THE HISTORICAL EVOLUTION OF THE METHODOLOGY FOR QUANTIFYING FEDERAL RESERVED INSTREAM WATER RIGHTS FOR AMERICAN INDIAN TRIBES

BY

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From the earliest days of their relationship with the United States, the tribes from the region today referred to as the Northwestern United States have been steadfast in their effort to protect the land, waters, plants, and animals of their traditional homelands. That effort is not coincidental; North America's indigenous people have a singular relationship to the environment they have been a part of for millennia. In particular, they have relied on the streams of their territory for food, fiber, transportation, recreation, cultural, and spiritual sustenance. As a result, through litigation, restoration, and conservation management, tribes have focused on maintaining a good environment for culturally important aquatic species. This Article—a companion to another in

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The author acknowledges that he lives and makes his living in the aboriginal homeland of the Nimi'ipuu (Nez Perce) and Schitsu'umsh (Coeur d'Alene) peoples and that the University of Idaho is situated within the boundaries of the Nez Perce Tribe's unceded 1855 Reservation. These Tribal Nations are distinct, sovereign, legal and political entities with their own powers of self-governance and self-determination. Honor the treaties; "[g]reat nations, like great men, should keep their word." F.P.C. v. Tuscarora Indian Nation, 362 U.S. 99, 142 (1960) (Black, J., dissenting).

this Issue that addresses contemporary methodologies—focuses on but one part of that monumental effort: the historical development of the methods used to ensure adequate quantities of water remain in streams to maintain a healthy habitat for aquatic species.

I. INTRODUCTION

This past summer, I had the opportunity to go fishing with one of my students, Gaylen Edmo, on a tributary of the Salmon River in Central Idaho. I have fished for many years, but this trip was special because Gaylen—who is a member of the Shoshone–Bannock Tribes of the Fort Hall Indian Reservation—spears fish in the traditional way, much in the same way as his ancestors. Gaylen was taught this technique by his father, Wesley, who learned it from his father, and on it goes. The Shoshone–Bannock spears are long, up to ten feet or more, and traditionally they were made of willow. Today, the spears can be made of several types of wood. Willow is still used, but so is pine, as well as manufactured wooden dowels. To the end of these spears are affixed large steel hooks, about four inches in length. The hooks are attached to an approximately ten-inch line, which is in turn attached to the spear. The hooks are attached to the spear so that when they strike the fish they detach and spin through the fish, setting the hook. Hunters[1]

[1] I use the term "hunter" rather than "fisher" because neither the Shoshones nor the Bannocks traditionally conceptualized a difference between hunting for land animals and

congregate at constrictions in the river, below which fish collect and then run a gauntlet of spears. Spears are attached to the hunter by a long rope and, depending on the distance to the fish, the hunter may strike the fish while holding to the spear or by throwing the spear and dragging it back in by the rope.

Unfortunately, the chinook salmon run this past year was not prolific, making the fishing a slow-going affair. Nonetheless, it was an experience to see Gaylen, his father, and his fellow tribal members come together to celebrate the fish, their culture, and occasionally harvest a fish. In so doing, they were taking part in a tradition that spans time, connecting to ancestors that hunted fish in much the same way and in the same places since time immemorial.

Although Gaylen's Tribes' method of hunting fish is unique—indeed, every tribe's method is a little different—its historic reliance on aquatic species for subsistence is not. Tribes throughout the Northwest traditionally relied upon the fish in their territory for their survival. As a result, in the face of incredible odds, time after time the tribes of the Northwest demanded the United States recognize their right to continue their traditional way of life.[2] For many, the dependence on fish continues; much of the fish Gaylen harvests goes to elders and others in need back home at Fort Hall. As important, tribal members throughout the Northwest rely on the fish for their cultural survival. For them, these fish, which have sustained their ancestors since time immemorial,

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hunting aquatic animals. State v. Tinno, 497 P.2d 1386, 1389 (Idaho 1972). Indeed, neither tribe had separate words for these two activities. *Id.* To this day, Gaylen and his family speak of "hunting" fish and in fact when you watch them you see that this is exactly what they are doing, working together to stalk and/or corral the fish, getting into a position to take the shot, and then making the strike.

[2] *See, e.g.*, Treaty with Nisquallys, art. 3, Dec. 26, 1854, 10 Stat. 1132 (Treaty of Medicine Creek); Treaty with the Flatheads, art. 3, Jul. 16, 1855, 12 Stat. 975 (Treaty of Hellgate); Treaty with the Makah Tribe, Makah Tribe-U.S., Jan. 31, 1855, 12 Stat. 939 (the Makah tribe includes Neah Waatch, Tsoo-Yess, and Osett) (Treaty of Neah Bay); Treaty with the Dwamish &c. Indians, art. 2, Jan. 22, 1855, 12 Stat. 927 (1855) (Treaty of Point Elliot); Treaty with the S'klallams, 12 Stat. 933 (1855) (Includes Kah-tai, Squah-quaihtl, Tch-queen, Ste-tehtlum, Tsohkw, Yennis, Elhwa, Pishtst, Hun-nin, Klat-la-wash, Oke-ho, other tribes include Sko-ko-mish, To-an-hooch, and Chem-a-kum) (Point No Point Treaty); Treaty with the Walla Walla, art. 1, June 9, 1855, 12 Stat. 945; Treaty with the Yakamas, U.S.-Yakima Tribe, June 9, 1855, 12 Stat. 951 (Including Palouse, Skin-pah, Wish-ham, Shyks, Oche-chotes, Kah-milt-pah, and Se-ap-cat); Treaty with the Nez Perces, Nez Perce Tribe-U.S., June 11, 1855, 12 Stat. 957; Treaty with Indians in Middle Oregon, art. 1, June 25, 1855, 12 Stat. 963; Treaty with the Qui-Nai-Elts, &c., Qui-nai-elt Tribe-U.S., July 1, 1855, 12 Stat. 971 (Treaty of Olympia); Treaty with the Klamath &c. Indians, art. 1, Oct. 14, 1864, 16 Stat. 707; Treaty with the Shoshonees and Bannacks, art. 4, July 3, 1868, 15 Stat. 673 (Treaty of Fort Bridger). The Executive Orders Creating the Coeur d'Alene, Colville, and Spokane Reservations have likewise all been interpreted to have included on-reservation hunting and fishing rights. *See* United States & Coeur d'Alene Tribe v. Idaho, 95 F. Supp. 2d 1094, 1099–100 (D. Idaho 1998); Colville Confederated Tribes v. Walton (*Walton I*), 647 F.2d 42, 48 (9th Cir. 1981) (finding "an implied reservation of water from No Name Creek for the development and maintenance of replacement fishing grounds"); United States v. Anderson, No. 3643, slip op. at 9 (E.D. Wash. July 23, 1979) (finding maintneance of creek was for the purpose of reservation).

are inextricably intertwined with their identity as a person indigenous to the region now known as the Northwestern United States.

In turn, the fish rely upon the tribes for their survival in an era of consumption, climate change, and dams. Whether fighting to maintain the fishery through the canneries and fish wheels of the 1800s to the massive hydroelectric projects of the twentieth century, the tribes of the Northwest have been steadfast in their defense of these aquatic relatives. That effort, through litigation, restoration, and conservation management, has focused on maintaining a good environment for culturally important aquatic species. Those fishes need many things; their success is predicated on good habitat, food, water quality, and water quantity. Tribal efforts have addressed each of these and each deserves considerable attention for their dedication and innovation in the face of incredible odds. This Article focuses on a sliver of that effort: the methods tribes have used to ensure adequate *quantities* of water remain in streams to maintain a healthy habitat for fish.

II. THE *WINTERS* DOCTRINE AND RESERVED INSTREAM WATER RIGHTS

Due to the unique combination of an historical abundance of fish and a contemporary shortage of water, conflict surrounding instream flows primarily takes place in the northwestern portion of the United States. Tribes throughout this region traditionally relied upon fish and other aquatic life for subsistence; a reliance that continues to this day.[3]

The states of the Northwest, like all western states, apply the water rights doctrine known as prior appropriation.[4] In a prior appropriation state,

> [O]ne acquires a right to water by diverting it from its natural source and applying it to some beneficial use. Continued beneficial use of the water is required in order to maintain the right. In periods of shortage, priority among confirmed rights is determined according to the date of initial diversion.[5]

Because of a longstanding federal deference to state water rights law, states are said to generally have plenary authority over water management.[6] This general rule is subject to two broad exceptions: the navigational servitude and the water rights reserved by the federal government for the benefit of federal reservations of land.[7] Although the reserved water rights doctrine applies to all federal reservations, it was

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[3] *See, e.g.*, United States v. Anderson, 736 F.2d 1358, 1365 (9th Cir. 1984).

[4] FELIX COHEN, COHEN'S HANDBOOK OF FEDERAL INDIAN LAW § 19.01[1], at 1204 (Nell Jessup Newton ed., 2012); A. DAN TARLOCK, LAW OF WATER RIGHTS AND RESOURCES § 5:3, at 5–6 (Thompson Reuters/West, 7th ed. 2010).

[5] Colo. River Water Conservation Dist. v. United States, 424 U.S. 800, 805 (1976).

[6] Cal. Ore. Power Co. v. Beaver Portland Cement Co., 295 U.S. 142, 163–64 (1935).

[7] *See* United States v. Rio Grande Dam & Irr. Co., 174 U.S. 690, 703 (1899).

born at the Fort Belknap Indian Reservation in northeast Montana.[8] It was the water rights appurtenant to that reservation that were at issue before the Court in 1908 when it laid the foundations for what would become the *Winters* doctrine: "when the Federal Government withdraws . . . land from the public domain and reserves it for a federal purpose, the Government, by implication, reserves appurtenant water then unappropriated to the extent needed to accomplish the purpose of the reservation."[9]

The differences between state-based non-Indian water rights and water rights reserved by Indian tribes are well documented.[10] Water rights reserved for Indian tribes are based upon the treaties, executive orders, congressionally ratified agreements, and other operative documents that were negotiated between the United States and each Indian Tribe for the creation of Indian reservations.[11] Although these documents are invariably silent regarding water rights, the Supreme Court has long held that the tribes and United States nonetheless intended to acquire a reserved water right "if the previously unappropriated waters are necessary to accomplish the purposes for which the reservation was created."[12] As a result, the reserved water rights doctrine is one of *implied* rights.[13] Further, although reserved rights are administered in priority along with state-based water rights, the priority date for non-consumptive instream flow water rights is "time immemorial," because "[t]he rights were not created by the . . . [t]reaty, rather, the treaty confirmed the continued existence of these rights."[14]

Winters[15] was not a general adjudication but was instead limited to the question of whether the Tribes in that case had reserved water for irrigation.[16] In fact, all of the early cases regarding the development of the *Winters* doctrine were factually limited to reserved irrigation water rights.[17] These cases culminated in the Supreme Court decision *Arizona v. California*[18] wherein the Court affirmed the practicably irrigable

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8 Winters v. United States, 207 U.S. 564, 575–77 (1908).

9 Cappaert v. United States, 426 U.S. 128, 138 (1976); *see also* United States v. Dist. Court for the Cty. of Eagle, 401 U.S. 520, 522–23 (1971); Arizona v. California (*Arizona I*), 373 U.S. 546, 597–98 (1963); Fed. Power Comm. v. Oregon, 349 U.S. 435, 448 (1955); United States v. Powers, 305 U.S. 527, 532–33 (1939); *Winters*, 207 U.S. at 564.

10 *See* COHEN, *supra* note 4, § 19.01[1], at 1204.

11 COHEN, *supra* note 4, § 19.03[1], at 1210–12.

12 *Cappaert*, 426 U.S. at 139.

13 *Arizona I*, 373 U.S. at 546; *Cappaert*, 426 U.S. at 139. *Cappaert* also held that reserved water rights may be expressed rather than implied. *Id.*

14 United States v. Adair, 723 F.2d 1394, 1414 (9th Cir. 1984).

15 207 U.S. 564 (1908).

16 *Id.* at 576.

17 *Id.*; United States v. Ahtanum Irr. Dist., 236 F.2d 321, 340 (9th Cir. 1956); Conrad Inv. Co. v. United States, 162 F. 829, 831 (9th Cir. 1908); United States v. Walker River Irr. Dist., 104 F.2d 334, 340 (9th Cir. 1939); Skeem v. United States, 273 F. 93, 94–95 (9th Cir. 1921); United States *ex rel* Ray v. Hibner, 27 F.2d 909, 912 (E.D. Idaho 1928).

18 373 U.S. 546 (1963).

acreage (PIA) methodology to quantify irrigation water rights reserved by Indian tribes.[19] Later, the Ninth Circuit established that tribes may also be entitled to water rights sufficient to preserve their hunting, fishing, gathering, and other traditional subsistence rights.[20] In those cases, the Ninth Circuit recognized that the Supreme Court had never required it to "choose a single essential purpose" for the creation of Indian reservations.[21] Instead, courts have almost universally recognized that in addition to the development of an agricultural economy, "preservation of the tribe's access to fishing grounds was one purpose for the creation of," many Indian reservations in the Northwestern United States.[22]

III. THE HISTORICAL DEVELOPMENT OF RESERVED INSTREAM WATER RIGHT QUANTIFICATION METHODOLOGIES

A. Early Stream Modeling Approaches

As the United States began to shift its attention to environmental concerns in the late 1960s, public values shifted away—if only slightly—from an emphasis solely on water *use* to recognize the importance of maintaining some minimum amount of water in streams to support fish and other aquatic habitat.[23] However, the relationship between flow and habitat was not well understood at that time.[24] As a result, "[p]rior to about 1973, instream flow assessments typically arrived at a single streamflow value—a 'minimum flow' above which all flows were considered available for out-of-stream use."[25] These single values were

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[19] *Id.* at 600.

[20] *Walton I*, 647 F.2d 42, 48 (9th Cir. 1981); *Adair*, 723 F.2d at 1408; *Anderson*, 736 F.2d 1358, 1365 (9th Cir. 1984).

[21] *Adair*, 723 F.2d at 1410.

[22] *Walton I*, 647 F.2d at 48. *But see In re* Rights to Use Water in the Big Horn River System (*Big Horn I*), 753 P.2d 76, 98 (Wyo. 1988).

[23] *See* Richard J. Lazarus, *The Greening of America and the Graying of United States Environmental Law: Reflections on Environmental Law's First Three Decades in the United States*, 20 VA. ENVTL. L.J. 75, 76 (2001) ("During the final three decades of the twentieth century, federal and state governments enacted a series of increasingly ambitious, complex, and often dense laws aimed at reducing pollution and promoting resource conservation."); *see also* Cynyhia F. Covell et al., *Update to a Survey of State Instream Flow Programs in the Western United States*, 20 U. DENV. WATER L. REV. 355, 355 (2017) (instream water rights were reluctantly enforced prior to the 1990s); Berton L. Lamb & Harvey R. Doerksen, *Instream Water Use in the United States—Water Laws and Methods for Determining Flow Requirements*, *in* NATIONAL WATER SUMMARY 1987, at 109, 112 (U.S. Geological Survey, Water-Supply Paper 2350, 1987) (concept of instream flow was not widely known prior to the 1970s and shifted focus to the minimum-flow level required to sustain fish populations).

[24] R. T. MILHOUS ET AL., NAT'L ECOLOGY RESEARCH CTR., INSTREAM FLOW INFO. PAPER NO. 26, PHYSICAL HABITAT SIMULATION SYSTEM REFERENCE MANUAL-VERSION II, at I.4 (1989).

[25] *Id.*

typically derived from "analyses of hydrologic records and/or fish population studies," rather than a more robust analysis of the interrelationship between stream hydrology and fish biology.[26]

Numerous methods were developed during this time.[27] Most common was to simply apply some percentage of a stream's mean annual flow.[28] This method, known as the "Montana Method" or "Tennant Method," after its creator Don Tennant, develops an empirical relationship between flow and habitat.[29] Through analysis of empirical data on many streams, Tennant concluded that 60%–100% of mean annual flow represents optimal flow conditions for fish; 30% to be adequate conditions; and 10% of the mean annual flow to be the "absolute low flow for fishery resources."[30] Another method—which was a precursor to the more robust incremental methods that would be developed later—was to construct a transect through a riffle of a study stream and take measurements of velocity and substrate.[31] These data were then input into a hydraulic model to determine velocity and substrate values for a range of flows.[32] Biologists would then "examine the computer output and try to determine what the optimum level of flow to inundate a certain portion of [substrate] . . . and . . . would make [a] recommendation upon that."[33] Similarly, other methods would try to develop a quantity based upon the water surface profile.[34] For this method, researchers would take a measurement of one flow at multiple locations on a stream and "look at the output from each [measurement location] at various extrapolated or interpolated flows, and a biologist [would] make[] a judgment on the quantity of substrate that's inundated by more or less flows, and it's up to the biologist to make his recommendation upon what he observes . . . ."[35] Although these methods have fallen out of use in favor of more robust methodologies, each of these methods continue to be useful for making a rough but reasonable estimation of the amount of water necessary to provide a healthy

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26 *Id.*

27 Transcript of Record Vol. 71 at 6341–43, *In re* Rights to Use Water in the Big Horn River System, No. 4993 (D. Wyo. June 2, 1981) [hereinafter *Big Horn*, Test. D. Vogel (Part I)].

28 *Id.* at 6343.

29 Affidavit & Direct Testimony of Dudley W. Reiser at VII-6, In the Matter of the Determination of the Relative Rights of the Waters of the Klamath River, a Tributary of the Pacific Ocean, No. 277 (Office of Administrative Hearings, Or. Dec. 4, 2009) [hereinafter *In re Klamath River*, Aff. D. Reiser]; *In re Klamath River*, Aff. D. Reiser, at V-5; Second Affidavit of Dell Simmons at 2-3, Wash. Dept. of Ecology v. Acquavella (Wash. Super. Ct. Aug. 10, 1994) [hereinafter *Acquavella*, 2d Aff. D. Simmons].

30 *Big Horn*, Test. D. Vogel (Part I), *supra* note 27, at 6343.

31 *Id.*

32 *Id.* at 6343–44.

33 *Id.*

34 *Id.* at 6344.

35 *Id.* at 6344–45.

habitat for aquatic species.[36] They are particularly useful on streams where the collection of data is not economically or practically feasible.[37]

B. The Early Cases: Walton *and* Anderson*—Temperature is the Key*

The first reserved water rights case to test whether an American Indian tribe was entitled to a quantity of water for instream flows was *Confederated Colville Tribes v. Walton*.[38] The Confederated Tribes of the Colville Reservation "traditionally fished for both salmon and trout," which were of "economic and religious importance to them."[39] However, by the middle of the twentieth century "[t]he Tribe's principal historic fishing grounds on the Columbia River [had] been destroyed by dams."[40] In response, the Colville Tribes set out to build a replacement fishery within the Colville Reservation.[41] The Tribes and United States eventually determined to establish a Lahonton cutthroat trout fishery in Omak Lake.[42] Lahonton trout evolved primarily within terminal saline lakes within the Great Basin of the United States.[43] As a result, they spend the majority of their lives in saline lakes but then migrate into freshwater streams to spawn.[44] Omak Lake within the Colville Reservation is a terminus lake, which causes it to be saline.[45] A number of freshwater streams flow into Omak Lake, including No Name Creek.[46] Resultantly, the Omak Lake/No Name Creek watershed provided ideal habitat for Lahonton trout.[47]

By the mid-1960s, the United States and Colville Tribes began developing an introduction plan for Lahonton trout after a study by Gerald Thiessen recommended that "Omak Lake, being of similar chemical quality and characteristics to some of the southwest terminal lakes," would be an ideal site for their location.[48] Upon learning of the

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[36] Robert T. Milhous, Two 1970s Methods of Prescribing Instream Flow Regimes 1, 10–11 (2017) (unpublished manuscript) (on file with Colorado State University); Daniel Caissie & Nassir El-Jabi, *Instream Flow Assessment: From Holistic Approaches to Habitat Modelling*, 28 CAN. WATER RESOURCES J. 173, 175–76 (2003).

[37] I.G. Jowett, *Instream Flow Methods: A Comparison of Approaches*, 13 REGULATED RIVERS: RES. & MGMT. 115, 124–25 (1997); *In re Klamath River*, Aff. D. Reiser *supra* note 29, at V-4.

[38] Colville Confederated Tribes v. Walton, 460 F. Supp. 1320, 1320–23 (E.D. Wash. 1978); *Walton I*, 647 F.2d 42, 42–44 (9th Cir. 1981); Colville Confederated Tribes v. Walton (*Walton III*), 752 F.2d 397, 397–99 (9th. Cir. 1985).

[39] *Walton I*, 647 F.2d at 48.

[40] *Id.*

[41] *Id.*

[42] Transcript of Record at 9, Colville Confederated Tribes v. Walton, 460 F. Supp. 1320 (E.D. Wash. 1978) (No. 3421) [hereinafter Deposition David Koch].

[43] *Id.* at 7.

[44] *Id.* at 13–14.

[45] *Walton I*, 647 F.2d at 45.

[46] *Id.*

[47] Deposition David Koch, *supra* note 42, at 12.

[48] *Id.* at 8.

potential for a Lahonton fishery, the U.S. Fish and Wildlife Service (FWS) began a series of experiments to determine Omak Lake's suitability for Lahonton trout and "found them to survive and do very well."[49] In response, the Tribes and the FWS obtained Lahonton eggs from the State of Nevada in 1967 and raised those fish in a federal hatchery in Winthrop, Washington.[50] That first cohort of Lahonton trout were introduced into Omak Lake in 1968, with supplemental stock being introduced in subsequent years.[51]

Although the Lahonton trout were successful in Omak Lake, they initially lacked access to viable spawning areas.[52] The result was that trout had to be spawned and reared in the hatchery in Winthrop before being trucked to Omak Lake.[53] However, researchers identified sections of No Name Creek, a tributary of Omak Lake, as ideal spawning habitat for Lahonton trout.[54] They also observed that the trout seemed to be attracted to No Name Creek.[55] But, fish could not access the stream due to a small section of swampy area near the stream's mouth where it entered Omak Lake.[56] Consequently, fish were precluded from spawning in No Name Creek.[57] To solve this issue, researchers recommended a channel be run through this swampy area in order for fish to pass through to access spawning habitat further upstream.[58] That channel was constructed in the summer of 1976 and by 1977 over 200 adults migrated up No Name Creek to spawn.[59]

The Confederated Tribes were not the only ones in need of water in the No Name Creek Basin.[60] Boyd and Kenna Joan Walton acquired three allotments along No Name Creek in 1948 and by the early 1970s they were irrigating 105 acres with water from groundwater wells that were hydrologically connected to No Name Creek.[61] Additionally, the Waltons operated a dairy farm and used No Name Creek for stock watering.[62] The impact on the Lahonton fishery was twofold. First, the Waltons, along with competing consumptive uses by the Confederated Tribes,[63] caused there to be insufficient flows in No Name Creek during

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49 *Id.* at 8–9.

50 *Id.* at 16.

51 *Walton I*, 647 F.2d 42, 45 (9th Cir. 1981); Deposition David Koch, *supra* note 42, at 16–17.

52 Deposition David Koch, *supra* note 42, at 15–16.

53 *Id.* at 16.

54 *Id.* at 14–15.

55 *Id.* at 15.

56 *Id.*

57 *Id.* at 16.

58 *Id.* at 15.

59 *Id.* at 29.

60 *Walton*, 460 F. Supp. 1320, 1324 (E.D. Wash. 1978).

61 *Id.*

62 Transcript of Record at 215, 250, Colville Confederated Tribes v. Walton, 460 F. Supp. 1320 (E.D. Wash. 1978) (No. 3421) [hereinafter *Walton*, Test. M. Tonasket].

63 Around the same time it began developing its fisheries program, the Confederated Tribes also developed a small irrigation project for agricultural use on allotments adjacent

the irrigation season for trout migration, spawning, and rearing.[64] Second, runoff from the Walton dairy feedlot caused the stream to become contaminated, which buried the spawning beds and suffocated the eggs.[65] As a result, the Tribes and the United States brought suit against the Waltons, "seek[ing] to enjoin the Waltons' interference with tribal use of No Name Creek Basin Waters."[66]

The Confederated Tribes hired Dr. David Koch to develop a methodology for quantifying their reserved instream water right in support of the Lahonton fish program.[67] Dr. Koch was the executive director of the Desert Research Institute in Reno, Nevada.[68] As part of his work, he helped to develop Lahonton trout programs at Pyramid and Walker Lakes in Nevada.[69] Once hired as a consultant by the Confederated Tribes, Dr. Koch began collecting pH, dissolved oxygen, conductivity [collectively "water quality indicators"], and temperature data at various locations in No Name Creek between the entrance to Omak Lake and the spawning ground further upstream.[70]

Dr. Koch's ultimate quantification methodology was predicated primarily on the maintenance of appropriate water temperature and the spawning substrate material in No Name Creek.[71] Temperature took center-stage because of the sensitivity trout have to warm water.[72] Although adult trout holding in Omak Lake could withstand water temperatures up to 74°F, Lahonton redds[73] in spawning reaches require water temperatures as low as 50 to 55°F.[74] On the extreme, Lahonton redds cannot survive water temperatures exceeding 58°F.[75] Likewise,

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No Name Creek. *Id.* at 219–20. Eventually, management of the project was turned over to the Paschal Sherman Indian School, which had instituted vocational training that included irrigated agriculture and used the proceeds from growing hay on the property to support the school. *Id.* at 267.

64 Deposition David Koch, *supra* note 42, at 25.

65 *Id.*

66 *Walton*, 460 F. Supp. at 1325.

67 Deposition David Koch, *supra* note 42, at 3.

68 *Id.*

69 *Id.* at 4–5

70 *Id.* at 10.

71 Transcript of Record at 571, Colville Confederated Tribes v. Walton, No. 3421 (E.D. Wash. May 7, 1982) [hereinafter *Walton*, Test. D. Koch]. It appears that the collection effort for conductivity and pH data were primarily focused at the interface between Omak Lake and No Name Creek. Deposition David Koch, *supra* note 42, at 10. pH and conductivity are both indicators of the alkalinity of a water body, which was a necessary predicate to determining the chance of success for a Lahonton trout fishery. *Id.* at 11–12.

72 *See, e.g.*, JORDAN ROSENFELD, FRESHWATER HABITAT REQUIREMENTS OF ANADROMOUS CUTTHROAT TROUT AND IMPLICATIONS FOR FORESTRY IMPACTS 20 (FISHERIES MGMT. REPORT NO. 113, 2000); David A. Boughton et al., *Spatial Patterning of Habitat for Oncorhynchus Mykiss in a System of Intermittent and Perennial Streams*, 18 ECOLOGY FRESHWATER FISH 92, 101 (2009).

73 Salmonid eggs and their nests are collectively referred to as "redds." Affidavit of Dell Simmons at 2, Wash. Dept. of Ecology v. Acquavella (Wash. Super. Ct. July 29, 1990) [hereinafter *Acquavella*, Aff. D. Simmons].

74 Deposition David Koch, *supra* note 42, at 20.

75 *Id.* at 20–21.

the condition of the spawning bed substrate became an important factor because of the sensitivity trout redds have to spawning substrate that deviates from ideal conditions.[76] Salmonids require clean gravel that has a minimum amount of fine material.[77] This type of substrate optimizes redd development by promoting the movement of gas and waste and preventing the suffocation of the eggs.[78]

Stream temperature and spawning bed substrate became the basis for the quantification methodology because they were the factors being affected most by the Waltons' land and water use.[79] Specifically, the combination of the Waltons' increased water usage during the irrigation season coupled with the introduction of organic and waste material to the water from their feedlot adjacent to No Name Creek caused an increase in stream temperature and decrease in stream velocity.[80] Specifically, Dr. Koch testified that he "followed the temperatures very closely over the last six years," and that there were "problems some years with warm temperatures when diversions have been made and low flow conditions occur."[81] Similarly, Dr. Koch testified that once Mr. Walton "began his irrigation season and he diverted the water . . . the organic material, waste material . . . from his barn area, just settled on top of the eggs that were incubating as the flow slowed down."[82]

Ultimately, the Confederated Tribes claimed an instream flow for only the spring and summer when low flow conditions became a

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[76] *See* G. Mathias Kondolf, *Assessing Salmonid Spawning Ground Quality*, 129 TRANSACTIONS AM. FISHERIES SOC'Y 262, 264–66 (2000).

[77] *Id.* at 265.

[78] *See id.* at 265; Clifford J. Burner, *Characteristics of Spawning Nests of Columbia River Salmon*, 61 FISHERY BULL. 97, 103 (U.S. Fish & Wildlife Serv. ed. 1951); William J. McNeil, *Effect of the Spawning Bed Environment on Reproduction of Pink and Chum Salmon*, 65 FISHERY BULL. 495, 500 (U.S. Fish & Wildlife Serv. ed., 1966); FREDRICK B. LOTSPEICH & FRED H. EVEREST, U.S. DEP'T OF AGRIC., RESEARCH NOTE PNW-369, A NEW METHOD FOR REPORTING AND INTERPRETING TEXTURAL COMPOSITION OF SPAWNING GRAVEL 1 (1981); Paul D. Tappel & Ted C. Bjornn, *A New Method of Relating Size of Spawning Gravel to Salmonid Embryo Survival*, 3 N. AM. J. FISHERIES MGMT. 123, 123 (1983); G. Mathias Kondolf, Salmonid Spawning Gravels: A Geomorphic Perspective on Their Size Distribution, modification by Spawning Fish, and Criteria for Gravel Quality (1988) (unpublished Ph.D. dissertation, Johns Hopkins University) (on file with Johns Hopkins University).

[79] Deposition David Koch, *supra* note 42, at 25; *see also Walton*, Test. D. Koch, *supra* note 71, at 571.

[80] *Walton*, Test. D. Koch, *supra* note 71, at 571.

[81] *Id.*

[82] Transcript of Record at 1661, Colville Confederated Tribes v. Walton, 460 F. Supp. 1320 (E.D. Wash. 1978) (No. 3421); *see also*, Deposition David Koch, *supra* note 42, at 25 ("In between the second and third week [of the egg incubation period] was the time Mr. Walton began his irrigation season, and our water flow just about disappeared on us. The velocities in flow slowed down the silt that was being carried in the water and that was at a time when there was significant runoff from Mr. Walton's feedlot that year. All of this contamination and silt just buried the eggs and suffocated them. There was not enough velocity to keep the dissolved oxygen levels to remove the metabolic waste of the eggs. So we have to prevent that type of event occurring.").

concern.[83] Although Dr. Koch was concerned about both temperature and substrate, the primary driver for the actual water right quantification methodology appears to have been stream temperature.[84] When asked about the water requirements for No Name Creek, Dr. Koch responded that "we followed the temperatures very closely over the last six years," in order to determine the water quantities necessary to address the "problems . . . with warm temperatures when diversions have been made and low flow conditions occur."[85] During this time, the quantity claimed changed to protect the most vulnerable lifestage of fish in the stream. From May through the beginning of June, the Confederated Tribes claimed one cubic foot per second (cfs) "to maintain the temperatures below 58 degrees, which is the spawning temperature requirement."[86] The Tribes then claimed 2 cfs from June first through the middle of July "to maintain those temperatures during the warmer period as the season warms up."[87] Finally, the Tribes' claim dropped to 0.5 cfs for the remaining portion of the summer "to maintain temperatures below 68 degrees," which was the necessary temperature for the "rearing of the fry and fingerlings" that would be present in the stream during that time.[88] Overall, the quantity claimed totaled approximately 350 acre-feet per year.[89]

Although the quantities claimed were based primarily on the maintenance of temperature, they had a number of secondary benefits, including the maintenance of adequate food, oxygen, and clean substrate for spawning.[90] Dr. Koch testified that at

> the time Mr. Walton began his irrigation . . . [t]he velocities in flow slowed down the silt that was being carried in the water . . . . All of this contamination and silt just buried the eggs and suffocated them. There was not enough velocity to keep the dissolved oxygen levels to remove the metabolic waste of the eggs.[91]

Later, during trial, Dr. Koch testified that when the flow dropped "to about [0.3] cfs . . . the eggs all suffocated because there was not

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83 Deposition David Koch, *supra* note 42, at 31.

84 *Walton*, Test. D. Koch, *supra* note 71, at 571.

85 *Id.*

86 *Id.*; *see also* Deposition David Koch, *supra* note 42, at 31 (stating that "1.5 cubic feet per second would be required," for "spawning attraction [and] incubation" from early May through mid-July).

87 *Walton*, Test. D. Koch, *supra* note 71, at 571.

88 *Id.*; *see also* Deposition David Koch, *supra* note 42, at 32 (stating that "it would take .5 cubic feet per second to maintain the rearing areas and the habitat for the substrate and the food organisms to feed the young fish.").

89 *Walton III*, 752 F.2d 397, 404 (9th. Cir. 1985); *see also* Deposition David Koch, *supra* note 42, at 32.

90 Transcript of Record, *supra* note 82; Deposition David Koch, *supra* note 42, at 25, 31–32.

91 Deposition David Koch, *supra* note 42, at 25.

enough velocity to carry the waste products on by or over the egg."[92] The purpose of the quantities claimed was, at least partially, to "prevent that type of event [from] occurring" during the portion of the season where Lahonton redds would be present in the stream.[93] By keeping the streamflow above that point, the water rights not only ensured sufficiently low temperatures, but also the presence of clean water with sufficient velocity to maintain adequate habitat.[94]

Although the quantification methodology was rudimentary compared to modern approaches, *Confederated Colville Tribes v. Walton* broke ground in several respects. Foremost, it represents the first time that a court recognized non-consumptive reserved water rights for traditional tribal needs. As a result, it was also the first time the parties and a court grappled with the development of a quantification methodology. Until *Walton*, courts had limited tribal reserved water rights to water for agricultural needs—irrigation and grazing—along with concomitant water rights for domestic, commercial, municipal, and industrial uses.[95] And, although the Supreme Court had indicated in *Cappaert v. United States*[96] that the federal government may reserve water for a broad range of purposes including the protection of fish,[97] *Walton* was truly the path-making case for the tribal instream water rights cases that were to follow.

Further, *Walton* was the case that established the test for determining a tribe's *entitlement* to a reserved instream water right.[98] Like all reserved rights, the Ninth Circuit in *Walton* found that a tribe's entitlement to water rights is driven by the purposes for the creation of that Tribe's reservation.[99] To determine that purpose, the Ninth Circuit found that, "we consider the document and circumstances surrounding [the reservation's] creation, and the history of the Indians for whom it was created."[100] However, until *Walton*, the purpose-of-the-reservation test had not been applied to the question of entitlement to instream water rights for subsistence purposes.[101] The Ninth Circuit found a fishing purpose based upon the historical importance of fishing to the Confederated Tribes, stating that "[t]he Colvilles traditionally fished for

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92 Transcript of Record, *supra* note 82.

93 Deposition David Koch, *supra* note 42, at 25; *see also*, Transcript of Record, *supra* note 82 (indicating that a flow in excess of 0.3 cfs and closer to the natural flow of "about 1.2 to 1.5 cfs" is necessary to ensure sufficient velocity to carry waste products away from and prevent the suffocation of Lahonton redds).

94 Deposition David Koch, *supra* note 42, at 31.

95 *See, e.g.*, *Winters*, 207 U.S. 564, 576 (1908); *Arizona I*, 373 U.S. 546, 600 (1963); *Conrad Inv. Co.*, 161 F. 829, 831 (9th Cir. 1908); *Skeem*, 273 F. 93, 95 (9th Cir. 1921); *Hibner*, 27 F.2d 909, 910 (D. Idaho 1928); *Walker River Irr. Dist.*, 104 F.2d 334 (9th Cir. 1939), 340; *Ahtanum Irr. Dist.*, 236 F.2d 321, 321 (9th Cir. 1956).

96 426 U.S. 128, 128 (1976).

97 *Id.* at 140–42.

98 *Walton I*, 647 F.2d 42, 47 (9th Cir. 1981).

99 *Id.*

100 *Id.*

101 *Id.*

both salmon and trout. . . . [F]ishing was of economic and religious importance to them."[102] Importantly, the Ninth Circuit's approach considers not only the federal purpose for creating an Indian reservation but also the tribal intent behind setting aside their permanent homeland.[103] Although the specific verbiage has varied from case to case, all subsequent courts have followed *Walton*'s lead and looked to the history of the tribe and circumstances surrounding the creation of their reservation to discern the water rights the tribe would have intended to reserve.[104]

Shortly after the Confederated Tribes commenced the *Walton* litigation, their neighbors across the Columbia River, the Spokane Tribe, commenced its own water rights adjudication to determine the nature, extent, and priority of the water rights in the Chamokane Creek Basin.[105] Chamokane Creek originates to the north of the Spokane Reservation in the Huckleberry Mountains of Northeastern Washington State.[106] Its eastern bank makes the entire eastern boundary of the Spokane Indian Reservation, which runs a length of approximately 14.5 miles.[107] The stream hydrology is complex, with different reaches exhibiting drastically different flow patterns.[108] The initial two miles within the Reservation runs consistently throughout the year.[109] However, the next five miles are intermittent and dry during the summer months.[110] This continues until a three-mile reach of massive springs consistently contribute upwards of 20 cfs to the stream.[111] Three miles below the springs is Chamokane Creek Falls, which exists just a mile and a half from the mouth of Chamokane Creek before it enters the Spokane River.[112]

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102 *Id.* at 48.

103 *Id.* at 46–47.

104 *See, e.g.*, *Adair*, 723 F.2d 1394, 1409 (9th Cir. 1984) (finding that the purposes for the creation of the Klamath Reservation "depends on an analysis of the intent of the parties to the 1864 Klamath Treaty," and determining "one of the 'very purposes' of establishing the Klamath Reservation was to secure to the Tribe a continuation of its traditional hunting and fishing lifestyle," based upon "the historical importance of hunting and fishing" to the Klamath Tribe); *Anderson*, No. 3643, slip op. at 130 (E.D. Wash. July 23, 1979) (finding a reserved instream flow in Chamokane Creek based upon the "importance of Chamokane Creek to the Spokane Indians," for fishing purposes). *But see In re* Rights to Use Water in the Big Horn River Sys., 753 P.2d 76, 98 (Wyo. 1988) (finding an Indian tribe is entitled to instream flow water rights to protect fishing only where "the Indians were heavily, if not totally, dependent on fish for their livelihood").

105 *Anderson*, 736 F.2d 1358, 1361 (9th Cir. 1984).

106 Complaint at 2, United States v. Anderson, No. 3643 (E.D. Wash. May 5, 1972) [hereinafter *Anderson*, Complaint].

107 *Id.*

108 *Id.* at 3.

109 Memorandum in Opposition and Order at 3, United States v. Anderson, No. 3643 (E.D. Wash. July 23, 1979) [hereinafter *Anderson*, Memorandum Opinion].

110 *Id.*

111 *Id.*

112 *Id.*

This hydrological complexity was a driving factor leading to the *United States v. Anderson*[113] litigation.[114] Although the portion of Chamokane Creek between the springs and confluence with the Spokane River proved to be an ideal trout fishery,[115] it is often short of water and unbearably warm for trout habitat during the summer months.[116] The fishery therefore relies on the consistently cool water that discharges from the springs into Chamokane Creek.[117] Over time, however, the flow in both Chamokane Creek per se and the springs that feed it was beginning to decrease as more water permits were being issued by the Washington State Department of Ecology.[118] Additionally, the Department of Ecology was increasing the rate at which it was authorizing new water uses.[119] The result was an ever-decreasing average flow in Chamokane Creek during the critical low-flow periods in the summer.[120] More concerning for fish habitat, groundwater withdrawals were causing discharge from the springs into the creek to decrease.[121] Eventually, this caused the United States to file suit to protect the prior rights it held on behalf of the Spokane Tribe for a series of uses, including an instream flow claim for the maintenance of 30 cfs in Chamokane Creek to maintain the fishery.[122]

The United States retained Mr. Richard Navarre to develop the instream water rights claims for the United States and the Tribe.[123] Navarre served as assistant program manager of the Northwest Fisheries Program, which was a field office of the U.S. Fish and Wildlife Service under the Department of the Interior.[124] The purpose of this program was to "provide technical assistance to Indian tribes [and the federal government] . . . on Indian reservations . . . military areas and

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113 736 F.2d 1358 (9th Cir. 1984).

114 *Anderson*, Memorandum Opinion at 4.

115 Transcript of Record at 424, United States v. Anderson, No. 3643 (E.D. Wash. Feb. 13, 1976) [hereinafter *Anderson*, Test. R. Navarre]; Brief of the State of Washington, Department of Ecology at 24, United States v. Anderson, No. 3643 (E.D. Wash. Mar. 29, 1977) [hereinafter *Anderson*, Brief of the State of Washington]; Brief of the United States in Support of its Claims at 37, United States v. Anderson, No. 3643 (E.D. Wash. Dec. 30, 1976) [hereinafter *Anderson*, Brief of the United States]; Brief of the Spokane Indian Tribe at 53, United States v. Anderson, No. 3643 (E.D. Wash. Jan. 3, 1977) [hereinafter *Anderson*, Brief of the Spokane Tribe].

116 *Anderson*, Test. R. Navarre, *supra* note 115, at 452–53.

117 *Id.*

118 *Anderson*, Complaint, *supra* note 106, at 7; *see also Anderson*, Brief of the Spokane Tribe, *supra* note 115, at 76.

119 *Anderson*, Complaint, *supra* note 107, at 9–10, 11.

120 *Anderson*, Brief of the Spokane Tribe, *supra* note 115, at 76.

121 *Anderson*, Judgment, *supra* note 106, at 4; *see also Anderson*, Brief of the Spokane Tribe, *supra* note 115, at 76.

122 *Anderson*, Complaint, *supra* note 106, at 5.

123 *Anderson*, Test. R. Navarre, *supra* note 115, at 413; *Anderson*, Brief of the United States, *supra* note 115, at 81; *Anderson*, Brief of the Spokane Tribe, *supra* note 115, at 81; Reply Brief of the United States at 21, *Anderson*, 591 F. Supp. 1 (E.D. Wash. 1982) (No. 3643) [hereinafter *Anderson*, Reply Brief of the U.S.].

124 *Anderson*, Test. R. Navarre, *supra* note 115, at 413–14.

national parks [throughout the Northwestern United States]."[125] Navarre was tasked with conducting a study on the Chamokane Creek watershed—performing field work on nine occasions[126]—to determine "the amount of flow necessary to maintain a quality trout fishery in the stream."[127] Navarre set up three data collection points along Chamokane Creek, where he conducted various studies to determine the status of the creek's fish content,[128] food supply,[129] stream substrate habitat area,[130] temperature,[131] and water quality (dissolved oxygen, pH, and alkalinity).[132]

Navarre's method involved the identification of the "limiting factor" to expansion of the fish population.[133] The theory behind this method is that "[t]he stream eventually can just produce so many pounds of fish per acre, and somewhere there's a limiting factor on that population. It might be food, or it might be something else."[134] After conducting his field studies, Navarre concluded that the limiting factor at Chamokane Creek was temperature and stream habitat area.[135] Specifically, Navarre found that reduced flows allowed "additional areas of the streambed [to become exposed], which is then out of production."[136] As a result, "the aquatic insects on which the fish feed could no longer live in these sections, so it . . . reduce[s] the total food supply."[137]

The largest concern, however, was the affect that stream temperature in Chamokane Creek was having on the fish population in the lower portion of the stream.[138] The critical threshold temperature for

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125 *Id.* at 414.

126 *Anderson*, Reply Brief of the U.S., *supra* note 123.

127 *Anderson*, Test. R. Navarre, *supra* note 115, at 424.

128 *Anderson*, Reply Brief of the U.S., *supra* note 123.

129 *Anderson*, Test. R. Navarre, *supra* note 115, at 427, 449–50; *see also Anderson*, Brief of the United States, *supra* note 115, at 35–36; *Anderson*, Brief of the Spokane Tribe, *supra* note 115, at 81; *Anderson*, Reply Brief of the U.S., *supra* note 123.

130 *Anderson*, Test. R. Navarre, *supra* note 115, at 448. The food supply in the substrate habitat area compared favorably to other rivers but, despite that, there was a noticeable lack of trout and any reduction in flow threatened the existing food supply. *Anderson*, Brief of the United States, *supra* note 115, at 35–36.

131 *Anderson*, Test. R. Navarre, *supra* note 115, at 426, 433; *see also Anderson*, Brief of the United States, *supra* note 115, at 36 (explaining that the trout population in Chamokane Creek was diminished as a result of the heightened temperature which, in turn, was caused by the sub-opitmal flow volume); *Anderson*, Brief of the Spokane Tribe, *supra* note 115, at 81–82; *Anderson*, Reply Brief of the U.S., *supra* note 123, at 21.

132 *Anderson*, Test. R. Navarre, *supra* note 115, at 450–51; *see also Anderson*, Brief of the Spokane Tribe, *supra* note 115, at 81; *Anderson*, Reply Brief of the U.S., *supra* note 123, at 21.

133 *Anderson*, Test. R. Navarre, *supra* note 115, at 475.

134 *Id.*

135 *Id.* at 491.

136 *Id.* at 492.

137 *Id.* at 427; *see also Anderson*, Brief of the United States, *supra* note 115, at 35–36 ("Any reduction in flow in the creek during the summer . . . will expose areas of the stream thus reducing the food production potential.").

138 *See Anderson*, Test. R. Navarre, *supra* note 115, at 440–43.

the trout population in Chamokane Creek is 68°F.[139] Above this temperature fish become increasingly stressed because "the metabolic rate of that fish increases, [its] oxygen consumption goes up, [its] respiratory functions go up, and produces more carbon dioxide in [its] blood system . . . [its] heartbeat is faster, [its] blood circulates faster, [its] enzyme digesting actions increase . . . ."[140] Furthermore, these fish become increasingly susceptible to predation and disease as temperatures increase.[141] Eventually, this stress becomes so great the fish can no longer swim against the stream current, causing them to be washed downstream into presumably even warmer waters.[142] Once washed downstream, the fish rarely are able to return, causing these fish to eventually perish.[143] Temperatures affect the stream's brood stock first, which precludes the fish populations from sustaining themselves.[144] Eventually, even the adult fish weaken and are washed downstream.[145] The outcome in Chamokane Creek was "a noticeable lack of trout in that area of the creek as a result of the excessive water temperature in spite of the existence of pools and an abundant food supply."[146]

The goal, therefore, became to determine the quantity of water necessary to maintain Chamokane Creek at a temperature of 68°F or lower.[147] Navarre observed the warmest water temperature at the lowest observation station to be 75°F, which was 7°F warmer than the target temperature.[148] Navarre noted that this temperature occurred at a flow of twenty-two cfs.[149] In contrast, the water coming from the springs that feeds Chamokane Creek was at a constant temperature of 47°F,[150] a difference of 28°F.[151] As a result, Navarre concluded, "if we [want] to maintain the temperature [at] 68 degrees, we should have had 7 degrees less, or 7/28, which is equivalent to one-quarter . . . less temperature degrees."[152] Navarre determined there existed a linear but inverse relationship between streamflow and temperature; "when the temperature was up, the flow was down, and when I had low

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139 *Id.* at 446; *Anderson*, Brief of the United States, *supra* note 115, at 36.

140 *Anderson*, Test. R. Navarre, *supra* note 115, at 440.

141 *Id.* at 443.

142 *Id.* at 439–41; *Anderson*, Brief of the United States, *supra* note 115, at 36.

143 *Anderson*, Test. R. Navarre, *supra* note 115, at 443.

144 N.W. Pankhurst & H.R. King, *Temperature and Salmonid Reproduction: Implications for Aquaculture*, 76 J. FISH BIOLOGY 69, 71–72, 82 (2010); *Anderson*, Test. R. Navarre, *supra* note 115, at 441–42.; *see also Anderson*, Brief of the Spokane Tribe, *supra* note 115, at 82 ("with any repetition over the years of the conditions of low flows and high temperatures . . . the stream would be virtually destroyed as a trout fishery.").

145 *Anderson*, Test. R. Navarre, *supra* note 115, at 441–42.

146 *Anderson*, Brief of the United States, *supra* note 115, at 36.

147 *Anderson*, Test. R. Navarre, *supra* note 115, at 453.

148 *Id.* at 454.

149 *Id.* at 505.

150 *Id.*

151 *Id.*

152 *Anderson*, Test. R. Navarre, *supra* note 115, at 505.

temperatures, there were higher flows."[153] As a result, in order to decrease the water temperature by 25%, Navarre estimated there needed to be a 25% increase in the flow in Chamokane Creek.[154] A 25% increase in flow over the observed 22 cfs required an additional 5.5 cfs.[155] Finally, Navarre added an additional 2.5 cfs to compensate for other factors:

> [W]hen you add another quarter of water to a stream, it's going to spread out more. And, so, this is going to result in more surface area of the stream exposed to solar radiation or to the air, which you might gain heat by conduction. And I also said that the air temperatures on that particular day were lower than the historical highs for that particular day. So, that sometime in the future, if this particular day again occurs and the air temperature is up near historical high, we might expect that water to get even warmer than it did on [that day].[156]

As a result, the United States ultimately claimed a quantity of 30 cfs to maintain Chamokane Creek.[157]

The State of Washington Department of Ecology's (Ecology's) primary argument was that a reserved instream water right in Chamokane Creek to support a trout fishery was not necessary to fulfill the purpose of the Spokane Reservation.[158] Ecology argued the Spokanes historically fished for Salmon in the Columbia and Spokane Rivers, with a limited salmon fishery in the lowest mile of Chamokane Creek as it flowed into the Spokane River.[159] In contrast to its salmon fishing practices, Ecology maintained that "[t]here is very little evidence of historical use [by the Spokane Tribe] of the trout fishery," in Chamokane Creek.[160] According to Ecology, what little evidence that did exist suggested that the trout fishery was "not a large scale fishery . . . on which the Spokanes depend for their livelihood."[161] Instead, Ecology argued, the Spokanes only rarely fished for resident fish in Chamokane Creek during the winter months and only when necessary to supplement other means of subsistence.[162] As a result, Ecology stressed that the only water right that could arguably be implied would have been appurtenant to the Spokanes' right to fish for salmon.[163] However, Ecology concluded that even assuming this right once existed, it was

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153 *Id.* at 452; *see also*, *Anderson*, Brief of the United States, *supra* note 115, at 36 ("The temperature of the water flowing in Chamokane Creek is inversely proportional to the volume, i.e. . . . more water means a lower temperature.").

154 *Anderson*, Test. R. Navarre, *supra* note 115, at 454, 505.

155 *Id.*

156 *Id.* at 454–55, 505–06.

157 *Id.* at 455, 506.

158 *Anderson*, Brief of the State of Washington, *supra* note 115, at 20–22.

159 *Id.* at 20–21.

160 *Id.* at 22.

161 *Id.* at 23.

162 *Id.* at 22–23.

163 *Id.* at 22.

terminated with the extirpation of the salmon in the upper Columbia River Basin with the construction of Grand Coulee Dam.[164] Ecology claimed that the Tribe had been compensated for this loss through the reservation of exclusive fishing zones on Lake Roosevelt and through the Indian Claims Commission process.[165] From this, Ecology concluded "[a]ny needs for waters to satisfy such alleged reserved purposes being eliminated, it follows the water rights to such purposes also terminate."[166]

In the alternative, Ecology attacked the federal methodology for quantifying the instream water right, arguing that the quantity reserved should be minimal, given how "limited [the] trout fishery" was for the Spokanes at the time the reservation was created.[167] First, Ecology questioned the proper threshold temperature for the water right, contending it should be 77°F—the temperature where the trout would perish—rather than 68°F.[168] Second, Ecology pointed out that—even at the 68°F threshold—only the bottom mile of Chamokane Creek exhibited issues related to temperature, with the remaining five miles above the falls consistently remaining below 68°F.[169] Even in the lower reach the temperature only exceeded 68°F for a few hours on nine different days throughout the time data were collected.[170] The intersection of these factors caused Ecology to question whether the overall "effects in this small part of the fishery are so adverse as to violate the reserved rights of the Tribe in this limited trout fishery."[171]

Ultimately, Ecology maintained that the State of Washington's instream flow water right of 20 cfs was sufficient to "protect[] this limited fishery on the creek . . . ."[172] They admitted that "[t]he fishery protected by the 20 cfs minimum flow may not be as good below the falls as above, but the fishery above the falls is thriving in excess of what was 'reserved' at the time of creation of the reservation."[173] As a result, Ecology concluded "not only that the evidence does not show that a 30 cfs minimum flow is necessary but that a 20 cfs flow fulfills the purpose of the reservation and more."[174]

The court summarily dismissed Ecology's arguments regarding the purpose for the creation of the Spokane Reservation.[175] The court's holding was based upon three factors, the combination of which

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164 *Id.*

165 *Id.* at 21 & n.15, 22.

166 *Id.* at 22.

167 *Id.* at 24; *see also*, *id.* at 23 ("At most, it is a fishery to *supplement* an already abundantly available food supply *during the winter months*.").

168 *Id.* at 24.

169 *Id.*

170 *Id.* at 24–25.

171 *Id.* at 24.

172 *Id.* at 23.

173 *Id.* at 25.

174 *Id.* at 23.

175 *See generally Anderson*, Complaint, *supra* note 106, at 9–10.

demonstrated joint federal–tribal intent to reserve instream water rights for fish at the time the Spokane Reservation was created.[176] Foremost, the court acknowledged the historical importance to the Spokane Tribe of the fishery in Chamokane Creek, observing that "The Spokanes . . . reserved the exclusive right to take fish from the part of Chamokane Creek contained within the reservation . . . ."[177] The court likewise recognized that, for its part, "[t]he United States acknowledged the importance of Chamokane Creek to the Spokane Indians by setting the eastern boundary of the reservation at the eastern bank of the creek, thus including the breadth of the waterway within the reservation."[178] Finally, the court highlighted the Tribe's contemporary use of the Chamokane Creek fishery, pointing out that "[f]ish remain a staple food in the diet of the Spokane Indians. . . . many Indians catch and use the native trout as a food source."[179] As a result, the court held that "the Tribe has the reserved right to sufficient water to preserve fishing in Chamokane Creek."[180]

The court was more circumspect about the actual quantity necessary to "preserve fishing in Chamokane Creek." Although it agreed with the United States and the Tribe that "the quantity of water needed to carry out the reserved fishing purposes is related to water temperature rather than simply to minimum flow," and that "[t]he native trout cannot survive at a water temperature in excess of 68°F," it did not ultimately agree that 30 cfs was necessary to maintain the appropriate temperature in Chamokane Creek.[181] Instead, more consistent with the arguments made by Ecology, the court found that "[t]he minimum flow from the falls into Lower Chamokane Creek which will maintain the water at 68°F varies, but is at least 20 cfs."[182] However, the court did not agree that the State's minimum instream flow water right was sufficient to fulfill the purpose of the Spokane Reservation.[183] Instead, the court held "the plaintiffs have a reserved right to sufficient water to maintain the water temperature below the falls at: 68°F or less, provided that at no time shall the flow past the falls be less than 20 cfs."[184] Recognizing the uncertainty inherent in its decision, however, the court left the decree open, allowing "the Tribe to apply for a modification of the judgment on showing a change in circumstances resulting in a greater need for water."[185]

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176 Order Modifying Memorandum Decision at 1–2, United States v. Anderson, 591 F. Supp. 1 (E.D. Wash. 1982) (No. 3643).
177 *Anderson*, Complaint, *supra* note 106, at 10.
178 *Id.* at 9–10.
179 *Id.* at 10
180 *Id.*
181 *Id.*
182 *Id.*
183 *Id.*
184 *Id.*
185 *Id.* at A-2.

C. Big Horn: The First Use of IFIM—But is Fishing a Purpose of the Reservation?

Commenced in 1977, the *Big Horn* adjudication was one of the first in a generation of large-scale general stream adjudications involving Indian tribes and one of the few that was litigated from start to finish.[186] A 37-year undertaking involving six trips to the Wyoming Supreme Court, as well as review by the United States Supreme Court, the *Big Horn* adjudication laid much of the initial groundwork for quantification methodologies other adjudications would later follow.[187] *Big Horn*'s impact has been particularly important for the quantification of reserved water rights for irrigation purposes using the practicably irrigable acreage standard.[188] However, less well-known is its development of the quantification standard for reserved minimum flows for fish.[189] This is likely due to the fact that the Wyoming Supreme Court ultimately found fishing was not a purpose of the creation of the Wind River reservation because—in the view of the court—the Eastern Shoshone lacked a "dependency upon fishing for a livelihood nor a traditional lifestyle involving fishing . . . ."[190] As a result, the Wyoming Supreme Court concluded "[t]he evidence is not sufficient to imply a fishery flow right absent a[n expressed] treaty provision."[191]

Nonetheless, the methodology employed before the Special Master to quantify the claimed minimum stream flows remains instructive. It is worth noting just how cutting-edge this methodology was in the late 1970s. The methodology had only been developed a few years prior,[192] and—at the time evidence was being taken—was still being described as an "ephemeral field so new within the last four or five years of devising a system to try to arrive at a conclusion as to . . . a flow recommendation."[193] The methodology was developed by David Allen

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186 *Big Horn I*, 753 P.2d 76, 84 (Wyo. 1988).

187 *See generally* Rachael Paschal Osborn, *Native American Winters Doctrine and Stevens Treaty Water Rights: Recognition, Quantification, Management*, 2 AM. INDIAN L.J. 76, 89 (2013) (using *Big Horn* cases as a cautionary example for future Tribes attempts to manage their own water resources); *see also Big Horn I*, 753 P.2d at 112; Wyoming v. United States, 492 U.S. 406, 407 (1989); *In re* Rights to Use Water in the Big Horn River System, 803 P.2d 61, 70 (Wyo. 1990); *In re* Rights to Use Water in the Big Horn River System, 835 P.2d 273 (Wyo. 1992); *In re* Rights to Use Water in the Big Horn River System, No. 4993 (Wyo. Oct. 26, 1993) (order dismissing appeal) [hereinafter *Big Horn IV*]; *In re* Rights to Use Water in the Big Horn River System, 899 P.2d 848, 849 (Wyo. 1995); *In re* Rights to Use Water in the Big Horn River System, 48 P.3d 1040, 1042 (Wyo. 2002).

188 *Big Horn I*, 753 P.2d at 101.

189 *Id.* at 98.

190 *Id.*

191 *Id.*

192 MILHOUS ET AL., *supra* note 24, at I.4.

193 Transcript of Record Vol. 72 at 6409, *In re* Rights to Use Water in the Big Horn River System, No. 4993 (D. Wyo. June 2, 1981) [hereinafter *Big Horn*, Test. D. Vogel (Part II)].

Vogel, a fishery management biologist with the FWS.[194] Vogel was assigned by the Department of Justice the task of developing instream flow quantities necessary to maintain "fish resources in selected rivers and streams on the Wind River Indian Reservation."[195] To achieve this, Vogel used "the IFG incremental methodology," which he argued "has advantages over [other] methods . . . in that it quantifies fish habitat. It gives the biologist an indication of what [the affect of] an incremental increase or decrease of flow would have on . . . fish habitat."[196]

The methodology before the Special Master in *Big Horn* is strikingly similar to the methodology used in litigation today.[197] The method began with the selection of claim reaches and study sites.[198] Once these study sites were selected, transects were placed and "measurements of hydraulic and habitat characteristics" were collected, as well as data for stream velocity, depth, and substrate material.[199] The velocity, depth, and other hydraulic data were input into a hydraulic computer model, which allowed the modelers to "actually simulate the stream," velocity and depth at streamflows other than those directly observed.[200] Finally, the modelers were able to "tie [the hydraulic parameters] in with what fish actually prefer," by comparing known habitat preferences for velocity, depth, and substrate material to those simulated at various flows.[201]

Other than repeatedly reminding the Special Master of the "preliminary" nature of the IFIM methodology, the State of Wyoming did not directly attack its use as an inappropriate method for quantifying reserved instream flow water rights.[202] Instead, the State's attack on the instream flow claims was threefold: it argued 1) the reserved right to fishing was not a purpose for the creation of the Wind River Reservation;[203] 2) Vogel's application of the IFIM methodology

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194 *Big Horn*, Test. D. Vogel (Part I), *supra* note 27, at 6322–29. Vogel's resume was filed with the court as United States Exhibit WRIR-C-279.

195 *Id.* at 6337. Vogel's expert report was filed with the court as United States Exhibit WRIR-C-280.

196 *Id.* at 6346.

197 *See* Dylan R. Hedden-Nicely, *The Contemporary Methodology for Quantifying Reserved Instream Flow Water Rights to Support Aquatic Habitat*, 50 ENVTL. L. 257, 264 (2020).

198 *Big Horn*, Test. D. Vogel (Part I), *supra* note 27, at 6360–75.

199 *Id.* at 6360, 6375–91.

200 *Id.* at 6360; *see also Big Horn*, Test. D. Vogel (Part II), *supra* note 193, at 6430–31, 6473–78.

201 *Big Horn*, Test. D. Vogel (Part I), *supra* note 27, at 6360; *see also*, *Big Horn*, Test. D. Vogel (Part II), *supra* note 193, at 6431–35, 6438–40, 6444–63.

202 Transcript of Record Vol. 163 at 15,253, *In re* Rights to Use Water in the Big Horn River System, No. 4993 (D. Wyo. Dec. 17, 1981) [hereinafter *Big Horn*, Test. J. Sinning].

203 *Big Horn I*, 753 P.2d 76, 94–99 (Wyo. 1988). Although Special Master Roncalio rejected this argument, it was the argument that eventually carried the day for the State of Wyoming. However, the veracity of this argument is beyond the scope of this Article as it went to the Tribes' and United States' *entitlement* to water rights rather than the quantity of water necessary to fulfill a fishing purpose. *See also Big Horn*, Test. D. Vogel (Part I), *supra* note 27, at 6338–40.

was flawed and fraught with errors;[204] and 3) reservation of the Tribes' water rights, in the aggregate, would have a significant impact on non-Indian water rights.[205]

The State's primary approach in arguing against the claimed quantities for instream flow purposes was to try to undermine Vogel's methodology through the use of its own expert, James Arthur Sinning.[206] Generally, Sinning argued that Vogel miscalibrated the velocity component of the model, which would have significant impacts on the overall outcome of the quantities claimed.[207] Going further, the State argued that "Mr. Vogel did not attempt to verify the computer predictions resulting from his application of the Incremental Methodology."[208] Sinning also argued that, despite the federal team spending over sixty days in the field collecting data, "the field work was not adequate, [and/or] that it was done incorrectly."[209] He also argued that some locations where study transects were selected had unstable bed profiles, causing either stream channel degradation or aggradation.[210] Such a condition is problematic as a stable bed profile is a necessary assumption for proper modeling under the incremental method.[211] Similarly, the State argued that Vogel failed to consider water quality and food availability, both of which it asserted were necessary for "proper application of the IFG Incremental Methodology."[212] Another attack leveled against Vogel's work was that he did not develop his own site-specific habitat criteria, choosing instead to rely upon "species preference curves developed outside of Wyoming," failed to include temperature preference curves, and "Mr. Vogel modified the fish preference curves he used so as to require . . . increased flows."[213] The State likewise argued that the flows recommended by Vogel in several claim reaches were greater than 1) the amount actually claimed by the United States; 2) the actual amount of

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204 *Big Horn*, Test. J. Sinning, *supra* note 202, at 15,262–75.

205 *See generally* Transcript of Record Vol. 104, at 9558–59, *In re* Rights to Use Water in the Big Horn River System, No. 4993 (D. Wyo. Sept. 4, 1981) [hereinafter *Big Horn*, Test. G. Fassett (Part I)]; Transcript of Record Vol. 105, at 9956–57, *In re* Rights to Use Water in the Big Horn River System, No. 4993 (D. Wyo. Sept. 21, 1981) [hereinafter *Big Horn*, Test. G. Fassett (Part II)]; Transcript of Record Vol. 162, at 15131–33, *In re* Rights to Use Water in the Big Horn River System, No. 4993 (D. Wyo. Dec. 17, 1981) [hereinafter *Big Horn*, Test. G. Fassett (Part III)].

206 *See Big Horn*, Test. J. Sinning, *supra* note 202, at 15,262–75.

207 *Id.* at 15,274–75.

208 Report of the Special Master Concerning the Reserved Water Right Claims By and on Behalf of the Tribes of the Wind River Indian Reservation, Wyo., App. A: Proposed Findings of Fact, Conclusions of Law, Judgment and Interlocutory Decree, Part VI, at 1486, *In re* Rights to Use Water in the Big Horn River System, No. 4993 (D. Wyo. April 12, 1982) [hereinafter *Big Horn*, App. A, Special Master Report].

209 *Big Horn*, Test. J. Sinning, *supra* note 202, at 15,274–75.

210 *Id.* at 15,270–71.

211 *Id.* at 15,266; *see also*, *Big Horn*, App. A, Special Master Report, *supra* note 208, at 1486.

212 *Big Horn*, App. A, Special Master Report, *supra* note 208, at 1486.

213 *Id.* at 1487.

flow measured by the United States Geological Survey; and/or 3) the natural flow of the reach, as estimated by the federal hydrological expert Mr. Mike Keene.[214]

In undermining the claims in specific reaches, Sinning asserted that Vogel chose the wrong substrate for some reaches where claims were made.[215] He also argued that certain model runs predicted velocities in excess of forty miles per hour, an excessive velocity wherein the available "substrate would wash away."[216] In other reaches, he argued that the study site chosen "was not representative of the claim reach . . . ."[217] Further, Sinning alleged that the United States "did not determine if there was, in fact, a fish population present," in the reaches where instream flows were claimed.[218] He also argued that "the claimed flows don't add up, or [spontaneously] change with no source [adding or subtracting water] . . . . If there is no tributary, or if you have a tributary coming in . . . it should add up to what is below the tributary."[219] In some cases, Sinning also found that more water than was claimed in the upstream reaches would be necessary to meet claimed quantities in reaches further downstream.[220] Finally, Mr. Sinning proposed his own quantification methodology, which consistently resulted in lower quantities of water being necessary to maintain fish habitat.[221] In one specific reach, he found that the United States was "claiming 44.44 percent [of annual flow] as an optimum flow. Other methodologies, including the one we used, have said that 30 percent is an adequate flow to maintain a good fishery."[222] From this, Sinning concluded that the federal claims required "an unreasonable percentage of the average annual virgin flow."[223]

The State also made a more insidious argument: that the Tribes' water rights, if decreed as claimed, would significantly interfere with existing non-Indian water rights appropriated under state law.[224] The Supreme Court has consistently ruled that entitlement to federal reserved water rights is wholly independent from impacts on non-Indian water rights.[225] Rather than taking this precedent head-on, the State instead presented a witness, Gordon W. Fassett, who produced a model

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214 *Id.* at 1484.

215 *Big Horn*, Test. J. Sinning, *supra* note 202, at 15,264.

216 *Id.* at 15,265–66.

217 *Id.* at 15,275.

218 *Id.* at 15,267.

219 *Id.* at 15,271.

220 *Id.*

221 *Id.* at 15263, 15267–68.

222 *Id.* at 15273.

223 *Id.*

224 *Id.*; *Big Horn*, Test. G. Fassett (Part I), *supra* note 205, at 9536; *Big Horn*, Test. G. Fassett (Part II), *supra* note 205, at 9582.

225 *Winters*, 207 U.S. at 575–576; *Cappaert*, 426 U.S. at 138–39; New Mexico v. Aamodt, 537 F.2d 1102, 1113 (9th Cir. 1976); *Big Horn I*, 753 P.2d at 112; In the Matter of the Determination of the Rights to the Use of the Surface Waters of the Yakima River Drainage Basin, 850 P.2d 1306, 1317 (Wash. 1993).

that estimated under a variety of scenarios whether there was sufficient water to service all reserved rights and state-based rights.[226] One modeled scenario examined whether sufficient water would exist if all reserved water rights claimed were decreed with a priority date of July 3, 1868—the date of the creation of the Wind River Reservation.[227] In that scenario, Mr. Fassett testified that the Tribes' water rights could have a significant impact on non-Indian water rights appropriated under state law.[228] The State then put on evidence to argue that the priority date for many of the Tribes' reserved water rights should be later than 1868 and Mr. Fassett modeled a second scenario wherein he assumed that the Special Master adopted those later priority dates.[229] The State presented this scenario as a middle ground that would "result in little, if any, conflicts between any promises which may have been made to the Indians, and any promises which may have been made to all the persons who settled on the public domain."[230] Later, in its trial brief, the State went so far as to argue that *no* instream flow water rights should be decreed because "the flows remaining in the [claim] reaches . . . [after all other water rights were satisfied] would be adequate to maintain the fishery."[231] The United States strongly objected to submission of the evidence regarding this second model run, arguing that the State was attempting to give the Special Master "a way out," that allowed him to decree the tribal reserved water rights in a way that "won't affect any [state-based] water rights."[232]

It is not clear the degree to which Special Master Roncalio relied upon this argument. Although he ultimately allowed the submission of Fassett's testimony, he did not expressly rely upon it in his decision regarding the instream flow claims.[233] Instead, the Special Master affirmed the federal claims and the United States' use of the IFIM methodology.[234] At the same time though, the Special Master noted the method "is still not so certain in its conclusions as to be given flows in the amounts recommended."[235] His ultimate decision was based upon a number of factors.[236] First, he had already found that the Tribe was

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226 *See generally Big Horn*, Test. G. Fassett (Part I), *supra* note 205, at 9543–69; *Big Horn*, Test. G. Fassett (Part II), *supra* note 205, at 9582–656; *Big Horn*, Test. G. Fassett (Part III), *supra* note 205, at 15,177–219.

227 *Big Horn*, Test. G. Fassett (Part II), *supra* note 205, at 9621–22.

228 *Id.* at 9616–17.

229 *Id.* at 15,132.

230 *See generally Big Horn*, Test. G. Fassett (Part III), *supra* note 205, at 15,177–219.

231 *Big Horn*, App. A, Special Master Report, *supra* note 208, at 1492.

232 *Big Horn*, Test. G. Fassett (Part III), *supra* note 205, at 15193–94.

233 *See* Report Concerning Reserved Water Right Claims By and On Behalf of the Tribes of the Wind River Indian Reservation, Wyo. at 242–50, *In re* Rights to Use Water in the Big Horn River System, No. 4993, (5th Dist. Wyo. Dec. 15, 1982) [hereinafter *Big Horn*, Special Master Report].

234 *Id.* at 248.

235 *Id.*

236 In addition to the factors listed, his decision also seemed to have been colored by his observation that "fishing on the reservation, while at one time solely what is described as

entitled to 50% of the flow in certain headwater streams for aesthetic and wildlife purposes that fed into the reaches where instream flow claims were made for fish.[237] He found those water rights would "inevitably benefit and inure to the various forks [of certain streams where instream claims were made.]"[238] As a result, the Special Master reasoned that an in-kind reduction was warranted for the instream flow claims for fish in those reaches.[239] Second, he placed weight in the testimony of Sinning that the federal claims for "optimal habitat" were in excess of what "would be [an] adequate flow to maintain a good fishery."[240] The Special Master noted that affirming the federal claims "is to accept what one expert says is maximizing the case for fishing, and another of equal qualification says is an obviously excessive flow."[241] In the Special Master's view, this amounted to "the subtle advancement and purpose to be the 'maximization' of a goal rather than the establishment of normal or ordinary levels."[242] Finally, he expressed concern that on certain reaches the United States had failed to provide "statistics to show fish experience [i.e., presence] or usage [i.e., fishing by tribal members] on these reaches."[243] As a result of these three factors, the Special Master ultimately recommended water rights for instream flow purposes that were between 40% and 60% of the amount claimed by the United States and the Tribe.[244]

D. Acquavella*: The First Use of IFIM/PHABSIM—"Diminished" but Resilient Water Rights*

In the same year Wyoming commenced its adjudication of the Big Horn River system, the State of Washington commenced an adjudication of all surface waters of the Yakima River and its tributaries.[245] A tributary of the Columbia River, the Yakima River watershed drains nearly ten percent of the entire land area of the State of Washington.[246] The River finds its source in the Cascade Mountains and flows east and south for approximately 215 miles, whereupon it drains into the Columbia River near Richland, Washington.[247] Many streams feed the

subsistence fishing, of latter years has become a profit making proposition for the tribes." *Id.* at 246. However, aside from mentioning this fact, he does not go into detail as to whether it affected his ultimate decision. *Id.*

237 *Id.* at 248.

238 *Id.*

239 *Id.* at 249.

240 *Id.* at 248

241 *Id.* at 246.

242 *Id.* at 242.

243 *Id.* at 249.

244 *Id.*

245 Dep't of Ecology v. Yakima Reservation Irrigation Dist. (*Acquavella*), 850 P.2d 1306, 1309 (Wash. 1993).

246 Sidney P. Ottem, *The General Adjudication of the Yakima River: Tributaries for the Twenty-First Century and a Changing Climate*, 23 J. ENVTL. L. & LITIG. 275, 279 (2008).

247 *Id.*

Yakima along the way; some of its major tributaries include the Naches, Tieton, Teanaway, Wenas, Ahtanum, and the Cowiche.[248]

Although precipitation varies widely, the lower basin is arid in nature, with much of the rain that occurs coming outside of the irrigation season.[249] Despite this, the area is considered to have "outstanding agricultural opportunities."[250] In fact, "[a]griculture is the single major use in the eastern and southern portions of the basin."[251] The United States Bureau of Reclamation has long had a presence in the Basin, working since the passage of the Reclamation Act to develop federal irrigation projects to support primarily non-Indian farmers and ranchers.[252] As a result, the Basin is also home to as many as 40,000 non-Indian water users who use water from the Yakima River and its tributaries for irrigation and other consumptive purposes.[253]

However, for much longer, the Yakima Basin has been home to the people of the Yakama Nation,[254] who have lived in the region since time immemorial.[255] The people of the Yakama Nation are a fishing people, relying on resident and anadromous fish for their cultural, spiritual, and physical survival. Particularly relevant to this case, the Basin is home to various species of anadromous fish including spring and fall chinook salmon and steelhead.[256] Protection of the unique relationship its people have to these fish was foremost on the minds of the Yakama

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248 *Id.; see also* U.S. BUREAU OF RECLAMATION, INTERIM COMPREHENSIVE BASIN OPERATING PLAN FOR THE YAKIMA PROJECT WASHINGTON 2-1 (2002), https://perma.cc/9XQC-HQDN.

249 U.S. BUREAU OF RECLAMATION, *supra* note 248, at 2-1 to 2-3.

250 Ottem, *supra* note 246, at 280.

251 U.S. BUREAU OF RECLAMATION, *supra* note 248, at 2-1.

252 *Acquavella*, 850 P.2d 1306, 1311–12 (Wash. 1993).

253 Osborn, *supra* note 187, at 99.

254 The Yakama Nation is a confederation of tribes, including the Li-ay-was, Kow-was-say-ee, Kah-milt-pah, Oche-chotes, Klickitat, Se-ap-cat, Klinquit, Shyiks, Palouse, Wenatshapam, Yakama, Skinpah, Pisquose and Wishram peoples. Treaty with the Yakamas, 12 Stat. 951 (1855).

255 *Id.*; Yakama Nation, *Yakama Nation History*, https://perma.cc/7298-TM2Y (last visited Jan. 25, 2020); *see also* U.S. BUREAU OF RECLAMATION, *supra* note 248, at 2-1 ("The entire basin lies within areas either ceded to the United States by the Yakama Nation (YN) or areas reserved for their use.").

256 *Acquavella*, Aff. D. Simmons, *supra* note 73, at 2–3. Simmons observed that "[s]pring chinook enter the Yakima River as adults during spring when flows are naturally high and migrate to the upper reaches of the Yakima and Naches River and their respective tributaries. They spawn from late July through October, when stream flows are naturally low." *Id.* In contrast, "[f]all chinook enter the Yakima during September and October, and unlike spring chinook, spawn almost immediately. These fish do not migrate to the upper reaches of the basin, but spawn in the lower reaches of the mainstream Yakima River." *Id.* Different from both spring and fall chinook, "[s]teelhead adults enter the Yakima River during the fall and winter and migrate to the upper reaches of the streams of the Yakima basin. The adults hold in the system until late winter, and spawn from February to May." *Id.* However, unlike the chinook salmon, which migrate back to the ocean shortly after only a few months, steelhead "will spend from between one and three years in the Yakima basin before beginning their ocean migration during the spring." *Id.*

negotiators that signed a treaty with the United States in 1855.[257] In exchange for the cession of approximately 10-million acres,[258] that agreement included the promise that the Yakama would retain "[t]he exclusive right of taking fish in all the streams, where running through or bordering said reservation . . . as also the right of taking fish at all usual and accustomed places, in common with the citizens of the Territory."[259]

The Yakama Nation and its members have been steadfast in their protection of the fish in the Yakima Basin.[260] Although that effort has taken many forms, by the eve of the *Acquavella* adjudication, instream flows were a primary concern as irrigation activities within the Yakima Basin exerted ever-increasing pressure on aquatic habitat.[261] This tension came to a head in the drought year of 1977 and the Yakama Nation filed suit in the United States District Court for the Eastern District of Washington, seeking "determination of its rights to water in the Yakima River Basin."[262] Perhaps in an effort to avoid yet another adjudication in federal court,[263] the Department of Ecology filed the *Acquavella* adjudication shortly thereafter and, pursuant to the Colorado River abstention doctrine, the Eastern District stayed the litigation "pending resolution of the *Acquavella I* litigation in state court."[264] Pursuant to the McCarran Amendment,[265] the United States was joined to the state court proceeding and filed claims for, among other things, reserved instream water rights to support the Yakama Nation's fishing rights.[266]

The United States sought to determine the quantity of water necessary to "provide the optimum habitat for anadromous fish

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257 12 Stat. 951, 953 (1855).

258 Wash. State Dept. of Licensing v. Cougar Den, Inc., 139 S. Ct. 1000, 1007 (2019).

259 12 Stat. at 953.

260 *See, e.g.*, United States v. Winans, 198 U.S. 371, 372, 374 (1905); Seufert Bros. Co. v. United States, 249 U.S. 194, 195 (1919); Tulee v. Washington, 315 U.S. 681, 681–84 (1942); *see also*, JOSEPH C. DUPRIS ET AL., THE SI'LAILO WAY 57–118 (2006).

261 *See generally* Kittitas Reclamation Dist. v. Sunnyside Valley Irr. Dist., 763 F.2d 1032, 1033–35 (9th Cir. 1985) (affirming the 1980 decision of the federal district court requiring irrigation districts to release sufficient water from Cle Elum Lake into the Cle Elum River to cover salmon redds in the River).

262 *Acquavella*, 850 P.2d 1306, 1314 (Wash. 1993).

263 By 1977, the Department of Ecology was already litigating both *Confederated Colville Tribes v. Walton*, 460 F. Supp. 1320 (E.D. Wash. 1978), and *United States v. Anderson*, 591 F. Supp. 1 (E.D. Wash. 1982), in the Eastern District of Washington.

264 *Acquavella*, 850 P.2d at 1314.

265 43 U.S.C. § 666 (1952); *see also*, Dylan R. Hedden-Nicely, *The Legislative History of the McCarran Amendment: An Effort to Determine Whether Congress Intended for State Court Jurisdiction to Extend to Indian Reserved Water Rights*, 46 ENVTL. L. 845, 849–50 (2017).

266 Memorandum Op. Re: Motions for Partial Summary Judgment at 43–44, Dep't of Ecology v. Acquavella, No. 77-2-01484-5 (Wash. Super. Ct. May 29, 1990) [hereinafter *Acquavella*, Memo. Op. (Yakima River)].

spawning and rearing in the Basin."[267] To further this objective, it retained Dell Simmons of the FWS to develop the quantification methodology for the reserved instream water rights claimed to support the Yakima River Basin fishery.[268] Simmons was retained as early as 1979 to develop the claims and was "the principle biologist for the government in [the] case and . . . conducted an Instream Flow Incremental Methodology study in the Yakima River Basin to determine those instream flows that are needed to restore and sustain anadromous fish runs in the Basin."[269] Ultimately, based upon the recommendation of Mr. Simmons, the United States claimed a total of approximately 1.25 million acre-feet per year to support the fishery in the Yakima River Basin.[270]

The quantification methodology employed in the *Acquavella* adjudication shared two important similarities to the *Big Horn* adjudication. First, like *Big Horn*, the experts in *Acquavella* broke new ground in developing the quantification method for instream flows, this time by employing for the first time the PHABSIM method for the habitat simulation portion of the quantification methodology.[271] That method, developed in 1989, was essentially brand new when used by Simmons in this adjudication.[272] However, also like the *Big Horn* Adjudication, the court ultimately never decided on whether IFIM/PHABSIM was an appropriate methodology.[273]

Determination of the Yakama Nation's reserved instream water rights came in three separate phases of the adjudication. First, the court examined the instream water right claims appurtenant to the Yakima

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[267] Amendment to Memorandum Opinion Re: Motions for SJ, May 22, 1990, at 55, State of Washington Dep't of Ecology v. Acquavella, No. 77-2-01484-5 (Wash. Super. Ct. Oct. 22, 1990); State of Idaho's Memorandum in Support of Motion for Summary Judgment at 10, In re: the General Adjudication of the Rights to Use of Water from the Coeur d'Alene-Spokane River Basin System (D. Idaho Oct. 21, 2016), No. 49576 [hereinafter *In re CSRBA*, Idaho's Mem. for S.J.].

[268] *Acquavella*, Aff. D. Simmons, *supra* note 73, at 3–6. Because the quantification method used in *Acquavella* is practically identical to the contemporary method, the particulars of Simmons' method are explored as part of the contemporary method in *supra* Part III and accompanying discussion.

[269] United States Motion for Reconsideration at 8, n.3, *Acquavella*, No. 77-2-01484-5 (Wash. Super. Ct. July 20, 1991); *see also Acquavella*, Aff. D. Simmons, *supra* note 73, at 3–4 ("Since 1981, this office has worked under a series of contracts with the Department of the Interior's Bureau of Indian Affairs to conduct an IFIM study in the Yakima River Basin to determine instream flows required to restore and sustain anadromous fish runs in the basin.").

[270] *Acquavella*, Aff. D. Simmons, *supra* note 73, at 10, Attachment 1, at 1–5; Amendment to Memorandum Op. Re: Motions for Partial Summary Judgment Dated May 22, 1990 at 54, *Acquavella*, No. 77-2-01484-5 (Wash. Super. Ct. Oct. 22, 1990) [hereinafter *Acquavella*, Amended Memo. Op. (Yakima River)].

[271] *Acquavella*, Aff. D. Simmons, *supra* note 73, at 7.

[272] *See* MILHOUS et al., *supra* note 24, at 1.

[273] Ottem, *supra* note 246, at 301, 302.

River per se.[274] The second issue revolved around the water necessary to support the Nation's off-reservation water rights in tributaries to the Yakima River at its usual and accustomed fishing places.[275] Finally, the court determined the nature and scope of the Nation's on-reservation instream flow rights in Yakima River tributaries to support fish habitat.[276] In each phase, the objectors to the Nation's claims focused on events subsequent to 1855, arguing that any water rights the Nation had were "extinguished" by a series of Congressional Acts, executive actions, and judicial decisions.[277] In particular, they argued that "a 1914 congressional allocation of a specific amount of water from the Yakima River to the Yakama Indian Reservation effectively quantified the Yakama Indian Nation's federally reserved right and protected [non-Indian] use of any water above that which was allocated."[278] Accordingly, the objectors argued, that "the Act of August 1, 1914,[279]

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274 *Acquavella*, Amended Memo Opinion (Yakima River), *supra* note 270, at 53–61; *see also* Ottem, *supra* note 246, at 301–02; *see generally Acquavella*, Memo. Op. (Yakima River), *supra* note 266, at 42–55.

275 *See* Ottem, *supra* note 246, at 302–03. *See generally* Memorandum Op.: Treaty Reserved Water Rights at Usual and Accustomed Fishing Places, Dep't of Ecology v. Acauavella, No. 77-2-01484-5 (Wash. Super. Ct. Sept. 1, 1994) [hereinafter *Acquavella*, Memo. Op. (Usual & Accustomed Fishing Places)].

276 *See* Ottem, *supra* note 246, at 307–08. *See generally* Report of the Court Concerning the Water Rights for the Yakama Indian Nation, Vol. 25, No. 77-2-01484-5 (Wash. Super. Ct. Nov. 3, 1995) [hereinafter *Acquavella*, Memo. Op. (On-Reservation Rights)]. A related issue surrounded the question of whether and when the Nation was entitled to "flushing flows" to allow chinook smolts to migrate down river to the Pacific Ocean. *See* Memorandum Op. Re: "Flushing Flows," Dep't of Ecology v. Acquavella, No. 77-2-01484-5 (Wash. Super. Ct. Dec. 22, 1994) [hereinafter *Acquavella*, Memo. Op. (Flushing Flows)]; *see also* Ottem, *supra* note 246, at 303–05.

277 *Acquavella*, 850 P.2d 1306, 1318 (Wash. 1993). Specifically, the parties argued that the Nation's water rights had been

> extinguished or diminished by the United States by any one or more of the following: (1) The limitation imposed by the Secretary of the Interior in 1906 on the quantity of water the Indians could receive during the low water flow; (2) The Act of August 1, 1914; (3) The effect of congressional, executive, administrative and judicial actions by the United States between 1905 and 1968; (4) The consent judgment of 1945; or (5) The 1968 settlement and judgment entered in an Indian Claims Commission case.

Id. at 1318.

278 United States' Reply Brief in Opposition to Motions for Partial Summary Judgment and Motions for Summary Judgment at 3, *Acquavella*, No. 77-2-01484-5 (Wash. Super. Ct. Dec. 15, 1989) [hereinafter *Acquavella*, United States Reply Brief].

279 Act of Aug. 1, 1914, ch. 222, § 22, 38 Stat. 582, 604 (1914). The Washington Supreme Court found:

> In the Act of August 1, Congress found the Yakima Indians were unjustly deprived of their right to water from the Yakima River and, over and above the 147 cfs the Indians were already receiving, allotted an additional 573 cfs during the low water irrigation season. The act states that at least 720 cfs of water would be available when needed for irrigation, "this quantity being considered as equivalent to and in satisfaction of the rights of the Indians in the low-water flow of the Yakima River" and adequate for the irrigation of 40 acres of each allotment.

provided for all of the tribal rights in and to the low water flow of the river, including the fishery as well as irrigation rights."[280]

Likewise, the objectors argued that the Yakama Nation's fishing rights—and by extension their water rights for fish habitat—had been extinguished by the Indian Claims Commission. That Commission was formed "for the purpose of determining Indian claims against the U.S. and to determine the amount of compensation for claims [for the Congressional abrogation of rights] found to be valid."[281] In 1951 the Yakama Nation made claims against the United States, "three of which were land claims and one, Docket No. 147, was a claim for fishery rights."[282] In that claim, the Nation alleged that "by construction of Bonneville and Grand Coulee Dams on the Columbia the U.S. 'drowned out and destroyed completely numerous valuable spawning grounds of the salmon,' which 'decreased the value of the property rights of petitioner.'"[283] The Nation's lawyers apparently went farther, alleging in its petition that "'*all* of the usual and accustomed fishing locations' had been 'completely destroyed.'"[284] The Nation eventually settled those claims with the United States and the objectors "urge[d] that by the dismissal of the claim with prejudice [in the I.C.C.], the judgment compensated the Tribe for the totality of the fishing rights and therefore such rights are fully extinguished."[285]

In response, the United States argued that both the plain language of the 1914 Act and its legislative history demonstrated that Congress directed the Secretary of the Interior to "furnish --- enough water --- so that there shall be during the low water irrigation season at least 720 cubic feet per second of water available when needed for irrigation."[286] Accordingly, the United States asserted that the 1914 Act did not touch upon, let alone limit, any reserved instream water rights necessary to satisfy the fishing purpose of the Yakama Reservation.[287]

Similarly, the United States urged that the settlement between the Nation and the United States in the Indian Claims Commission did not extinguish the Nation's instream water rights for two reasons.[288] First, the United States pointed out that "the [objectors] have failed to advise this Court that the Tribe's petition [in the I.C.C.] was dismissed with

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Acquavella, 850 P.2d at 1313 (citations omitted).

280 *Acquavella*, Memo. Op. (Yakima River), *supra* note 266, at 46.

281 *Id.* at 49–50.

282 *Id.* at 50; *see also Acquavella*, 850 P.2d at 1313–14.

283 *Acquavella*, Memo. Op. (Yakima River), *supra* note 266, at 50.

284 *Id.* at 51 (emphasis added).

285 *Id.*; *see also Acquavella*, United States Reply Brief, *supra* note 278, at 4 (noting that the objectors' argument was that "the settlement of [the I.C.C. claims] against the United States is an admission that the Yakama Indian Nation's treaty fishing rights were extinguished in excess of the 1914 allocation").

286 *Acquavella*, United States Reply Brief, *supra* note 278, at 27, 29–32 (emphasis in original).

287 *Id.* at 29.

288 *See generally id.* at 69–73.

prejudice by agreement of the parties."[289] According to the United States, "the issues raised by the Tribe were never tried before the Indian Claims Commission and were never the subject of settlement."[290] Therefore, according to the United States, the objectors were simply wrong that the Claims Commission had extinguished the Nation's fishing rights at its usual and accustomed fishing places on the Yakima River and its tributaries. Second, citing to *Kittitas Reclamation District v. Sunnyside Valley Irrigation District*[291] and *Sohappy v. Smith*,[292] the United States highlighted that "two cases have since recognized the Yakama Indian Nation's treaty fishing rights in the Yakima River Basin."[293] The United States cited these cases as establishing that

> [i]n both instances, the courts recognized that the Tribe's treaty-protected fishing rights in the Yakima River Basin continue to exist notwithstanding [the I.C.C. case]. Moreover, not only are the holdings in *Kittitas* and *Sohappy* governing in this proceeding, the movants' claim that the settlement of [the I.C.C. case] extinguished the Tribe's off-reservation treaty fishing rights is now *res judicata* because it could have been argued in *Kittitas*.[294]

The district court's opinion in the first phase of the adjudication dealing with the Nation's water rights in the mainstem of the Yakima River laid the foundation for the other two phases dealing with the tributaries both on and off the Reservation. First, the court concluded that "the 1914 Act, in and of itself, did not . . . address the treaty fishing rights."[295] The court analyzed the history from 1914 onward[296] and found:

> Unquestionably . . . Congress and the Executive Branch concentrated their efforts over the years on providing irrigation water . . . . But we also see from the documented history that parallel actions were being taken also by the U.S., the State and the Indian Nation to preserve and protect the fisheries of the Yakima River. With these parallel actions being taken by the U.S. agencies, and others, it is clear that there was no Congressional intent, either express or implied, to limit or extinguish the specifically reserved treaty fishing rights.[297]

Nonetheless, the court went on to find that although the Nation's instream water rights in the Yakima River had not been extinguished, they had been significantly "diminished" pursuant to compensation it

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289 *Id.* at 69.
290 *Id.* at 70.
291 763 F.2d 1032 (9th Cir. 1985).
292 302 F. Supp. 899 (D. Or. 1969).
293 *Acquavella*, United States Reply Brief, *supra* note 278, at 70.
294 *Id.* at 73.
295 *Acquavella*, Memo. Op. (Yakima River), *supra* note 266, at 46.
296 *Id.* at 46–49.
297 *Id.* at 49.

had received through the I.C.C. process.[298] Contrary to the arguments of the United States, the court concluded that

> [a] 'Stipulation of Settlement' was agreed upon and was approved by the [Yakama] Tribal Council[.] . . . The agreement[s] covered Docket Nos. 47, 147 [the fishing rights claim], 160 and 164 and stated that 'the disposition of each and all of said cases is part and parcel of the settlement herein.'[299]

The court also observed that the agreement provided that "[e]ntry of final judgment . . . shall constitute a final determination of all claims asserted or which could have been asserted by the [Yakama] Tribe."[300] However, the court was not ready to agree with the objectors that the I.C.C. settlement constituted a full extinguishment of the Nation's fishing rights. The court observed that:

> No factual evidence on the petition was ever presented to the I.C.C. From the facts as we know them, from the documented history noted herein, the Tribe would not and could not have been able to prove the complete destruction of the fishery prior to 1946. Thus, it appears that the real gravamen of the cause of action was for the *diminution* of the treaty fishing rights.[301]

As a result, the court ultimately concluded that although the Nation's fishing rights—and by extension its water rights to support the fishery—were not extinguished.[302] However, it did conclude that "the award of $2,100,000.00 and the dismissal of Docket No. 147 conclusively established the diminution of the [Yakama] Indian Nation's treaty reserved fishing rights."[303]

This left the question of quantification of the Nation's "diminished" reserved instream water rights. Pursuant to the results of the IFIM/PHABSIM analysis conducted by Simmons, the United States had claimed a variety of flows for a variety of locations within the Yakima River Basin.[304] Simmons "recommended [these] flows . . . based on the biological requirements of anadromous fish at various times and various locations in the Yakima River Basin."[305] However, the court took a much more limited approach, concluding that "the scope of the diminished treaty right to water . . . [is limited] to sufficient instream flow to maintain the fishery as it now exists and no more."[306] In so doing, the

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298 *Id.* at 52–53.

299 *Id.* at 51.

300 *Id.*

301 *Id.* at 51–52 (emphasis added).

302 *See id.* at 53 (the court relied on prior Supreme Court opinions to determine that although the Indians retain fishing rights, as well as water rights sufficient to support those fishing rights, these rights are limited to those necessary to sustain their livelihood).

303 *Id.* at 53.

304 *Acquavella*, Aff. D. Simmons, *supra* note 73, at 1, 7, 10.

305 *Id.* at 10.

306 *Acquavella*, Memo. Op. (Yakima River), *supra* note 266, at 54.

court linked the right to a flow operations agreement between the Department of the Interior's Bureau of Reclamation and the then Bureau of Sports Fishery and Wildlife on January 6, 1958.[307] The quantities agreed to in that contract were *significantly* less than the amounts claimed by the United States based upon the biological needs of anadromous fish in the Yakima River.[308]

In its motion for reconsideration, the United States argued "there is absolutely nothing in the record . . . to support a finding that those specific minimum flows [listed in the agreement]. . . are based on fishery studies and/or data of a biological nature."[309] The United States went further, arguing "it is clear that these flows were obviously adopted through a process of deduction to satisfy irrigation needs rather than a process of biological research/study."[310] That approach was inconsistent with the foundations of the *Winters* doctrine as well as basic principles of biology; such little water would have "most certainly cause[d] the absolute extinction to the existence of anadromous fish in the Basin as we know it at this time."[311] To establish this, the United States submitted affidavits from Dell Simmons[312] and Robert Tuck.[313] Dell Simmons concluded that the flows awarded by the Court would result in water temperatures "over 70 degrees Fahrenheit with maximum daily temperatures over 80 degrees. These temperatures will cause severe stress if not death to any juvenile salmonids in . . . the Yakima River."[314] Simmons also concluded that the reserved flows would "not provide enough depth . . . for adult fish to migrate upstream." [315] He also observed that the flows would "provide very poor [spawning] conditions . . . [because the flows are] in my opinion . . . too low to provide for adequate water for egg incubation, and reduces habitat available to over-wintering spring chinook to essentially zero."[316] Finally, he determined that the court's chosen flow "produces very little juvenile rearing habitat . . . [and] does nothing to assist the older juveniles when they begin their outward migration."[317] In concluding, Simmons highlighted the futility of awarding a water right not biologically sufficient to meet the needs of the fish, "[n]o matter what the minimum flow is . . . it is my opinion that the benefits to anadromous fish are zero

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307 *Id.* at 48, 54.

308 *Compare Acquavella*, Aff. D. Simmons, *supra* note 73, at 10, *with In re CSRBA*, Idaho's Mem. for S.J., *supra* note 267, at 6.

309 United States Motion for Reconsideration at 7–8, *Acquavella*, No. 77-2-01484-5 (Wash. Super. Ct. July 20, 1991).

310 *Id.*; *see also* Affidavit of Robert Tuck at 5–13, *Acquavella*, No. 77-2-01484-5 (Wash. Super. Ct. July 29, 1990) [hereinafter *Acquavella*, Aff. R. Tuck].

311 United States Motion for Reconsideration at 8, *Acquavella*, No. 77-2-01484-5 (Wash. Super. Ct. July 20, 1991).

312 *Acquavella*, Aff. D. Simmons, *supra* note 73, at 1, 10.

313 *Acquavella*, Aff. R. Tuck, *supra* note 310, at 1, 14–17.

314 *Acquavella*, Aff. D. Simmons, *supra* note 73, at 11.

315 *Id.*

316 *Id.*

317 *Id.*

without guaranteed streamflows throughout the year for egg incubation and juvenile rearing."[318]

Tuck likewise demonstrated the inadequacy of the court's chosen flows by "examining the status of the salmon and steelhead runs in the late 1950's and again in the late 1970's, after more than 20 years of this operational flow regime [consistent with the operations agreement]."[319] The court itself recognized, by 1980 those management practices had resulted in "the [Yakama] Nation [being] limited to a 72 hour fishery at Wapato and Sunnyside dams in the interest of conservation of the fish runs."[320] However, the court failed to recognize that the poor fishing conditions were directly linked to the operational management of the instream flows in the Yakima River. Tuck noted that "it is clear that anadromous fish in the Yakima Basin experienced a drastic decline in numbers [a reduction of 89%] between the late 1950's and late 1970's."[321] More dramatic, "[o]perations of the Yakima Project by the Bureau of Reclamation during this time period (1960–1980) actually resulted in the extinction or virtual extinction of two runs of salmon . . . both of which virtually disappeared from the basin by the early 1980's."[322] From this, Tuck concluded that the flows reserved by the Court "are not sufficient to maintain even a minimal run of the various species of anadromous fish in the Yakima River Basin."[323] He concluded with a dire prediction, "[t]he same fate awaits the remnant run of salmon and steelhead that currently exist in the Yakima River Basin if this Court relies solely upon [the] . . . instream flows that are 'left over' after irrigation flows have been removed."[324]

The court granted the United States' motion for reconsideration.[325] However, in so doing, it did not adopt the flows claimed by the United States, noting that the 1.25 million acre-feet claimed "is considerably more than the total amount of the water capacity of the storage reservoirs (1,070,700 acre-feet) . . . [and] is a highly substantial portion of the 'total water supply available.'"[326] The court also took issue that the federal claims were designed to "provide the optimum habitat for anadromous fish," and they assumed "that the Tribe's . . . rights . . . have remained unaffected by actions of the federal government."[327] Rather than accept the federal claims, the court doubled-down on its holding that the Nation's water rights had "been greatly diminished, for which the Yakama Nation has been compensated."[328] As a result, the

318 *Id.* at 12.
319 *Acquavella*, Aff. R. Tuck, *supra* note 310, at 14.
320 *Acquavella*, Memo. Op. (Yakima River), *supra* note 266, at 53–54.
321 *Acquavella*, Aff. R. Tuck, *supra* note 310, at 14.
322 *Id.* at 15.
323 *Id.* at 16.
324 *Id.* at 16–17.
325 *Acquavella*, Amended Memo. Op. (Yakima River), *supra* note 270, at 1.
326 *Id.* at 54.
327 *Id.* at 55.
328 *Id.*

Court held that the Nation was entitled to only "the minimum amount of instream flow that is absolutely necessary for the mere maintenance of fish life in the river."[329]

All was not lost, however. The court acknowledged that "[i]t is readily apparent from the affidavits of Robert Tuck and Dell Simmons that the flows called for [in the court's original decision] are totally insufficient to maintain fish life in the river and to limit the instream flows to those amounts would result in complete destruction of the fishery."[330] The court acknowledged that the overall success of the fishery rested on many "variables that may enter into the determination, on an annual basis."[331] "In view of ever changing circumstances," the court held "it would be inappropriate for the Court to set specific, discrete quantifications . . . for all times and conditions."[332] Accordingly, the court assigned the Yakima River System Operations Advisory Committee[333] the task of determining the flows necessary—on an annual basis—to "maintain fish life in the river,"[334] considering factors such as "water quality, climatic and temperature changes, changes in substrate locations within the stream, etc."[335]

The trial court's decision was ultimately affirmed by the Washington Supreme Court.[336] Later, the trial court extended its decision "to include *all* Yakima River tributaries affecting fish availability at the [Yakama Nation's] 'usual and accustomed' fishing stations."[337] The court refused, however, to extend its prior ruling to those tributaries of the Yakima River that are located on the Yakama Reservation.[338] The basis for the court's decision laid in the fact that "[t]he right to take fish on the reservation was an exclusive right separately bargained for [from the Nation's right to fish at its off-reservation usual and accustomed fishing places] in the 1855 Treaty."[339] The court found that those rights had not been diminished by the I.C.C.

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329 *Id.*

330 *Id.* at 55–56.

331 *Id.* at 58.

332 *Id.* at 59.

333 Today this committee is known as the System Operations Advisory Committee. *See* U.S. BUREAU OF RECLAMATION, *supra* note 248, at i-i.

334 *Acquavella*, Amended Memo. Op. (Yakima River), *supra* note 270, at 59.

335 *Id.* at 58.

336 *Acquavella*, 850 P.2d 1306, 1322–25 (Wash. 1993).

337 *Acquavella*, Memo. Op. (Usual & Accustomed Fishing Places), *supra* note 275, at 15; *see also* Ottem, *supra* note 246, at 302–03 (discussing claimants' request that the court limit the Yakama Nation's Yakima River fishing rights to its "usual and accustomed fishing stations"). Those streams include the Yakima, Naches, Teiton, and Klickitat rivers and their tributaries. *Acquavella*, Memo. Op. (Usual & Accustomed Fishing Places), *supra* note 275, at 6.

338 *Acquavella*, Memo. Op. (On-Reservation Rights), *supra* note 276, at 15; *see also* Ottem, *supra* note 246, at 307–08.

339 Ottem, *supra* note 246, at 307.

process and therefore, the Nation retained an "undiminished treaty right for instream flows for the three on-reservation tributaries."[340]

Although the court made much of "diminished" versus "undiminished" flows throughout the Yakima Basin, the practical difference between the two remains elusive. The flows in *all* tributaries of the Yakima River Basin are set on an annual basis by the Yakima Field office of the Bureau of Reclamation.[341] That office determines instream flows in consultation with the System Operations Advisory Committee (SOAC), which includes representatives from the FWS, the Yakama Nation, the Washington Department of Fish and Wildlife, and certain irrigation entities.[342] "Reclamation operates the project to meet specific purposes: irrigation water supply, instream flows for fish, and flood control," with the overall goal "[i]n any given year . . . to manage the Yakima River basin . . . to provide maximum benefits to each of the water demands in the river system."[343]

Specifically for fish, Reclamation "makes efforts to reduce impacts on the fisheries resource and to provide for appropriate water flows."[344] Operations provide flows necessary for spawning,[345] incubation,[346] rearing,[347] and migration.[348] Finally, the operations plan includes protocols for streamflow ramping,[349] as well as flushing flows to help smolts migrate downstream.[350] The SOAC has also developed innovative operations including the "flip-flop,"[351] the "mini flip-flop,"[352] and flow

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340 *Id.* at 308. Those streams included the Toppenish, Simcoe, and Status creeks. *Id.* at 308 n.226.

341 U.S. BUREAU OF RECLAMATION, *supra* note 248, app. at E-1 to -3.

342 *Id.* at 4-7.

343 *Id.* at 5-1.

344 *Id.* at 5-35.

345 *See id.* at 5-40.

346 *See id.* at 5-40 to -41.

347 *See id.* at 5-41.

348 *See id.* at 5-42.

349 *See id.* at 5-41 to -42.

350 *See id.* at 5-44 to -46.

351 "The purpose of the flip-flop operation is to encourage anadromous salmon (spring chinook) to spawn at lower river stage levels in the upper Yakima River above the mouth of the Teanaway River, so that the flows required to keep the redds watered and protected during the subsequent incubation period (November through March) are minimized from the upper Yakima reservoir storage." *Id.* at 5-37. For a broader explanation, see *id.* at 5-35 to -38.

352 The "mini flip-flop" is

> performed in years of sufficient water supply . . . between Keechelus and Kachess Lakes. Heavier releases are made from Keechelus during June, July, and August to meet the upper basin demands, and releases from Kachess Lake are restrained. In the fall (September and October), heavier releases are made from Kachess to meet upper basin demands, and the releases from Keechelus Lake are reduced to provide suitable spawning flows in the Yakima River reach from Keechelus Lake to the head end of Lake Easton.

Id. at 5-39. For a broader explanation, see *id.* at 5-39 to -40.

bypass through the Kittitas Canal.[353] Each of these "operational schemes is designed to balance the need for irrigation water delivery with the protection of spring chinook redds in the upper Yakima Basin."[354] Although Reclamation has targets based upon historical flow data in the Yakima Basin,[355] the flows are actually set "on a yearly, monthly, and daily basis, [in order to balance] the requirements for spawning, incubation, rearing, passage, flushing[ ] flows, ramping rates, power subordination . . . , and carryover storage in the Yakima basin."[356]

E. Anderson *Revisited: IFIM Comes to Chamokane Creek*

Consistent with the court's decree allowing for adjustments in the Tribe's instream flow water right, in 1988 the Bureau of Indian Affairs reexamined the amount of water necessary to support fish habitat in Chamokane Creek.[357] Noting that the previous decreed quantity of twenty cubic feet per second "was made without the benefit of an assessment of the impact that such a reduction in the flow would have on the fishery in Chamokane Creek," these later investigators developed a new methodology for quantifying the reserved right based upon IFIM.[358]

The new IFIM methodology involved analysis of macrohabitat preferences for the target fish (temperature and water quality), as well as microhabitat preferences (water depth, velocity, cover, and substrate).[359] However, water quality did not ultimately factor in to the final flow recommendations because investigators found that water quality was "adequate at the present time and has been adequate in the past."[360] Similarly, despite noting that "[t]emperature was a key issue in legal proceedings concerning Chamokane Creek," investigators dismissed temperature as a concern because "temperatures have never approached the upper lethal limit for brown trout or rainbow trout."[361] Importantly, investigators were able to avoid making recommendations for temperature because of the flexibility built into the federal decree, which expressly allowed for "the Tribe to apply for a modification of the judgment on showing a change in circumstances resulting in a greater

353 "This operation makes use of some upstream storage above Easton Diversion Dam to supply some of the lower irrigation diversion demands in the Kittitas/Ellensburg Valley, RID, and flow demands below Roza Diversion Dam while maintaining target spawning flows in the Easton reach of the Yakima River." *Id.* at 5-39 (citation omitted).

354 *Id.* at 5-37.

355 *See id.* at 5-43 to -44 tbl.5-11 (table of historial streamflow targets).

356 *Id.* at 5-35.

357 *See* MICHAEL R. BARBER ET AL., PREDICTING THE EFFECT OF REDUCED STREAMFLOW ON RAINBOW TROUT, BROWN TROUT, AND SCULPIN POPULATIONS IN CHAMOKANE CREEK USING INSTREAM FLOW INCREMENTAL METHODOLOGY (IFIM) (1988).

358 *Id.* at 1.

359 *Id.* at 4 fig.1.1.

360 *Id.* at 24.

361 *Id.* at 25.

need for water."[362] Although they noted that temperature and water quality needed not to be factored in at the present time, the decree expressly envisions its modification should such adjustments be necessary in the future.[363] Ultimately, however, the flow recommended was based upon those parameters necessary for PHABSIM—stream velocity, depth, cover, and substrate material—to come to an adjusted instream water right in Chamokane Creek of 24 cfs as applied against any state law water rights that existed before the Court's adjustment order in 1988 and 27 cfs "[i]n relation to all other water rights established subsequent to the entry of this order . . . ."[364]

F. Modern Era: Klamath Reservation—IFIM/PHABSIM Becomes the Accepted Methodology

The Klamath River originates at Upper Klamath Lake in south-central Oregon before flowing into California on its way to the Pacific Ocean. The Basin was home to a multitude of tribes, including the Yurok, Karuk, Hupa, Klamath, Yahooskin, and Modoc Tribes.[365] Like many of its sister streams in the Northwest, the Klamath River historically provided an abundance for its indigenous people, who used the land and water for food, fiber, transportation, and other important activities.[366]

The important role of the Klamath River was central to the people of the Klamath, Modoc, and Yahooskin Tribes as they negotiated the Klamath Treaty of 1864.[367] Article I of that treaty guarantees "the exclusive right of taking fish in the streams and lakes, included in said reservation, and of gathering edible roots, seeds, and berries within its limits."[368] The Ninth Circuit has repeatedly extended the 1864 Klamath Treaty to also include a "grant of exclusive hunting and trapping rights."[369] Specifically, the court found that:

> The specific treaty provision reserving the Klamaths' exclusive right to fish could prompt the argument that their treaty excludes the right to hunt. However, in light of the highly significant role that hunting and trapping

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362 *Id.* at A-2.

363 *Id.*

364 *Id.* at 6; Order Modifying the Minimum Flow Provisions of this Court's Memorandum Decision of July 23, 1979 at 2–3, United States v. Anderson, No. 3643 (E.D. Wash. Dec. 9, 1988).

365 *See* Mattz v. Arnett, 412 U.S. 481, 486 (1973) (Yurok and Karuk); Klamath & Modoc Tribes v. Maison, 139 F. Supp. 634, 637 (D. Or. 1956) (Klamath, Modoc, and Yahooskin Tribes); Kimball v. Callahan, 493 F.2d 564, 565 (9th Cir. 1974) (Klamath and Modoc Tribes); *Adair* 723 F.2d 1394, 1398 (9th Cir. 1984) (Klamath Tribe).

366 *See*, *e.g.*, *Adair*, 723 F.2d at 1409 (Klamath Tribe).

367 Treaty between the United States of America and the Klamath and Modoc Tribes, and Yahooskin Band of Snake Indians, Oct. 14, 1864, 16 Stat. 707.

368 *Id.* art. I, at 708.

369 *Adair*, 723 F.2d at 1409 (citing *Maison*, 139 F. Supp. at 637; *Kimball*, 493 F.2d at 566).

> played (and continue to play) in the lives of the Klamaths, it seems unlikely that they would have knowingly relinquished these rights at the time they entered into the treaty.[370]

The question remained, however, whether the Tribes were entitled to *water rights* necessary to protect their traditional subsistence rights. The question was resolved in *United States v. Adair*,[371] wherein the Court found that:

> [w]e therefore have no difficulty in upholding . . . that at the time the Klamath Reservation was established, the Government and the Tribe intended to reserve a quantity of the water flowing through the reservation not only for the purpose of supporting Klamath agriculture, but also for the purpose of maintaining the Tribe's treaty right to hunt and fish on reservation lands.[372]

The federal court was only called upon to make a determination of the Tribes' entitlement to water rights.[373] Later, the State of Oregon, commenced a general stream adjudication, wherein the Tribes quantified the amount of water necessary to fulfill the traditional subsistence purpose of the Klamath Reservation.[374] The Klamath adjudication is the most recent effort to quantify reserved instream flow water rights that has been fully litigated, making it the most up-to-date version in the evolution of the instream flow quantification methodology. As a result, the methods used by the United States and the Tribe in the Klamath adjudication to develop minimum flows form the backbone of an article that is a companion to this one.[375] However, a number of unique characteristics of that case beyond the methodology are worthy of mention here. The first is the incredible effort put into the quantification of the Tribes' water rights.[376] Quantification was conducted by a team of experts retained by the United States.[377] That team included Dr. Dudley Reiser "in conjunction with a team of fisheries biologists, aquatic ecologists, riparian ecologists, aquatic entomologists, water quality specialists, hydrologists and hydrologic engineers."[378] This team "developed the physical habitat claims after more than 20 years of scientific work on the project."[379]

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370 *Kimball*, 493 F.2d at 566 (footnote omitted).

371 723 F.2d 1394 (9th Cir. 1984).

372 *Id.* at 1410.

373 *Id.* at 1399.

374 *See* Amended Order on Motions for Ruling on Legal Issues at 11–13, In the Matter of the Determination of the Relative Rights of the Waters of the Klamath River, a Tributary of the Pacific Ocean, No. 285 (Feb. 13, 2007) [hereinafter *In re Klamath River*, Proposed Order].

375 *See* Hedden-Nicely, *supra* note 197, at 259–60.

376 *In re Klamath River*, Aff. D. Reiser *supra* note 29, at 22.

377 *Id.* at 22.

378 *Id.*

379 *Id.*

Also notable, the overarching goal of the quantification effort shifted from sufficient water to establish an "optimal habitat"—the standard from the *Big Horn* and *Acquavella* adjudications—to a "healthy and productive habitat for fish species subject to the Tribes' treaty rights."[380] In this case, "healthy and productive habitat" was defined as "sufficient water to meet the needs of fish species in a manner that permits fish to exist in a stable condition and reproduce in order to provide a sustainable population."[381]

Finally, although the claimed minimum instream flow right was primarily quantified using the IFIM/PHABSIM methodology, the claims were augmented to reflect the need for water in the riparian zone as well.[382] The riparian zone is that area above, but directly adjacent to, the stream that "provides necessary functions to a stream's ecosystem," including "shade and cover for fish, stability along the stream bank, [provides] organic matter that serves as food for various organisms within the stream . . . . [and] is also crucial in controlling stream temperatures."[383] Based upon this, the United States concluded "[h]ealthy riparian vegetation is essential to ensure high quality fish habitat."[384]

Given the strong interrelationship between the riparian zone and fish habitat, federal expert Dr. David Chapin conducted cottonwood tree ring studies to determine the quantity of water necessary to maintain a healthy riparian zone.[385] To complete these studies, Chapin took tree rings from trees at a number of study locations, and compared the tree rings to known data regarding streamflow, precipitation, and air temperature.[386] From tree rings, Chapin was able to determine a strong correlation between the overall health of the trees and streamflow and that "reduced stream flows between the months of April through September reduce the health of riparian environments in the basin."[387] Chapin determined that "a minimum flow equal to 66-percent of the monthly median flows during the months of March through November," was necessary to maintain the riparian zone in all streams.[388]

In addition to augmenting the minimum flow, the United States successfully argued that a flood flow water right was necessary for certain streams. Two types of streams were found to exist within the Klamath Basin: streams that were primarily spring-fed ("spring-dominated streams"), and streams that were primarily fed by seasonal snow runoff ("runoff-dominated streams").[389] These two types of streams

380 *Id.*
381 *Id.* at 23.
382 *Id.* at 23, 26.
383 *Id.* at 25.
384 *Id.*
385 *See id.* at 25–26.
386 *Id.* at 26.
387 *Id.*
388 *Id.*
389 *Id.* at 25.

were subdivided depending on whether the stream had an adjacent floodplain or whether it lacked a floodplain due to steep gradients and/or an incised and stable channel.[390] Chapin found that seasonal flooding was an important function of healthy and productive stream habitat in runoff-dominated streams with an adjacent floodplain.[391] To ensure continuation of these seasonal floods, the United States claimed a "flood-flow" water right in these streams for the months of March through June.[392]

To determine the quantity of water necessary for these flood flows, federal experts identified a series of study area transects and "examined the distribution of riparian plant communities in relation to elevation above the stream channel," in those study areas by "determining how high above the stream channel riparian plant communities occur."[393] Once the elevation of the upper-bound for riparian plant habitat was determined, the hydrologic expert determined the corresponding return period and flow necessary to achieve that elevation at each transect.[394] In the Klamath Basin, that return period was determined to be once every 3.4 years.[395] Since these flood flows do not occur every year, the flood-flow water right does not occur every year. Instead, the 1.5-year flow event was designated as a "trigger" in any given year for the water right. Should that flow occur in a stream, junior users are curtailed during the months of March through June, up to a cap corresponding to the flow at the 3.4 return-period.[396]

The State of Oregon brought forth two experts in an attempt to rebut the evidence put forward by the United States.[397] First, Oregon presented the testimony of Graeme Aggett, an expert in fluvial geomorphology. Aggett "opine[d] about the inferiority of the habitat models used by Claimants and the superiority of the models and data he employed."[398] Oregon also presented the testimony of Frank Rozaklis, an environmental engineer who criticized the streamflow estimates relied upon by the federal experts.[399] The hearing officer found neither of these experts persuasive. As to Aggett, the court noted that he "failed to provide any substantive information regarding his modelling techniques," including a failure to provide sufficient "data collected" or "input files for his calculations."[400] Despite claiming a superior modeling technique, the hearing officer noted that "no true detailed results for the

390 *Id.*
391 *Id.* at 27.
392 *Id.*
393 *Id.* at 26.
394 *Id.* at 26–27.
395 *Id.* at 27.
396 *Id.*
397 *Id.* at 4–5.
398 *Id.* at 5.
399 *Id.*
400 *Id.*

models were provided to support his testimony in this case."[401] The hearing officer likewise found Rozaklis' testimony unpersuasive, not least because the streamflow estimates relied upon by the United States were produced by the Oregon Department of Water Resources and had been thoroughly vetted by the federal experts.[402] Further, the hearing officer found that the data Razoklis instead chose to rely upon, which had been developed through a natural flow study by the United States Bureau of Reclamation, had been found by the National Research Council "to be lacking adequate calibration and testing."[403]

G. Water for the Homeland: Instream Flows at the Coeur d'Alene Reservation

Situated in what is today referred to as North Idaho, the Coeur d'Alene-Spokane River Basin is home to a bounty of waters, plants, animals, and people.[404] The heart of the Coeur d'Alene-Spokane River Basin is "a magnificent sheet of water, the Coeur d'Alene Lake."[405] In general, the waters of the Basin originate in the headwater streams of the Bitterroot Mountains, which form the border between Idaho and Montana.[406] Those waters flow into three major tributaries: the Coeur d'Alene River, the St. Joe River, and the St. Maries River, which eventually flows into the St. Joe.[407] Along with a series of smaller streams located to the west, the Coeur d'Alene and St. Joe River provide the inflow for Coeur d'Alene Lake, which is drained via the Spokane River.[408] The Spokane River flows through Idaho for approximately fifteen miles before crossing the state-line into Washington.

The Coeur d'Alene-Spokane River Basin has seen a population explosion in recent years.[409] From 1980 to 2006, population in the region increased by 88%.[410] By 2018, its largest community—the City of Coeur d'Alene—was "the fastest-growing metropolitan area in the fastest-growing state in the nation."[411] With an "actual direct economic impact of . . . $2.1 billion a year," the region's economy is built around Coeur

401 *Id.*

402 *Id.* at 20–22.

403 *Id.* at 5.

404 Idaho v. United States (*Idaho II*), 533 U.S. 262, 265 (2001).

405 *Id.* at 269.

406 Memorandum Decisions on Petition to Commence Coeur d'Alene-Spokane River Basin General Adjudication at 8–9, No. 49576 (D. Idaho Nov. 12, 2008) [hereinafter *In re CSRBA*, Memo. re Commencement Order].

407 *Id.*

408 *Id.*

409 Wilson Criscione, *In North Idaho, Leaders Brace for Rapid Population Growth*, THE INLANDER (Jan. 11, 2018), https://perma.cc/DZS8-9EU4.

410 Molly A. Maupin and Rhonda J. Weakland, *Water Budget for Coeur d'Alene Lake, Idaho, Water Years 2000-2005*, at 3 (2009), https://perma.cc/7R5W-9CV6.

411 Criscione, *supra* note 409.

d'Alene Lake.[412] As a result, the water resource in the region is primarily managed for "minimum flow requirements . . . energy demands, flood control, and . . . recreational, residential, and commercial interests."[413]

The entirety of the Coeur d'Alene-Spokane River Basin is the aboriginal home of the Coeur d'Alene People. The Supreme Court observed

> The Coeur d'Alene Tribe once inhabited more than 3.5 million acres in what is now northern Idaho and northeastern Washington, including the area of Lake Coeur d'Alene and the St. Joe River. Tribal members traditionally used the lake and its related waterways for food, fiber, transportation, recreation, and cultural activities. The Tribe depended on submerged lands for everything from water potatoes harvested from the lake to fish weirs and traps anchored in riverbeds and banks.[414]

By the early 1870s, encroaching non-Indian settlers led the Tribe to petition the United States for a reservation that included "the two valleys, the St. Josephs . . . and the Coeur d'Alene."[415] In response, the United States sent negotiators that found "the Indians *demanded* an extension of their reservation so as to include the Catholic Mission and fishing and mill privileges on the Spokane River."[416] Those negotiations resulted in an agreement in 1873 for a reservation that physically enclosed much of the St. Joe and Coeur d'Alene Rivers, nearly all of Coeur d'Alene Lake as well as the southern half of the Spokane River for its entire length within the Idaho Territory.[417] The agreement also promised that "the water running into said reservation shall not be turned from their natural channel where they enter said reservation."[418] Ultimately, the 1873 Agreement was not ratified by Congress.[419] However, the Coeur d'Alene Reservation was nonetheless set aside in 1873 pursuant to executive order, which was designed "to create a reservation that mirrored the terms of the 1873 agreement."[420]

The Tribe's reliance on the waterways within its reservation continues to this day. The Tribe continues to hunt, fish, and gather in the Basin and the Tribe's cultural identity continues to be inextricably

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412 Affidavit of Cajetan Matheson at Exhibit 6, *In re* Rights to the Use of Water from the Coeur d'Alene-Spokane River Basin System (D. Idaho Oct. 21, 2018) [hereinafter *In re CSRBA*, Aff. C. Matheson].

413 Order Issuing New License and Approving Annual Charges for Use of Reservation Lands, 127 Fed. Energy Reg. Comm'n Rep. (CCH) ¶ 61,265 (2009).

414 *Idaho II*, 533 U.S. 262, 265 (2001).

415 *Idaho I*, 95 F. Supp. 2d 1094, 1103 (D. Idaho 1998).

416 *Id.* at 1105.

417 *Id.* at 1095–96. The northern portion of the Reservation was later ceded by agreement in 1889. *See Idaho II*, 533 U.S. at 269–70.

418 *Idaho I*, 95 F. Supp at 1105.

419 *Idaho II*, 533 U.S. at 267.

420 *Idaho I*, 95 F. Supp at 1109.

linked to the waterways.[421] The Tribe has an annual holiday celebrating the gathering of water potatoes.[422] It hosts a summer camp at the Lake each year for elementary students from around the region to learn about the interrelationship between humans and the ecosystem.[423] Most recently, the tribe has "built traditional sturgeon nose and dugout canoes and hosts an inter-tribal canoe journey where the Tribe invites regional tribes to the Reservation to paddle the length of the Lake from the Reservation to the City Beach at downtown Coeur d'Alene."[424] The Tribe and its members continue these activities because they are essential to their very identity.[425] As tribal member Vincent Peone put it, "[b]y doing this, our ancestors are still alive . . . . Without an identity, you are a lost people."[426]

Because of the strong interrelationship between the Coeur d'Alene Tribe and the Basin's plants, animals, and waters, the Tribe has long been the Basin's greatest defender.[427] In 1991, it filed a quiet title action against the State of Idaho to reaffirm its sovereign ownership of the submerged lands underlying navigable waters within the 1873 Reservation.[428] That case was eventually dismissed by the United States Supreme Court, which held that the State enjoyed sovereign immunity from suit by the Tribe.[429] However, the United States and Tribe brought a second suit in the district of Idaho.[430] This time, the court took jurisdiction over the case and held

- Title is quieted in favor of the United States . . . and the Coeur d'Alene Tribe . . . to the bed and banks of all of the navigable waters lying within the current boundaries of the Coeur d'Alene Indian Reservation . . . ;

- The United States . . . and the Coeur d'Alene Tribe . . . are entitled to the exclusive use, occupancy and right to the quiet enjoyment of the bed and banks of all of the navigable waters lying within the current boundaries of the Coeur d'Alene Indian Reservation . . . ; and

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421 *See generally In re CSRBA*, Aff. C. Matheson, *supra* note 412, at Exhibit 4.

422 *Id.* at Exhibit 8.

423 *Id.* at Exhibit 10.

424 United States' & Coeur d'Alene Tribe's Joint Statement of Facts at 51, *In re* Rights to the Use of Water from the Coeur d'Alene-Spokane River Basin System, No. 49576 (D. Idaho Oct. 21, 2016) [hereinafter *In re CSRBA*, Joint Statement of Facts].

425 *Id.* at 50.

426 *In re CSRBA*, Aff. C. Matheson, *supra* note 412, at Exhibit 5.

427 *See In re CSRBA*, Joint Statement of Facts, *supra* note 424, at 9–10 (explaining that the Coeur d'Alene Tribe is culturally and historically tied to Coeur d'Alene Lake).

428 Coeur d'Alene Tribe v. Idaho, 798 F. Supp. 1443, 1445 (D. Idaho, 1992).

429 *See* Idaho v. Coeur d'Alene Tribe, 521 U.S. 261, 287–88 (1997) (affirming the lower court's decision to dismiss the suit based upon the State of Idaho's sovereign immunity pursuant to the 11th Amendment).

430 *Idaho I*, 95 F. Supp. 2d 1094 (D. Idaho 1998).

- The State of Idaho is permanently enjoined from asserting any right, title or otherwise interest in or to the bed and banks of all the navigable waters lying within the current boundaries of the Coeur d'Alene Indian Reservation . . .[431]

The case made its way to the Supreme Court, which affirmed the judgment of the federal district court and concluded that the "right to control the lakebed and adjacent waters was traditionally important to the Tribe . . . ."[432]

Nearly simultaneous to its initial quiet title action, the Tribe filed a Natural Resources Damages suit seeking damages for release of approximately 65 million tons of contaminated tailings into the Coeur d'Alene River, which eventually flows into Coeur d'Alene Lake.[433] Initially, it could not get the United States to join in a suit and so it alone sued eight mining companies and the Union Pacific Railroad.[434] Later, the United States filed its own claim, and the two proceedings were subsequently consolidated.[435] That suit resulted in settlements that recovered approximately $1 billion to restore natural resources and protect human health in the region.[436] The federal district court also found the Tribe a trustee "for purposes of CERCLA over the federal and tribal land as well as the migratory natural resources of: fish, wildlife, birds, biota, water and groundwater."[437]

It was against this backdrop that the State commenced the Coeur d'Alene-Spokane River Basin Adjudication (CSRBA) in 2008.[438] The CSRBA Court bifurcated the litigation into issues of entitlement and quantification, ordering that all "[i]ssues related to entitlement [will] be addressed in a single proceeding prior to litigation of quantification issues."[439] To date, the quantification phase of the adjudication has not begun. As a result, information related to the quantification

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431 Judgment & Decree at 2, *United States v. Idaho*, No. CIV-94-0328-N-EJL, 2 (D. Idaho Aug. 14, 1998).

432 *Idaho II*, 533 U.S. 262, 274 (2001).

433 Coeur d'Alene Tribe v. Asarco, Inc. (*Asarco I*), 280 F. Supp. 2d 1094, 1105 (D. Idaho 2003).

434 Coeur d'Alene Tribe v. Gulf Res., No. 3:1991cv00342 (D. Idaho 1991). Those polluters were Gulf Resources & Chemical Corp., Pintlar Corp., Asarco, Inc., Government Gulch Mining Co., Ltd., Federal Mining & Smelting Co., Hecla Mining Co., Sunshine Mining Co., Callahan Mining Corp., and Union Pacific Railroad Co. ENVTL. PROT. AGENCY, INTERIM RECORD OF DECISION (ROD) AMENDMENT, UPPER BASIN OF THE COEUR D'ALENE RIVER 2-6 (Aug. 2012), https://perma.cc/HQH2-RURR.

435 *Asarco I*, 280 F. Supp. 2d at 1094.

436 *See* ENVTL. PROT. AGENCY, *supra* note 434, at 2-6 to -8 (discussing settlement amounts of regulatory actions related to the Coeur d'Alene basin).

437 United States v. Asarco, Inc., 471 F. Supp. 2d 1063, 1069 (D. Idaho 2003).

438 Commencement Order for the Coeur d'Alene-Spokane River Basin General Adjudication, No. 49576 (D. Idaho Nov. 12, 2008) [hereinafter *In re CSRBA*, Commencement Order].

439 Order Consolidating Subcases; Order Bifurcating Proceedings, Scheduling Order, No. 49576, Subcase No. 91-7755, 2 (D. Idaho Feb. 17, 2015) [hereinafter *In re CSRBA*, Order Bifurcating Proceedings].

methodology is not publicly available. Nonetheless, a number of issues that arose in the entitlement phase remain instructive.

From the beginning, both the Tribe and United States took the position that

> the overall purpose of the Coeur d'Alene Reservation was to set aside a permanent homeland for the Coeur d'Alene People. Water rights are necessary to fulfill a number of components of that overarching homeland purpose. Namely, water rights for fishing, hunting, gathering, lake levels, culture, and spiritual needs, as well as water rights for agriculture and domestic, commercial, municipal, and industrial uses.[440]

The United States and Tribe filed 353 claims to carry out the homeland purpose of the Coeur d'Alene Indian Reservation.[441] Based upon the strong foundation established in *Idaho II*, the Tribe and United States took the position that a primary factor of the Coeur d'Alene homeland is the ability for the Tribe to continue its traditional way of life.[442] As a result, a large majority of the claims were for nonconsumptive water rights to maintain Coeur d'Alene Lake, instream flows, seeps, springs, and wetlands to preserve the Tribe's fishing, hunting, gathering, and cultural tradition.[443]

A cornerstone of the homeland of the Coeur d'Alene people is the Tribe's fishery.[444] Of the 353 claims, 71 were made for instream flows necessary to protect fish habitat throughout the Coeur d'Alene-Spokane River Basin.[445] The Native fish in the Basin are westslope cutthroat trout and bull trout.[446] The Coeur d'Alene people have been living alongside these fish for generations and relying upon them for their survival.[447] Resultantly, these species were identified as the target species for the Coeur d'Alene's instream flow claims based on their "historical importance to the [Coeur d'Alene Tribe] in terms of harvest,

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[440] United States and Coeur d'Alene Tribe's Joint Memorandum for Summary Judgment at 3, *In re* Rights to the Use of Water from the Coeur d'Alene-Spokane River Basin System, No. 49576, Subcase No. 91-7755 (D. Idaho Oct. 21, 2016) [hereinafter *In re CSRBA*, CDAT's Memo. in Support of S.J.]; *see also* United States' Memorandum in Support of Motion for Summary Judgment at 3, 9–20, *In re* Rights to the Use of Water from the Coeur d'Alene-Spokane River Basin System, No. 49576, Subcase No. 91-7755 (D. Idaho Oct. 21, 2016) [hereinafter *In re CSRBA*, United States' Memo. for S.J.].

[441] *In re CSRBA*, United States' Memo. for S.J., *supra* note 440, at 2.

[442] *Id.* at 21–22.

[443] *Id.* at 42–46.

[444] United States & Coeur D'Alene Tribe v. Idaho (*In re* CSRBA), No. 49576, Subcase No. 91-7755, slip op. at 55 (Idaho Sept. 5, 2019).

[445] *Id.* at 8.

[446] Transcript of Record at 1, 14, 16, *In re* Rights to the Use of Water from the Snake River Basin System, No. 39576, Subcase No. 03-10022 (D. Idaho April 28, 1998) [hereinafter *In re SRBA*, Aff. D. Reiser].

[447] *Id.* at 3–6. The Coeur d'Alenes also harvested anadromous chinook salmon from Hangman Creek and traveled to lower reaches of the Spokane River to "harvest salmon species that were naturally excluded (via Spokane Falls on the Spokane River) from the Coeur d'Alene Lake basin." *Id.* at 12.

and today represent species which the [Tribe] actively manages and seeks to protect, restore and maintain sustainable populations."[448] To develop the technical basis for those claims, the United States retained Dr. Dudley Reiser, the same expert it retained to develop the instream flow claims for the Nez Perce Tribe in the Snake River Basin Adjudication and for the Klamath Tribes in the Klamath River Adjudication.[449] Reiser and his team developed the claims "based on a combination of methods centered around the Physical Habitat Simulation (PHABSIM) models that are part of the Instream Flow Incremental Methodology (IFIM) developed by the U.S. Fish and Wildlife Service."[450]

Objectors, led by the State of Idaho, argued for a much narrower interpretation of the purpose for the creation of the Coeur d'Alene Reservation.[451] It relied primarily on the Supreme Court's decision in *United States v. New Mexico*[452]—a case involving the question of reserved water rights appurtenant to *non-Indian* federal reservations—to argue that the so-called "primary-secondary purposes" test should apply to the Coeur d'Alene Reservation: "[g]iven Congress' almost invariable deference to state water law, reserved water rights are implied only if 'necessary to fulfill the very purposes for which a federal reservation was created.'"[453] These so-called "primary purposes" are only inferred where "the purported use of the water [is] so essential to the Tribe's livelihood that their lands would be useless or valueless if water was not reserved for such use."[454]

The *CSRBA* court ultimately determined that *New Mexico*'s primary-secondary purposes test applied, concluding that "[t]he [*Winters*] doctrine's scope is limited to the reservation of water for the primary purposes of a reservation."[455] Further, the court rejected the homeland purpose for the creation of the Coeur d'Alene Reservation, finding it to be "overly broad and contrary to law."[456] Instead, the court determined that the United States and the Tribe impliedly reserved water rights for specific purposes, including "agriculture, fishing and hunting, and domestic [purposes]." [457] The court simultaneously disallowed as secondary purposes all other categories of claims,

448 *Id.*

449 *Id.*; *In re SRBA*, Aff. D. Reiser *supra* note 446, at 1; *In re Klamath River*, Aff. D. Reiser *supra* note 29, at 1.

450 Exhibit 1, Affidavit of Dudley W. Reiser, Ph.D at 1, *In re* Rights to the Use of Water from the Coeur d'Alene-Spokane River Basin System, No. 49576, Consolidated Subcase No. 91-7755 (D. Idaho Oct. 18, 2016) [hereinafter *In re CSRBA*, Aff. D. Reiser].

451 *In re CSRBA*, Idaho's Mem. for S.J., *supra* note 267, at 14.

452 438 U.S. 696 (1978).

453 *In re CSRBA*, Idaho's Mem. for S.J., *supra* note 267, at 13 (quoting *New Mexico*, 438 U.S. 696, 702 (1978)).

454 *Id.* at 65.

455 *In re* CSRBA at 7, No. 49576, Subcase No. 91-7755 (D. Idaho May 3, 2017) [hereinafter *In re CSRBA*, Order on S.J.] (order on motions for summary judgment).

456 *Id.* at 9.

457 *Id.* at 14.

including claims for gathering industrial, commercial, water storage, power generation, aesthetics, recreation, and maintenance of Lake Coeur d'Alene lake levels.[458] Finally, despite finding that a "primary purpose of the reservation was to provide the Tribe with waterways for fishing and hunting,"[459] the court ultimately disallowed all off-reservation instream water right claims.[460] The United States, Coeur d'Alene Tribe, and the State of Idaho timely filed notices of appeal. Among other issues, each party sought review on whether the *CSRBA* Court correctly interpreted the nature and scope of the reserved instream water right claims.[461]

The Idaho Supreme Court's decision is noteworthy for its fidelity to foundational principles of federal reserved water rights law, as well as federal Indian law more generally.[462] Most impressive is the court's analysis regarding the purposes for the creation of the Coeur d'Alene Reservation.[463] There, in reversing the trial court, the Idaho Supreme Court surveyed the existing caselaw and found several distinctions between non-Indian federal reservations and Indian reservations that advised against application of *New Mexico*'s primary-secondary purposes test.[464] Although the court found each of these distinctions important, it

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458 *Id.*

459 *In re CSRBA*, Order on S.J., *supra* note 455, at 12.

460 *In re CSRBA* at 3–4, No. 49576, Subcase No. 91-7755 (D. Idaho May 3, 2017), [hereinafter *In re CSRBA*, Order to Modify] (order on motion to set aside or modify).

461 Brief of Appellant United States of America at 9, United States v. Idaho, No. 45382-2017 (Idaho Feb. 26, 2018) [hereinafter *In re CSRBA*, USA's Opening Brief] (stating that one of the issues is "whether claims for instream flows outside of Reservation boundaries are properly included as part of the Reservation's water rights because they are necessary for protecting the on-Reservation fishery"); Appellant Coeur d'Alene Tribe's Opening Brief at 2, Coeur D'Alene Tribe v. Idaho, No. 45383-2017 (Idaho Feb. 28, 2018) [hereinafter *In re CSRBA*, CDAT's Opening Brief] ("Should the Tribe have the opportunity to prove during the quantification phase that reserved rights to instream flows outside the Reservation are necessary to fulfill the fishing purpose of the Reservation?"); Opening Brief of Appellant State of Idaho at 13–14, Idaho v. United States & Coeur D'Alene Tribe, No. 45383-2017 (Idaho Feb. 23, 2018) [hereinafter *In re CSRBA*, Idaho's Opening Brief].

462 *See In re* CSRBA No. 49576, Subcase No. 91-7755, slip op. at 11–22 (D. Idaho Sept. 5, 2019).

463 *See id.* at 22–34.

464 *See id.* at 22–29. Specifically, the court found persuasive the reasoning of both the Montana and Arizona Supreme Courts. State of Montana *ex. rel.* Mike Greely v. Confederated Salish & Kootenai Tribes, 712 P.2d 754, 768 (Mont. 1985) (explaining that the Supreme Court of Montana has recognized differences between the broad purposes of Indian reservations and the narrow purposes of non-Indian reserved water rights); *In re* Rights to Use Water in Gila River Sys. & Source, 35 P.3d 68, 77 (Ariz. 2001) ("[W]hile the purpose for which the federal government reserves other types of lands may be strictly construed, the purposes of Indian reservations are necessarily entitled to broader interpretation if the goal of Indian self-sufficiency is to be attained."). The court likewise distinguished the decision of the Wyoming Supreme Court in *In re Rights to Use Water in the Big Horn River System*, 753 P.2d 76 (Wyo. 1988), while noting that "the Ninth Circuit has endorsed a broad homeland purpose theory . . . despite adding to the confusion by employing the primary-secondary language." *In re CSRBA*, slip op. at 27 (citing Agua Caliente Band of Cahuilla Indians v. Coachella Valley Water Dist., 849 F.3d 1262, 1269 (9th Cir. 2017)).

ultimately concluded that "more to the point, the primary-secondary distinction runs counter to the concept that the purpose of many Indian reservations was to establish a 'home and abiding place' for the tribes."[465] Accordingly, it concluded that the "purposes behind the creation of an Indian reservation should be more broadly construed and not limited solely to what may be considered a 'primary' purpose."[466]

Instead, the court found that "Indian reservations were created to be a homeland for the tribe and such a homeland would necessarily encompass uses for water related to the tribe's ability to inhabit and live on the land."[467] It once again surveyed the caselaw,[468] noting that *Winters* itself outlined a homeland purpose for the creation of the Fort Belknap Reservation, finding "[i]n Winters, the Supreme Court lent support to the idea that the reservation at issue was established as a 'home and abiding place of the Indians.'"[469] The court also looked to its own precedent to acknowledge the homeland purpose for the creation of Indian reservations:

> this Court, in interpreting *Winters* and *Arizona I*, wrote "the Supreme Court determined that the creation of the Reservations carried with it the need for water to sustain human life on those Reservations. The purpose for the creation of Reservations was clear—to provide habitable land for the Indian tribes."[470]

The court ultimately applied this homeland purpose to the Coeur d'Alene Reservation, concluding "[t]he formative documents and historical context surrounding the Reservation's creation demonstrate a

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465 *In re CSRBA*, slip op. at 25 (quoting *Winters*, 207 U.S. 564, 565 (1908)).

466 *Id.* at 29.

467 *Id.* at 26. In coming to this conclusion, the court diverged somewhat from its sister Supreme Court in Arizona, which has also adopted a homeland purpose for Indian reservations. *See Gila V*, 35 P.3d at 74. There, the Arizona Supreme Court found that, as a matter of law, the purpose of *all* Indian Reservations "is to provide Native American people with 'a permanent home and abiding place,' that is, a 'livable environment.'" *In re CSRBA*, slip op. at 30. The Idaho Supreme Court disagreed with the analysis of the Arizona Supreme Court insofar as it eschewed analyzing the specific history and circumstances surrounding the creation of each Indian reservation, finding instead that the "[f]ormative documents and historical circumstances should be used to derive the Reservation's purposes." *Id.*

468 *See, e.g.*, *id.* at 26 (quoting *Arizona I* , 373 U.S. 546, 599 (1963)) ("[T]he Supreme Court elaborated further that the implied reservation of water on Indian Reservations requires enough water 'to make the reservation livable.'"); *Greely*, 712 P.2d at 768 ("The purposes of Indian reserved rights, on the other hand, are given broader interpretation in order to further the federal goal of Indian self-sufficiency."); *Gila V*, 35 P.3d at 74. The Arizona Supreme Court adopted the homeland purpose theory when it stated that it "agree[d] with the [U.S.] Supreme Court that the essential purpose of Indian reservations is to provide Native American people with a 'permanent home and abiding place,' that is, a 'livable environment.'" *Id.* (first quoting *Winters*, 207 U.S. 564, 565 (1908), then quoting *Arizona I*, 373 U.S. at 599).

469 *In re CSRBA*, slip op. at 26 (quoting *Winters*, 207 U.S. at 565).

470 *Id.* at 26 (quoting Potlatch Corp. v. United States, 12 P.3d 1260, 1264 (Idaho 2000)).

homeland purpose consisting of the following uses: domestic, agriculture, hunting and fishing, plant gathering, and cultural."[471]

Although the Idaho Supreme Court did not reverse the district court's decision regarding off-reservation instream flows,[472] the court's affirmance of the Tribe's *on-reservation* instream flow claims leaves the Tribe in a strong position to protect the Reservation fishery. Perhaps more important, the court's clear signal that it interprets the reserved water rights doctrine *broadly* when applying to Indian tribes will strongly color the quantification phase of the CSRBA. Although too early to know how the United States and Tribe plan to quantify the Tribe's instream flow rights, the Tribe is well-positioned in its on-going effort to protect its rights, resources, and homeland.

IV. CONCLUSION

Although told through the lens of technical experts and scientific methodology, the stories above are really about resilience, vision, and kinship. Despite this Article's focus on contemporary times, that story actually begins much earlier, in the time when non-Indian settlers were making their steady march to the West. In the face of incredible odds

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471 *Id.* at 32.

472 Importantly, this portion of the court's decision garnered the vote of just three of the five justices. Chief Justice Roger Burdick, joined by Justice Joel Horton, criticized this portion of the decision, arguing that the court "inexplicably abandons the canons of construction" for Indian treaties on this issue. *Id.* at 57. The majority began its analysis by expressly acknowledging that it "must interpret these treaties differently than ordinary conveyances, keeping in mind the probable understanding of the Indians." *Id.* at 43. It also had previously concluded that agreements must be interpreted "in the sense in which they would naturally be understood by the Indians." *Id.* at 21 (quoting Washington v. Wash. State Commercial Passenger Fishing Vessel Assn., 443 U.S. 658, 675–76 (1979)). Despite these strong pronouncements, the court ultimately based its conclusion that the Tribe had ceded off-reservation instream flows *solely* upon statements made by representatives of the United States, not the Tribe. *See id.* at 44–47. In fact, the majority cites to, but ignores two instances during negotiations that indicate contrary tribal intent. First, the court quotes negotiators for the United States:

> General Simpson, the government's chief spokesman told tribal leader Chief Seltice that "the Lake belongs to all of you as well as the whites—to all, everyone who wants to travel on it." Seltice replied: "*That is your idea about the boundary*. You know we do not understand papers; in taking it that way we will not know the boundaries."

Id. at 46 (emphasis added) (citation omitted) (quoting *Idaho*, 95 F. Supp. 2d 1094, 1111–13 (D. Idaho 1998)). Later, the majority quotes the same federal negotiator as saying "if we buy this land [the northern end of the 1873 reservation] you still have the St. Joseph River and the lower part of the lake." *Id.* (alteration in original) (quoting *Idaho*, 95 F. Supp. 2d 1094, 1111–13 (D. Idaho 1998). The court fails to include Chief Seltice's response: "I do not quite like those boundaries . . . now, if you ask us where we want to sell, we could talk." Joint App., Vol. I at 183, Idaho v. United States, 533 U.S. 262 (2001). Ultimately, Chief Justice Burdick found that "[g]iven the plausible ambiguity the historical record creates, [he couldn't] agree with the Majority that the 1887 [agreement] abrogated the Tribe's instream-flow rights." *In re CSRBA*, slip op. at 60.

and incalculable pressure, time and again the indigenous people of the Northwest stood firm and demanded the United States recognize their right to continue their traditional way of life. If the story ended there it would be an epic to rival the *Odyssey*; but the story continues. As Supreme Court Justice Neil Gorsuch recently said, "[i]t is a new day, and now [the states and their citizens] want[] more."[473] And so, while that first generation of tribal people had the daunting task of *securing* their rights, each generation of tribal people since have had the equally daunting task of *protecting* those rights. In so doing, each generation honors those that came before them as well as those that are to come.

[473] Wash. State Dep't of Licensing v. Cougar Den, Inc., 139 S. Ct. 1000, 1021 (2019) (Gorsuch, J., concurring).