

HYDRAULIC CONTINUITY IN WASHINGTON WATER LAW

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I. A GOOD DAY AT BLACK ROCK

In 1993, while serving in the Office of Legal Counsel of the Yakama Nation, a Native American tribe located in the agriculturally productive salmon mecca of the Yakima Valley of eastern Washington, I was assigned to assist tribal water resources and fisheries staff charged with protecting the Nation’s treaty water rights for instream flows in regional rivers. The Nation’s goal was (and remains) restoration of salmon populations. By 1993, historic annual returns of half a million salmon had dwindled to less than 5,000 salmon migrating into the basin each year. At the time, the Yakama Nation’s water rights were being adjudicated in the state court system, and landmark recognition of the Nation’s treaty-based rights to instream flows in off-reservation streams was about to be confirmed by the Washing-

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ton State Supreme Court.¹ Tribal rights to instream flows were based on the Treaty of Walla Walla's reservation of rights "to fish in common" with the people of the territory. This ruling is profoundly important for many Pacific Northwest treaty tribes and serves as a basis for tribal interests in integrated water resource management.²

The Yakima general stream adjudication had been moving forward in fits and starts since 1977—a drought year that witnessed substantial curtailment of junior surface water users.³ The basin was effectively closed to issuance of new surface water rights, but groundwater was still considered fair game.⁴ The Yakima Basin is underlain by deep Columbia Basin basalt group aquifers that are quite productive, although their depth belies substantial hydrologic connections to local river systems.⁵ Water users wanted this groundwater. In response, the Department of Ecology was preparing to issue hundreds of deep well groundwater permits for irrigation in the Black Rock-Moxee Valley, east of the City of Yakima.⁶ A ten-year study of the local hydrogeology focused on the presence and absence of groundwater level declines relating to a valley fault line but failed to consider hydrologic connections with the Yakima River.⁷

This failure was surprising because the Department of Ecology (Ecology) was rethinking its policies for evaluation of ground and surface water interactions. A 1980 agency guidance document requiring a showing of "significant" connectivity was repudiated in 1989 as "technically obsolete."⁸ Agency hydrogeologists were just issuing a new procedural framework for conducting hydrologic investigations in support of water right decision making.⁹ Moreover, Ecology was defending its study of deep basalt hydrogeology farther east in the Columbia Basin as part of the "Sinking Creek" enforcement case.¹⁰ That study mapped and analyzed relationships between basalt aquifers and surface springs and streams, leading to an order directing groundwater users to curtail pumping to protect senior surface water claims.¹¹ Most importantly, a substantial body of scientific literature already existed, most of it prepared by the U.S. Geologic Survey (USGS) and the Army Corps of Engineers, documenting the connectivity between Yakima basin deep basalt aquifers and the Yakima River. After the Black Rock study was issued, but prior to issuance of water right decisions, the tribal hydrogeologist prepared a review of scientific litera-

1. Wash. Dep't of Ecology v. Yakima Reservation Irrigation Dist., 850 P.2d 1306, 1323 (Wash.1993).

2. See Rachael P. Osborn, *Native American Winters Doctrine and Stevens Treaty Water Rights: Recognition, Quantification, Management*, 20 J. WATER LAW 224, 230 (2010).

3. *Id.*

4. See *id.*

5. TODD K. KIRK & THOMAS L. MACKIE, BLACK ROCK-MOXEE VALLEY GROUNDWATER STUDY, OPEN FILE TECHNICAL REPORT 93-1, at 6 (1993).

6. See generally *id.* at 1 (indicating that the study's purpose was to provide hydrogeologic information that was "necessary to evaluate water right applications").

7. *Id.*

8. Postema v. Pollution Control Hearings Bd., 11 P.3d 726, 739 n.5 (Wash. 2000).

9. See generally ROBERT S. GARRIGUES ET AL., PROCEDURAL GUIDELINES FOR HYDROGEOLOGIC INVESTIGATIONS, OPEN FILE TECHNICAL REPORT 93-6 (1993).

10. Rettkowski v. Dep't of Ecology, 858 P.2d 232, 234 (Wash. 1993); see discussion *infra* Part III.C.

11. See discussion *infra* Part III.C.

ture, summing up dozens of existing reports.¹² Despite this information, Ecology began issuing groundwater permits, and the Yakama Nation began filing appeals.

Forty-three permit appeals later, the issues were joined, but would not be resolved for another six years.¹³ Ecology halted the Black Rock-Moxee groundwater development program while the consolidated appeals were parked in the state courts, awaiting decision on an interlocutory procedural issue concerning “timeliness.”¹⁴ Years later, on remand, the Pollution Control Hearings Board¹⁵ denied summary judgment to all parties, finding that factual issues regarding hydraulic continuity precluded purely legal resolution.¹⁶ The appeals were scheduled for hearing.¹⁷

By this time, five years after issuance of the permits, Ecology’s hydraulic continuity policies had evolved. Virtually all of the administrative personnel involved in the original permits had retired or moved on. The *Hubbard* case, in which Ecology issued new groundwater permits conditioned on protection of instream flows in the Okanogan River, had been affirmed by the Court of Appeals.¹⁸ Ecology was defending a massive set of permit appeals in western Washington, in which it had denied hundreds of groundwater permits due to hydraulic continuity with rivers protected by instream flow rules.¹⁹ Ecology’s policy stance had changed so dramatically that its arguments and practices elsewhere actually supported the Yakama Nation’s Black Rock-Moxee claims, putting the agency in the potentially embarrassing situation of repudiating its own conflicting policies and evidence.²⁰

There was little appetite for further litigation. Instead, in August 1999, the three co-managers of water resources in the Yakima River basin—the U.S. Bureau of Reclamation, the Washington Department of Ecology, and the Yakama Nation—signed a Memorandum of Agreement settling the appeals. The state and federal parties would commit six million dollars for a USGS study of hydraulic continuity in the basin. Ecology would cease issuing new groundwater rights pending the outcome of that study.²¹ The individual Black Rock-Moxee permittees could keep their water permits in exchange for payment of mitigation funds to purchase and retire existing water rights, offsetting impacts of the new permits. As it turned out, these were to be the last groundwater permits issued in the basin.

12. See *Den Beste v. State*, Pollution Control Hearings Bd., 914 P.2d 144, 147 (Wash. Ct. App. 1996).

13. *Id.*

14. *Id.* at 147–48.

15. The Pollution Control Hearings Board, or PCHB, is the state administrative court that hears appeals of the Department of Ecology’s water right decisions. WASH. REV. CODE § 43.21B.110(d) (2008).

16. *Yakama Indian Nation v. Dep’t of Ecology*, PCHB No. 93–157 (Oct. 9, 1998) (order on motions for summary judgment).

17. *Id.*

18. *Hubbard v. State*, 936 P.2d 27, 28 (Wash. Ct. App. 1997); see discussion *infra* Part III.D.

19. See *Postema v. Pollution Control Hearings Bd.*, 11 P.3d 726 (Wash. 2000) (consolidating the numerous individual permit appeals); see also discussion *infra* Part III.E.

20. See *Yakama Indian Nation*, *supra* note 16.

21. MEMORANDUM OF AGREEMENT AMONG THE YAKAMA NATION and U.S. BUREAU OF RECLAMATION AND WASH. STATE DEP’T. OF ECOLOGY RELATED TO GROUND WATER MANAGEMENT IN THE YAKIMA RIVER BASIN (Aug. 12, 1999) (on file with author). In the Agreement, Ecology committed to adopt a regulation closing the basin to issuance of new groundwater permits. The agency failed to do so, but did adhere to the intent of the agreement and has not issued an unmitigated groundwater permit since 1993.

In September 2010, USGS announced the last in a series of reports describing the hydrogeologic framework of the Yakima River basin and the relationships between groundwater pumping and surface water depletion.²² The report concluded that aggregate basin groundwater pumping subtracts 200 cubic feet per second (cfs) from river flows, a “sobering” number when compared to federally mandated in-stream flow targets of 300 to 600 cfs.²³ Twenty-seven years after the state commenced the Black Rock-Moxee hydrogeology study and seventeen years after the forty-three water permit appeals were filed, basin co-managers are now overhauling the water management paradigm. Unmitigated groundwater permits will never be issued again. Rather, water managers and stakeholders are considering not only how to mitigate for the surface water impacts of new groundwater rights, but also how much mitigation will be required for the thousands of existing groundwater wells that post-date and are subordinate to the basin’s senior surface rights.²⁴

The Black Rock-Moxee story spans three decades during which Washington’s management of connected ground and surface waters underwent significant evolution. Like bookends, the history of the Black Rock controversy provides a window into the evolution of science-based policy for water resource management in Washington.

II. WASHINGTON’S HYDRAULIC CONTINUITY LAWS

A. Introduction

In Washington, it is state policy that “[f]ull recognition shall be given in the administration of water allocation and use programs to the natural interrelationships of surface and groundwaters.”²⁵ This policy is implemented via the state groundwater code, which is “supplemental to” the surface water code, and requires integrated management of ground and surface water resources.²⁶

Ostensibly designed to protect senior water users, legal integration of surface and groundwater management also provides protection for instream flows. Washington’s water code requires development of instream flow regulations for rivers around the state.²⁷ These regulations are a form of water right and enjoy priority as of the date of formal adoption.²⁸ The streamflow regulations require denial of new groundwater permits when there is “significant hydraulic continuity” between a

22. News Release, Wash. Dep’t. of Ecology, Agencies Consider Yakima Basin Groundwater Study Results (Sept. 21, 2010) (available at <http://www.ecy.wa.gov/news/2010news/2010-245.html>).

23. *Id.* See UNITED STATES GEOLOGICAL SURVEY, HYDROGEOLOGIC FRAMEWORK OF THE YAKIMA RIVER BASIN AQUIFER SYSTEM, WASHINGTON 2009-5152 (2009). In this penultimate “hydrogeologic framework” report, the USGS concluded that “[g]roundwater moves from topographic highs in the uplands to topographic low areas along the streams” and that “[r]egional groundwater flow discharges to surface-water drainage features in the lowlands” This report is the culmination of a series of about a dozen data collection studies. See generally Agencies Consider Yakima Basin Groundwater Study Results, *supra* note 22.

24. See generally, U.S. Bureau of Reclamation, *Yakima River Basin Water Enhancement Project*, RECLAMATION, <http://www.usbr.gov/pn/programs/yrbwep/index.html>.

25. WASH. REV. CODE § 90.54.020(9) (2008).

26. *Id.* § 90.44.020.

27. WASH. REV. CODE §§ 90.22.010, .54.040, .03.247 (2008); see also WASH. ADMIN. CODE § 173-500 (2009).

28. WASH. REV. CODE §§ 90.03.247, .03.345.

given aquifer and the protected stream.²⁹ While the closure of rivers to new surface water rights to protect streamflow is a relatively straightforward analysis, Washington has seen significant litigation over the question of protecting streamflow from groundwater pumping.

Two published decisions have further developed these concepts. In *Hubbard v. State of Washington, Department of Ecology*, the agency found significant connection between an aquifer proposed for new groundwater development and the Okanogan River, which is protected by a streamflow regulation.³⁰ New groundwater rights were issued, but were conditioned with requirements to curtail pumping when the river dropped below specified flow levels. On appeal, the court affirmed the curtailment conditions, finding that any hydraulic connection between the aquifer and the river was legally significant if it would lead to depletion of flow in the river.³¹

The legal basis for integrated management was further developed with the *Postema* decision in 2000, which explicitly examined the use of science surrounding the concept of “hydraulic continuity” in water right decision making.³² Rejecting arguments that de minimus impairment of streamflow is allowed, the court embraced groundwater modeling as a basis for understanding impacts of pumping on streams.³³

The topic of hydraulic continuity provides an avenue for understanding important water resource interests. Instream flows support habitat for fisheries, particularly salmon populations, which have substantial cultural and economic importance in Washington.³⁴ The twenty-nine Native American tribes located within Washington’s boundaries possess treaty-based interests in salmon and other fisheries, and therefore aquatic habitat and instream flows.³⁵ Recognition of ground-surface water connections implicates these interests, and tribes have been both aggressive litigants and policy leaders on issues relating to hydraulic continuity. Groundwater pumping also implicates land use policies, as permit-exempt wells provide water for non-urban developments. The legal disconnect between Washington’s growth management laws and the water code have led to major litigation and policy proposals, as fully appropriated stream systems suffer the cumulative impacts of unregulated groundwater development.

B. Early History (Surface Water Code)

Adopted in 1917, Washington’s Surface Water Code established a permitting process for new surface water rights that requires evaluation of several factors, including water availability, beneficial use, and impacts to existing water rights and the public interest.³⁶ The original water code did not address groundwater usage.³⁷

29. See e.g., WASH. ADMIN. CODE § 173-549-060 (2009) (Okanogan River); see also *id.* at §§173-507-040 (Snohomish River), 173-510-050 (Puyallup River); see discussion *infra* Part III.B.

30. *Hubbard v. State*, 936 P.2d 27, 28 (Wash. Ct. App. 1997).

31. *Id.* at 29–30; see discussion *infra* Part III.D.

32. *Postema v. Pollution Control Hearings Bd.*, 11 P.3d 726 (Wash. 2000).

33. *Id.* at 740–41; see also discussion *infra* Part III.E.

34. Osborn, *supra* note 2, at 224.

35. *Id.*

36. WASH. REV. CODE § 90.03.290 (2008).

Between 1917 and 1945, Washington water users, particularly public water suppliers, increasingly recognized that groundwater systems were vulnerable to over-pumping and required control.

C. Groundwater Code of 1945

Washington's groundwater code was adopted in 1945 with some fanfare, but little controversy. House Bill 536 was promoted by the Association of Washington Cities, which described the impetus for the bill:

The underground water supply, a great natural resource of the state, should be given the same protection now given surface waters. In certain areas the waters are now being drawn off so rapidly that the water table is in danger of being permanently lowered and the future supply jeopardized. At the same time, too heavy consumption in one area may definitely affect another area immediately . . . it is highly important that this natural resource of the state be conserved for the benefit of all the people.³⁸

House Bill 536 passed quickly through both houses of the Washington State Legislature and was signed into law, unchanged from the original version.³⁹

While contemporaneous documents did not discuss the bill's proposal for integrated management of interconnected ground and surface waters, the language of the code makes clear that it was designed to protect existing surface rights, and that the priority rule of prior appropriation would apply to groundwater rights.⁴⁰ That protection is phrased in a manner that effectively mandates integrated ground and surface water management:

to the extent that any underground water is part of or tributary to the source of any surface stream or lake, or that the withdrawal of groundwater may affect the flow of any spring, water course, lake, or other body of surface water, the right of an appropriator and owner of surface water shall be superior to any subsequent right hereby authorized to be acquired in or to groundwater.⁴¹

The Washington Supreme Court concluded that this statute "emphasizes the potential connections between groundwater and surface water, and makes evident

37. See WASH. REV. CODE §§ 90.20.050–060 (1917).

38. Association of Washington Cities, 1945 Legislative Program, Bulletin B-17. While the groundwater code was largely promoted by public water suppliers who desired legal certainty for their groundwater withdrawals, it included a key exemption from permitting for small domestic uses. This exemption arose out of U.S. Department of Interior, Bureau of Reclamation planning documents for the Columbia Basin Project, which addressed, among other topics, water supply for rural farmsteads. WASHINGTON STATE PLANNING COUNCIL, JOINT INVESTIGATIONS, COLUMBIA BASIN IRRIGATION PROJECT, RURAL DOMESTIC WATER SUPPLY (Tentative Final Draft, May 1942). From this report came the proposal to exempt from permitting uses of water of no more than 5,000 gallons per day, set forth in RCW 90.44.050.

39. See H.B. 536, 29th Leg., Reg. Sess. (Wash. 1945).

40. WASH. REV. CODE §§ 90.44.020, .44.030, .44.060 (2008).

41. *Id.* § 90.44.030.

the Legislature's intent that groundwater rights be considered a part of the overall water appropriation scheme, subject to the paramount rule of 'first in time, first in right.'⁴² Hence, groundwater rights are subject to and may not impair pre-existing surface rights, and the converse is also true—junior surface rights must yield to senior groundwater rights. As a practical matter and based on patterns of development, surface rights are typically senior to groundwater rights, but regardless, integrated management is required.

D. "Modern" Policy Development Relating to Hydraulic Continuity

1. Early Science

In the early 1960s, several studies were published evaluating groundwater resources around Washington State, with varying attention paid to hydraulic continuity issues. A 1961 study of groundwater resources in Okanogan County, precipitated by a petition from surface water irrigators to halt local groundwater permitting, discussed "determination of interference relationships between ground-water withdrawals and lake level of Duck Lake," used to store water for local irrigation.⁴³ In the Walla Walla Basin, a 1965 study found that "[m]ost, if not all, of the mountain-fed streams lose water while crossing unconsolidated deposits underlying the upper parts of the valley floor. That infiltrating water returns again to the streams in the middle and lower parts of the alluvial fans . . ." and "streams first lose and then regain water."⁴⁴ In 1963, in the Seattle area, the department concluded that "[a]dditional ground-water development along the course of perennial streams that are now receiving ground-water discharge from permeable materials would result in reversal of the ground-water gradient, and the stream would then recharge the ground-water body."⁴⁵ In 1960, in the Nooksack basin near Bellingham, the department was aware that "[t]he lowest level of the regional water table is commonly along the major streams, with the water table beneath the Nooksack River flood plain being in general balance with the river into which the ground water escapes by effluent seepage."⁴⁶

42. *Postema v. Pollution Control Hearings Bd.*, 11 P.3d 726,735 (Wash. 2000) (quoting *Rettkowski v. Dep't of Ecology*, 858 P.2d 232, 236 n.1 (1993)).

43. EUGENE F. WALLACE, WASH. DEP'T OF CONSERVATION, DIV. OF WATER RES., A PRELIMINARY REPORT ON THE GEOLOGY AND GROUND-WATER RESOURCES OF THE DUCK LAKE AREA, OKANOGAN COUNTY, WASHINGTON 1 (1961).

44. R. C. NEWCOMB, WASH. DEP'T OF CONSERVATION, DIV. OF WATER RES., GEOLOGY AND GROUND-WATER RESOURCES OF THE WALLA WALLA RIVER BASIN, WASHINGTON-OREGON, WATER SUPPLY BULLETIN NO. 21, 15–16 (1965). The study continued, "[t]he discharge of the Walla Walla River comes from three principle sources," one is groundwater, of which the "outflow is dominant during the summer and the long cold periods of winter." *Id.* at 16. Further, "[t]he ground water in the old gravel . . . discharges mainly to two spring zones . . . which feed Shelton, Yellowhawk, Stone, and the other creeks . . . [and] the western part of Walla Walla." *Id.* at 45. The study explained that groundwater then emerges in springs beneath the Walla Walla River Fan. *Id.*

45. BRUCE A. LIESCH ET AL., WASH. DEP'T OF CONSERVATION, DIV. OF WATER RES., GEOLOGY AND GROUND-WATER RESOURCES OF NORTHWESTERN KING COUNTY, WASHINGTON, WATER SUPPLY BULLETIN NO. 20, 56 (1963).

46. WASH. DEP'T OF CONSERVATION, DIV. OF WATER RES., WATER RESOURCES OF THE NOOKSACK RIVER BASIN AND CERTAIN ADJACENT STREAMS, WATER SUPPLY BULLETIN NO. 12, 28 (1963).

Washington's water resources agency was developing an improved understanding of the science of hydraulic connectivity. However, notwithstanding the technical conclusions about interrelationships and impacts, the department did not yet control continued development of groundwater resources to protect senior surface rights and instream flows.

In 1980, Ecology adopted a policy for technical review of hydraulic continuity questions in the context of instream flow rulemaking. The policy called for a finding that the groundwater pumping either (1) was within a certain distance of the stream in an unconfined aquifer system, or (2) captured five percent or more of a stream's flow before the agency would take action to control groundwater pumping or deny water right applications.⁴⁷ By 1993 the agency had concluded that this approach was neither ascertainable nor defensible, and issued a new technical policy conforming to its improved understanding of, and practical experience with, making hydraulic continuity determinations.⁴⁸

2. The Water Resources Act of 1971

Washington water law evolved in 1971, when Governor Dan Evans led efforts to modernize the water code through adoption of a policy statute guiding water resource and water quality management and decision making. The result, the Water Resources Act of 1971 (WRA),⁴⁹ legislated a series of policy directives and pilot programs with profound importance for the development of the law of hydraulic continuity. Most directly, the WRA requires that "[f]ull recognition shall be given in the administration of water allocation and use programs to the natural interrelationships of surface and groundwaters."⁵⁰ The WRA also mandates protection of instream flows and related uses in perennial streams.⁵¹

The WRA established two pilot projects for watershed planning: one in the Dungeness watershed in the Puget Sound region and another in the Methow Valley, east of the Cascade Mountains.⁵² Ecology's new Instream Resources Protection Program first delineated the state's sixty-two watersheds, styled "Water Resource Inventory Areas" (WRIAs),⁵³ and then began adoption of a series of watershed-based regulations for water resources management.⁵⁴ Sixteen rules, adopted between 1977 and 1983, established base flows for instream flow protection.⁵⁵ As discussed in detail below, most of the rules include a proviso that hydraulically connected groundwater could be regulated to protect instream flows. The Water

47. S. MAHLUM ET AL., WASH. DEPT. OF ECOLOGY WATER RES. MGMT., GUIDELINE FOR DETERMINING SIGNIFICANT HYDRAULIC CONTINUITY, OFFICE REPORT NO. 86 (1980).

48. See GARRIGUES, *supra* note 9.

49. WASH. REV. CODE § 90.54 (2008).

50. *Id.* § 90.54.020(9).

51. *Id.* § 90.54.020(3)(a).

52. *Id.* § 90.54.045(2).

53. WASH. ADMIN. CODE § 173-500-040 (2009).

54. See *id.* § 173-500-010; Kenneth O. Slattery & Robert F. Barwin, *Protecting Instream Resources in Washington State*, in *INSTREAM FLOW PROTECTION IN THE WEST 20-1* (Lawrence J. MacDonnell et al. eds., 1993) [hereinafter Slattery]; CLIFFORD D. RUSHTON, *INSTREAM FLOWS IN WASHINGTON STATE OF WASHINGTON PAST, PRESENT AND FUTURE* (Wash. Dept. of Ecology, Working Paper Ver. 12, 2000) available at <http://www.olympus.net/community/dungenesswc/InstreamFlowversion12.PDF>.

55. See WASH. ADMIN. CODE § 173-500 (2009).

Resources Act and its implementing rules were drivers for state policy development and major court decisions defining the law of hydraulic continuity in Washington.⁵⁶

3. Mid-Term Doldrums

By 1985, after adopting instream flow regulations for eighteen (out of sixty-two) watersheds, the program had become a lightning rod for controversy. Proposed instream flows for the Skokomish-Dosewallips River basins on the Olympic Peninsula were criticized as insufficient to protect pristine instream resources.⁵⁷ A state-sponsored workshop identified thirty-seven water resource management issues, among them whether Ecology should “establish analytical procedures and standards for determining hydraulic continuity between surface and ground waters” and more fundamentally, “[w]hat is the state’s policy for allocating ground water in hydraulic continuity with surface water?”⁵⁸

Ecology convened an advisory committee to assess instream flow and water allocation policies but was unable to reach consensus.⁵⁹ Ecology then developed a draft environmental impact statement that identified hydraulic continuity as a major issue to be addressed in water allocation policy, noting that “[l]ow summer flows generally consist almost entirely of ground water discharge” and that “[g]round water is usually a major contributor to streamflow, and as streamflow levels decline, the percentage of ground water-derived streamflow increases.”⁶⁰

In 1988 the Legislature instituted a moratorium on both instream flow setting and water right permitting, convened the Joint Select Committee on Water Resources Policy, and commissioned a formal program review, which identified as an issue the lack of policy and implementation procedures for ground and surface water management.⁶¹ Again, no conclusions were reached. In 1989, Washington Governor Booth Gardner and the federally-recognized Indian tribes located in the state signed the *Centennial Accord*, an agreement committing to government-to-government relations between state and tribal agencies on matters of mutual concern, including natural resources management.⁶² Thereafter, the parties convened a mediated dispute resolution process resulting in the landmark *Chelan Agreement*, which led to creation of the Water Resources Forum.⁶³ The Forum process brought together multiple stakeholder subcommittees to discuss many topics relating to

56. See discussion *infra* Part III.B.

57. The Dosewallips instream flow controversy sparked a landmark case before the U.S. Supreme Court, which held that instream flows to protect beneficial uses may be established pursuant to Clean Water Act authorities. See PUD No. 1 of Jefferson Cnty. v. Wash. Dep’t of Ecology, 511 U.S. 700 (1994).

58. WASH. STATE DEP’T OF ECOLOGY, INSTREAM RESOURCES AND WATER ALLOCATION PROGRAM REVIEW: DRAFT ENVIRONMENTAL IMPACT STATEMENT, I-2 (1987) available at <http://www.ecy.wa.gov/pubs/87900.pdf> [hereinafter INSTREAM FLOW EIS].

59. *Id.* at 1-6.

60. *Id.* at 3-8, 3-9.

61. Act of Mar. 15, 1988, ch. 47, 1988 Wash. Sess. Laws 183–190 (relating to water resource policy).

62. *Centennial Accord Between the Federally Recognized Indian Tribes in Wash. State and the State of Wash.*, WASH. GOVERNORS OFFICE OF INDIAN AFFAIRS, (Aug. 4, 1989), available at <http://www.goia.wa.gov/Government-to-Government/Data/CentennialAccord.htm>; Jovana J. Brown, *Treaty Rights: Twenty Years After the Boldt Decision*, 10 WICAZO SA REV. 1, 9 (1994).

63. Brown, *supra* note 62, at 9.

water resources management.⁶⁴ The issue of hydraulic continuity policy was near the top of the list. Ultimate recommendations included:

- Interrelated ground and surface water should be managed as an integrated hydrogeologic system.
- When hydraulic continuity exists, new appropriations should be approved only if existing rights and instream flows are not impaired. Existing law imposes a standard of no harm to existing rights and instream flows.
- Cumulative effects of groundwater appropriations in hydraulic continuity with surface water should be considered when considering any new appropriation.
- Basin hydrogeology should be assessed to determine the relative risk of impairment of existing rights and instream flows due to hydraulic continuity between surface and ground water.
- The greater the risk to existing rights and instream flows, the greater the burden on the proponent of a new use to show no harm will result if the new use is approved.
- In areas with high risk, prospective water users should be encouraged to pursue options other than development of new groundwater withdrawals.
- Anticipated impacts to existing rights and instream flows may be mitigated at the expense of the proponent.⁶⁵

As with previous policy declarations regarding hydraulic continuity, political factions prevented adoption of the Water Resource Forum recommendations into legislation or agency rules. Notwithstanding the policy stalemate, pressure was mounting for the Department of Ecology to process its growing backlog of water right applications.

4. Interagency Coordination

Interagency coordination created more impetus for policy development on hydraulic continuity. The Washington Department of Fish & Wildlife (WDFW) is authorized by statute to review and comment on pending water rights applications.⁶⁶ The agency's habitat management program evaluates all pending and active applications to determine whether and how streamflow and aquatic habitat will be affected by proposed new diversions.⁶⁷ WDFW transmits its recommendations to Ecology, which are often translated to specific instream flow requirements for

64. *Id.* at 10.

65. WATER RESOURCES FORUM, HYDRAULIC CONTINUITY POLICY RECOMMENDATIONS (1992), *cited in* Slattery, *supra* note 54, at 20-27 to 20-28.

66. WASH. REV. CODE § 77.57.020 (2008).

67. Rushton, *supra* note 54, at 53.

streams.⁶⁸ These conditions, called Surface Water Source Limitations, have established hundreds of stream flow regimens throughout the state.⁶⁹

In 1989, WDFW and Ecology updated an interagency agreement to improve WDFW's statutory evaluation of impacts associated with specific water right applications. In addition to transmittal of surface water right applications, Ecology committed to "send all ground water applications where hydraulic continuity with a surface water source is believed to exist."⁷⁰ This in turn required Ecology to focus on the very practical question of whether a given groundwater application could be connected to surface waters and might cause adverse impacts to aquatic habitat. Ecology incorporated protocols for making this determination into a newly adopted "procedures manual" that directed permit writers to "[r]esearch potential for . . . hydraulic continuity with closed or limited surface waters" and to "[c]heck for possible hydraulic continuity, interference with existing rights including instream flows."⁷¹ In developing the report of examination (findings of fact) for water right decisions, permit writers were directed to include information about hydraulic continuity between ground and surface waters.⁷²

III. THE TRIUMPH OF SCIENCE: INSTREAM FLOWS & GROUNDWATER

A. Introduction

The most instructive caselaw relating to hydraulic continuity and management of Washington's water resources has developed out of Washington's instream flow protection program. *Hubbard v. State of Washington, Dep't of Ecology* and *Postema v. PCHB*, cases arising in the 1990s, involved direct challenges to Ecology's use of hydrogeologic science to condition or deny water rights in order to protect streamflow. For the most part, science has prevailed as the basis for water management decisions.

B. The WRIA Rules

As discussed above, the Water Resources Act of 1971 clarified policies for water resource decision making. "Full recognition shall be given in the administration of water allocation and use programs to the *natural interrelationships of surface and groundwaters*."⁷³ While this general principle was already recognized in the 1945 Groundwater Code, the Water Resources Act served as the foundation for a new agency program that would eventually put the issue of how to manage the natural interrelationships before the courts. The statute directed Ecology to create a program of rulemaking, watershed by watershed, in which base flows for instream

68. *Id.* at 53–54.

69. *See id.* at 52–53; *see also* WASH. ADMIN. CODE § 173-501-040 (2009).

70. Addendum, Memorandum of Understanding Among the Wash. State Dep't of Ecology and Wash. Dep't of Fisheries and Wash. Dep't of Wildlife, on Procedures for Implementation of Permit Application Review (1989) (on file with author).

71. WASH. DEP'T OF ECOLOGY, PRO-1000 WATER RESOURCES PROGRAM PROCEDURE §§ VII(A)(4), VII(B)(7) (1990).

72. *Id.* § IX(B)(1).

73. WASH. REV. CODE § 90.54.020(9) (2008) (emphasis added).

flow protection would be assessed and adopted into rule.⁷⁴ As a fundamental principle, water rights issued after formal adoption of the instream flow rules would be subject to curtailment if the flows established by rule were not met in-river.⁷⁵

It was largely assumed that surface rights junior to the flows would be at risk of curtailment and, in several basins in eastern Washington, curtailment of post-rule water permits occurs on a regular basis.⁷⁶ But Ecology foresaw the possibility that groundwater development could also implicate surface water protection. The instream flow programmatic rule states that groundwater rights may be interrupted based on impacts to instream flows:

(5) Base flow provisions for water rights.

(a) Surface water and/or ground water appropriation permits, issued subsequent to the effective dates of chapters 173-501 through 173-599 WAC, that will allow either direct diversion from or have a measurable effect on streams where base flow limitations of this chapter, and any such permits or certificates shall be appropriately conditioned to assure maintenance of said base flows.⁷⁷

Individual watershed rules also contain provisions addressing groundwater. For example, the Colville WRIA rule sets forth a very general test: "If it is determined that a future development of ground water affects surface waters subject to the provisions of WAC 173-559-030 through 173-559-050, then rights to said ground water shall be subject to the same conditions as affects the surface water."⁷⁸ In the Methow WRIA, "[i]f it is determined that a future development of ground water measurably affects surface waters subject to the provisions of chapter 173-548 WAC, then rights to said ground water shall be subject to the same conditions as affected surface waters."⁷⁹

The Snohomish WRIA rule tracks the language of the Water Resources Act, providing that "[i]n future permitting actions relating to groundwater withdrawals, the natural interrelationship of surface and groundwaters shall be fully considered in water allocation decisions to assure compliance with the meaning and intent of this regulation."⁸⁰ The Okanogan WRIA rule, at issue in the *Hubbard* case, provides that

74. See *id.* § 90.54.010; see also *id.* § 90.54.040.

75. *Id.* § 90.03.247.

76. See, e.g., News Release, Wash. Dep't of Ecology, Residents on Little Spokane River Advised to Conserve Water (Aug. 25, 2010), available at <http://www.ecy.wa.gov/news/2010news/2010-216.html>. The release stated:

Some 150 junior water-right holders and other residents along the Little Spokane River are being asked to curtail their irrigation or other use of river water until the fall rains . . . This is the ninth time in 10 years that late summer flows have diminished enough to restrict junior water-right holders and other users from taking water from the river.

Id.

77. WASH. ADMIN. CODE § 173-500-060(5)(a) (2009).

78. *Id.* § 173-559-060.

79. *Id.* § 173-548-060.

80. *Id.* § 173-507-040; see also *id.* § 173-508-050 (Cedar-Sammamish Basin).

[i]f department investigations determine that there is significant hydraulic continuity between surface water and the proposed groundwater source, any water right permit or certificate issued shall be subject to the same conditions as affected surface waters. If department investigations determine that withdrawal of groundwater from the source aquifers would not interfere with stream flow during the period of stream closure or with maintenance of minimum instream flows, then applications to appropriate public groundwaters may be approved.⁸¹

The Green-Duwamish WRIA rule sets forth a stricter interpretation: “Future ground water withdrawal permits will not be affected by this chapter unless such withdrawal would clearly have an adverse impact upon the surface water system contrary to the intent and objectives of this chapter.”⁸² On the other hand, several WRIA rules are silent as to groundwater.⁸³

The regulations seemingly establish a variety of tests for determining hydraulic continuity: effect, measurable effect, significance, interference, clear adverse impact. The meaning of these linguistic variations was an issue in the *Postema* case, discussed below.⁸⁴ Many WRIA rules simply close a number of rivers, lakes and tributaries to future water rights.⁸⁵ Stream or lake closures represent a finding that water is not available from the stream system.⁸⁶ Closure thus answers in the negative the first inquiry that must be affirmed before a water right may be issued.⁸⁷ Closures of streams by rule do not, however, necessarily resolve whether new groundwater withdrawals are also prohibited.

Following adoption of the WRIA rules, Ecology continued to issue both surface and groundwater rights, but attached conditions to protect instream flows only to surface rights.⁸⁸ Barwin and Slattery describe the excruciating process of enforcement of the instream flow rules in the early years, when the agency encountered hostility and controversy virtually every step of the way.⁸⁹ Although these experiences led to the policy initiatives described above, they met with little success in terms of changing state water laws. But the agency was taking the discussion to heart, along with a much improved understanding of hydrogeologic science. In 1990, Ecology issued procedural guidance for water rights decision-making that incorporated hydraulic continuity questions into the standard inquiry for water

81. *Id.* § 173-549-060.

82. *Id.* § 173-509-050.

83. *See, e.g., id.* § 173-555 (Little Spokane); *id.* § 173-522 (Chehalis).

84. *Postema v. Pollution Control Hearings Bd.*, 11 P.3d 726 (Wash. 2000).

85. *E.g.,* WASH. ADMIN. CODE §§ 173-501-030(2) to -040 (Nooksack), 173-549-020 to -025 (Okanogan) (2009).

86. *Postema*, 11 P.3d at 742, (citing as authority for Ecology’s closure activities WASH. REV. CODE §§ 90.54.020(3)(a) (protection of base flows in perennial streams), 90.54.040, 43.21A.064(9), 43.27A.090(7) and (11) (authorizing rulemaking under the Water Code), and 90.03.247 (authority to set minimum flows and stream restrictions) (2008)).

87. WASH. REV. CODE § 90.03.290. (2008). The four-part test for obtaining a surface water permit also applies to groundwater rights. *See id.* § 90.44.060.

88. Slattery, *supra* note 54, at 20-3.

89. *Id.* at 20-4 to 20-9.

permit applications.⁹⁰ The 1993 technical memorandum created a framework to ensure consistent scientific inquiry.⁹¹

Four particular controversies cemented the agency's commitment to utilize best science in evaluating hydraulic continuity: the Black Rock-Moxee appeals, the Sinking Creek enforcement debacle, the Hubbard-Okanogan permit appeal, and the "statewide" *Postema* case. The Black Rock controversy is described in Part I above; the latter three cases are described below.

C. *Rettkowski* and Sinking Creek

Ranchers in the dryland wheat country of eastern Washington claimed stock-water and sub-irrigation rights to the waters of Sinking Creek, with priority dates as early as 1883.⁹² Between 1950 and 1979, Washington issued groundwater rights in the region authorizing deep-well irrigation for thousands of acres.⁹³ By the 1960s, Ecology and the U.S. Geological Survey were evaluating local groundwater resources, which were declining, but did not assess how and where groundwater intersects surface waters prior to issuance of large numbers of groundwater use permits.⁹⁴

As groundwater rights developed, Sinking Creek disappeared.⁹⁵ Requests for enforcement led Ecology into an increasingly complex evaluation of hydrologic relationships between the basalt aquifer system, utilized by irrigators, and Sinking Creek, utilized by ranchers.⁹⁶ Hydraulic continuity was determined to exist, and Ecology issued orders directing the groundwater users to cease pumping.⁹⁷ The resulting case, *Rettkowski v. Department of Ecology*, decided in 1993, is infamous for stripping the agency of authority to enforce claims among water users when an

90. WASH. DEP'T OF ECOLOGY, PRO-1000 WATER RESOURCES PROGRAM PROCEDURE § VII(B)(7)(1990).

91. GARRIGUES, *supra* note 9, at 2.

92. *Rettkowski v. Dep't. of Ecology*, 858 P.2d 232, 233–34 (Wash. 1993).

93. *Id.* at 234.

94. *Id.* See also WASH. ADMIN. CODE § 173-128A-020 (2009), WASH. REV. CODE §§ 90.90.020(3)(a), .030(12)(a), .050 (2008). Groundwater level declines (averaging ten feet per year) in this region, predominately the Odessa Subarea, are driving Washington water policy toward a program to build a new generation of dams, reservoirs, and diversions from the Columbia River. To date, however, the Department of Ecology has provided no analysis of the hydraulic connectivity between the Odessa Subarea aquifer system and the Columbia River. The state legislature has indicated that groundwater pumping should be considered only if it is within one mile of the river. WASH. REV. CODE § 90.90.050(2)(a) (2008).

95. See *Rettkowski*, 858 P.2d at 234.

96. See, e.g., LINTON WILDRICK, WASH. DEP'T OF ECOLOGY, OFTR No. 91-4, HYDROLOGIC EFFECTS OF GROUND-WATER PUMPING ON SINKING CREEK AND TRIBUTARY SPRINGS, LINCOLN COUNTY, WASHINGTON (1991); LINTON L. WILDRICK, WASH. DEP'T OF ECOLOGY, OFTR No. 90-2, BRIEF ANALYSIS OF THE CAUSE OF REDUCED SPRING DISCHARGE AND STREAMFLOW, SINKING CREEK AREA, LINCOLN COUNTY (1990); LINTON WILDRICK, WASH. DEP'T OF ECOLOGY, WDOE No. 85-4, RETTKOWSKI AQUIFER TEST, LINCOLN COUNTY, WASHINGTON (1985); LINTON WILDRICK, WASH. DEP'T OF ECOLOGY, WDOE No. 82-6, DECREASING STREAMFLOW AND POSSIBLE GROUND WATER DEPLETION IN THE SINKING CREEK WATERSHED, LINCOLN COUNTY, WASHINGTON (1982).

97. See generally Wick Dufford, *Water Law after Sinking Creek*, in THE SINKING CREEK DECISION: "WATER RIGHTS" IN THE 21ST CENTURY (Wash. Law Sch. Found. ed., 1994).

unadjudicated water rights claim is at issue.⁹⁸ The court did not reach the animating conflict in the case, i.e., enforcement between ground and surface water rights.⁹⁹

Rettkowski is important, however, in the annals of the development of hydraulic continuity policy in water rights administration. The Sinking Creek controversy was a turning point in Ecology's use of hydrogeologic science to direct water resource decision making. Ecology began investigations in 1978, and prepared four studies between 1982 and 1991 in support of its determination that "[t]he most serious effect of increased ground water pumping in the vicinity of Sinking Creek will be the further seasonal depletion of springs supplying baseflow to the creeks."¹⁰⁰ While Ecology could not show that groundwater pumping captured five percent of the flow in Sinking Creek, as its 1980 technical policy required, there was no question that cumulative pumping from the basalt aquifers was causing streamflow decline and thereby affecting the ranchers' water rights.¹⁰¹ Hydrogeologic science impelled Ecology to attempt to integrate ground and surface water management. By 1993, when the case reached the Washington Supreme Court, more than twenty-five years after the ranchers' original complaints, the odyssey had worked a major change in agency thinking about integrated management of water resources based on hydraulic continuity standards.

D. Hubbard and Wagonroad Coulee Aquifer

In 1976, in Okanogan County, Ecology adopted a WRIA rule establishing minimum instream flows for major rivers in the watershed and requiring that new water rights be conditioned to protect those flows.¹⁰² Ecology then issued about seventy-five new surface water permits in the basin that were subject to interruption when flows fall below the regulatory minimums.¹⁰³ Ensuing enforcement orders engendered controversy, but by 1987 a system of notice and curtailment orders was being implemented with relative success.¹⁰⁴

In 1992, when brothers John and James Hubbard applied for groundwater permits to irrigate using Wagonroad Coulee groundwater, the lessons of Sinking Creek were sinking in.¹⁰⁵ The Okanogan WRIA rule required that "[i]f department investigations determine that there is significant hydraulic continuity between surface water and the proposed groundwater source, any water right permit or certifi-

98. *Rettkowski*, 858 P.2d at 236. Although Ecology's enforcement authority could be restored by statute, the state legislature has thus far declined to do so.

99. *Id.* at 236, 240. The decision acknowledges that groundwater users may be subject to curtailment if their usage is found to interfere with prior surface water rights. The court also noted that "[a]lthough the conclusion Ecology reached as to the relative priorities of the water rights in the Sinking Creek basin may ultimately prove to be correct, the only method of ascertaining this will be through a general adjudication." *Id.* at 240.

100. LINTON WILDRICK, WASH. DEP'T OF ECOLOGY, WDOE No. 85-4, RETTKOWSKI AQUIFER TEST, LINCOLN COUNTY, WASHINGTON 16 (1985).

101. *See id.*

102. WASH. ADMIN. CODE § 173-549-020 (2009).

103. *See* Slattery, *supra* note 54, at 20-7.

104. *See id.* at Table 2, 20-17.

105. *See* Hubbard v. State, 936 P.2d 27, 28 (Wash. Ct. App. 1997).

cate issued shall be subject to the same conditions as affected surface waters.”¹⁰⁶ What did the term “significant” mean and how was it to be determined?

Ecology’s investigations concluded that Wagonroad Coulee aquifer was hydraulically connected to the Okanogan River and thus fell within the ambit of the WRIA rule.¹⁰⁷ Water permits were issued to Hubbard, but they contained conditions requiring interruption when Okanogan instream flows fell below the specified minimums.¹⁰⁸ During the *de novo* appeal of the permit, expert witnesses for both parties agreed that Hubbard’s groundwater pumping would capture water that would otherwise contribute to river flow during the critical season.¹⁰⁹ Hubbard argued that the connection, calculated as a 0.004 percent reduction in river flows, was negligible and therefore did not meet the test for “significance” set forth in the WRIA rule.¹¹⁰ The court concluded that the connection, albeit small, was significant for two reasons.¹¹¹ First, instream flow rules are protected as a form of water right under Washington law and even *de minimus* impairment of water rights is not allowed.¹¹² Second, the term applies to the question whether hydraulic continuity exists, not the magnitude of the affect of pumping the water right.¹¹³ The finding that the Wagonroad Coulee aquifer discharged to the Okanogan River during low flow periods supported a finding of significant hydraulic continuity.¹¹⁴

The Hubbards’ permits raised another technical concern not addressed in the case. When do the impacts of groundwater pumping “arrive” at the river? Could groundwater rights be turned on and off (like surface water permits) as river stage rises and falls during the irrigation season? This question, by its nature, could be answered only through computer modeling. But, beyond steady state impacts, Ecology could not ascertain the exact timing of the impact of the Hubbard pumping, and lacked resources to regulate intra-annually. This led to a realization that issuance of conditional groundwater permits would be difficult, if not impossible, to administer. The problem of determining and implementing appropriate conditions for groundwater approvals became a key factor in assessing whether such approvals could be issued at all.

E. *Postema* and the Statewide Appeals

Even as the *Hubbard* appeal wound through the courts, Ecology opted to tackle its backlog of 5,000-plus water right applications, many in limbo due to hydraulic continuity concerns.¹¹⁵ In 1994, the agency improved workload efficiency by creating “initial watershed assessments” that provided enough general information about specific basins to allow batch processing of applications, augmented

106. WASH. ADMIN. CODE § 173-549-060 (2009).

107. *Hubbard*, 936 P.2d at 28.

108. *See id.* at 27–28.

109. *Id.* at 30.

110. *Id.*

111. *See id.* at 29.

112. *Id.*

113. *Id.* at 30.

114. *Id.*

115. *See Hillis v. State*, 932 P.2d 139, 142 (Wash. 1997).

by individual findings as needed.¹¹⁶ Ecology published twelve watershed assessments in 1995, each providing a summary of information relevant to water rights processing, including descriptions of the hydrologic features of each watershed, water demand, hydrogeology, streamflow status (including water quality and habitat conditions), and general conclusions about water availability.¹¹⁷ Most of the assessments concluded that basin groundwater was hydraulically connected to surface water sources that were already stressed. Many noted the paucity of data on groundwater conditions and usage.¹¹⁸

In late 1995 and early 1996, armed with its basin-wide assessments of ground and surface water usage and impacts on instream flows, Ecology issued 500 water right decisions, about equally divided between approvals and denials.¹¹⁹ More than 130 appeals were filed with the Pollution Control Hearings Board, which consolidated the cases to rule on threshold legal issues common to all appeals, including whether groundwater applications could be denied based on hydraulic continuity with instream flows established by rule (yes), and whether Ecology was required to adopt a rule standardizing the test for hydraulic continuity and impairment before deciding water rights (no).¹²⁰ The appeals were then de-consolidated for individual hearings. Ultimately, five of the appeals made it to the Washington Supreme Court, and were consolidated under the name *Postema v. Pollution Control Hearings Board*.¹²¹

Postema is Washington's defining case on hydraulic continuity. As did the PCHB below, the Supreme Court first addressed threshold legal issues, establishing baseline rulings on the legal nature of instream flow rules, use of science, standards for impairment, and other matters. The court then applied these rules to particular issues raised in the five individual appeals. All five cases arose out of Ecology's denial of groundwater rights, decisions that were ultimately premised on hydraulic continuity with surface waters.¹²²

Cautioning that the case would not delve fully into the science of hydrogeology, the court did exhibit a solid understanding of basic principles, recognizing that

[h]ow groundwater moves and where it moves depend on several factors, including gravity, saturation of the ground materials, the hydraulic gradient, the level of the groundwater, and the type of material through which it moves. An aquifer is a geologic formation having materials with a higher rate of conductivity. An aquitard is composed of materials with lower conductivity. While at one time it was thought that aquitards could be im-

116. *Id.* at 142–43, 146–47, 150–51; WASH. ADMIN. CODE § 173-152-040 (2009).

117. *E.g.*, JOHN COVERT, JIM LYERLA & MARK ADER, WASH. DEP'T OF ECOLOGY, OFR No. 95-04, INITIAL WATERSHED ASSESSMENT TUCANNON RIVER WATERSHED (1995) (draft), available at <http://www.ecy.wa.gov/pubs/95004.pdf>; TOM CULHANE & JERRY LISZAK, WASH. DEP'T OF ECOLOGY, INITIAL WATERSHED ASSESSMENT WATER RESOURCES INVENTORY AREA 9 GREEN-DUWAMISH WATERSHED (1995), available at <http://www.ecy.wa.gov/pubs/95001.pdf>.

118. *E.g.*, COVERT, *supra* note 117, at 14.

119. Rachael P. Paschal, *Turning off the Tap*, SEATTLE POST-INTELLIGENCER, March 3, 1996, available at <http://www.mrsc.org/Subjects/Environment/water/PI3-3-96.aspx>.

120. *E.g.*, Evergreen Golf Design, PCHB No. 96-8 (Wash. Pollution Control Hearings Bd. July 17, 1996).

121. *Postema v. Pollution Control Hearings Bd.*, 11 P.3d 726, 732 (Wash. 2000).

122. *Id.* at 731.

permeable, it is now known that an aquitard is never truly impermeable. Pumping well water can affect groundwater movement by lowering pressure and heads, by reducing groundwater storage, and by changing rates of groundwater recharge and discharge. The interrelationship can be quite complex and effects are sometimes difficult or impossible to measure in the field. Also, pumping groundwater may not have a discernable effect on surface water until considerable time has passed, depending upon the conditions.¹²³

One threshold ruling answered the question of what was meant by the term “measurable” as set forth in the WRIA rules.¹²⁴ It was argued that Ecology was required to utilize the same scientific methods and assumptions at work when the instream rules were created. The stream gauges at issue would only measure changes down to about five percent of streamflow and thus are incapable of measuring impacts of any single new well on most streams. However, the court held that “Ecology may use new methods to determine impairment as they are developed.”¹²⁵ By 1995, both qualitative analysis (hydrologic assessments and conceptual models) and quantitative models (analytical and numeric) had substantially improved the “measurability” of impacts compared with the science of 1976-1984, when the WRIA rules were adopted. The demand that impacts could only be assessed through physical stream measurements was met with the observation that “one cannot actually measure the impact of a well which does not yet exist.”¹²⁶ Ultimately the court held that the term “measurability means ascertainable using the best available science.”¹²⁷

The court addressed the permit denials using the framework set forth in the statute governing new water permits, which requires investigation into the physical and legal availability of water before a permit may be issued.¹²⁸ Stream closure represents a finding that water is not physically available. Hence, where it was demonstrated that groundwater pumping would capture water that is hydraulically connected to a closed surface stream, the court found that water is not physically available and denial of new groundwater permits was proper.¹²⁹

With respect to the denial of groundwater rights based on impacts to regulatory instream flows, the court used an impairment analysis. Instream flows set by rule are equivalent to an appropriative water right, with the date of priority being the date of adoption of the rule.¹³⁰ Legal impairment of water rights, even *de minimis*, is not allowed in Washington, a protection that extends to instream flows.¹³¹ How-

123. *Id.* at 732.

124. WASH. ADMIN. CODE § 173-500-060(5)(a) (2009) (“[G]round water appropriation permits . . . that . . . have a measurable effect on streams . . . shall be appropriately conditioned to assure maintenance of said base flows.”).

125. *Postema*, 11 P.3d at 740.

126. *Id.*

127. *Id.*

128. *Id.* at 741; WASH. REV. CODE § 90.03.290(1) (2008) (adopted into the groundwater code at WASH. REV. CODE § 90.44.060 (2008)).

129. *Postema*, 11 P.3d at 742.

130. WASH. REV. CODE § 90.03.345 (2008). Instream flow conditions are applicable to water right applications that pre-date adoption of the WRIA rules.

131. *See Hubbard v. State*, 936 P.2d 27, 29 (Wash. Ct. App. 1997).

ever, the court ruled that the fact that groundwater is hydraulically connected alone is not sufficient to show impairment because some instream flow rules may allow for out-of-stream appropriations at certain times of year.¹³² Instead, it must be demonstrated that groundwater pumping will actually deplete stream flow during the time period when regulatory flows are not being met.¹³³

Based on this analysis, the court rejected the argument that Ecology had effectively changed the prerequisites for obtaining a water right without proper rule-making.¹³⁴ The finding of the existence of hydraulic continuity between ground and surface waters is not the equivalent of finding impairment—harm must also be shown. Thus, Ecology’s evaluation of hydraulic continuity was not a new qualification or requirement that would require rulemaking.¹³⁵

After deciding these threshold questions, the *Postema* court addressed the facts and issues in the individual appeals. Denials in two of the five cases were affirmed because Ecology established that groundwater pumping would deplete instream flows at a time when the regulatory flows were not being met or the streams had been closed.¹³⁶

Denials in the third and fourth appeals were reversed and remanded.¹³⁷ In the third appeal, the court held that the facts as established before the PCHB showed that the proposed new groundwater pumping “could lead to reduced flows,” but “do not unequivocally establish that the proposed withdrawal would lead to decreased flows in regulated streams.”¹³⁸ The fourth appeal was remanded based on the Board’s failure to enter a finding that the targeted groundwater was in fact hydraulically connected to a closed stream.¹³⁹ In the fifth appeal, the court affirmed the lower court’s remand for a new hearing, noting that the Department of Ecology could endeavor to demonstrate that “the proposed withdrawals will affect a closed stream.”¹⁴⁰

As a result of *Postema*’s limitation on Ecology’s traditional discretion to decide water right applications, Washington’s water right processing backlog continues to grow.¹⁴¹ Ecology may not grant a water permit if the applicant does not affirmatively show that it meets the four tests for a water right.¹⁴² But, according to the *Postema* court, Ecology may not deny a water permit if the agency does not unequivocally demonstrate that water is not available.¹⁴³ Not surprisingly, this de-

132. *Postema*, 11 P.3d at 741.

133. *Id.* at 741–42.

134. *Id.* at 742–43. See also *Hillis v. Ecology*, 932 P.2d 139, 152–53 (Wash. 1997) (holding that when Ecology creates new qualifications or requirements relating to obtaining a water right, one of the “benefits or privileges conferred by law,” it must engage in rulemaking). The use of watershed assessments and prioritization of certain applications and river basins for processing are such new qualifications. In response, Ecology adopted WASH. ADMIN. CODE § 173-152. The *Postema* court backtracks from the *Hillis* holding by finding that the use of watershed assessments and priority ranking was not required as a part of the decision process on the statewide cases, and therefore there was no violation of APA rulemaking laws.

135. *Postema*, 11 P.3d at 743–44.

136. *Id.* at 746, 748.

137. *Id.* at 757.

138. *Id.* at 750.

139. *Id.* at 752.

140. *Id.* at 755.

141. *Id.*

142. *Id.* at 734 (citing WASH. REV. CODE § 90.03.290 (2000)).

143. *Id.* at 750.

mand for scientific certitude regarding the timing of impacts, which is difficult and expensive to obtain, has resulted in a continued stalemate in water rights processing. As of the date of writing, more than 7,000 water right applications are pending with the agency.¹⁴⁴

F. Agency and Legislative Responses

The statewide appeals made a big impact on the agency, the public, and the legislature. The number of appeals, the intensity of the litigation issues, particularly relating to science, and the awakening understanding that the water supply was limited (even in rainy western Washington), brought much public attention to the appeals. As the cases proceeded through the courts, several bills proposed to legislate a new “hydraulic continuity” standard, all of which failed.¹⁴⁵

Once the fact-finding phase of the statewide appeals concluded, Ecology convened the Technical Advisory Committee on the Capture of Surface Water by Wells, a cadre of agency, consulting, tribal and other hydrogeologists, whose charge was “to seek agreement . . . on appropriate technical methods for assessing and quantifying the effects of ground-water withdrawals on surface-water sources.”¹⁴⁶ The committee reported back with a detailed set of recommendations regarding the state of the science for assessing hydraulic continuity. The committee concluded:

[T]he technical analysis of surface-water capture by wells should be rooted in broadly accepted, state-of-the-art, scientific principles governing ground-water and capture effects on surface-water flow, including the law of conservation of mass and Darcy’s Law. Based upon these principles, the Committee agrees that, in the long run, any ground water withdrawal will reduce (“capture”) surface water flow in one or more hydraulically connected water bodies, and may also affect other parts of the water cycle, such as the amount of water returned to the atmosphere through evapotranspiration. Questions that may require further analysis are: *how much* of a surface-water body’s flow will be captured, *where* will water be captured (i.e., which surface-water bodies will be affected; *when* will the effect occur, and *how long* will the effect last.¹⁴⁷

The report noted that “[n]o single technical approach will fit all circumstances”¹⁴⁸ and went on to provide detailed frameworks for identifying and selecting

144. WASH. DEP’T. OF ECOLOGY, PUB. NO. 09-11-028, FOCUS ON WATER RIGHT PROCESSING IMPROVEMENTS: PROPOSED LEGISLATION 1 (2009).

145. *E.g.*, H.B. 2050, 55th Leg., Reg. Sess. (Wash. 1997) (vetoed); FINAL BILL REPORT, H.B. 2050, 55th Leg., Reg. Sess., at 2 (Wash. 1997) (surface right impairment occurs only if “[w]ithdrawal of groundwater . . . cause[s] a measurable head reduction within 50 feet of the surface water body in question in the shallowest unconfined [water table] aquifer . . .”). *See also* H.B. 1116, 55th Leg., Reg. Sess. (Wash. 1997), H.B. 2206, 54th Leg., Reg. Sess. (Wash. 1996).

146. WASH. DEP’T OF ECOLOGY, PUB. NO. WR-98-154, DRAFT REPORT OF THE TECHNICAL ADVISORY COMMITTEE ON THE CAPTURE OF SURFACE WATER BY WELLS, ES-1 (1998) [hereinafter CAPTURE OF SURFACE WATER].

147. *Id.* at ES-3.

148. *Id.*

appropriate technical methods for analyzing hydraulic continuity.¹⁴⁹ Under most hydrogeologic settings in Washington, the committee concluded that one of six general model types would produce the necessary information.¹⁵⁰

The Capture Report confirmed Ecology's approach to determining hydraulic connectivity between ground and surface waters.¹⁵¹ Hydrogeologic characterization and hydraulic continuity findings are now a standard part of all water right decision reports (called Reports of Examination or ROEs).¹⁵² Since the mid-1990s, informal moratoria have existed for most of the state's water bodies.¹⁵³ Because, as discussed below, mitigation is now required for virtually all groundwater permits, detailed hydrogeologic information has become a key component of the water right decision process.

IV. THE MITIGATION ERA

A. Introduction

It is difficult to obtain a new water right in Washington, absent some form of mitigation. The Department of Ecology's backlog of water right applications has grown to more than 7,000 pending requests,¹⁵⁴ and most water rights processing focuses on transfers of or changes to existing water rights.¹⁵⁵ Permitting trends reveal that new groundwater permits are issued primarily in areas where the impact will be on tidally influenced rivers or saltwater, and not on streamflow.¹⁵⁶

B. The Nonconsumptive Argument

The phenomenon of water rights mitigation began in earnest in 1996-1997, during the statewide appeals, when several parties argued that their groundwater pumping would be "nonconsumptive" because water would return to the hydrologic system after use. Most of these arguments and mitigation proposals were rejected.¹⁵⁷ For example, in *Manke Lumber*, the applicant proposed that, by clearcutting trees from its property and developing a residential subdivision, its net use was non-consumptive because "the removed trees consume more water than the houses,

149. See *id.* at ES-3 to -5.

150. *Id.* at ES-6.

151. See generally *id.* at ES-3.

152. See generally KEN SLATTERY, WATER RES. PROGRAM POLICY, POL-1005, INTERNET POSTING OF REPORTS OF EXAMINATION (2007).

153. E.g., *Postema v. Pollution Control Hearings Bd.*, 11 P.3d 726, 749 (Wash. 2000).

154. WASH. DEP'T OF ECOLOGY, PUB. NO. 09-11-028, WATER RIGHT PROCESSING IMPROVEMENTS: PROPOSED LEGISLATION 1 (2009).

155. See WASH. REV. CODE § 90.03.380(5) (2008) (segregating the processing of new applications from that of transfer applications and allowing the Department of Ecology to prioritize processing of transfers over new applications).

156. See, e.g., Wash. Dep't of Ecology, Water Right and Water Right Change Reports of Examination, <https://fortress.wa.gov/ecy/wrx/wrx/roe/> (last visited Jan. 18, 2011) (containing the drafts and final water right Reports of Examination).

157. See, e.g., *Manke Lumber*, PCHB No. 96-102 to 106 (Wash. Pollution Control Hearings Bd. Nov. 1, 1996) (final order); *Black River Quarry, Inc.*, PCHB Pub. No. 96-56 (Wash. Pollution Control Hearings Bd. Nov. 15, 1996) (final order).

yards, roads, etc., which would replace them”¹⁵⁸ The Board also rejected a proposal to infiltrate and recharge groundwater via a golf course storm drainage system,¹⁵⁹ and a proposal to allow credit for septic system return flow in a new development.¹⁶⁰ As noted below, the latter idea has gained traction over time.

C. Evolving Mitigation Policy

More fundamentally, the statewide appeals cases raised questions as to whether the Department of Ecology possessed authority to approve mitigation plans that would offset the impacts of groundwater pumping and allow the agency to issue new water rights.¹⁶¹ The Legislature responded in 1997, authorizing Ecology to consider “the benefits and costs, including environmental effects, of any water impoundment or other [water] resource management technique that is included as a component of the application.”¹⁶² This served as an invitation to applicants to propose a wide variety of mitigation proposals. The Department of Ecology has approved dozens of water right mitigation proposals, but has yet to promulgate guidance or rules to define and evaluate acceptable mitigation plans.¹⁶³

Until recently, one popular hydraulic continuity-driven mitigation concept involved streamflow augmentation, also known as “pump and dump.”¹⁶⁴ Here the water user drills through shallow, alluvial aquifers to access deeper groundwater systems, and then pumps some proportion of the groundwater into the affected

158. *Manke Lumber*, PCHB Nos. 96-102 to 106, at Findings of Fact XII. The Board rejected this proposal, finding that:

[a] tree does not hold a water right. Trees grow, they die, they are cut down. The amount of ground water they suck up, and the amount of precipitation they intercept, is ever-changing. The water they leave in the ground at any point in time is merely a portion of the ground water resource that belongs to the people of the State, subject to the rights of prior appropriators.

Id. at Conclusion of Law IX.

159. *Black River Quarry*, PCHB Pub. No. 96-56, at Conclusion of Law XII (“Absent the impermeable surfaces, the water would naturally recharge the system and benefit the base flows of streams.”).

160. *Cedar River Water & Sewer Dist.*, PCHB Pub. No. 96-59 and 96-60 (Wash. Pollution Control Hearings Bd. Nov. 15, 1996) (final order). The Board observed here that “[a]s a policy matter, the proliferation of septic systems has been shown to cause deteriorations in water quality. As a matter of law, the right Cedar River seeks would be perpetual.” *Id.* at Conclusion of Law IX. Then the court noted the temporary nature of septic systems: “But the history of urban development shows us that septic systems near urban areas tend to be interim facilities only, and are usually replaced eventually by sewers. Sewers, with tightline removal to treatment facilities . . . would eliminate the septic system’s groundwater recharge function, but the water right would live on.” *Id.*

161. See, e.g., *Manke Lumber*, PCHB No. 96-102 to 106; *Black River Quarry*, PCHB Pub. No. 96-56.

162. WASH. REV. CODE § 90.03.255 (2008).

163. See WASH. DEP’T OF ECOLOGY, MITIGATION MEASURES USED IN WATER RIGHT PERMITTING (2003). This document describes twenty-five mitigation plans incorporated into water right permits between 1997 and 2003. *Id.* Some of these projects, like the Battle Mountain Gold Co. project, have since been rejected by the PCHB or state courts.

164. Tom Culhane, Dep’t of Ecology Water Res. Program, PowerPoint Presentation at the 7th Washington Hydrogeology Symposium: Water Rights and Mitigation in Washington (April 28, 2009) (on file with author).

stream as mitigation recharge.¹⁶⁵ The challenge for this type of proposal is demonstrating that pumping from the deep aquifer is not capturing water that would otherwise flow to either the affected local stream or another regional water body with streamflow limitations. In 2006, the Squaxin Island Tribe prevailed in a challenge to a new water right proposing a “pump and dump” scheme.¹⁶⁶ The PCHB held that “[t]he pumping of ground water for stream flow augmentation therefore becomes a consumptive use itself because a significant portion of the groundwater captured by the pumping would have flowed into the surface water of Woodland Creek.”¹⁶⁷

In recent years (with exceptions noted below), mitigation projects have tended toward the straightforward approach of obtaining and retiring existing water rights as mitigation for new groundwater withdrawals. This is often accomplished through the state’s trust water right program, which allows transfer of out-of-stream water rights to legally protected instream flows while retaining the priority date of the original right.¹⁶⁸ Most recently, Ecology has created “water banks,” providing an institutional mechanism to offset the impacts of new permit-exempt wells on both regulatory instream flows and senior water users.¹⁶⁹ This program allows owners of existing water rights to voluntarily transfer their rights into the bank, where they are converted into trust water rights.¹⁷⁰ Groundwater developers wishing to commence new water use may purchase the mitigation benefit of the deposited rights where there is a geographic match, i.e., the impacts of new use occur within the stream reach protected by the trust water right.¹⁷¹

One outstanding policy issue involves *how much* mitigation is necessary when a water user pumps groundwater that impacts surface water flows. Because mitigation is expensive, water users frequently argue that mitigation obligations should deduct the “non-consumptive” portion of water use.¹⁷² In 2004, the Washington Supreme Court interpreted the federal and state Clean Water Act antidegradation rules to mean that water quality laws cannot be used to impose mitigation

165. ROBERT ANDERSON, CHRIS PITRE & ALYSSA NEIR, TECHNICAL REPORT ON GROUND WATER STORAGE ALTERNATIVES FOR THE YAKIMA RIVER BASIN THE INTEGRATED WATER RESOURCE MANAGEMENT ALTERNATIVE 8 (2009).

166. Squaxin Island Tribe, PCHB Pub. No. 05-137 (Wash. Pollution Control Hearings Bd. Nov. 20, 2006) (modified order).

167. *Id.* at 53. In this post-*Postema* case, the PCHB found that the groundwater section of the WRIA rule, WASH. ADMIN. CODE § 173-513-050, which provides that “[f]uture ground water withdrawal proposals will not be affected by this chapter unless it is verified that such withdrawal would clearly have an adverse impact upon the surface water system contrary to the intent and objectives of this chapter,” means that “groundwater withdrawals in the Deschutes Basin constitute a clear adverse impact . . . if the withdrawals produce *any effects which adversely impact the values identified in WAC 173-513-020*,” i.e., protection of wildlife, fish, scenic, aesthetic, environmental values, recreation, navigation, and water quality. *Id.* at 44.

168. See WASH. REV. CODE § 90.42.040 (2008).

169. PEGGY CLIFFORD, WASH. DEP’T OF ECOLOGY, PUB. NO. 09-11-024, 2008 REPORT TO THE LEGISLATURE: WATER BANKING IN WASHINGTON STATE 2 (2009).

170. See *id.*

171. See WASH. DEP’T OF ECOLOGY, PUB. NO. 09-11-035, WATER BANKING AND TRUST WATER PROGRAMS: IMPORTANT WATER MANAGEMENT TOOLS 4 (2009), available at <http://www.ecy.wa.gov/biblio/0911035.html>. See also Wash. Dep’t of Ecology, *Water Banking*, ECY.WA.GOV, <http://www.ecy.wa.gov/programs/wr/market/waterbank.html> (last visited Jan. 27, 2011) (listing various Washington water banking documents).

172. See, e.g., *Port of Seattle v. Pollution Control Hearings Bd.*, 90 P.3d 659, 681 (Wash. 2004).

requirements beyond the very specific impacts associated with a project.¹⁷³ Ecology subsequently conflated this water quality rule with water resource management to create an unwritten policy that subtracts “non-consumptive” quantities associated with new groundwater pumping from mitigation requirements. In this context, the “septic system recharge credit” is now embraced as an example of non-consumptive use that can be deducted from a water users’ mitigation obligation.¹⁷⁴ At present there is no accounting for inaccurate modeling, margin of error, or future changes in water usage associated with mitigation obligations. Science-based policy development is sorely needed and may come about if senior water right litigants prevail in holding the agency accountable for failure to protect them from impairment.

D. New WRIA Rules

After a fifteen-year hiatus, in 2000, Ecology recommenced the program to adopt or amend WRIA rules.¹⁷⁵ Most of these rules, now based on locally-developed watershed plans,¹⁷⁶ define mitigation, although the definitions vary among watersheds. Many of the rules utilize a statutory loophole, the “overriding considerations of the public interest” proviso,¹⁷⁷ to authorize future groundwater uses that will capture and deplete instream flows. Despite the years water policy makers spent defending the use of scientific principles, land use development interests have been successful in obtaining politically expedient routes to allow depletion of instream flows for future growth.

In the Skagit River basin, the locus of the first “modern” WRIA rule, legal challenges have been underway for nearly ten years.¹⁷⁸ The rule defines “consumptive use” to mean “a use of water whereby there is a diminishment of the water source” and defines “mitigation plan” as a “scientifically sound plan voluntarily submitted by a proponent to offset the impacts of a proposed water use . . . approved by the department.”¹⁷⁹ The rule specifically reserves updating authority to the Department if hydrogeologic investigations reveal new information.¹⁸⁰ The tribal challenge to the rule is based, *inter alia*, on the reservation of future water supplies at the expense of instream flows, and the concept of using septic return flow as a credit against those reservations.¹⁸¹

173. *Id.* (holding that PCHB could not impose an additional 0.92 cubic foot per second stream-flow augmentation requirement over and above calculated impact).

174. WASH. ADMIN. CODE § 173-503-073(3)(h)–(7)(c) (2009); Upper Kittitas Emergency Ground Water Rule, 10-15 Wash. Reg. 30 (July 21, 2010) (to be codified at WASH. ADMIN. CODE § 173-539A-050(3)); see discussion *supra* Part III.B. The latter rule was being amended while this article was written, and the subsection may change in the near future.

175. See Wash. Dep’t of Ecology, *Walla Walla River Basin (WRIA 32) Rule Amendments*, ECY.WA.GOV, <http://www.ecy.wa.gov/programs/wr/instream-flows/wallawallabasin.html> (last visited Jan. 27, 2011).

176. See WASH. REV. CODE § 90.82 (2008).

177. *Id.* § 90.54.020(3)(a).

178. See Petition for Judicial Review, *Swinomish Indian Tribal Cmty. v. Wash. Dep’t of Ecology*, No. 08-2-01403-4 (Wash. Super. Ct. filed June 11, 2008). Skagit County settled the initial challenge and amended the rule. The Swinomish Tribe is now challenging the amended rule.

179. WASH. ADMIN. CODE § 173-503-025.

180. *Id.* § 173-503-116.

181. Petition for Judicial Review, *supra* note 178.

In the Walla Walla River basin, surface waters have been over-appropriated for more than a century, and a water master annually regulates use among valley irrigators.¹⁸² Ecology amended the original 1977 WRIA rule to add instream flow requirements and provisions for future water use.¹⁸³ In this rule, “consumptive use” means “use of water whereby there is diminishment of the amount or quality of the water source.”¹⁸⁴ The rule closes the shallow, alluvial (“gravel”) aquifer to new appropriations, finding that it is entirely “hydraulically connected to surface waters in the basin,” and prohibits further groundwater development absent mitigation.¹⁸⁵ The rule establishes an elaborate water banking program, applicable to water users within “high density” zones (more than one house per ten acres),¹⁸⁶ and provides authorization to halt outdoor groundwater use if Ecology determines that mitigation is insufficient to offset impacts to surface water rights and instream flows.¹⁸⁷

In the Kittitas Valley, the uppermost watershed in the Yakima River basin, Ecology has adopted the first rule to completely close a basin to new groundwater withdrawals, including permit-exempt wells.¹⁸⁸ The rule defines “consumptive use” to mean “the total depletion that the withdrawal has on any affected surface water bodies” and utilizes a new term, “water budget neutral project,” to mean “an appropriation or project where withdrawals of [public] ground water of the state are proposed in exchange for discharge of water from other water rights that are placed into the trust water right program where such discharge is at least equivalent to the amount of consumptive use.”¹⁸⁹ Kittitas Valley is a battle ground for reform of Washington’s permit-exempt laws, driven by over-appropriation of basin water resources and the new USGS reports on ground-surface water interaction discussed above.¹⁹⁰ The importance of hydraulic continuity has reached new heights, with bucket-for-bucket mitigation required for all new groundwater water uses, regardless of size.

Three additional pending lawsuits of note challenge the impact of permit-exempt groundwater development on tribal water rights. In the western Washington Johns Creek watershed, the Squaxin Island Tribe unsuccessfully petitioned Ecology to amend the existing WRIA rule to close the basin to all groundwater withdrawals,

182. See generally WALLA WALLA LOCAL AGRIC. WATER QUALITY ADVISORY COMM., WALLA WALLA AGRICULTURAL WATER QUALITY MANAGEMENT AREA PLAN (2007), available at www.oregon.gov/ODA/NRD/docs/pdf/plans/walla_07.pdf.

183. See WASH. ADMIN. CODE § 173-532.

184. *Id.* § 173-532-020(3).

185. *Id.* §§ 173-532-040(2), -045(2). The amendment opens the deeper basalt aquifers to permitting (closed to new appropriations under the original rule), despite known hydraulic continuity with local and regional rivers; although it puts the onus on proposed users to avoid impairment and effects on closed surface and groundwater resources.

186. *Id.* § 173-532-050; WASH. DEP’T OF ECOLOGY & WASH. WATER TRUST, PUB. NO. 07-11-032, MITIGATION GUIDE FOR FUTURE OUTDOOR WATER USE IN THE WALLA WALLA BASIN (2007).

187. WASH. ADMIN. CODE § 173-532-050(9).

188. Upper Kittitas Emergency Ground Water Rule, 10-15 Wash. Reg. 30 (July 21, 2010) (to be codified at WASH. ADMIN. CODE § 173-539A-040), available at <http://www.ecy.wa.gov/laws-rules/wac173539a/x0908a.pdf>. This emergency rule is in the process of being replaced with a permanent rule and language may change in the near future.

189. *Id.* at § 173-539A-030.

190. See *supra* Part I; see also Jonathan Martin, *Big Growth, Big Fight Over Water*, SEATTLE TIMES, Nov. 21, 2007, http://seattletimes.nwsources.com/html/localnews/2004026753_water21m.html.

including permit-exempt wells.¹⁹¹ The resulting Administrative Procedure Act-based lawsuit alleges impacts of industrial groundwater development on stream flows that are necessary to protect treaty-based fisheries.¹⁹²

In the Skagit River basin, the Swinomish Indian Tribal Community has challenged the mitigation program associated with the WRIA rule, which allows water users to obtain a uniform fifty percent “septic recharge credit” of 175 gallons of water per day for new developments using water imported into tributary basins via public utility district service.¹⁹³ This approach leads to an unusual result, a finding that the amount of water in each tributary is increasing over time (thereby allowing an increase in housing development). The Tribe challenges the program as lacking in sound science and causing impairment to senior rights, including instream flows.¹⁹⁴

In eastern Washington, the Spokane Indian Tribe has re-opened the *United States v. Anderson* proceeding, which adjudicated tribal and non-tribal rights to Chamokane Creek, a border stream for the Spokane Reservation.¹⁹⁵ The original decree encompassed groundwater tributary to the surface stream, but the Department of Ecology refused to halt or regulate non-tribal development of permit-exempt wells in the basin, which the Tribe alleges impairs its adjudicated rights to instream flows to protect fisheries.¹⁹⁶ In 2006, the court ordered development of a USGS study to resolve factual questions concerning the extent to which groundwater is tributary to surface water and to determine the cumulative effects of permit-exempt wells.¹⁹⁷

With many legal challenges underway, it is fair to say that the intersection between science, policy, and administration of water rights remains in flux. Eventually these cases will provide answers about the precision of evaluation required to assess hydraulic continuity.

V. CONCLUSION

Washington’s water laws have exhibited a companionable evolution of science and policy over the last four decades. Most of the law surrounding ground and surface water interaction has derived from administrative policy and cases concerned with protection of instream flows for public values. More fundamentally, much of Washington’s water is now allocated to out-of-stream or instream uses, and parties are fighting to the last drop.

191. Squaxin Island Tribe v. Wash. State Dep’t of Ecology, No. 10-2-1243-2 (Wash. Super. Ct. filed June 3, 2010).

192. *Id.* at 2.

193. Swinomish Indian Tribal Cmty. v. Wash. Dep’t of Ecology, PCHB No. 10-010 (Wash. Pollution Control Hearings Bd. Jan. 28, 2010). This matter is currently stayed pending the outcome of the Tribe’s challenge to the WRIA rule. See Swinomish Indian Tribal Cmty. v. Wash. Dep’t of Ecology, No. 08-2-01403-4 (Wash. Super. Ct. filed June 11, 2008).

194. Swinomish Indian Tribal Cmty, PCHB No. 10-010 at 7–9.

195. *United States v. Anderson*, 736 F.2d 1358 (9th Cir. 1984).

196. *Id.*

197. *United States v. Anderson*, No. CV-72-3643-JLQ, (E.D. Wash. Aug. 11, 2006) (Order Adopting Special Master’s Report and Recommendation Regarding Factual and Legal Issues). There may be additional action on this matter in the near future.

The courts have set a high bar for scientific certainty in water right decision making, and science has responded with increasingly sophisticated models to describe and predict interactions and impacts between ground and surface water uses. Brand new U.S. Geological Survey groundwater models for the Skagit,¹⁹⁸ Yakima,¹⁹⁹ and Spokane River²⁰⁰ basins are examples of tools that provide answers to questions water managers are mandated to ask: when, where, and by how much will groundwater pumping affect river flows? Armed with answers to these questions, water rights mitigation has become the new paradigm for water management in Washington State.

198. News Release, U.S. Geological Survey, New Tool Guides Skagit Groundwater Plans (Sept. 15, 2010), available at <http://wa.water.usgs.gov/news/2010/news.sir20105184.htm>.

199. U.S. GEOLOGICAL SURVEY, *Yakima River Basin*, WA.WATER.USGS.GOV, <http://wa.water.usgs.gov/projects/yakimagw/> (last visited Jan. 27, 2011).

200. News Release, U.S. Geological Survey, Spokane-Rathdrum Aquifer Study Wraps It Up (May 1, 2007), available at <http://wa.water.usgs.gov/news/2007/news.svrpa.050107.htm>.