sides and contain a water bearing formation through which the water moves, percolates or flows in a definite general direction, that is toward the lower end of the basin....Nor does the court indicate in [*Pomeroy*] that it considered the entire area covered by the narrows, which was in places from 2 ½ to 3 miles wide, a subterranean stream....[I]t is deemed conclusive that the Division of Water Rights can not under the guise of an expanded definition of ‘a subterranean stream...’ bring within its jurisdiction the waters of typical underground basins, reservoirs or lakes.”¹⁸⁶ Despite the attorney’s strong memo urging the Division to decline jurisdiction, a permit was granted for what was described in one brief as “an underground lake, a natural reservoir...where a great natural dam or plug of adobe fills the mouth of the river...”¹⁸⁷ The case may be of little precedential importance, since neither side urged the Division to decline jurisdiction; only the Division’s attorney appears to have been concerned about setting a bad precedent.¹⁸⁸

¹⁸⁶ Memorandum re Jurisdiction Over Applications To Appropriate Underground Water, at 4, unsigned and undated signature line for “Attorney for Division,” stapled to Personal Memorandum (Do not file) re Application Number 1851, Reference to Memo. date of Jan. 16, 1924, re jurisdiction over applications to appropriate underground water, dated January 17, 1924, also with unsigned signature line for Attorney for Division. The dated memo refers in the text to the Tia Juana River Valley application of the Coronado Water Company. The January 17th memo is initialed SEB, undoubtedly referring to Spencer Burroughs who was attorney for the Division at that time.

¹⁸⁷ The quote is from the “Brief of Protestor Herbert Peery” in re Application No. 1851, stamped received by the Dept. of Public Works, March 5, 1923, at 1. The permit is No. 1724, granting application 1851 by the Coronado Water Company to appropriate groundwater in the Tia Juana River Valley. The permit was abandoned by the successor permit holder, California Water and Telephone Co., in February 1962.

¹⁸⁸ A private water company wanted to install wells in the valley where existing farmers’ alfalfa was being root-irrigated by the existing high water table, which they feared would be drawn down. Their claim was that overlying uses should be protected against export appropriations. (Of course they should. The real question was whether they were entitled to have the “natural” level of the water table maintained. This controversy arose in 1923, prior to the constitutional amendment that is now Article X, § 2). In any event, both sides apparently wanted the State to take jurisdiction and to give its stamp of approval to their position, rather than litigating the question privately. The attorney who wrote the memo urged (in addition to his legal
(continued...))

e. Carmel River, Monterey County

In this case, testimony offered that the subsurface flow of the Carmel River was a subterranean stream was not contested, and “accordingly” – without drawing any conclusions of its own – the Board found it to be a subterranean stream and subject to Board jurisdiction.¹⁸⁹ The case, therefore, is of no precedential importance. It is nonetheless interesting because it illustrates the tension created when a setting that does not have the geographic elements of a conventional subterranean stream case¹⁹⁰ is combined with strong concerns about the impact of pumping on a stream. The alluvial valley in question was about 15 miles long and .5 to 1 mile wide, the valley floor consisting all of younger alluvium ranging in thickness from about 1 foot to 200 feet near the river mouth. The river channel itself ranged from 20-150 feet in width. Pumping impacts on the stream were a central concern.¹⁹¹ The case is also illustrative of the disagreement commonly found in cases over the presence of confined or partially-confined aquifer conditions. The highly various and complex conditions within different aquifers can generate diverse conclusions from technical experts as to whether, and to what extent, pumping from beneath more-confining layers within an aquifer is impacting a surface stream.¹⁹²

The following is from a memo to the Board from the Chief of the Division of Water Rights in the Carmel River case:¹⁹³

It can be concluded that a classification of the basin as underflow or as groundwater would be a very close call. Litigation might be necessary to finally settle the question, and the burden of proof would fall on the Board, were we to find the

¹⁸⁸(...continued)
argument) the State not to become implicated in this essentially private fight.

¹⁸⁹ Order No. WR 95-10, at 12-13, 1995 WL 464902 at 5 (1995).

¹⁹⁰ I.e., a physical-proximity/underflow type case.

¹⁹¹ See G.M. Kondolf, et al., Effects of Bank Storage and Well Pumping on Base Flow, Carmel River, Monterey County, 91 J. Hydrology 351 (1987).

¹⁹² See, e.g., Carmel River Watershed Management Plan, Working Paper Number Six, Legal Status of Carmel Valley Groundwater, prepared for the California Department of Fish and Game by the Monterey Peninsula Water Management District, John Williams, Resource Analyst, September 1983, at 31-34.

¹⁹³ Quoted in Carmel River Watershed Management Plan, *supra*, at 33. Note the use of “underflow” here as a synonym for the statutory subterranean stream definition; and the Board’s recent insistence that underflow is only one subcategory of subterranean stream. It is hardly surprising that outsiders have been confused.

water to be underflow and attempt to require the company to file water right applications. The presumption would be that the water is in a groundwater basin and not part of a flowing stream.

f. Sacramento River Groundwater Transfer, Yolo County

This was the only decision found that can be read to conclude openly that the fact of “direct surface stream impact” from pumping is irrelevant to the Board’s jurisdiction over groundwater, though the jurisdictional question is only adverted to in an aside. The matter arose in the context of the 1977-78 drought, and involved a proposed pumping operation that would have created a cone of depression whose effect would likely have drawn a good deal of water out of the surface flow of the Sacramento River. The decision suggests that such impact does not trigger jurisdiction under Water Code § 1200. “In reviewing this program,” it said, “we have been mindful of our limited jurisdiction over percolating groundwaters and recognize that no application for a permit to appropriate percolating groundwater is required by law....It should be noted that the Governor’s Commission to Review California Water Rights Law is studying the issue of groundwater rights. To the extent that such review may lead to approaches to coordinate surface and groundwater rights, problems such as those raised by the instant proposal could be resolved in a more orderly manner.”¹⁹⁴

g. San Luis Rey River, San Diego County (Mission and Bonsall Basins)

While most “direct impact” cases seem to fit into conventional subterranean stream settings – such as wells in the alluvium of a narrow coastal river canyon, or wells so proximate to the river that they easily qualify as underflow – occasionally more perplexing cases arise. In such instances, while pumping clearly threatens a “direct impact” on surface stream interests, the river valley is fairly broad and the wells aren’t pumping what is commonly understood to be underflow. Perhaps the most notable example of such a case is a 1938 decision of the State Engineer,¹⁹⁵ reconsidered and reaffirmed in 1962,¹⁹⁶ dealing with the status of groundwater in the downstream reaches of the San

¹⁹⁴ D. 1474 (1977), at 13, 1977 WL 22457 at 6. See also D. 1474, at 7,10; 1977 Westlaw 22457 at 3,5.

¹⁹⁵ D. 432 (1938).

¹⁹⁶ In the Matter of Permit 5227 et al. (Order Extending Time to Complete Application of Water to Beneficial Use Under Permits 5228 and 5229 (State Water Rights Board, June 26, 1962)). As a result of substantial pumping and a series of dry years (15 or more years), the factual situation had changed (at least for the time). It was apparently alleged that the ground water table was much lower, and groundwater direction had shifted, so it was urged the Board should relinquish jurisdiction. See Memorandum [to the Files?], regarding Permits 5227, 5228 and 5229

(continued...)

Luis Rey River,¹⁹⁷ the same river that was at issue in the 1999 *Pauma and Pala* draft decision. Basically the question was whether proposed municipal pumping projects for growing north San Diego County communities sought by Fallbrook, Oceanside, and Carlsbad would interfere with existing downstream irrigators, and risk infiltration of seawater into the aquifer. The Board found there would likely be such interference. It took jurisdiction of the proposed wells on the ground that they pumped from a subterranean stream, and the Board limited operation of the wells in order to protect existing surface water rights.

The area in question was defined by a river that widened and then constricted as it went through several narrows on its way to the ocean. Above the narrows the water spread underground in basins averaging about one mile wide,¹⁹⁸ with water rising to the surface as it reached the narrows, then sinking underground again at the downstream end of the narrows, and into another basin.

This was plainly not a narrow alluvial valley with a well in the immediate physical environs of a river; but rather a substantial well field across a rather broad alluvial plain. Fallbrook, for example, proposed to drill ten wells in the valley bottomlands. The 1938 decision strongly suggested the Board's appreciation that this was not the usual subterranean stream case. For example, it said, "while the underground water is concluded to be a definite stream, yet the bottoms along the river constitute reservoirs of some magnitude just as are found in a surface stream in its wide, deep and

¹⁹⁶(...continued)

(Applications 8156, 8205 and 8418), from Charles M. Harris, Associate Engineer, Water Resources, concurred in by Lee W. Carter, Senior Engineer, Water Resources (Jan. 3, 1962), at 14-15.

¹⁹⁷ Permits 5228 and 5229 dealt with the Mission Basin, and Permit 5227 dealt with the Bonsall Basin. The Board considered them together in 1961 because "the physical characteristics of Bonsall and Mission Basins appeared to be similar." Order Extending Time [etc.], *supra* note 196, at 2. Interestingly, the Board says that in 1938 the State Engineer concluded that the Bonsall, Mission, and Pala sectors and their connecting narrows constituted an underground channel with known and definite banks and bottom. *Id.*, at 9.

¹⁹⁸ In the 1938 decision, D. 432, the Board said the areas in question were bottoms in three sectors, one of which averaged a maximum width of 3,800 feet in an area six and one-quarter miles long; another with a maximum width of 6,500 feet and five miles long; and a third was about 600-700 feet wide and five miles long. The average depth of the alluvium ranged from under 100 to about 200 feet. All through this area the alluvium was "most of the time full of water to or near the surface." D. 432 at 11. See Order Extending Time, *supra* note 196, at 13.

slow moving reaches.”¹⁹⁹ Then it added, while the “[m]ovement downstream is very slow”²⁰⁰ underground water was appearing on the surface at several narrows, evidencing the presence of an “underground channel...too narrow to carry the flow which is moving through the wider and deeper channels above and below.”²⁰¹ While this description depicted a setting quite different from the sort of “underflow” that had been involved in the *Pomeroy* case, the Board found there was “an underground stream in a definite channel.” The channel’s width varied considerably from a few hundred feet to a maximum of more than a mile. Nonetheless, the Board found it had the necessary bed and banks consisting of “bedrock hills of granite or other material descending sharply to the trough and definitely marking the banks...[and] [t]he same bedrock would be found to continue across the bottom.”²⁰²

That the decision was unconventional is evidenced by the fact that the same areas of the San Luis Rey River that were discussed in the 1938 decision (the downstream Mission and Bonsall Basins) came before a Superior Court in 1959, and again before the Board in 1962.²⁰³ The trial judge had concluded in a memorandum opinion “that ground water in the Mission Basin does not constitute a subterranean stream flowing in a known and definite channel.”²⁰⁴ The Board, however, reaffirmed the 1938 decision. It again noted that movement of the subterranean water was slow,²⁰⁵ but it did not find that fact disqualifying. It said all the elements were necessary to find a subterranean stream within the meaning of § 1200 of the Water Code. During normal years when the water table was high, and ignoring changes in water movement brought about by pumping’s cones of depression, it said, there was frequent contact between the subsurface water and the surface flow, and the direction of movement was the same in both instances, moving downgradient with the stream. As to the existence of a channel, it noted that the width of the banks in *Pomeroy* was 1½ to 2 miles, and in another Supreme Court case,²⁰⁶ 700 to 1800 feet in width, while here it was on average

¹⁹⁹ D. 432, at 14, 15.

²⁰⁰ *Id.*, at 13.

²⁰¹ *Ibid.*

²⁰² *Id.*, at 12.

²⁰³ Order Extending Time, *supra*, note 196. The case is cited in the order as *San Luis Rey Water Conservation District v. Carlsbad Mutual Water Company*, San Diego Superior Court No. 184855, memorandum opinion dated November 18, 1959.

²⁰⁴ Order Extending Time, *supra* note 196, at 2.

²⁰⁵ About one-third of a mile per year (*Id.*, at 7).

²⁰⁶ *Verdugo Canon Water Co. v. Verdugo*, 152 Cal. 655, 659 (1908).

“only about one mile wide.”²⁰⁷ It then announced (in the single sentence it underscored in its opinion) what was apparently a strong influencing factor for it: “The conclusion is inescapable that during periods of normal rainfall and runoff the stream and underground water function as a closely related unit with the effects of surface flow extending from bank to bank.”²⁰⁸

That underscored sentence suggests that though it did not track the usual physical shape of subterranean stream cases, in fact the 1938 Bonsall Basin case was functionally an underflow case, that is, one where pumping the wells anywhere within the basin (“from bank to bank”) was directly impacting the surface stream,²⁰⁹ and that therefore the subterranean waters were effectively a subterranean element of the surface stream. In that respect the Bonsall Basin case was within the mainstream of Board decisions both before and after it.

The 1962 decision also posed an extremely important question that has not often been considered, but becomes crucial if stream impact is acknowledged as the determinant of jurisdiction. That question is whether a well should be viewed as pumping from a subterranean stream if the qualifying criteria are not presently being met, but were being met under earlier conditions before there was extensive pumping. An example would be where pumping has lowered the water table, changed the direction of flow, and severed hydrological connectivity which previously existed and would be restored if pumping were substantially constrained. This is not a matter that has been settled, either in Board or judicial decisions, but there is a staff expression of opinion dealing with the variant situation where an extended drought, along with pumping, has dramatically changed natural conditions in the basin. A staff report prepared for the 1962 consideration of Board jurisdiction over groundwater in the Mission Basin reads as follows:²¹⁰

Therefore, in re-examining the analysis leading to Decision #432 in the light of present conditions, it is concluded that the basic natural factors have not been altered, but that a prolonged period of very low precipitation combined with steady pumping has caused a temporary overdraft condition which could and probably will be corrected upon resumption of normal rainfall and runoff....Such a situation would cause a recurrence of the factors necessary to a complete legal definition of an underground channel. As a result of these considerations, it is believed that the Board would be remiss in its responsibilities were it to relinquish jurisdiction.

There are a number of places in California where widespread pumping over the years has lowered

²⁰⁷ Order Extending Time, *supra* note 196, at 13. Mission Basin is about 9 miles long.

²⁰⁸ *Id.*, at 13 (emphasis in original).

²⁰⁹ “...it is clear that the ground water table would be affected directly by surface flows in the river and vice versa when the ground water table is near the surface...” *Id.*, at 13.

²¹⁰ Memorandum [to the Files?], *supra* note 196, at 15.

the water table and reversed the gradient that existed before pumping began.²¹¹ Continuation of that pumping may have no current adverse impact on surface stream flows. But if that pumping were to cease or cut back, eventually the water table would rise and contribute significantly to surface stream flows, which have been historically diminished by pumping. Thus the question of “hydraulic connection” has temporal and cumulative elements to it. From a legal perspective, the question is whether and to what extent longstanding uses should be accepted, under “grandfathering,” in order to minimize disruption of established human communities and economies.²¹² These perplexities, among others, lead to the suggestions, made earlier in response to Question 6 that jurisdictional decisions should not be used to reverse long-standing situations of hydrological disconnection; and also to the proposal made below in Part VI,²¹³ suggesting comprehensive basin management, rather than legislatively expanded permitting jurisdiction, is the preferred long-term solution to overpumping.

²¹¹ E.g., *United States v. Fallbrook Public Utility Dist.*, 193 F.Supp. 342, 353 (S.D. Cal. 1961), rev’d in part on other grounds, 347 F.2d 48 (9 Cir. 1965). The impacts of such sustained pumping are noted and described in G. Mathias Kondolf, *Surface-Ground Water Interactions: Some Implications for Sustain ability of Ground Water Resources*, Proceedings of the 19th Biennial Ground Water Conference, JJ DeVries, J. Woled, eds., Water Resources Center Report No. 84, Univ. of Cal., Davis (1994), at 135.

²¹² If the Board adopted an expanded view of its jurisdiction, affecting some existing pumpers who had never applied for permits, there would – it seems – be some ability to prefer existing users to new applicants, notwithstanding application date, and perhaps to grant priorities to existing pumpers who are new applicants that reflect their actual relative date of beginning pumping. “Water Code Section 1450 states that any application properly made gives to the applicant a priority of right as of the date of the application until such application is approved or rejected. The SWRCB has the authority, however, to modify the relative priority of applications. (Water Code Section 1257).” D. 1632 (1995) (New Los Padres Project of Monterey Peninsula Water Management District, Carmel River, Monterey County), at 43, 1995 WL 464946. Such authority, however, would not help those making unpermitted diversions from subterranean streams as against those with already permitted or licensed rights. See also note 303, *infra*.

²¹³ See item 6 in response to Question 6, following note 30, *supra*; and point (3), text at note 306, *infra*.

PART IV:

GROUNDWATER LAW IN OTHER STATES²¹⁴

1. Arizona

Arizona's experience deserves extended consideration both because it is the only other state with a statute like California's,²¹⁵ and because its courts and Department of Water Resources have dealt extensively and recently with the definition of subterranean streams (which their statute calls "underground channels," and which their courts call "subflow"). In contrast to the experience in California, Arizona's Supreme Court interpreted its statutory provision in major decisions on several occasions, starting in 1931,²¹⁶ and then again in 1993²¹⁷ and 2000.²¹⁸ The Court's decisions

²¹⁴ For related literature on groundwater law in other states, see Robert Jerome Glennon & Thomas Maddock, III, *The Concept of Capture: The Hydrology and Law of Stream/Aquifer Interactions*, in *Forty-Third Annual Rocky Mountain Mineral Law Institute* (1997), at 22-1 – 22-89; Herman Bouwer & Thomas Maddock III, *Effects of Groundwater Pumping on Streamflow: Legal and Hydrologic Aspects*, *Proceedings of the 21st Biennial Ground Water Conference*, University of California Water Resources Center Report No. 95 (1998) 9; Robert J. Glennon & Thomas Maddock, III, *In Search of Subflow: Arizona's Futile Effort to Separate Groundwater from Surface Water*, 36 *Ariz. L. Rev.* 567 (1994); John D. Leshy & James Belanger, *Arizona Law Where Ground and Surface Meet*, 20 *Ariz. St. L.J.* 657 (1988); Douglas Grant, *The Complexities of Managing Hydrologically Connected Surface Water and Groundwater Under the Appropriation Doctrine*, 22 *Land and Water L. Rev.* 63, 64 (1987); Frank J. Trelease, *Conjunctive Use of Groundwater and Surface Water*, 27 *Rocky Mtn. Min. L. Inst.* 1853, 1857-58 (1982); Barbara Tellman, *My Well v. Your Surface Water Rights: How Western States Manage Interconnected Groundwater and Surface Water*, U. AZ Water Resources Res. Center, Issue Paper No. 15 (June 1994); David H. Getches, *Water Law in a Nutshell*, at 272 et seq. (3d ed. 1997).

²¹⁵ A.R.S. § 45-141(A): "The waters of all sources, flowing in streams, canyons, ravines or other natural channels, or in definite underground channels...are subject to appropriation..."

²¹⁶ *Maricopa County Municipal Water Conservation Dist. No. 1 v. Southwest Cotton Co.*, 39 *Ariz.* 65, 4 P.2d 369 (1931) (hereafter *Southwest Cotton*).

²¹⁷ *In re the General Adjudication of...The Gila River System*, 175 *Ariz.* 382, 857 P.2d 1236 (1993) (hereafter *Gila River II*).

²¹⁸ *In re the General Adjudication of...The Gila River System* (hereafter *Gila River IV*),
(continued...)

have also been the subject of extensive law review discussion,²¹⁹ and of an unusually detailed and candid analysis by the Arizona Department of Water Resources (ADWR).²²⁰

The Arizona experience is especially interesting because its recent judicial decisions arose out of an effort to develop workable, objective criteria to be used in deciding what groundwater wells should be treated as pumping from “definite underground channels,” the statutory provision that parallels California’s subterranean stream definition in Water Code § 1200.

By way of introduction, it should be noted that since the 1931 decision in the state’s leading case, *Southwest Cotton*, Arizona seems to have essentially abandoned any search for subterranean streams as such, and limited the application of its statute to those underground waters that constitute what it calls “subflow.”²²¹ It is not entirely clear why it has done this. *Southwest Cotton* itself was a subflow case, and that may be the only sort of subterranean stream issue that has come before the Arizona courts. In any event Arizona has concluded that a broad alluvial valley cannot meet the definition of an underground channel,²²² a proposition that it notes is supported by *Pomeroy’s* view of the San Fernando Valley.²²³

The history of judicial interpretation of Arizona’s statute is instructive. Arizona’s bifurcated system applies appropriation law to surface water and a different rule to groundwater. What underground water, then, if any, should be managed under the appropriation system? The leading case that addresses that question, *Southwest Cotton*, can be read as both sophisticated and naïve. In one

²¹⁸(...continued)

198 Ariz. 330, 9 P.3d 1069 (2000), cert. denied sub. nom. *Phelps Dodge Corp. v. United States*, ___ U.S. ___, 121 S.Ct. 2576, 150 L.Ed.2d 739 (2001) (asserting that judicial interpretations of subflow in the 1993 and 2000 decisions of the Arizona Supreme Court constituted a sudden and unpredictable departure from prior precedent and thus constituted an unconstitutional taking without compensation).

²¹⁹ Glennon & Maddock, (1994), *supra* note 214. Glennon & Maddock (1997), *supra* note 214. Bouwer & Maddock (1998), *supra* note 214.

²²⁰ Preliminary Report on Proposed Criteria to Identify Stream Subflow, Arizona Department of Water Resources (November 5, 1993) (typescript); Technical Assessment of the Arizona Supreme Court Interlocutory Appeal Issue No. 2 Opinion, In re The General Adjudication of the Gila River System and Source, Arizona Department of Water Resources (December 15, 1993) (typescript).

²²¹ *Southwest Cotton*, 39 Ariz., at 96.

²²² *Id.*, at 89-90.

²²³ *Id.*, at 97-98.

respect, it seems to take a very contemporary and hydrologically informed position. The Court's answer is that those waters which are "as a matter of fact...part of the surface stream"²²⁴ should be managed under appropriation. The way to determine the identity of such waters, the Court said, is by asking, does "drawing off the subsurface water tend to diminish appreciably and directly the flow of the surface stream? If it does, it is subflow, and subject to the same rules of appropriation as the surface stream itself."²²⁵

In other words, the Court interpreted its subterranean stream category as designed to protect the integrity of its surface stream appropriation system. Thus, it concluded, all uses that appreciably and directly affect surface streams should be managed integrally with the surface stream system. Thus understood, the court's interpretation seems both rational (it approaches the issue functionally rather than definitionally), and workable (though the system is a continuum throughout the watershed, one need only manage for significant interference, rather than for any and every impact, however remote in quantum and time).

To this point, *Southwest Cotton* seems to have taken a thoughtful, functional approach to the problem – embracing within the surface water system only pumping that "appreciably and directly" affects the flow of surface waters, and defining such pumping as "subflow." But then the Court took a turn in another direction. Drawing on the formalistic treatise writer Kinney, the Court added that subflow may be defined as "the bed of the stream, or the lands under or immediately adjacent to the stream."²²⁶ By adding a locational element to its conception of subflow, the Court shifted from a functional definition to a geographical one. While one need not necessarily read the opinion that way (for example, the Court said "in almost all cases the so-called subflow is found within, or immediately adjacent to, the bed of the surface stream itself," suggesting that proximity is simply a guide to answering a functional question, rather than a requirement in and of itself²²⁷), that *is* the way the subsequent Arizona Supreme Court has read it, assuring that what might have been a hydrologically and administratively workable standard, would become a more formalistic, geographically driven test.²²⁸

Because of its geographic-test interpretation of *Southwest Cotton*, in 1993 the Arizona Supreme Court rejected a carefully developed trial-court-fashioned test that was designed to be functional (asking whether the pumping was appreciably and directly diminishing the surface stream), on the ground that it used an impact test, rather than the geographical one that *Southwest Cotton*, in its

²²⁴ *Id.*, at 96.

²²⁵ *Id.*, at 97 (emphasis omitted).

²²⁶ *Id.*, at 96.

²²⁷ *Id.*, at 97 (emphasis added).

²²⁸ *Gila River II*, 175 Ariz., at 390-91.

view, required.

The trial court had determined that wells withdrawing water from the younger alluvium within the stream basin should be presumed to be pumping appropriable subflow if.²²⁹

As to wells located in or close to that younger alluvium, the volume of stream depletion would reach 50% or more of the total volume pumped during one growing season for agricultural wells or during a typical cycle of pumpage for industrial, municipal, mining, or other uses, assuming in all instances and for all types of use that the period of withdrawal is equivalent to 90 days of continuous pumping for purposes of technical calculation.

The Supreme Court rejected that test, holding that location, not impact, was decisive. It said, “*Southwest Cotton*...did not purport to identify subflow in terms of an acceptable amount of stream depletion in a given period of time. It sought to identify subflow in terms of whether the water at issue was part of the stream or was percolating water on its way to or from the stream.”²³⁰ The Court thus ruled that the trial judge must be guided by the language in *Southwest Cotton* stating “that subflow is found within or immediately adjacent to the stream bed.”²³¹

In a report issued following the Supreme Court’s 1993 decision, designed to guide the trial court on remand in fashioning a legally acceptable definition of subflow, the ADWR identified a number of respects in which the Supreme Court had perpetuated “the arbitrary nature of the bifurcated system” in Arizona, and imposed legal concepts “at odds with hydrological reality.”²³² What is arbitrary about the decision, the ADWR said, is the notion that there is such a thing as water “more closely associated with the stream than with the surrounding alluvium,”²³³ which is how the Court defined subflow. As the Report gently put it, “[h]ydrologists generally agree that in perennial and intermittent stream environments water is interrelated and interconnected.”²³⁴

In other words, if one wants to make distinctions about water within a single interrelated system such as a stream and the watershed of which it is a part, the recommended way to do so is to draw lines based on hydrological distinctions, such as impact of pumping on streamflow measured over

²²⁹ *Id.*, at 385 (quoting trial court).

²³⁰ *Id.*, at 391-92.

²³¹ *Id.*, at 391.

²³² Preliminary Report, *supra* note 220, at 1.

²³³ *Id.*, at 4 (quoting *Gila River II*, 175 Ariz., at 391, 144 Ariz. Adv. Rep., at 23).

²³⁴ *Id.*, at 1.

specified time periods. As the Report indicates, while any such approach incorporates a policy decision, cutting off consideration of impacts at some selected point – the hydrologic system being essentially a continuum – using impact over time at least draws the line in terms of managerial realities that reflect hydrological significance, rather than a merely arbitrary geographic line. Some such policy decision must be made in every water management system.²³⁵

In an unmistakable, though diplomatic, rebuke to the Court, the Report says,

the Court establishes the legal concept that the imaginary line between percolating groundwater and appropriable subflow is a geographic line, rather than a geologic line, by rejecting the younger alluvium test. In the Court’s own words, subflow is water that is ‘more closely associated with the stream than with the surrounding alluvium.’ DWR can only interpret this to mean that subflow is the physical presence of water in a certain geographic location at a particular moment in time....Developing a set of criteria based on these guidelines negates the need to use the aquifer parameters of transmissivity and storage coefficient because these are only useful in determinations that calculate a specific volume of water depleted from the stream after a certain period of time, a specific rate of depletion after a certain period of time, or the location of the boundary between older and younger alluvium.²³⁶

Following the ADWR Report, the case returned to the trial court for a revised decision consistent with the Supreme Court’s opinion. Obligated to draw a geographic rather than a geologic line (to find which wells are “more closely associated with the stream than with the surrounding alluvium”), the trial judge fashioned, and the Supreme Court has now validated, a geographic definition of subflow that probably includes most of the wells that have the greatest impact on the stream. While abjuring any direct measure of impact (such as the rejected 50%/90 day test), it

²³⁵ See Technical Assessment, *supra* note 220, at 36: “In other states that have a unified water law system, in which both groundwater and surface water are appropriable, there is still a need to establish streamflow interference thresholds for the conjunctive management of groundwater and surface water rights. States such as Colorado and New Mexico recognize that wells located some distance from the stream have an effect. Those states use a time based maximum interference test to identify which wells need to be actively administered in the prior appropriation system. Oregon uses a distance based approach, declaring wells within specified proximity to the stream to be within the law of appropriation. Whether Arizona has a bifurcated or unified system of water law, there is still the need to establish a test for identifying wells which significantly effect [sic] streamflow. That test must of necessity incorporate some type of arbitrary factor within its criteria.”

²³⁶ Preliminary Report, *supra* note 220, at 4 (citations omitted).

defines subflow as the “saturated floodplain Holocene [younger] alluvium.”²³⁷ To this the Court added several other criteria to provide “more certainty and reliability.”²³⁸ It noted that the geologic unit must be saturated because of the need for a hydraulic connection between the stream and the subflow. The water which makes up the saturation must flow substantially in the same direction as the stream, and the effect of any side discharge from tributary aquifers and basin fill is overcome or is negligible. In addition.²³⁹

1. the water level elevation of the subflow zone must be relatively the same as the stream flow’s elevation.
2. the gradient of these elevations for any reach must be comparable with that of the levels of the stream flow.
3. there must be no significant difference in chemical composition that cannot be explained by some local pollution source which has a limited effect.
4. where there are connecting tributary aquifers or floodplain alluvium of ephemeral streams, the boundary of the subflow zone must be at least 200 feet inside of that connecting zone so that the hydrostatic pressure effect of the side recharge of this tributary aquifer is negligible and the dominant direction of flow is the stream direction.
5. where there is a basin-fill connection between saturated zones of the floodplain Holocene alluvium and a saturated zone of basin fill, the boundary of the subflow zone must be 100 feet inside of the connecting zone so that the hydrostatic pressure effect of the basin-fill’s side discharge is overcome and the predominant direction of flow of all of the subflow zone is the same as the stream’s directional flow.

The irony of the Arizona situation is that its Supreme Court in 1921, often condemned for backwardness, basically understood the importance of managing water functionally, while the same Court 72 years later – in a misplaced effort to defer to earlier precedent – turned the clock back to the formalism of an earlier time. The functional approach described by the ADWR reports was

²³⁷ Holocene is a period of time covering the most recent 10,000 years. It should be noted that the Technical Advisory Committee appointed by the Board to assist the author of this Report concludes that “anything in the Arizona [Report] that discusses this younger alluvium...[is] probably not applicable to the general case in California.” The reason is that “In California, many river systems are constructional – that is the river deposits have built-up on top of previous sediments. Good examples of this are the areas in California where levees are required to control higher flows in the streams, because the streams are very close to surrounding surface elevations.” Memorandum, Dr. Steven Bachman, to Joseph Sax, August 15, 2001, at 1 (on file with Joseph Sax).

²³⁸ *Gila River IV*, 198 Ariz., at 337-38 (quoting trial court).

²³⁹ *Ibid.*

long ago understood by the California Supreme Court, as evidenced by decisions like *Katz v. Walkinshaw*²⁴⁰ and *Los Angeles v. Hunter*.²⁴¹ And, as an earlier section of this Report indicates, there is good reason to conclude that the California legislature knew it as well, and intended to legislate it in 1913.

2. Other Western States

How do other western states deal with the groundwater/surface water intersection, and what have any of them done that might be of interest to California, either in modifying its administration of the law as it currently stands, or in considering changes in the legal test it now employs?²⁴² While categorization of groundwater as either percolating water, or as subterranean stream water, was once common in many western states, it has been rejected as a scientific anachronism almost everywhere for many years. To take just a few examples, Utah got rid of it in 1935,²⁴³ Kansas did so in 1945,²⁴⁴ and North Dakota in 1955.²⁴⁵ It remains as a legally significant category only in Arizona and California.

In general, western states may be categorized as falling in one of four categories:²⁴⁶

1. At one extreme is Oklahoma, which rigidly separates surface water and groundwater, and treats as groundwater any water under the surface of the earth outside the cut bank of a definite stream. Though prior appropriation governs both surface water and groundwater, the two sources are managed separately without integration. Texas – which still follows an absolute ownership rule for

²⁴⁰ 141 Cal. 116, 74 P. 766 (1903).

²⁴¹ 156 Cal. 603, 105 P. 755 (1909).

²⁴² Several excellent, modern articles are available dealing with the very questions posed in this study – essentially the problems and opportunities for integrating groundwater and surface water management – and the following draws significantly upon them, with thanks. Among those upon which I especially relied are: Glennon & Maddock (1994), *supra* note 214; Glennon & Maddock (1997), *supra* note 214; Grant, *supra* note 214.

²⁴³ See Robert W. Swenson, A Primer of Utah Water Law: Part II, 6 Energy L.& Pol’y. 1, 25 (1985).

²⁴⁴ Kans. Laws 1945, ch. 390, § 25.

²⁴⁵ See *Baeth v. Hoisveen*, 157 N.W.2d 728, 730 (N.D. 1968).

²⁴⁶ Where not otherwise cited, references to state statutes and cases cited can be found in Glennon & Maddock (1997), *supra* note 214.

groundwater – also provides no integrated management of groundwater and surface water (though it has been under strong pressure, because of an Endangered Species Act problem in the Edwards Aquifer, to do so).²⁴⁷

2. At the other extreme are those states that have a fully integrated system, under which all water is within the appropriation system, and seniority and juniority is recognized without regard to whether one is using groundwater or surface water.²⁴⁸ Nebraska has moved somewhat toward integration, giving local districts authority (but not an obligation) to designate groundwater management areas and to develop plans for integrated use of groundwater and surface water.
3. Oregon and Colorado treat groundwater and surface water as separate systems (though appropriation applies to both), but have a specific method for integrating uses, founded on whether there is impact by a user of one source on a user from the other source. These methods are usually called “bright-line rules.”
4. California and Arizona separate groundwater and surface water, drawing a line between them by a statutory category.²⁴⁹ The statutory characterizations are almost certainly meant to be the same, though the phrasing of the laws differ somewhat.

²⁴⁷ For a review of the Texas situation generally, see *Sipriano v. Great Spring Waters of Am., Inc.*, 1 S.W.3d 75 (Tex. 1999).

²⁴⁸ E.g., Washington, Kansas, New Mexico, Nevada, North Dakota, Utah, Wyoming, Idaho.

²⁴⁹ This seems to be the case in Texas as well, though the statutory situation in Texas is rather confused. Tex. Water Code Ann. §§ 52.001(4) (repealed in 1995), defined underground water as “water percolating below the surface of the earth...but does not include defined subterranean streams or the underflow of rivers.” That definition still appears in Tex. Water Code Ann. § 64.003(12), which deals with import authorities, but a new statute dealing with groundwater conservation says only “‘Groundwater’ means water percolating below the surface of the earth,” without qualification, Tex. Water Code Ann. § 36.001(5). In any event, the Texas courts thus far have rigorously applied the Kinney Treatise of 1912 as authority: “[f]or...water to qualify as surface water, the subterranean water course must have all the characteristics of surface water courses, such as beds, banks forming a channel, and a current of water,” citing as authority, Kinney, §1155, at 2099, *A.H. Denis, III v. Kickapoo Land Company*, 771 S.W.2d 235, 236 (Ct. App. Texas, 1989), writ of error denied Oct. 25, 1989. Moreover, a designation of the Edwards Aquifer as a subterranean watercourse was found void by a state district court, and declared not an underground river in legislation in 1993, though litigation in a suit attempting to adjudicate water rights in the Edwards Aquifer on the theory that it is an underground river is still pending at this time. These issues were discussed by Douglas G. Caroom in an April 8, 1999 presentation at a Local Government Seminar, available at <http://www.bickerstaff.com/articles/groundwater.htm>.

While California's law defines the jurisdiction of its administrative permitting agency, the Arizona law is utilized to determine whether or not the water in question is subject to appropriation, or is governed by the groundwater reasonable use system.

It would lengthen this Report unduly to describe in detail all the variants, intricacies and implementation issues encountered in each of the states mentioned above. The states on the two extremes – those that do not integrate administration at all, and those that totally integrate – have little if anything to offer California under its current law.

3. Nebraska

Nebraska's approach will doubtless be of interest to water interests in California. Until quite recently, surface streams and aquifers had been dealt with under separate legal regimes, and there was no law governing groundwater withdrawals that affect surface water rights. However, in 1996 a law was enacted stating that where groundwater and surface water are physically interrelated, they should be managed as one source,²⁵⁰ but the question who was to govern was controversial for reasons that would be entirely familiar to Californians. The new law gives to local natural resource districts (NRDs) authority to resolve surface/groundwater conflicts by designating groundwater management areas and developing management plans for conjunctive use in what are called integrated management areas.²⁵¹ The State DWR (which like the Board here has surface water jurisdiction) was given only very limited authority to act where the NRDs fail to act (where interstate compacts are involved). The incentive for the new law was a particular problem, pumping in Nebraska that affected its ability to meet its compact obligations under the Republican River Compact.

Inquiries in Nebraska reveal that at least one NRD has initiated an integrated management plan (North Platte NRD, for Pumpkin Creek) to control groundwater impacts on stream flows. A moratorium was instituted on new well drilling, while existing wells are measured for pumping rates over the next few years to determine use. No limits on existing uses have been imposed at this time. Groundwater users have sued to challenge the NRD Management Plan, while surface water users have filed suit against the State seeking damages for its alleged failure to regulate

²⁵⁰ See Stephen D. Mossman, *Whiskey is for Drinkin' But Water is for Fightin' About: A First-Hand Account of Nebraska's Integrated Management of Ground and Surface Water Debate and the Passage of L.B. 108*, 30 Creighton L. Rev. 67 (1996).

²⁵¹ The NRDs are given authority to limit the total amount of groundwater withdrawn, institute a system of rotating groundwater use, requiring well spacing, and requiring a reduction in the number of irrigated acres.

groundwater use. The details of the plan can be accessed on the North Platte NRD website.²⁵² Another plan is said to be in the offing for Lodgepole Creek in the South Platte NRD. Then there is the Platte River Cooperative Agreement, which involves three-state negotiations, a Supreme Court interstate water case, and the Endangered Species Act, which presents a sort of ultimate legal, economic, and political test of a state's capacity to integrate management of hydrologically connected ground and surface water.²⁵³

4. Oregon

Oregon and Colorado have also employed techniques that might be of interest here: efforts to implement so-called "bright line" tests for determining when pumping impacts on surface streams should no longer be taken into account because they are too remote. Oregon regulates groundwater appropriation in order to prevent "substantial interference with surface water supplies"²⁵⁴ (which includes both appropriators and instream flow rights). This is somewhat the same as the impact test proposed by the trial court in Arizona, discussed above. The Oregon administrative standard is the following:

1. Is the aquifer hydraulically connected to the surface water source?²⁵⁵ If yes, then a well producing water from that aquifer is presumed to be a cause of substantial interference, if any of the following conditions exists:
 - a. The well is less than .25 mile from the surface water source; or
 - b. The rate of appropriation is greater than 5 c.f.s. and the well is less than 1 mile from the surface water source; or
 - c. The rate of appropriation is greater than 1% of the minimum perennial

²⁵² <http://www.npnrd.org>

²⁵³ See J. David Aiken, *Balancing Endangered Species Protection and Irrigation Water Rights: The Platte River Cooperative Agreement*, 3 *Great Plains Nat. Res. J.* 119 (1999).

²⁵⁴ Or. Admin. R. § 690-09-040. Washington State does not require a substantial impact. It regulates pumping that "affects, even if minutely, the river's flow....," *Hubbard v. Washington Dept. of Ecology*, 86 Wash.App. 119, 124, 936 P.2d 27, 29 (Wash. Ct. App. 1997).

²⁵⁵ Or. Admin. R. § 690-09-040(1). While Oregon does not define hydraulic connection, there is a definition in a recent Washington State Pollution Control Board decision: "[i]f the evidence demonstrates that any of the water extracted from the ground at the place, and depth, in question would otherwise have contributed to a particular surface water, then hydraulic continuity between that groundwater and that surface water is established." *In re Appeals from Water Rights Decisions of the Department of Ecology*, at 1996 WL 514630, at 12.

streamflow or instream water right with a senior priority date, or greater than 1% of the discharge that is equaled or exceeded 80% of the time, and the well is less than 1 mile from the surface water source; or

- d. The well pumping would result, after a continuous 30 day period, in depleting the stream by more than 25% of the rate of appropriation, and the well is less than 1 mile from the surface water source.

The above criteria, if met, create a presumption of interference. The administrative agency is also permitted to demonstrate substantial interference by evidence, and apparently one way of making that showing is by demonstrating a potential for “a cumulative adverse impact” on surface flows.²⁵⁶ If a similar approach were to be utilized in California, the Board, by utilizing a version of such bright-line rules, might establish a presumption of the presence of a subterranean stream, and thus of jurisdiction. It would alternatively have the opportunity to establish jurisdiction analytically, that is, by site-specific evidence of the impact presumed to exist under the various bright-line tests.

An alternative approach would be to adopt a simplified version of the Oregon standard. One might, for example, create a presumption that pumping from any well within a fixed distance and pumping above a specified minimum, is pumping a statutory “subterranean stream.” The question, when such methods are used, is both (1) how much sophistication one is willing to forego, e.g., in terms of actual impact on the stream in making a jurisdictional decision; and (2) how justifiable any such presumption is, in terms of the facts it purports presumptively to demonstrate. Notably, three of the four Oregon presumptions include no accounting for the actual hydrological relationship between the well and the stream. Only standard (d.) requires that factor to be determined analytically.

The Oregon system is also hydrologically incomplete in its use of specified distances such as .25 mile or 1 mile, which necessarily fail to account for impacts that will be felt over longer periods of time,²⁵⁷ though some standard to account for attenuation of impact is inevitable in any system, a point that the California Supreme Court has expressly acknowledged.²⁵⁸

²⁵⁶ Or. Admin. R. § 690-09-040(5).

²⁵⁷ Both Colorado and Idaho have statutes that require accounting for future loss: Colo. Rev. Stat. § 37-92-502(2) (“is causing or will cause material injury”); Idaho Code § 42-237a(g) (would adversely affect “the present or future use of any prior surface or ground water right”).

²⁵⁸ *City of San Bernardino v. City of Riverside*, 186 Cal. 7, 14, 198 P. 784 (1921): There “may be a point of distance from the stream at which a diversion of...underground water will have so little effect on the stream that it will not be actionable.”

5. Colorado

Like Oregon, Colorado has also adopted a “bright line” approach that sets a standard for inclusion and exclusion from the regulatory system. That standard is whether “the withdrawal... will... within one hundred years, deplete the flow of a natural [surface] stream...at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal.”²⁵⁹ While 100 years seems an extraordinarily long time, and .001 a very small quantum, used as managerial standards, the attractiveness of some sort of time-sensitive standard is that it bases jurisdiction on the hydraulic realities of the specific case, rather than building in simplifying assumptions.²⁶⁰ It also acknowledges the significance of long-term impacts on the water supply in the system.²⁶¹ Its weakness is that it is unlikely to take account of other variables that might intervene to diminish the need for the water, such as a run of unusually wet years.²⁶²

It should be noted again that any standard based on impact (that is, on the degree of hydrologic relationship between the groundwater use and surface water resources) – whatever the legal regime may be – necessarily calls for a policy judgment about the point at which impacts should no longer be accounted for, either because they are too slight, too difficult to ascertain, or too expensive to manage. Notably this problem arises as much in a state with a fully integral system for groundwater and surface water administration as it does in a state with a system like California’s.²⁶³

²⁵⁹ Colo. Rev. Stat. § 37-90-103(10.5).

²⁶⁰ “In the Scott River adjudication [in California], the ...Board staff report applied a time factor in deciding to include...only pumping which affected the surface flow of the Scott River within a single irrigation season.” Anne J. Schneider, *Are Our Ground Water Laws Adequate?*, in *Proceedings of the 19th Biennial Ground Water Conference*, JJ DeVries, J. Woled, eds., Water Resources Center Report No. 84, Univ. of Cal., Davis (1994), at 50.

²⁶¹ Fashioning an appropriate remedy to account for impacts that won’t be felt for many years is a challenging task. In theory, it is simply a discounting problem, like providing enough money today to assure an individual she will have \$1,000 in 25 or 40 years based on an assumed rate of interest. In practice, with water supply, the problem is a good deal trickier. New Mexico’s approach is discussed in Glennon & Maddock, *supra*, note 214, at 22-41 – 22-42. Colorado’s augmentation plan system is discussed in Lawrence J. MacDonnell, *Colorado’s Law of “Underground Water”; A Look at the South Platte Basin and Beyond*, 59 U. Colo. L.Rev. 579, 589 (1988).

²⁶² Possible practical approaches to this problem are discussed in Grant, *supra* note 214, at 75-77.

²⁶³ An interesting dispute over the question how little is too little arose recently in
(continued...)

PART V:

MANAGEMENT OF GROUNDWATER OUTSIDE WATER CODE § 1200

In considering the limitations on Board jurisdiction imposed by Water Code § 1200, it is useful to keep in mind two matters: (1) Even if the definition of a subterranean stream were very expansively interpreted, the Board’s permitting jurisdiction would still not embrace uses of that water on overlying land; and (2) There are other potentially available sources of Board authority over the use of subsurface water, outside of Water Code § 1200's permitting jurisdiction.

1. Overlying Uses of Groundwater

Land overlying a subterranean stream is considered riparian to that stream,²⁶⁴ and the Board’s understanding is that “[a] riparian is entitled to pump and use water on a parcel which overlies a subterranean stream” just like a riparian on a surface stream, without seeking a permit from the Board.²⁶⁵

²⁶³(...continued)

Washington State, which has an integrated system. See *Hubbard v. Washington Dept. of Ecology*, 86 Wash.App. 119, 936 P.2d 27 (1997). The court found that the Department of Ecology had not abused its discretion in restricting pumping when river flows fell below a specified minimum even though there was evidence that the impact of pumping could have accounted for as little as a .004 percent reduction in streamflow during low flows. See Jeffrie Minier, *Conjunctive Management of Stream-Aquifer Water Rights: The Hubbard Decision*, 38 Nat. Res. J. 651 (1998); Douglas L. Grant, *supra* note 214.

²⁶⁴ “An overlying right, [is] analogous to that of the riparian owner in a surface stream,” *City of Barstow v. Mojave Water Agency*, 23 Cal.4th 1224, 1240, 5 P.3d 853, 863, 99 Cal.Rptr. 294, 304 (2000). See also *Prather v. Hoberg*, 24 Cal.2d 549, 50 P.2d 405 (1944); Wells A. Hutchins, *The California Law of Water Rights* (1956), at 421. All the usual limits on riparian diversion and use presumably apply to subterranean stream riparians as to those riparian to a surface stream – use is limited to natural flows, must be within the watershed, and no seasonal storage is permitted. As to the extent of overlying rights, it is “the owner’s right to take water from the ground underneath for use on his land within the basin or watershed.” *City of Barstow, supra*.

²⁶⁵ See D. 1632 (1995), at 35, 1995 WL 464946. Riparian pumpers of percolating groundwater don’t even have to file the statements of diversion and use to which surface riparians
(continued...)

While there is no authoritative source of data as to how much groundwater is used on overlying riparian land, and how much being applied to non-overlying land, there is little doubt that a considerable percentage of groundwater is being used on riparian overlying land, and thus would be outside the Board's permitting jurisdiction, no matter how expansively the statutory category of "subterranean streams flowing through known and definite channels" was applied. Some rough sense of the scope of the issue may be gleaned from the following estimates provided by the Association of California Water Agencies (ACWA) in response to an inquiry by the author of this Report:²⁶⁶

For example, in Ventura County, the total groundwater pumping is about 70% agricultural and 30% municipal and industrial (M&I). It can be assumed that essentially all the M&I usage is not overlying....Assuming that some of the agricultural pumping is not overlying, then the total non-overlying usage could rise to at least 50%....Of course, this will vary considerably by county. It's likely that a county in the northern Sacramento Valley could have the highest percentage of overlying use whereas urban counties such as Los Angeles or Orange could have the lowest percentage. Again, this is all very theoretical and conditions could dramatically vary for each and every country in California.

Whatever the actual numbers, it is significant that concerns about non-regulation of groundwater use are not attributable solely to restrictions imposed under interpretations of Water Code § 1200, and that expanded interpretation of that statutory provision would primarily affect M&I users of groundwater, rather than agricultural pumpers.

2. Other Sources of Authority Over Use of Groundwater

a. Constitution Article X, § 2, Water Code § 100, The Public Trust, and Water Code § 275

While Water Code § 1200 limits the Board's permitting jurisdiction over groundwater, it does not limit other sources of authority that may be available to the Board to regulate uses of groundwater. A lively current question is whether, and to what extent, the Board may restrict pumping of percolating groundwater that is adversely affecting surface instream benefits, such as fish populations and riparian values. The Board's attorneys are of the view that the Board has authority to control such uses where they either (1) violate the prohibition of the Constitution and the Water Code on waste and on unreasonable use and methods of use; or (2) violate the public trust.

Both jurisdictional and substantive issues questions are presented. In terms of jurisdiction, there

²⁶⁵(...continued)
are subject under Water Code § 5101. See the definition of diversion in Water Code § 5100(b).

²⁶⁶ Letter from Stephen K. Hall, Executive Dir., ACWA to Joseph Sax, October 31, 2001, at 1 (on file with Joseph Sax).

are two distinct issues: (1) Does the Board have authority to take jurisdiction itself, and to issue remedial orders against users water users over whom it has no permitting authority?²⁶⁷ (2) May the Board go to court and seek judicial relief? Substantively, the questions are (1) What constitutes waste and unreasonable use, in the context of groundwater use that affects surface stream values? (2) Does the public trust extend to groundwater uses at all?²⁶⁸ Since this Report deals only with the Board's permitting jurisdiction, the following discussion is limited to that issue, not with the questions what constitutes waste and unreasonable use, or what constitutes a violation of the public trust.²⁶⁹

Assuming that a substantive violation exists, there is no doubt²⁷⁰ that the Board, through the Attorney General,²⁷¹ can institute litigation to control groundwater use that (1) constitutes waste or unreasonable use or method of use within the meaning of Article X, § 2 of the California Constitution, and Water Code § 100;²⁷² or (2) that violates the public trust.²⁷³ There may still be

²⁶⁷ While the question here relates to users of percolating groundwater, a parallel question arises as to riparian surface water users, and pre-1914 appropriators.

²⁶⁸ Cf. *In the Matter of the Water Use Permit Applications* (Waiahole Ditch case), 94 Haw. 97, 9 P.3d 409 (2000) (public trust extends to groundwater). An unresolved question in California is whether pumping of tributary groundwater that affects public trust values in navigable waters would be treated like tributary surface water under *National Audubon Society v. Superior Court*, 33 Cal.3d 419, 189 Cal.Rptr. 346, 658 P.2d 709 (1983).

²⁶⁹ The scope of the Board's public trust authority is currently a subject of considerable dispute. See, e.g., David R.E. Aladjem, *Is Water Ripe for the Taking? The SWRCB's Lower Yuba River Decision and the Public Trust Doctrine*, 11 California Water Law & Policy 261 (July 2001), criticizing D. 1644 (2001) (Lower Yuba River) (petitions for reconsideration and petitions for writ of administrative mandamus pending). See generally Gregory S. Weber, *Articulating the Public Trust: Text, Near-Text and Context*, 27 Ariz.St.L.J. 1155, 1173 (1995).

²⁷⁰ See *Environmental Defense Fund v. East Bay MUD*, 26 Cal.3d 183, 200, 605 P.2d 1, 10, 161 Cal.Rptr. 466, 475 (1980) (*EDF II*) and *People ex rel. State Water Resources Control Board v. Forni*, 54 Cal.App.3d 743, 126 Cal.Rptr. 851 (1st Dist. Ct. App. 1976). Courts may require the parties to accept a physical solution to resolve a waste problem. *City of Lodi v. East Bay MUD*, 7 Cal.2d 316, 341, 60 P.2d 439 (1936).

²⁷¹ Water Code § 275. Also the Attorney General can bring an action for equitable relief "for the protection of the natural resources of the state from pollution, impairment, or destruction." Cal. Govt. Code § 12607 (West 1980). For definition of "natural resources" see Cal. Govt. Code § 12605.

²⁷² *People ex rel. SWRCB v. Forni*, 54 Cal.App.3d 743, 753, 126 Cal.Rptr. 851 (1st Dist. (continued...))

some question whether the Board can assert its own jurisdiction to adjudicate and remedy complaints about these matters where it otherwise has no jurisdiction over the respondent,²⁷⁴ though the California Supreme Court has said that claims of unreasonable uses of water or of harm to the public trust “may be brought in the courts or before the Board.”²⁷⁵

Board jurisdiction in such situations is said to be founded primarily on Water Code § 275,²⁷⁶

²⁷²(...continued)

Ct. App. 1976) (Board sues under Water Code § 275 to enjoin riparian uses as unreasonable). The prohibition on unreasonable and non-beneficial use applies to groundwater as well as surface water use. *Peabody v. Vallejo*, 2 Cal.2d 351, 372, 40 P.2d 486, 494 (1935); *Joslin v. Marin Mun. Water Dist.*, 67 Cal.2d 132, 138, 429 P.2d 889, 893, 60 Cal.Rptr. 377, 381 (1967).

²⁷³ Under *Marks v. Whitney*, 6 Cal.3d 251, 261, 98 Cal.Rptr. 790, 491 P.2d 374 (1971) “members of the public” have standing to bring an action to restrain violations of the public trust. See also *In re Waters of Hallett Creek*, 44 Cal.3d 448, 472, 243 Cal.Rptr. 887, 749 P.2d 324, 338 n.16 (1988), cert. denied 488 U.S. 824 (1988). The State acting through the Board has a continuing responsibility and authority under the public trust doctrine to consider the effect of water diversions upon public trust resources and to avoid or minimize harm to those resources to the extent feasible. *National Audubon Society v. Superior Court*, 33 Cal.3d 419, 427, 189 Cal.Rptr. 346, 365, 658 P.2d 709 (1983) (a duty of continuing supervision). Preservation and enhancement of fish and wildlife resources, and recreation, as well as the public interest in water, are statutory responsibilities of the Board. Water Code §§ 1243, 1253.

A recently filed case in Arizona asserts that the State water agency has an affirmative duty to use the public trust to protect the state’s watercourses from adverse affects of groundwater pumping. *Center for Biological Diversity v. Joseph C. Smith, Dir., Arizona Dept. of Water Resources*, No. CV2002-000171, Superior Court, Maricopa County, filed Jan. 7, 2002.

²⁷⁴ It may be important to distinguish the Board’s ability to go to court from its ability to assert jurisdiction itself, and to issue orders restraining groundwater use. Sometimes the term “jurisdiction” seems to be used without making this distinction explicit. See, e.g., Barton H. Thompson, Jr., *Legal Disconnections Between Surface Water and Ground Water*, in *Making the Connections: Proceedings of the Twentieth Biennial Conference on Ground Water*, University of California, Water Resources Center Report No. 88, June 1996, at 21.

²⁷⁵ *In re Waters of Hallett Creek*, *supra* note 273, at 749 P.2d 324, 338 n.16.

²⁷⁶ “The department and board shall take all appropriate proceedings or actions before executive, legislative, or judicial agencies to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of water in this state.”

secondarily on Water Code § 174,²⁷⁷ and perhaps on substantive provisions Article X, § 2 of the Constitution which is self-executing, and on its statutory parallel, Water Code § 100. There is one court decision, in a district court of appeal case, directly on point, though it did not involve groundwater.

In *Imperial Irrigation District v. State Water Resources Control Board (IID II)*,²⁷⁸ the issue was whether the Board could take jurisdiction over pre-1914 surface water appropriations in order to determine whether the water was being unreasonably used in violation of Article X, § 2 of the Constitution, or whether a complainant would have to go to court to raise and adjudicate such a claim. The argument was that the Board had no pre-existing jurisdiction over IID's pre-1914 appropriations; and that the statutory provision upon which the Board relied was not a grant of jurisdiction to it, but simply an authorization to the Board to go to court to seek relief. The provision in question was Water Code § 275. IID claimed that this provision was a restriction on the Board – directing it to petition other agencies to grant relief for violations – rather than a grant of jurisdiction to act on its own. (Even if such a claim were to prevail, however, courts have broad authority to refer any and all issues to the Board).²⁷⁹

The court expressly rejected that claim, and said it saw no distinction between the *IID* case and an earlier case in the California Supreme Court (known as *EDF I*)²⁸⁰ which sustained Board jurisdiction over a claim of waste and unreasonable use under Water Code § 275. However in that case, the Board already had jurisdiction over the water user, which was one of its permittees;²⁸¹

²⁷⁷ “The [l]egislature hereby finds and declares that in order to provide for the orderly and efficient administration of the water resources of the state it is necessary to establish a control board which shall exercise the adjudicatory and regulatory functions of the state in the field of water resources.” See also Water Code §§ 104, 105.

²⁷⁸ 225 Cal.App.3d 548, 275 Cal.Rptr. 250 (4th Dist. Ct. App. 1990).

²⁷⁹ “...in any lawsuit for a determination of rights to water, ‘the court may order a reference to the Board, as referee, of any or all issues’ (Wat. Code, § 2000), or, alternatively, ‘may refer the suit to the board for investigation or and report upon any or all of the physical facts involved.’ (Wat. Code, § 2001.)” *In re Waters of Hallett Creek*, *supra* note 273, at 749 P.2d 324, 338 n.16.

²⁸⁰ *Environmental Defense Fund v. East Bay MUD*, 20 Cal.3d 327, 572 P.2d 1128, 142 Cal.Rptr. 904 (1977) (*EDF I*). See also *EDF II*, *supra*, note 270.

²⁸¹ The *EDF v. EBMUD* case, where the court held that the Board has jurisdiction to determine whether a water user's failure to reclaim water violated the Water Reclamation Law, dealt not only with the use of water held under a Board permit, but with a statute that expressly granted the Board jurisdiction to regulate reclamation and use of waste water. Such cases

(continued...)

similarly, in the *National Audubon (Mono Lake)*²⁸² case (which began in a court) Los Angeles was already within the Board's jurisdiction before the public trust claim arose.

The *IID I* decision says: “[n]o case has construed section 275 as a limitation on the Board’s adjudicatory power. In fact, *EDF I*, which holds the Board had *exclusive* adjudicatory jurisdiction...cites section 275 in support of its conclusion the Board’s ‘powers extend to regulation of water quality and prevention of waste.’”²⁸³ The court in *IID I* also relied on the so-called Racanelli decision,²⁸⁴ which also cited § 275 as authority for the proposition that the Board has “the separate and additional power to take whatever steps are necessary to prevent unreasonable use or methods of diversion.”²⁸⁵ The court in *IID I* concluded that “section 275 is not to be construed as a limitation on the Board’s adjudicatory authority, but rather as a statute granting separate, additional power to the Board.”²⁸⁶

Though the Supreme Court has not yet expressly addressed the question whether Water Code § 275 provides an independent source of jurisdiction over pumpers of percolating groundwater, the holding of the *IID* case, along with the language of *EDF I*, and the Racanelli decision, are significant authority in favor of the claim that the Board can assert jurisdiction over percolating groundwater pumping to adjudicate and remedy claims that come within the scope of waste and unreasonable use covered by Water Code § 275. Such jurisdiction could be a powerful tool to deal with pumping that impairs instream flows needed to protect fish and riparian values, one of the major issues underlying complaints urging the Board to take a broadened view of its jurisdiction

²⁸¹(...continued)

essentially raise primary jurisdiction, or concurrent jurisdiction, issues, rather than dealing with the question whether there is Board jurisdiction at all. The Board and the courts have concurrent jurisdiction. *EDF II*, *supra* note 270.

²⁸² *National Audubon Society v. Superior Court*, 33 Cal.3d 419, 189 Cal.Rptr. 346, 658 P.2d 709 (1983); D. 1635 (1996), at ¶ 4.1, 1996 WL 904701 at 12.

²⁸³ 186 Cal.App.3d 1160, 1169 (4th Dist. Ct. App. 1986).

²⁸⁴ *United States v. State Water Resources Control Board*, 182 Cal.App.3d 82, 142, 129-30, 227 Cal.Rptr. 161, 195-96, 187 (1st Dist. Ct. App. 1986). While there is language in the Racanelli decision that is very broad – the court says the Board has independent jurisdiction to implement the Constitutional provision against unreasonable use – this statement was made in the context of a party holding a Board permit, and the Board was only amending the permit terms. It did not seek to use an unreasonable use claim to create jurisdiction where it did not otherwise exist.

²⁸⁵ 186 Cal.App.3d., at 1170, quoting 182 Cal.App. 3d at 142.

²⁸⁶ *Id.*, at 1170.

under Water Code §1200.²⁸⁷

Of course *IID* is a District Court of Appeals case, not a Supreme Court decision, and it deals with surface water. It remains to be seen if the Supreme Court's language in *EDF I* will be applied to cases like groundwater, where there is no pre-existing Board jurisdiction. No doubt the claim will be made that percolating groundwater is a special case, and that the legislature has taken special pains to restrict Board jurisdiction over groundwater, specifying those (few) instances in which it believes such jurisdiction may be exercised.²⁸⁸ In anticipation of any such claim, however, it should be recalled that back in 1912 and 1913 the only expressed objection to jurisdiction over groundwater was to a discretionary permitting system that might deny a landowner appropriation of water despite an adequate supply. It was acknowledged even then that when groundwater pumping adversely affected other water rights it was amenable to regulation and restriction.

The question of the scope of Board jurisdiction over groundwater to protect instream values is currently pending in the *North Gualala Water Company* case.²⁸⁹ In that matter the Board had jurisdiction over a surface appropriation, which was conditioned by a bypass flow provision. The permittee then sought a permit (out of an abundance of caution?) to change the point of diversion to a well, while simultaneously asserting that the well did not pump subterranean stream water, and that it was not being recharged by the stream anyway. The Board nonetheless insisted on maintaining the bypass flow condition on the well, while declining to adjudicate the subterranean stream question, saying that issue was not properly before it.

²⁸⁷ It should be noted that the Board's limited ability to gather information or perform monitoring, or to require diverters to report and monitor, significantly constrains its practical capacity to implement Water Code § 275 and the public trust. Broad substantive authority may be undermined by inability to obtain sufficient evidence to sustain a claim. Improving the Board's information-gathering capacity is certainly an issue that deserves to be on the legislative agenda.

²⁸⁸ See text at notes 132 et seq., *supra*, citing various Water Code provisions.

²⁸⁹ *North Gualala Water Company v. State Water Resources Control Board*, No. SCUk CVG 01 86 109, Superior Court, Mendocino County, filed July 19, 2001. The case has a complicated history. See SWRCB Orders WR 2001-14, WR 99-011, and WR 99-09-DWR. On June 21, 2001, the Board issued an Order Denying Reconsideration, in the *North Gualala Water Company* case, Order WR 2001-14. The Order deals with the procedural failings of the petition for reconsideration. But the Order notes that the Company claims its pumping is not affecting the surface flow, as well as that it is not pumping from a subterranean stream. If there is no hydraulic connection between the pumping and the surface flows, then the case would become moot (there would be no need to apply streamflow maintenance standards to these wells). If, however, there is a connection, and if it is determined that the Company is not pumping from a subterranean stream – an issue that the June 21 Order leaves open for later consideration – the question remains whether, and how, the Board would seek to control the pumping in order to protect instream flows.

The Board has, however, made clear its understanding that it has jurisdiction whether or not the well in question is pumping subterranean stream water.²⁹⁰ As noted above, the applicant has now filed suit in Superior Court seeking a determination that it is not pumping subterranean stream water and that the Board has no jurisdiction over its well. The case potentially presents this issue: If the facts showed that the new point of diversion, the well, was pumping tributary groundwater with virtually the same impact on instream values as the previous surface diversion, but that legally the well is pumping percolating groundwater, has the Board now lost jurisdiction over the diversion? If so, can it take jurisdiction anew under Water Code § 275? This case, or one like it, will doubtless eventually work its way through the courts and clarify the scope of the Board's asserted independent authority over percolating groundwater that threatens surface stream values in violation of the values protected under Water Code § 275.

b. Remedies for Impairment of Water Rights

While California does not have an integrated permit system for administering surface and groundwater use, the Courts have protected surface stream rights against groundwater pumping, and *vice versa*, at the behest of the injured party, for nearly a century.²⁹¹ For example, in a 1904

²⁹⁰ The Board's Order says the following: "...Under Article X, Section 2 of the California Constitution and Water Code Section 100, all diversion and use of water in California is subject to reasonable use restrictions and a prohibition on unreasonable diversion or method of diversion. Adverse impacts to fish and wildlife are among the factors that provide a basis for determining that a water diversion may be unreasonable. (*United States v. State Water Resources Control Board* (1986) 182 Cal.App.3d 82, 129-130 [227 Cal.Rptr. 161, 187]; SWRCB Order WR 95-4, p. 17). Water Code Section 275 directs the SWRCB to take all appropriate actions to prevent waste or unreasonable use and unreasonable methods of diversion. The SWRCB's authority to regulate water use to comply with the reasonable use and diversion requirements of the California Constitution and Water Code extends to water use under all types of rights. [*Imperial Irrigation District v. State Water Resources Control Board*, 225 Cal.App.3d 548, 275 Cal.Rptr. 250 (4th Dist. Ct. App. 1990).] Thus, the SWRCB's authority to require the operator of a well to prepare a water supply contingency plan to avoid or reduce impacts on public trust resources is not limited to situations where the well is deemed to be under the SWRCB's permitting authority." Order WR-99-011, at 7-8, n.3. Elsewhere in the Order, the Board, citing *National Audubon* (note 273, *supra*), says the Board "has the continuing responsibility and authority under the public trust doctrine to consider the effect of water diversions upon public trust resources and to avoid or minimize harm to those resources to the extent feasible." *Id.*, at 5. It should be noted, incidentally, that since salmon in the river were listed under the federal Endangered Species Act, the pumpers might have been liable for a "take" under that law (16 U.S.C. § 1538(a)(1)(B)) whether or not the Board had jurisdiction over them.

²⁹¹ *Eckel v. Springfield Tunnel & Dev. Co.*, 87 Cal.App. 617, 262 P. 425 (3^d Dist. Ct. App. 1927); *McClintock v. Hudson*, 141 Cal. 275, 281, 74 P. 849 (1903); *Miller v. Bay Cities Water* (continued...)

case, *Cohen v. La Canada Land & Water Company*,²⁹² the Court protected a prior appropriator from a surface stream against a subsequent appropriator of tributary percolating groundwater. Similarly in *City of Lodi v. East Bay M.U.D.*,²⁹³ the Court protected a prior appropriator of percolating groundwater against a subsequent appropriator of surface stream water.

In a 1903 decision, a riparian surface stream user was protected against an appropriator of percolating groundwater.²⁹⁴ Similarly, the Court protected Los Angeles' paramount pueblo rights in the Los Angeles River against diminution by pumping of tributary percolating groundwater.²⁹⁵ Still another early case applied the correlative rights doctrine as between a riparian user of a surface stream and an overlying user of tributary groundwater.²⁹⁶

The effective result of all these cases has been to implement integrated management of water rights in hydraulically connected groundwater and surface stream water, through the medium of private litigation.²⁹⁷ Indeed, it may be that the determination of the California Supreme Court to

²⁹¹(...continued)

Co., 157 Cal. 256, 107 P. 115 (1910) (mandated injunctive relief no longer the law, cited in *City of Lodi v. East Bay M.U.D.*, 7 Cal.2d 316, 338, 60 P.2d 439 (1936)).

²⁹²142 Cal. 437, 76 P. 47 (1904). The Court's legal posture in this case is not entirely clear, as it does not describe the defendant (pumper of percolating groundwater used off the overlying land) as simply an appropriator, junior to the plaintiff (surface steam appropriator), but says that a use other than on the pumper's own land is "not for a reasonable use" (142 Cal. at 439).

²⁹³ 7 Cal.2d 316, 60 P.2d 439 (1936).

²⁹⁴ *McClintock v. Hudson*, 141 Cal. 275, 281, 74 P. 849 (1903).

²⁹⁵ *Los Angeles v. Hunter*, 156 Cal. 603, 608, 105 P. 755 (1909).

²⁹⁶ *Hudson v. Dailey*, 156 Cal. 617, 105 P. 748 (1909). The Court made clear that correlative rights would apply whether the groundwater was percolating or was a subterranean stream (156 Cal. at 628). Followed in *Eckel v. Springfield Tunnel & Dev. Co.*, 87 Cal.App. 617, 623, 262 P. 425 (3^d Dist. Ct. App. 1927).

²⁹⁷ See *United States v. Fallbrook Public Utility Dist.*, 165 F.Supp. 806, 847 (S.D. Cal. 1958), citing numerous California cases to the effect that: "...a percolating groundwater supply, although not part of the flow of a stream, may nevertheless be hydrologically connected with it, with the result that the extraction of water from either source diminishes the amount of water in the other....In such a situation, the percolating groundwater and the stream are regarded as one common water supply...and in considering the respective rights of those who secure water from

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integrate groundwater and surface water rights in litigation explains at least in part how California law has been able to endure the “non-administration” of groundwater under Water Code § 1200 for so many decades.

Nor need all such cases be remitted to private litigation. The Board clearly has authority to protect groundwater uses when it has jurisdiction over permit applications to appropriate surface water,²⁹⁸ and it does so. Groundwater users dependent on recharge from surface streams are protected by a determination whether surface water is available for appropriation.²⁹⁹ The Board also has authority to condition surface stream appropriation permits so as to protect groundwater rights.³⁰⁰ The courts, of course, can also afford such protection in private litigation.³⁰¹

²⁹⁷(...continued)

the two interconnected sources, it is ‘immaterial whether the (underground) waters...were or were not part of an underground stream, provided the fact be established that this exaction from the ground diminished to that extent, or to some substantial extent, the water flowing in the stream.’” Needless to say, the courts also integratively manage surface water rights with subterranean stream water uses, for example, protecting a senior surface appropriator against a junior pumper. *Larsen v. Apollonio*, 5 Cal.2d 440, 55 P.2d 196 (1936); *Barton Land & Water Co. v. Crafton Water Co.*, 171 Cal. 89, 152 P. 48 (1915).

²⁹⁸ Water Code §§ 1253, 1255, 1257.

²⁹⁹ E.g., the permits for the Solano Project (Putah Creek), Order WR 81-11 (1981), 1981 WL 40368, and Cachuma Project (Santa Ynez River), D. 1486 (1978), 1978 WL 21156, among others, have permit conditions designed to protect prior rights to divert from percolating groundwater (in both cases Condition 11). In a decision involving a stream tributary to Pismo Creek in San Luis Obispo County, the Board said: “In order to issue a permit, the Board must find that unappropriated water is available to supply the applicant....Unappropriated water includes water that has not been either previously appropriated or diverted for riparian use....The owner of land overlying a groundwater basin, which is fed by percolation from a surface watercourse, possesses rights analogous to a riparian owner (*Peabody v. Vallejo* (1935) 2 Cal.2d 351, 372, 40 P.2d 486. Consequently, water is not available for appropriation from a watercourse which feeds a groundwater basin if the appropriation would materially damage the rights of the overlying landowners (see *Id.* at 374; *Lodi v. East Bay Municipal Utility Dist.* (1936) 7 Cal.2d 316, 339, 60 P.2d 439).” D. 1627 (1990), at 3.

³⁰⁰ E.g., *City of Lodi v. East Bay M.U.D.*, 7 Cal.2d 316, 323, 60 P.2d 439 (1936): “In the permits of the District...it was specifically provided that the District was under the responsibility of not injuring the underground water users, downstream from the dam.”

³⁰¹ E.g., *Miller v. Bay Cities Water Co.*, 157 Cal. 256, 107 P. 115 (1910) (the court prohibited an appropriation of surface waters where the appropriation would have reduced

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PART VI:

SHOULD THE LEGAL TEST BE CHANGED?

Should the legal test for determining what subsurface waters are subject to the SWRCB's permitting authority be changed? If so, what legal test would be appropriate?

To answer these questions, one must first decide what is really being asked? If the question is whether Water Code § 1200 is suited to resolve California's 21st Century water problems, or is a law that would or should be enacted today, the answer is certainly "no".³⁰²

If, however, the question is whether proposing legislation to expand the Board's permitting jurisdiction over subsurface waters is the most promising approach to today problems for California, the answer – in this observer's opinion – is also "no." The reasons are many, and they are more practical than theoretical:

A great deal of subsurface water has been pumped for a long time, and any comprehensive permitting system would have to address existing uses. To do so presents complex problems of fairness to those dependent on existing uses, and perplexing questions of implementation. Illustratively, would a pumper of tributary groundwater since 1980 be integrated as of that date with appropriators from the stream, or be treated as a new appropriator, as

³⁰¹(...continued)

groundwater recharge necessary to support the use of an overlying user of percolating groundwater).

³⁰² Every authority agrees that the "right" system is one that integrates management of hydrologically connected ground and surface waters. "Where...the stream and the groundwater are so closely connected that the use of one affects the other, the same law must be applied to both sources," Frank J. Trelease, *Conjunctive Use of Groundwater and Surface Water*, 27 Rocky Mtn. Min. L. Inst. 1853, 1856 (1982), quoted in John D. Leshy & James Belanger, *Arizona Law Where Ground and Surface Water Meet*, 20 Ariz. St. L.J. 657, 658-59 (1988). See also National Water Commission, *Water Policies for the Future* 233, Recommendation 7-1 (1973): "State laws should recognize and take account of the substantial interrelation of surface water and ground water. Rights in both sources of supply should be integrated, and uses should be administered and managed conjunctively. There should not be separate codifications of surface water law and ground water law; the law of waters should be a single, integrated body of jurisprudence."

of the date of a newly required permit application?³⁰³ What if 1980 surface stream appropriators are subject to bypass flow limits in their permits? Would such limits be newly imposed on pumpers of tributary water? Or should there be recognition of longstanding existing uses through some form of “grandfathered rights” (an approach that presents its own fairness problems)?

Numerous such questions would arise under new legislation if it extended Board jurisdiction over existing uses, such as the application of permit requirements to situations such as adjudicated groundwater rights, and to established groundwater banking programs.

As noted above, a considerable percentage of pumped groundwater is used on overlying land and is thus riparian. It would therefore be outside any revised permitting system, unless riparian groundwater use was to be treated differently from riparian surface water use. Excluding overlying uses would at best be an incomplete form of regulatory management.

Experience shows the reluctance of the legislature to provide for comprehensive regulation of groundwater, even in the context of local control, as illustrated by the limitations in recent groundwater management legislation.³⁰⁴ The prospects for comprehensive legislative reform are therefore unpromising. (I do, however, wish to reiterate the observation made above³⁰⁵ that legislation improving the Board’s information-gathering capacity, so that it can effectively fulfill responsibilities it already has under the Article X, § 2 of the Constitution, and Water Code § 275, should unquestionably be on the legislative agenda).

The issues described in the preceding paragraphs are only some of those that legislative rewriting of Water Code § 1200 at this late stage would generate. In acknowledgment of such practical concerns, and in light of the history of proposed legislative groundwater reform in California, I

³⁰³ While priority is ordinarily based on the date of filing of a permit application (Water Code §§ 1225, 1450, 1455), the Board has authority to adjust the priorities of water right applicants, *United States v. SWRCB*, 182 Cal.App.3d 82, 132, 227 Cal. Rptr. 161, 189 (1st Dist. Ct. App. 1986), and it has adjusted priorities in the public interest where junior applicants had longstanding claims and uses within the groundwater basin (e.g., D. 1632 (1995), *supra* note 265 at 35, 41-45; Order WR 95-10, *supra* note 189 at 38-39). Nonetheless, settling priorities would be a deeply troublesome issue. See note 212, *supra*.

³⁰⁴ E.g., Water Code §§ 10753.8(b); 10750.4.

³⁰⁵ In note 287, *supra*.

suggest an alternate approach, a three-point strategy for dealing with the problem of groundwater/surface water management in California:

- (1) Adoption by the Board of clear criteria to implement the existing statutory purpose, by taking jurisdiction henceforth over groundwater uses that diminish appreciably and directly the flow of a surface stream; and
- (2) Proactive use by the Board of its authority under Water Code § 275 and any other sources of jurisdiction it has, to implement the constitutional prohibitions on waste, unreasonable use, and unreasonable methods of use; to protect the public trust; and to safeguard established rights in surface stream flows; and
- (3) Where serious basin-wide problems are presented, comprehensive basin management (as with the most successful adjudicated/managed Southern California basins)³⁰⁶ is the most promising tool to achieve genuine integration of surface water and groundwater administration in California. This suggestion is made in full recognition of the cost, duration and complexity usually associated with settling rights generally within a basin.³⁰⁷ Nonetheless, that approach seems the most promising way for this state to position itself to address contemporary issues. Unlike proposals for expanding regulatory jurisdiction, basin management offers the possibility of employing the full range of needed management tools, such as professional administration, pumping assessments, importation of new supplies, replenishment programs, achievement of sustainable use, allocation of groundwater storage capacity, quality control, and conjunctive use.

-end of report-

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³⁰⁶ See generally William Blomquist, *Dividing the Waters: Governing Groundwater in Southern California* (1992).

³⁰⁷ A task that has not been made easier by the recent decision in *City of Barstow v. Mojave Water Agency*, 23 Cal.4th 1224, 1240, 5 P.3d 853, 863, 99 Cal.Rptr. 294, 304 (2000).

Appendix A:
Draft of the Proposed Water Commission Bill

REVIEW OF THE LAWS ESTABLISHING THE SWRCB'S PERMITTING AUTHORITY OVER APPROPRIATIONS OF
GROUNDWATER CLASSIFIED AS SUBTERRANEAN STREAMS AND THE SWRCB'S IMPLEMENTATION OF THOSE LAWS

Joseph L. Sax
January 19, 2002
(SWRCB Contract No. 0-076-300-0)

Appendix B1:

Assembly Bill No. 642 (1913) (as introduced Jan. 23, 1913)

REVIEW OF THE LAWS ESTABLISHING THE SWRCB'S PERMITTING AUTHORITY OVER APPROPRIATIONS OF
GROUNDWATER CLASSIFIED AS SUBTERRANEAN STREAMS AND THE SWRCB'S IMPLEMENTATION OF THOSE LAWS

Joseph L. Sax
January 19, 2002
(SWRCB Contract No. 0-076-300-0)

Appendix B2:
Assembly Bill No. 642 (1913) (as amended in Senate May 10, 1913)

REVIEW OF THE LAWS ESTABLISHING THE SWRCB'S PERMITTING AUTHORITY OVER APPROPRIATIONS OF
GROUNDWATER CLASSIFIED AS SUBTERRANEAN STREAMS AND THE SWRCB'S IMPLEMENTATION OF THOSE LAWS

Joseph L. Sax
January 19, 2002
(SWRCB Contract No. 0-076-300-0)

Appendix C:

Water Commission Act of 1913

REVIEW OF THE LAWS ESTABLISHING THE SWRCB'S PERMITTING AUTHORITY OVER APPROPRIATIONS OF
GROUNDWATER CLASSIFIED AS SUBTERRANEAN STREAMS AND THE SWRCB'S IMPLEMENTATION OF THOSE LAWS

Joseph L. Sax
January 19, 2002
(SWRCB Contract No. 0-076-300-0)

Appendix D:
Transcripts of Hearings on Proposed Water Commission Bill

REVIEW OF THE LAWS ESTABLISHING THE SWRCB'S PERMITTING AUTHORITY OVER APPROPRIATIONS OF
GROUNDWATER CLASSIFIED AS SUBTERRANEAN STREAMS AND THE SWRCB'S IMPLEMENTATION OF THOSE LAWS

Joseph L. Sax
January 19, 2002
(SWRCB Contract No. 0-076-300-0)

Appendix E:
Memos from Technical Advisory Committee Members

REVIEW OF THE LAWS ESTABLISHING THE SWRCB'S PERMITTING AUTHORITY OVER APPROPRIATIONS OF
GROUNDWATER CLASSIFIED AS SUBTERRANEAN STREAMS AND THE SWRCB'S IMPLEMENTATION OF THOSE LAWS

Joseph L. Sax
January 19, 2002
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