

# "Bear Creek and the Stewards Who Saved a Salmon Stream, 1970-2020"

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## Preface on oral history

Oral history is an oddly fun undertaking. Instead of sitting around a campfire swapping stories, we are often alone or in small family groups nowadays, especially during the Covid pandemic. Fortunately, a variety of people with expertise and experience on Bear Creek were willing to sit down one-on-one, properly distanced, and share their stories with me. They brought different perspectives ranging from creekside property owners to representatives of local governments and non-governmental organizations (NGOs). So, in presenting their personal views, they also represented groups which have had significant impacts on salmon in Bear Creek. These seven creek stewards told their stories by answering a basic questionnaire, and for context I am including biographical information on them and myself (Appendices A and B).

I am also using their individual interviews to write this narrative history about turning around a deteriorating ecosystem and thereby extending the natural life of a wild run of salmon. It is basically a story of cooperation between citizens, NGOs and local governments. Later, there may be a prequel from a second round of interviews, calling on tribal members and descendants of pioneer families to offer a longer-term perspective on salmon and other natural features in the Bear Creek area. I invite anyone interested in a second round of interviews for this oral history to contact me at [gandksmith@gmail.com](mailto:gandksmith@gmail.com) or go to the following archivists.

For hosting this material and providing guidance on oral history in general, my thanks to Redmond Historical Society and Eastside Heritage Center. History is neglected in the United States, but if we are to learn from mistakes of the past and from efforts to correct or mitigate those mistakes, surely these two institutions have a role in our local history, quoting from each one to highlight its mission:

- “To collect, maintain, and safeguard articles and records of historical information in the greater Redmond area” (Redmond Historical Society, undated, URL, credit to Halee Turner, [manager@redmondhistoricalsociety.org](mailto:manager@redmondhistoricalsociety.org) )
- “To enhance community through the preservation and stewardship of the Eastside’s history” (Eastside Heritage Center, undated, URL, credit to Stephanie Mohr, [collections@eastsideheritagecenter.orgCenter](mailto:collections@eastsideheritagecenter.orgCenter) )

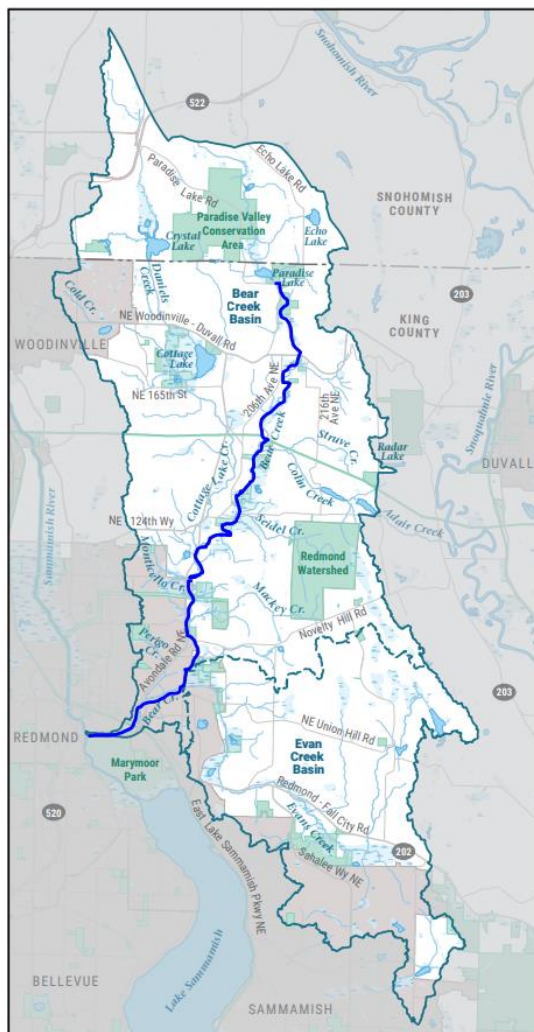
Additionally, under Stephanie’s supervision unnamed volunteers at Eastside Heritage Center transcribed the audiotapes for this oral history, a tedious job demanding incredible patience. And for follow-up video recordings with two of the interviewees, I thank cinematographer Nis Cowan whose 4-minute video has provided the public face of this study: [https://youtu.be/ekNm\\_v1ecEs](https://youtu.be/ekNm_v1ecEs) . Finally, my heartfelt appreciation to the seven stewards of Bear Creek who took time to answer my initial questions and later, patiently allowed me to pester them for clarification and expansion of their recollections of working for the creek – may they now enjoy the fruits of their labor in peace.

## Map of Bear Creek basin

Historical maps of the Bear Creek basin are available at Smith, 2022, in the local archives. And Redmond Historical Society holds original 3ft x 4ft basin planning maps (King County, 1970 and 1983). Current maps showing restoration sites on Upper and Lower Bear Creek are available at Smith, 2021a and Smith, 2021b.

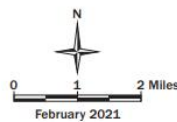
The most recent -- and for purposes of this oral history -- the most useful basin map is accessible at <https://your.kingcounty.gov/dnrp/library/water-and-land/watersheds/sammamish/bear-creek-basin-water-features.pdf> (King County, 2021, URL). It is shown below with an annotated version on the next page.

Bear Creek is shown in dark blue below running from Paradise Lake to the Sammamish River. To explain the obvious, the western boundary of the basin (light blue line on left side) delineates the flows that come into Bear Creek from those flows that go westward directly to the Sammamish River. Perhaps not so obvious are the tributaries in incorporated areas, which are shaded in darker gray shown on the next page. In the north, the aptly-name Cold Creek comes out of Woodinville, and in the City of Redmond are two more tributaries: Monticello and Perrigo Creeks (see next page for enlarged and annotated map). Other creeks are also marked, but it should be noted that Evans Creek is not included in this oral history.

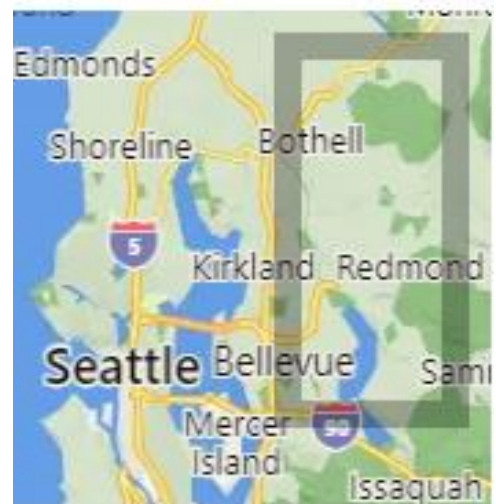


### Bear Creek Basin Water Features

- Basin Boundary
- Subbasin Boundary
- Major/Minor Stream
- Lake
- Wetland
- Incorporated Area
- Park
- Road



Shaded box is area  
of map to the left

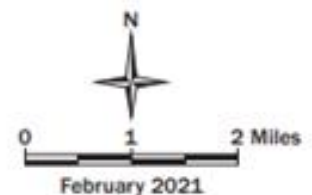




# Bear Creek Basin

## Water Features

- Basin Boundary
- Subbasin Boundary
- Major/Minor Stream
- Lake
- Wetland
- Incorporated Area
- Park
- Road



## Narrative history

with citation notes to accompany oral interviews

### Citation notes:

Timestamp in ( ) refers to the recording of an interviewee identified by initials: e.g. (TL@00'00")

= Terry Lavender's words starting at the zero minute, zero second mark on her recording;

Special e.g. (RD@p.3-Q12) = Roger Dane's answer to Question 12 on page 3 of his transcript.

# in ( ) refers to Endnotes by sequential number, starting with #1 and running continuously.

Author's name, publication date and page number in ( ) refer to Works Cited: e.g. (Smith, 1971, p.1)

and when online works are cited, they are labelled URL or Email: e.g. (Wikipedia, 2021-01-23, URL)

### 1. Background: what and where is Bear Creek?

*Bear Creek is a tributary of the Sammamish River in King County, Washington, United States. The stream flows approximately 12.4 miles (20.0 km) from its source at [sic: above] Paradise Lake near Maltby to a confluence with the Sammamish River at [sic: near] Marymoor Park in Redmond. The creek has two [main] tributaries, Cottage Lake Creek and Evans Creek, and a watershed of 32,100 acres or 50 square miles (Wikipedia, 2021-01-23, URL – see also #1).*

That is the wide-angle view of Bear Creek, but here the focus is on fish. Bear Creek is a Class 1 salmonid-bearing stream fed by cold-water aquifers and tributaries from moderate-to-steeply sloped uplands. That cold water is a major attraction for spawning salmon, which account for the creek's reputation: "For its size, Big Bear Creek is the number one salmon-spawning creek in the state of Washington, according to the State Department of Fisheries" (King County, 1987-06-01, p. 4). Flowing southward from Paradise Valley, the creek follows a broad floodplain to converge with the warmer water of the Sammamish River between Marymoor Park and Redmond Town Center. That watercourse defines a basin (or watershed) with the classic elements of hills and water, literally *shan-shui* in Chinese (commonly translated as landscape). And over time, changes to that local landscape are the subject of this oral history, particularly changes that affect salmon.

In contrast to other streams in the Sammamish Basin which have degraded headwaters, Bear Creek has healthy conditions for fish upstream, then encounters urban impacts downstream all the way to the Sammamish River, where the salmon start their home-stretch run to spawn (TL@1:17'43"). It was at that confluence where old Indian sites have been discovered, most recently in 2009, showing prehistoric fishing and hunting activity with the oldest artifacts dating back more than 12,000 years (Dietz, undated-1, URL). Significantly, among the artifacts was a salmonid bone, the only bone found at the site. As David Williams speculated in his recent book on Puget Sound history, "The bone and the salmon protein residue found on the Bear Creek tool may be the earliest evidence for people eating salmon in Puget Sound" (Williams, 2021, p.24 – see also #6).



It is the curse of fresh-water (and anadromous) fish that they often live where people want to gather, and in the modern era more and more people came to Bear Creek and stayed. Starting in the 1870s, non-Indians settled in the Sammamish River Valley, many homesteading on land granted by the federal government. They were not exactly displacing the native population since the Indians had no permanent settlements along Bear Creek, at least none that reveal surviving structures. Certainly, the tribes have established rights in this general area, for example, the right to fish in accustomed places, reaffirmed in the 1974 Boldt decision (#2). And perhaps the local tribes would be able to supplement this view, but thus far in this oral history, the interviewees refer only to seasonal tribal camps and occasional visits to the Bear Creek area by Indian hunters and fishers. By the same token there is no record of any adverse impacts from the tribes.

So for purposes of this oral history, change begins with the effects of white settlers on the natural landscape of the Bear Creek basin starting 150 years ago. A geologist is perhaps best qualified to describe the effects of settlements in the Northwest and the resulting challenges to fish, in particular the salmonids, including trout and salmon:

*The collision between the human population and the natural environment has been severe; certainly salmon and trout populations have been profoundly affected. . . . Survival of salmonids in urban systems will depend on our ability to control not only the obvious effects of urbanization but to restore the conditions to which salmonids are historically adapted.* (Booth, 1987, Appendix – p.5)

As for fish survival to this day, apparently this oral history tells a success story because salmon are still returning to Bear Creek, but did these stewards really save all the salmonid species from extinction? Not quite, since one sub-species, the early-run Kokanee, has already blinked out in this watershed (#3). Nevertheless, our 7 stewards/interviewees did contribute to saving a creek where salmon have persisted through millennia, and it is for that reason this oral history was undertaken.

As far back as people can remember or refer to in historical records, the creek itself has been stable in its basic course down as far as the current city of Redmond, where the channel was re-routed along numerous reaches. By contrast, in Upper Bear Creek not only has the basic channel remained the same, but according to Shirley Doolittle-Egerdahl, “Paradise Lake is biologically very old, judging by its naturally eutrophic state and high productivity” (Doolittle-Egerdahl, 2016). As an addition feature, it “is the most intact kettle lake left in King County” (TL@2’12”). The headwaters are located in Snohomish County north of Paradise Lake, extending above SR-522 according to Shirley, who has ridden the area on horseback looking at water sources (SD@2’22”).

At the other end of its course, Bear Creek now flows into the Sammamish River about ¼ mile north of Marymoor Park, but Terry Lavender noted that people had moved the creek mouth northward several times (TL@4’03”). City of Redmond’s Environmental Scientist Roger Dane

identified the original location of the confluence inside the park, citing a modern reference point: “Bear Creek flowed through what is now Marymoor Park pre-settlement, [and] the outfall would have been somewhere near the existing entry drive. At some point the channel was relocated by farmers into something like its current location” (#4). For a description of its earliest and most drastic move by human hands, Terry referred to the book *Willowmoor, the Story of Marymoor Park*, which placed Bear Creek close to the north boundary of the 76-acre Willowmoor property belonging to James Clise a century ago (#5).

The *Willowmoor* book also described the discovery of 6,000 year-old artifacts onsite near the original confluence of the creek with the Sammamish River (“Archeological Notes” by Chet Ferrier in Johnston, 1976, pp.3-6). During the latest move northward a decade ago, the new confluence once again became the site of an archeological find, this time dating back 12,000 years. Based on the findings at that dig, former Redmond Mayor John Marchione called it “a gathering place for fishing” by local tribes because it was always so “rich in salmon” (#6).

Clearly, the confluence was a traditional fishing site, and as we will see, native people also fished and trapped far upstream on Bear Creek. Those activities seemed to have had minimal environmental impact, but that changed radically in the 1870s when settlers came into this patch of the Washington Territory. That period following the Civil War was a time of tremendous economic growth when Americans were increasingly exploiting the country’s natural resources to feed industrial expansion. Unfortunately, for over a century those newcomers wrought tremendous environmental damage, which geomorphologist David Montgomery blandly called “widespread landscape modifications by settlers” (Collins et al, 2002, p. 106). The damage was in a sense unintentional, stemming from a human-centered view of nature, and it continued until approximately 50 years ago when people started to realize their negative impacts and began repairing and preserving the Bear Creek basin. Those historical changes from the headwaters to the mouth will now be described through the views and clues offered by our 7 stewards.

## **2. Human impacts on Bear Creek basin, 1870s – 1970s**

The pioneer period in the Upper Bear Creek started roughly in the 1870s, as set forth most colorfully in the book, *Avondale*, referenced by Terry Lavender (TL@5'18"). That book details the family's recollection of tribes visiting the area for seasonal fishing:

*Early in the autumn after the first heavy rain, the salmon and red fish would begin to come up the creek. Then the Indians would come from the shores of Lake Sammamish and camp along the creeks and catch and smoke fish over a fire for their winter food. Their favorite camp ground was the maple grove on Bear Creek. (#7)*

Further upstream on the creek, Shirley Doolittle-Egerdahl dated her Davis family homestead to early 1890s when it was "really out in the boondocks" around Paradise Lake (SD@8'20" – see also Smith, 2017, for Davis land grant documentation). Shirley noted that many arrowheads had been found on the property, and she described a visit to Paradise Lake by an Indian hunter in the 1930s (SD@3'30" – see also Norelius-Doolittle, 1996-07-01, p.4). In looking back on family lore, however, she had nothing to say about salmon or trout until her family started fish-farming and renting out boats to sports fishermen on Paradise Lake Resort in the 1920s (SD@14'21" – see also Norelius-Doolittle, 1996-07-01, p.6).

Prior to those settlements in Upper Bear Creek, the downstream area was subject to settler claims 15-20 years earlier, perhaps reflecting the richness of land and waters around the confluence of two streams. As the Redmond city website says, "Salmon were so abundant in the Sammamish River when the first homesteaders arrived in 1871, they called their settlement Salmonberg" (#8). Local historian Tom Hitzroth found no such official name but has documented the earliest land claims, including those made by Warren Perrigo and Luke McRedmond, whose log cabin was at the fork of Bear Creek and the Sammamish River (#9). If salmon were a feature in the waters then, trees were the main land-based resource subject to exploitation, and after 1888, when the railway reached the town, development accelerated with commercial logging and the expansion of sawmills in the area.

One should not overstate the impact of settlers, at least not in the Upper Bear Creek area. Even where they clear-cut trees, the land was allowed to reforest. Initially up to the 20<sup>th</sup> century, that was true as well in the larger area of over 500 square miles outside Seattle. A study by the U.S. Geological Survey showed that after settlers in the area had finished taking down over half of the tree canopy, time allowed trees to regrow to such an extent that by 1897, 88% of the land was wooded again (#10). Whereas the Seattle area has subsequently been mostly cleared and developed, the Upper Bear Creek watershed has remained in forest at close to that same percentage up to the present day. For instance, Terry Lavender cited 1980s surveys of the watershed that found 80% forest cover, a number which has decreased but now stabilized at 70% (TL@6'44" – see also Heller, undated). She contrasted those numbers with 20% forest



cover downstream in Redmond. City of Redmond, it should be noted, has established a 40% canopy cover goal to be achieved citywide by 2050 (#11).

Logging was only a prelude to major impacts on streams and fish. Cleared of trees and bare of soil that once filtered surface water naturally, developments were built on leveled landfill and covered with more and more impervious surfaces. Also, the county and city built roads where waterways had to be diverted and/or installed with culverts (see graphics in Smith, 2020). As a result, many tributaries and wetlands were lost, and stormwater – instead of slowing down and percolating – pulsed in flashy flows that scoured the creekbed and washed away eggs during the spawning period. Terry Lavender described that process and pointed out another loss affecting fish, the elimination of beavers, a demand made by Upper Bear Creek citizens themselves going back to at least 1987 (TL@6'44"). Those cumulative losses are known to harm salmonids in particular.

In describing Paradise Valley settlers' impact on the land, Shirley Doolittle-Egerdahl wrote that "disruption of nature in favor of human progress goes back to the 1890s when Great-great-great-granpa Davis, a Welsh preacher and coal miner, turned his hand to farming and cleared land at his homestead overlooking the inlet to Paradise Lake" (Doolittle-Egerdahl, 2016). First, trees had to come down to clear space and build a structure on this new homestead as required for all federal land grants. Next, Shirley emphasized the economic motive to clear-cut trees for sale to a commercial sawmill, which her ancestors figured would go out of business when the forest was exhausted: "Knowing the mill would only be in operation a few years, . . . they thought that they would never again be able to sell the timber" (Norelius-Doolittle, 1996-07-01, pp.3-4). Then, putting down her gardening tool there near the shores of Paradise Lake, Shirley donned her environmentalist hat and began to describe the "drastic changes" on the family property, "totally devastating to the ecology for a while" (SD@10'47"). She continued by detailing the "ecological effects" of clear-cutting and bulldozing the land for recreational purposes at Paradise Lake Resort (SD@19'38"). She mentioned old bridges over Bear Creek, including crossings for horse-drawn haywagons and railroad trains. The RR bridge had extra impact because that was where coal-fired trains dumped their ash into the creek (SD@12'13" – see also Norelius-Doolittle, 1996-07-01, p.3). And yet, ironically the coal ash had a restorative effect on fish habitat, or so the story goes. . . .

Shirley had heard from family members about an old hayfield east of Bear Creek that had been ditched and drained early last century, but eventually became too wet to plant (Norelius-Doolittle, 1996-07-01, p.4). The ditches are now totally submerged, and Shirley attributed the hayfield's demise to the cumulative effect of coal ash dumped into the lake, raising its level (SD@21'52"). Now, she is happy to see those fields supporting sedges and other native emergent plants "the way it should be" (SD@23'45"). So human effects have perhaps taken the area around Paradise Lake full circle from a wetland back to a wetland.

That story of self-correcting human action is an anomaly in local history. Shirley's ancestors had cleared a swamp and drained it for agriculture. Then by polluting it over time with ash from steam engines, the locomotive operator unintentionally raised the lake level, filling the ditches and re-watering the swamp so that nature could restore the area. It is no stretch to say that humans took away rearing areas for salmonids when they dried up the swamp and then accidentally returned it to natural habitat. Symbolically, the agricultural and industrial stages of human activity cancelled each other out, letting nature back in, which rarely happens. When it does happen, however, the natural order can re-assert itself and again become self-sustaining. Accidental reclamation aside, Shirley admitted that her ancestors had done a lot of environmental damage that is still evident, even in the valley and on the lake called Paradise.

King County Basin Steward Ray Heller described early logging from the 1880s to the 1930s in terms similar to Shirley Doolittle-Egerdahl's, but with reference to neighboring properties belonging to the Lloyds. Starting back in 1889, the family had numerous land grants in the state of Washington, but the ones closest to Paradise Valley were owned by David and James Lloyd, who received their grants in the 1890s (#12). They felled trees for profit, a practice that left traces on the land visible to this day (#13), but until their final days on the land a hundred years later, the Lloyds steadfastly refused to sell, sub-divide or turn their property into recreational uses, a saving grace as we shall see later in the story.

Not much is known about fish in the upper reaches of Bear Creek in those early days, but Ray documented salmon passage through the Lloyd property before this century. He also revealed first-hand knowledge about a 20<sup>th</sup> century project involving Kokanee a few miles south of the Lloyd and Doolittle properties. Those fresh-water fish, a close relative of sockeye salmon, were harvested on Bear Creek in a county hatchery program stretching over many years and spreading Kokanee throughout the state (#14). It is hard to assess the effects of that program on the fish population, but an historical anecdote shows a severe impact on the natural spawn during one particular year, probably in the 1920s. As a young boy, local resident Frank Mann lived along the creek where his family took many salmon during the fall runs:

*Every fall, when the fish ran, we would fill our smokehouse with fish... Well, one fall they didn't come! We found out the Game Department had built a trap down close to town. That didn't make any sense. You can't have fish if they don't come up to spawn. In about a week, a real heavy rainstorm hit. We knew this would bring the big run. You know, someone had put a charge of dynamite in the trap and blew it all to pieces. We didn't do it, but we got the blame. There were others on that creek, too. Anyway, the fish came up! (#15)*

Nobody can tell the long-term effects of any single program, but it is widely agreed nowadays that Kokanee are no longer seen in Upper Bear Creek (#16). As to settlers' more damaging effects on fish downstream in lower reaches, Ray described increased impacts from farming and from straightening and rip-rapping the creek along its final stretch to the Sammamish River, the last (or technically the first) stretch called Reach 1 (#17).

John Marchione recalled his childhood in the 1970s on that particular reach flowing alongside the golf course where Redmond Town Center now stands. According to John, the creek was armored on that stretch, and the water ran deeper and faster than now, dropping 10-12 feet along its final channelized run into the Sammamish. While it was an exciting ride for a kid to swim, he wondered how salmon managed to make it upstream there (JM@1'47").

And how did that come to be; how exactly did the mouth of Bear Creek change to Ray and John's harsh descriptions of Reach 1? A study commissioned in the 1990s by Washington State's Department of Transportation (WSDOT) pictured the Reach 1 originally as "a highly sinuous, low gradient stream channel flowing through a large floodplain area dominated by wetland plant communities" (#18). The study then traced the history of interventions degrading the creek, mostly farmers' fieldwork and government road-building, culminating in the 1960s "when SR-520 was built [and] WSDOT armored the banks in the lower reach" (#19). All that engineering removed most fish-friendly features and left very little fish habitat. But finally in the past 25 years, to counter that degradation, the creek's mainstem was re-meandered with habitat improvements to benefit salmonids. Before going into detail on that Lower Bear Creek project, let us go back to the story of Upper Bear Creek to see how the effects of white settlements were moderated and mitigated upstream.

### **3. Mitigations on Bear Creek, 1970s – 2020: The story of cooperation between local governments, NGOs and citizens to moderate harmful effects on fish**

In contrast to Shirley Doolittle-Egerdahl's story of accidental reclamation of wetlands on her property, Bear Creek in the past 40-50 years has undergone a much different process, a managed and quite intentional rehabilitation of salmon habitat. Some people think that the improvements began after the federal EPA raised a warning flag by listing Puget Sound Chinook as "threatened" in 1999, but according to our 7 stewards, that is not the case. Environmental scientist Roger Dane placed the effort a decade earlier:

*So far as I know, the realization that Bear Creek is really special and the consequent preservation efforts started long before the Chinook listing. Back in the early 1990's the Waterways 2000 planning effort developed strategies for preservation and enhancement. City and County codes also started placing wider buffers to protect the stream from development. (RD@p.3-Q12)*

According to other stewards, the history goes back further, at least to the 1970s. It started with increased awareness of damage being done to this "special" creek, for instance, early calls for protection by University of Washington professors (Karr, 2014-12-20, URL; and Whisler, 1974-05-16, Letter). Local officials, among them Ray Heller, took notice and started working with citizens to protect Bear Creek. In her interview Terry Lavender went to some length explaining the bureaucratic effort to preserve open space and restore streams, particularly for the benefit of fish (TL@8'48"). While the process started in the 1960s with the county's adoption of a Comprehensive Plan, Terry highlighted a seminal document with the odd title of "The Middle Plan for Bear Creek," adopted and published by the King County Council in 1971. As stated in the very first sentence of the plan, it set forth the conceptual bridge "between the long-range County-wide Comprehensive Plan and the day-to-day affairs of constructing public improvements and imposing zoning regulations" (Dunn, 1971-08-16, p.i). This short 18-page document with its accompanying zoning map was like an early seafaring chart into unknown waters, yet it showed the way to a better future for fish. And it explicitly warned against the future of unregulated growth, expressing the potential loss in monetary terms:

*Bear Creek supports a salmon run worth about ¼ million dollars per year. Although it may be possible to develop a fairly high density population within the valley itself and still maintain this salmon run, it is very unlikely that this would in fact be done. (Dunn, 1971-08-16, p.15)*

In a detailed history of the planning process that evolved over decades, Terry analyzed the Middle Plan's policy recommendations and elaborated how they were implemented through the 1980s (Lavender, 2020, pp.1-3, especially section-4). Of the many stakeholders involved in the county's planning process, bureaucrats and landowners were the most uneasy partners,

often at loggerheads, and to find compromise in practical solutions, the local community had to become involved in stewarding the environment. In Bear Creek, by all accounts, that involvement was spearheaded by WaterTenders, a citizens group dating back to the 1980s.

As Dick Schaetzel recalled, WaterTenders grew from grassroots along Upper Bear Creek, a small group of local property-owners concerned about new developments coming into their neighborhood (DS@9'55"). That core group provided a venue for aggrieved citizens to raise environmental concerns and amplify their call for government action. They educated themselves and the community about local issues, particularly where salmon were involved, and by showing up at county hearings to testify on land use issues, they made contact with relevant government officials (#20).

At about the same time, "concerns over growth had been a significant political factor in King County at least since the 1970s," so county staffers were reaching out to local residents (Oldham, 2006-08-02, URL). As a result of this push-and-pull, separating citizen and government action becomes a chicken-and-egg question in the case of Bear Creek. As Basin Steward Ray Heller summarized in a 1992 report, "The primary reason for optimism in the Bear Creek basin is active stewardship by a large segment of the community. . . The Basin Steward will continue to work with the community and local governments. . . ." (Heller, 1993a, p.1). Ray went on to describe how his own stewardship developed.

Prior to his time as King County Basin Steward, Ray had surveyed the entire county's natural resources, starting in 1981 with a streams and wetlands inventory (RH@27'03"). Using those initial surveys completed in 1986, the county put together basin planning groups with Citizen Advisory Committees for most of the major waterways (#21). Bear Creek was one of the first basins to go through that intensive planning process, which culminated in the Bear Creek Basin Plan (King County, 1995-09-06, URL). Over time other basin plans were evaluated as the need for a broad program to restore and protect became more and more obvious.

In 1993, King County Council passed an ordinance that provided funding for a new program called "Waterways 2000." The goal was to identify basins that still sustained salmon runs and other wildlife, were generally in good shape ecologically and needed very little restoration. Seventeen basins in King County met the criteria, and Bear Creek was one of six to be chosen for early implementation, to include land acquisition and other protection measures. While the purpose of the program went well beyond benefits to salmonids, "Salmon became the central symbol for the Waterways 2000 program" (King County, 1997-07-31, p.1, URL).

Although highly ranked, Bear Creek still showed degradation requiring action, and the planning process itself needed improvement to bring results. To be sure, it was not a straightforward process. It took time and encountered setbacks, including some of the county's own doing. One UW professor took critical note of the work being done under the various basin plans:

*King County, Washington, has been a recognized leader in the effort to analyze and to reduce the consequences of urban development, but even in this jurisdiction the path has been marked by well-intentioned but ultimately mistaken approaches, compromises with other agency goals that thwart complete success, and imperfect implementation of the measures that ultimately have been adopted. (Booth, 2000-09-01, URL, p.1)*

Still and all, the county made impressive progress on improving streams in its jurisdiction (#22). And because of its relative health as a salmon-bearing stream, Bear Creek was highly prioritized as a worthwhile project – and not only by King County. Former Redmond Mayor John Marchione understood this prioritization and explained it very simply: “The strategy has been to identify the clean basins and keep ’em clean first of all, and then the basins that aren’t so clean are second because it takes so much effort to clean them” (JM@10’47”).

Coincidentally during that period, John served as a King County intern in 1986-87 and was assigned to work on best management practices for the watersheds (#23). At an early age he thus became aware of the growing importance of stormwater management and the pioneering work that was being done by King County and the City of Redmond. That experience served John well as Mayor 20 years later, much to the benefit of salmon, which he referred to as a prized natural resource: “Bear Creek . . . is an important river. It’s always been known as a salmon river . . . so for 14,000 years people have liked Bear Creek salmon” (JM, 32’58”).

So King County had basin studies in-hand, young and energetic staffers/interns on-board, and experts like Ray Heller at the helm, but the county still needed organized participation from local citizens in order to implement plans. Ray brought Terry Lavender into the process in 1987 when he appointed her to the Citizen Advisory Committee for the Bear Creek Basin Plan, which provided a forum to generate support and recruit activists into specific projects (TL@19’40”). Next in 1992, Terry was appointed as a citizen representative on the King County Conservation Futures Advisory Committee, a position she continues to hold (TL@0’52”). Started in 1982 with a new property tax to conserve open space statewide, Conservation Futures Tax (CFT) was initially used to preserve agriculture through easements and acquisitions of farmland. In the 1990s and especially after Puget Sound Chinook populations were listed as threatened, acquisition shifted to wildlife habitat, including salmon streams (King County, 2019-10-09, URL, and Ott, 2012-03-12, URL).

When Conservation Futures began conserving open space specifically for watersheds and salmon habitat in the 1990s, it used guidance from “Waterways 2000,” which produced studies of particular creeks deemed healthy enough to preserve for salmon recovery, including Bear Creek and its tributary Cold Creek (#24). Funded by a tax bond in 1993 and guided by the Waterways 2000 studies, King County expanded its property acquisitions, starting in 1994 with the Roberts property on Upper Bear Creek (#25). A couple years later, the county acquired the

Bassett and Lisherness properties (TL@1:11'17"), 40 acres and 5 acres respectively, and eventually put both under protection in the Cold Creek Natural Area (#26).

Interestingly, there had been an earlier transfer of creekside property into protected status, but it was totally serendipitous and – fittingly enough – drug-related. In 1990 King County acquired an undeveloped piece of property on the creek seized by the Drug Enforcement Agency. It was somewhat forced on the county, according to Terry Lavender, and became the first land set aside for preservation in Bear Creek basin. Establishing a precedent, that so-called “drug parcel” -- #0826069246, or more poetically “WaterMeadow” – is reputedly one of the inspirations for Waterways 2000 (#27). Terry has written an extensive account of how it came into county hands, and her story is supported by former Bear Creek Steward Ray Heller. Spurred in this case by citizen initiative, the county began acquiring properties in the 1990s. And the Bear Creek basin received its fair share of tax money over the years, totaling over \$10 million, most of it for projects in Upper Bear Creek (Conservation Futures, 2021-05-03 – note that with matching funds the value of those projects is far higher).

Shirley Doolittle-Egerdahl recounted a later acquisition when a proposed tennis club was “snuffed out” (SD@29'52"). Covering almost 20 acres, the Granston property straddled Bear Creek and was in the permit process when she and other WaterTenders joined with neighbors in the area to protest the development. As a result, according to Dick Schaetzel, the tennis club permit was denied, allowing King County in 2011 to buy and protect the property, which remains undeveloped as part of a beautiful open space called “Middle Bear Creek Natural Area” (DS@1:09'06").

WaterTenders made similar efforts in other cases, but it never filed lawsuits, simply pursuing administrative challenges to development permits up to the level of the King County Hearing Examiner. Some failed or were only partially successful, such as the Street of Dreams development at Quinn’s Crossing, but over time these efforts had a cumulative effect on public perception. As the organization’s former President, Dick Schaetzel said, “WaterTenders had a good reputation. . . I think people realized that we were there to do good for Bear Creek watershed, and we were respected, and so what we did held a lot of weight, I believe” (DS@1:02'43").

The purchase of undeveloped land and its transfer into protected status under county authority is an important preservation tool, but there are also ways to conserve land without changing ownership. Dick Schaetzel gave the example of his own property which was in relatively good shape when he bought it and has remained natural under the county’s open space taxation program (#28). Twenty years ago, he voluntarily followed the bureaucratic steps to establish the value of the natural aquifer and stream onsite, and by so doing, he gained tax credits that continue to this day. Hearing him describe that process over the sound of Bear Creek flowing past his house made Dick’s story seem helpful to migrating salmon as well (DS@0'25"). Fish



also benefit from Paradise Lake being put under open space protection by Shirley Doolittle-Egerdahl's family (#29). Few salmon reach the lake these days, but the downstream benefits are undeniable.

**4. Major projects upstream and downstream:** Distinguishing rural from urban landscapes and the resulting differences in conservation work on the creek

Building on the work done prior to 1999, the listing of Puget Sound Chinook that year provided a major impetus, moving projects to a new level. One of the mechanisms for that lift was the Water Resource Inventory Areas (WRIAs), specifically the local WRIA-8 covering the Greater Lake Washington/Cedar Watershed (#30). Because its projects are implemented through the 28 member jurisdictions, WRIA-8 itself is not always recognized publicly, but people like our 7 stewards know its importance (RD@p.2-Q6, TL@1:22'09" and JM@21'15"). And Terry Lavender was for many years on its Salmon Recovery Council, representing WaterTenders alongside other representatives of conservation organizations with a fish focus, like Trout Unlimited and Mid-Sound Fisheries Enhancement Group.

By the turn of the century, as our stewards can attest, groups had become organized, and the stage was set for the biggest challenges on the creek: the headwaters and the mouth of Bear Creek. As several stewards recounted, conservation efforts on Upper Bear Creek were directed at preserving the land, while conservation on Lower Bear Creek required restoration. Likewise at the very ends of the creek, the headwaters needed to be preserved, and the mouth of Bear Creek had to be rehabilitated but with much larger-scale projects.

A significant portion of the headwaters was on the Lloyd family homestead, the largest piece of undeveloped land in Snohomish County in the 1990s. And fittingly, it was Cascade Land Conservancy, the largest conservation NGO homebased in Western Washington (#31), that facilitated the transfer of the 664-acre homestead into the Paradise Valley Conservation Area (PVCA), an event celebrated on June 4, 2001 (Woodinville Weekly, 2001-06-11, p.4). In responding to the open question about major successes along Bear Creek (Q16 on the questionnaire), the 7 stewards spontaneously named PVCA due to its location around the headwaters. Terry found its preservation "amazing" (TL@43'15"). Shirley called it "a rip-roaring success" (SD@36'05"), and Tom Murdoch termed the Lloyd property "a great acquisition" (TM@29'11"). Tom's story of its acquisition is instructive in the challenges of conservation, even on relatively well-preserved land carrying a moderately healthy creek.

It took many years to arrange for the purchase and transfer of the Lloyd property to Snohomish County. Since all PVCA land is in Snohomish County, one would assume that the county initiated the purchase, but in fact the first money obligated to the land deal came from King County's CFT (TL@28'58" and TL@1:24'37"). Snohomish County's CFT and various other grant sources also contributed funds, and finally in 2001, ownership was transferred to Snohomish County. After receiving title, the county assigned management to Tom Murdoch, who had gained experience with smaller restoration projects working for Snohomish County's Planning Department since 1978. Taking on the assignment of protecting the original 600+ acres, he met with David and Elizabeth Lloyd in the late 90s to better determine their wishes, starting with the protection of

natural resources written into the purchase and sales agreement (TM@25'03"). Among the provisions were specific protections of "habitat for species native within the Bear Creek basin" (Snohomish County, 2004-05-01, p. 33, URL). Visiting the property for the first time, he immediately noticed the erosion damage being done by free-lance hikers, bikers and ATV riders on the steep terrain above Bear Creek, and he took steps to put much of the area off-limits for several years while preparing a management plan.

During that time Tom undertook a public review process and called community meetings to invite comment from people, many of whom were fighting restrictions, especially the "Mud Mountain Bike Boys" (TM@30'46"). Hearing the feedback, he then pushed the county to purchase an extra 120 acres of Lloyd property in the southwest corner of the PVCA, where a public-use park would eventually be built for recreation use, primarily by mountain bikers, thus melding community interests with the family's legacy (see #32). In the end, even though his name is not on the document, Tom essentially wrote the management plan "to protect the biological integrity of a significant portion of the headwaters of Bear Creek" (#33).

Up until it came under PVCA protection, the headwaters of Bear Creek, like the entire basin already described, had been negatively impacted by logging and subsequent development on the land – but how negative, relatively speaking? It is worth taking into account Tom's overall assessment of PVCA's value to the well-being of salmon. Addressing that question, he was critical of previous damage done to watersheds in the area but said those effects on Bear Creek has been less catastrophic than on streams to the west like Little Bear, Swamp, and North Creeks, where residential development was much denser (#34). With less impact from developments, Upper Bear Creek was in better shape for salmon due to its cold water and riparian vegetation (TM@57'30"). Tom supported his conclusion with reference to the "RivCo Report," a 1974 tome in his Northwest Stream Center library: "Bear Creek is an excellent producer of coho, chinook and sockeye salmon as the stream system is extensive and the level of development is low" (River Basin Coordinating Committee, 1974-12-01, page C-5-3).

Since the PVCA opened in 2009, one final, intractable issue is the right-of-way for in-holdings of privately-owned residential lots. Because roads to such houses were built privately, they are potentially at cross-purposes with public use and state regulation. The particular problem affecting fish passage is bridge culverts. Tom pointed to two such roads in PVCA with possible fish barriers (#35). This issue is not being addressed currently and may take generations to resolve. That aside, the work required in Paradise Valley is primarily maintenance with a watchful eye.

Around the same time that PVCA was coming into existence under Tom's management plan, a situation was developing at Reach 1 of Bear Creek where it flows into the Sammamish River. The creek at that point was being squeezed hard between Redmond Town Center and an expanding corridor for SR-520. The highway widening had begun in the 1990s, when on their

own initiative the governmental partners in the project had started to move the creek channel away from the freeway. It was an ambitious and controversial project, eventually fulfilled after 20 years of effort (TL@55'50" – see chronology in Smith, 2016). The work was done jointly by the city, the county, and state's DOT, and early on, they produced a brochure to explain the project to the public (King County Surface Water Management, undated). The original concept depicted in the brochure was to move and re-meander Bear Creek away from SR-520 for its entire run from Redmond Way to the Sammamish River. After completing the upstream half of the project, however, the channelized portion of the creek on Reach 1 was left unchanged down to the mouth, primarily due to a shortfall in state highway funding (Paananen, 2003-03-03 – for reach maps see Smith, 2021-04-27, p.1).

The next opportunity on Reach 1 came with the passage of a state-wide gas tax in 2002, which allowed WSDOT to start Phase Two of the SR-520 widening. However, still short of money, the construction would proceed without moving Bear Creek. Local jurisdictions grew concerned, starting with the City of Redmond whose Sensitive Areas Ordinance mandated 150' buffers along streams. Terry Lavender and Ray Heller also emphasized King County's role in advocating not only for buffers but for improvements to salmon habitat in the creek (#36). They pointed to the confluence as Bear Creek's entryway for migrating wild salmon, the fork where they turn off the Sammamish River instead of continuing straight through the lake to the Issaquah hatchery, final destination for most of the hatchery-origin fish. Speaking of the crucial role of natural-origin salmon in maintaining the wild gene-pool, Terry emphasized the importance of facilitating their access to spawning grounds on Bear Creek. King County and other organizations like WRIA-8 agreed (#37), and as a result of these concerns over the buffer, the local governments held back their approval on 520's Phase Two. That delay gave WaterTenders and other citizen groups time to mount resistance to WSDOT's plan, first by a letter-writing campaign, then by face-to-face opposition to the proposed expansion into Bear Creek buffers.

I am personally able to tell the story of WaterTenders' role, having joined the organization by that time. In the early 2000s, the organization was still focused almost exclusively on Upper Bear Creek watershed. With the help of members like Terry Lavender and Dick Schaetzel, I was able to get the group to turn its focus downstream toward rehabilitating the other end of the creek. Because it was in the City of Redmond, I had useful contacts from my work on the city's Parks and Trails Commission and was able to arrange meetings with city staff to discuss our concerns about Reach 1. In addition, from my local chapter of Trout Unlimited I recruited fellow members to join WaterTenders at the table with other local environmental groups like Ducks Unlimited, Eastside Audubon Society, and SnoKing Watershed Council (#38).

As the highway planners admitted, the Phase Two widening of SR-520 threatened to eliminate the buffer on the creek's south bank: "The proposed future expansion of highway 520 will also bring the highway to within 10 feet of the existing creek edge and generally less than 50 feet from the creek edge" (Army Corps of Engineers, 1999-07-23, pp.1-2). The counter-argument

was simple, as Dick Schaetzel phrased it: “This is not right – the road is too close. . . Something’s gotta be done” (DS@56’05”). At first, WSDOT resisted all arguments for the wider buffer along Bear Creek and presented their project plan as a *fait accompli* to the public, as indeed their lawyer was doing to the city (WSDOT, 2007-12-07). Recalling their December 2007 presentation at Redmond City Hall, Dick stated the thrust of their message: “Here are the plans and we’re not gonna change it. . . They were adamant that they were not gonna change any plans whatsoever” (DS@57’44”). Dick fought back face-to-face, and others of us continued the political pressure through local contacts while the city’s attorney was responding to WSDOT’s legal arguments (City of Redmond, 2008-01-08). The climactic event was another meeting the following month at Redmond City Hall where WaterTenders advocated for creek buffers directly to state legislators who were present. Dick recalled the meeting, which in his mind’s eye drew many citizens, filling the seats and standing along the walls (DS@1:00’00”), and in my recollection of that crowded room there was a remarkable meeting of the minds about the need for corrective action (#39).

In the end, by October that year, the city was in receipt of \$8 million from WSDOT to allow for moving Bear Creek (#40). It was a classic example of sausage-making in the best tradition of practical politics, and it drew energy directly from citizens demands. As Dick Schaetzel explained, “I think there was enough pressure from . . . grassroots people and organizations like WaterTenders – and City of Redmond was on board, and legislators were on board – and I think that was enough pressure that WSDOT came up with some money to finish that Stage 2” (DS@1:01’50”).

With all parties on board and the City of Redmond leading the effort, Phase Two of the creek rehabilitation began alongside the freeway construction. Soon after heavy equipment started moving earth at the confluence, however, construction was halted in 2009 when ancient Indian artifacts were unearthed. To ensure that proper procedures were being followed under the eyes of the tribes and the Burke Museum, it took almost 3 years to complete the archeological dig as approved by the Army Corps of Engineers and funded largely by City of Redmond. During the delay, highway construction was completed before the creek could be moved. But finally in 2014, six years after the city had submitted its initial design for creek rehabilitation, the final half-mile of Reach 1 was diverted to its new run north of the former channel, providing a minimum buffer of 112 feet, over twice what it had been (#41). Significantly, it had a meandering streambed with off-channel wetlands and a cool-water refuge pool at the mouth for migrating adults, as advocated by the county (Crawford, 2007-12-10, p.2). Thus, over a century after Bear Creek had been diverted from its original route through Marymoor Park, then channelized and armored like a canal, it finally had a more natural course to the Sammamish River (for photos of the improved confluence from a salmon’s point of view, see Smith, 2021-04-27, p.7).

Given the state of the art at the time, it was a major, innovative move which “hadn’t been done in any significant way before,” according to Terry Lavender (TL@55’32”). John Marchione called it “an audacious project” to ease the transition of salmon from the Sammamish to Bear Creek and to add other benefits to the city (JM@16’46” and JM@19’12”). While agreeing that it was “a great restoration project,” Terry pointed out that the buffers still did not meet the standards for salmon-bearing waterways (TL@55’03”). Nor did it restore the creek to the location where it was known to be in 1897 prior to the moves described earlier. Since “there’s no way to truly restore the stream to predevelopment conditions,” the change was better described as rehabilitation according to Roger Dane, the city’s Natural Resources Division lead on the project (#42). Thus, the rehabilitation project simply repaired a migratory route, adding features for salmon.

Has it worked? Due to the cultural sensitivity of the area, the public is still not allowed along the creek near the confluence, but according to informal reports from City of Redmond staff, adult salmon are migrating freely through Reach 1 and some spawners are creating redds. Presumably, out-migrating fry will also use the new habitat there to mature as they start seaward in the next cycle. Those fry are scientifically counted using a rotary screw trap just upstream of Reach 1 at a site where the state Department of Fish and Wildlife has been collecting data for over 20 years. As for their actual numbers passing downstream, such annual estimates are complicated and trendlines even more elusive, but in summary, among the three species of salmon fry migrants, Chinook and coho are estimated in the tens of thousands, and sockeye frequently in the millions, all heading downstream each year through the recently-meandered reach of Lower Bear Creek to the Sammamish River and onward to the ocean (Lisi, 2019-04-01, pp.18ff, URL). Those fish are by definition natural-origin salmon in contrast to the fry coming out of the Issaquah hatchery, but unfortunately, the survivors who return to Bear Creek to spawn are not systematically counted, except by inference, using redd-counts by county staff and using anecdotal “Salmon-Watcher” reports by volunteers (King County, 2018-12-06, URL).

In any case, Bear Creek has been rehabilitated at its mouth, and a negative has been turned into a positive for the fish. As with the PVCA project, Lower Bear Creek’s rehabilitation requires continuing maintenance and monitoring, which the city has committed to do, following guidelines found in City of Redmond, 2018-11-1.

## **5. Future projects**

Thus protected at the headwaters with PVCA and at the mouth with a rehabilitated Reach 1, Bear Creek's future as a salmon stream seems to depend on the reaches and tributaries in-between. The pressing restoration needs are still in Lower Bear Creek, where the most promising large-scale project is at Keller Farm. The city's project there is a complex operation involving a wetland mitigation bank that was started officially in 2020 when John Marchione signed the agreement on one of his last days in office (#43). And adjacent to that property is the confluence with Evans Creek, which is now in the process of being moved and re-meandered on a scale similar to the Reach 1 rehabilitation. Like the Keller Farm project, it is still being rolled out, and so both subjects will be left for future study when results can be seen and perhaps interviews can be conducted with the managers of those projects. The city's past successes on Bear Creek give reason for optimism (#44).

John Marchione and his predecessor Rosemarie Ives were always keenly aware of the city's responsibility for managing Bear Creek reaches within municipal limits. And drawing on his early experience in stormwater management as a county intern, John knew the importance of improving facilities in the entire watershed, thus leading him to increased cooperation with King County, for example in the county's massive study of stormwater effects on salmon in Bear Creek (#45). The purpose was deceptively simple: "The goal of the Study is to link stormwater management and salmon recovery" (Burkey, 2019-01-03, URL landing page). And the result in 2018 was the comprehensive Stormwater Management Plan for the Bear Creek watershed.

To take steps toward that plan's goal, John knew that since the creek itself is the city-county boundary north of NE 95<sup>th</sup> Street, both jurisdictions needed to act cooperatively in northern Redmond (JM@0'40"). Thus far, the record shows that they have worked well together on numerous projects to restore the creek as it runs along Avondale Road down to 95<sup>th</sup>. Among those cooperative projects was a large restoration on Mackey Creek, one of the many salmon-bearing tributaries of Bear Creek, in this case preserving and restoring the creek upstream all the way through Farrel-McWhirter Park. The project was dear to heart of John Marchione, who had once helped build a fish ladder in the park where a 4-5 foot drop was leaving salmon stranded in a pool. He recalled that project as a 10-year-old day-camper in 1975, not long after the city received McWhirter Farm and opened it as a public park (JM@24'44"). Recent city/county work has made the youngsters' fish ladder unnecessary by meandering the creek and removing obstacles all the way up from Bear Creek (#46).

While government action is required for such large projects, smaller restorations can be done privately or with public-private partnerships. On Bear Creek south of NE 95<sup>th</sup> Street and immediately upstream from Keller Farm is a smaller, recently-completed project at Friendly Village (for map see Smith, 2021-04-26, p.1). Years ago, owners of that housing development had "tamed" the creek by removing all vegetation except grass, armoring the banks and



spanning them with at least 3 bridges, including 1 covered-bridge (picturesque but a choke-point in streamflow). Because that reach is on private property, government agencies had no purview for action, but a non-government organization stepped in and did the job; that was Adopt-a-Stream Foundation (AASF – see Murdoch, undated-1, URL).

AASF was founded by Tom Murdoch, the same man who wrote the PVCA Adaptive Management Plan, so he knew well the potential benefits of the project for the three salmon species still in Bear Creek (TM@8'31"). While still too new to assess for its effects, the project has impressed not only the residents of that senior-citizen community but outside visitors, including one of our stewards and a Redmond blogger (DS@20'50" and Yoder, 2020-09-07, URL). It also generated local newspaper and TV coverage and was put on Google Earth maps (#47).

Concurrent with the Friendly Village project and directly upstream, City of Redmond recently restored the riparian area up to 95<sup>th</sup> Street. There it joined with the restored area on Conrad Olsen Farm, a project completed by King County on city-owned land in the 1990s (#48). Thus, a series of joint projects over the past 30 years has restored much of Lower Bear Creek, and under the guidance of the new Stormwater Management Plan the city and county will expand work upstream as well.

So what work remains to be done on the creek and its riparian areas in Redmond? By comparison to previous work, it is now in smaller projects, so to locate the problem areas in the city, we need good maps and a little history (Smith, 2021-04-12). One riparian area of Bear Creek needing attention is in the Avondale triangle at the southbound onramp to SR-520. Reach 3 flows through that small triangle of heavily developed land into Bear Creek Park. Over 100 years ago, before any development there, a survey was done on the triangle, and that survey map showed a channel change on Bear Creek, moving the creek away from Avondale Road, probably to allow frontage for a house or business (#49).

Redmond has since bought most of the creekside land in that small triangle, but the city has been unable to improve habitat there; in fact, by some accounts it has impacted Bear Creek negatively by constraining the channel with a streamside trail (#50). Speaking as a retired Basin Steward, Ray Heller recommended "a biological assessment in the green triangle, and it should include instream impacts and stream buffer impacts of the City's trail" (Heller, 2021-05-15, Email). According to Ray and Terry, the creek and its riparian area in the triangle should someday be restored to match the downstream area in Bear Creek Park, which has recently been replanted and looks much healthier. Notably, even though that park property is also city-owned, the replanting project on the east bank of Reach 3 was funded by the county, according to Roger Dane (RD@p.5-Q19). Also, as Ray Heller suggested for the riparian areas in private hands there, the county has an ongoing program for small-scale stream restoration work, and it

invites applications from all landowners in unincorporated King County (RH@31'53" – see invitation at King County, 2016-11-10, URL).

Besides Reach 3, another example on Bear Creek where city and county need to cooperate is a property upstream on Reach 6. According to Terry Lavender on the Conservation Futures Advisory Committee, the creekside property there is currently nominated as a grantee for CFT funding (#51). If it were eventually purchased as public land, King County and/or City of Redmond could protect the creek and jointly restore the riparian area. And hopefully, the property on the opposite bank would also become available for conversion into open space. As a reminder of the scale of these projects, neither property is larger than 2 acres, and they combine for less than 1% of the total acreage acquired in Upper Bear Creek over the past 30 years. The big acquisitions have already been made, just as the major restorations on Lower Bear Creek have been completed (or are in process, as in the Bear and Evans confluence area). But more work always remains.

## 6. Conclusion: General prospects for salmon

As the 7 stewards answered questions about Bear Creek, they revealed their views of future trends. Despite all their hard work and continuing dedication to conservation, several of them are pessimistic. Shirley summarized her view in describing the challenges of fighting to keep the land and waters natural:

*The health of the creek starts on the top of the hill where they're, you know, knocking down the trees and putting up houses and **paving Paradise** (chuckles – emphasis added) . . . It does no good to just do restoration work right where the creek is if it's trashed above that. . . You can only do so much with restoration right in the creek. And so it's an overall approach to development that's needed. (SD@44'43")*

Shirley's experience in Paradise Valley confirms the need for approaching development holistically. Seeing first-hand the impact of her forebears and other homesteaders over a century ago, she looks skeptically at newcomers and wonders if they can be stopped from ruining the land and the water that flows through it. And yet, her story of the accidental reclamation of Bear Creek wetlands provides hope that nature can recover even after it has been dried up and even covered over in the process of "paving Paradise."

In summarizing his view of the Bear Creek watershed, Dick Schaetzel spoke of greater public awareness of salmon-related issues and of habitat improvements all along the creek, noting "a lot of good things going on here" (DS@44'20"). In answer to the question of degraded conditions for salmon survival, he said, "I don't think it's degrading anymore. . . Right on the creek, I think it's been protected pretty well." Aside from continuing development in Redmond, he mentioned only road runoff as a problem that was not being addressed locally (DS@29'25"). Yet, the salmon numbers continue to decline, which forced Dick to say, "I'm not real hopeful" simply because of what he witnessed on his reach of Bear Creek over the years (DS@1:07'30"). His memories linger of people gathering on his deck 20 years ago to watch spawning salmon, "whereas the last 3 years I haven't seen any redds being made, and I might see just a couple salmon, and that's it. And so it's pretty depressing to see the downward trend of the salmon" (DS@27'25").

Tom Murdoch is also worried about the future of salmon in Bear Creek. While admitting the creek is in better shape than most local waterways ecologically, he was at pains to emphasize that it is still under continuing threat from development, not only from new sub-divisions but from individual homeowners who cut down trees for a better view of the creek, "loving the creek to death" (TM@57'31"). He was also concerned about the Brightwater sewage treatment plant in Woodinville because its expanded capacity will allow more development to the southeast as far as Redmond Ridge. Most of that area is in the Bear Creek watershed, and denser housing there would create more pressure on salmon in the creek (TM@48'27").

Ray Heller and Terry Lavender shared Tom's concern about housing developments enabled by the nearby Brightwater plant (RH@36'33", TL@15'57" and TL@1:39'10"). While the Upper Bear Creek corridor southeast of Brightwater has limits to growth that would not allow for the density of the "urban island" on Redmond Ridge, for instance, those restrictions could be loosened. Then as the area changed from rural to urban, the county could immediately be ready with many new hookups for utilities and sewage service. Both Terry and Tom worry about that sort of development around Maltby and Paradise Lake and on county land east of Avondale. For Terry it caused "heartburn," and Ray Heller shared her concern (RH/TL@37'25").

Terry was also discouraged more generally about declining citizen involvement in salmon issues on Bear Creek, a concern echoed by other long-time WaterTenders (#52). Despite her concerns, Terry felt that the headwaters around Paradise Lake and Cold Creek are safe: "I think we've saved the headwaters" (TL@1:45'44"). And more generally, Terry felt good about the larger benefits of conservation:

*So there's a lot of good things going on. . . We characterize it as saving fish, but we're really saving a whole lot more. We're saving this incredible landscape, what will become old-growth forest, this place for birds and stuff. And the fish may be able to come back – and let's hope so. TL@1:37'18"*

Looking at that incredible landscape, Ray Heller said proudly, "during my tenure we planted about 5 streamside miles on Bear Creek and its tributaries" (#53). Ray had been an early advocate of retaining trees, especially near waterways, and he had been encouraged by forest cover retention in the Upper Bear Creek area (Heller, undated). Add that existing vegetation to his own new plantings, and he foresaw the possibility of replanting all the remaining gaps in an ideal future: "I picture Bear Creek with continuous streamside vegetation throughout the watershed on all the tributaries, and Bear Creek empties cool water into the Sammamish River" (RH@1:09'25").

Roger Dane also emphasized streamside trees but noted the many other challenges facing salmon:

*One of the wonderful things about planting trees is that they get bigger and better every year. . . . On each restoration site, growing native trees and shrubs should be beneficial for Chinook and other salmon. However, success with fish is hard to guarantee given outside influences like migration challenges, ocean conditions and harvest. (RD@p.5-Q20)*

Former Mayor John Marchione took perhaps the most practical view of the future. He lauded the city's efforts to manage stormwater and to improve water quality along with the "dynamic natural environment of fish and birds and bugs and so forth." John concluded by recommending more-of-same: "So now let's just work on the harder problems of creeks that

feed into Bear Creek and clean those up too, then improve Bear Creek quality” (JM@32’27”). The glass seemed more than half full to John, but he still wanted to keep pouring it on.

All of the interviewees are continuing their own conservation efforts. Tom shows no sign of slowing down. Dick is a stalwart on his own property and ready to take action as the need arises. Terry is perhaps doing the most for preservation through Conservation Futures, hoping for increased funding through a new county bond in the near future. Ray is fully retired and does occasional volunteer projects in Olympic National Park. Roger has retired as a city employee but returns on occasion as a contractor for City of Redmond, recently doing important work on a tributary called Monticello Creek which originates in Smith Woods at the northern boundary of the city. And former Mayor John Marchione, while temporarily retired from politics, stated on his website that he is “committed to keeping Redmond and the region moving forward. . . by enhancing environmental sustainability” (#54). Still living near Paradise Lake, Shirley and her sister are steadfast stewards, taking daily water level and precipitation readings and weekly canoe outings to monitor the lake. And she works the family land as a nursery business with her son:

*A lot of my family members have been sorta oriented towards this as a piece of recreation property, which it is (Paradise Lake). So I’ve been trying to, you know, steer them toward a more ecologically holistic approach to things. Actually, the only way it can continue to be any fun to be here is if it stays clean, and we’re a big part of that. (SD@46’52” – see also Doolittle-Egerdahl, 2016)*

So Shirley is passing the torch. And not only Shirley – all 7 stewards are passing on a conservation legacy in the Bear Creek watershed.

Looking back over the past 150 years of Bear Creek history since white settlers arrived, there’s clearly been a change in attitudes toward the environment. And in retrospect, our 7 stewards were at work during the most critical phase of preserving and restoring Bear Creek, starting in the 1970s to correct damage done in the previous century. Some are younger than others, but they generally belong to the generation coming out of the sixties with a changing ethos about wildlife. That evolution in attitudes becomes obvious when reading earlier accounts like the 1950 exchange of letters between state and federal agencies considering the option of dumping Bear Creek directly into Lake Sammamish (#55). Clearly, the motivation behind early conservation efforts was limited to maintaining fish populations as natural resources for food and recreation. By contrast, the current – and hopefully prevailing – view of their inherent wildlife value was well-expressed recently by King County Executive Dow Constantine: “We have to rectify some of the damage done by remaking of natural systems in our county, to restore natural fish runs for people with treaty rights and also for the fish themselves; they have a right to exist.” The County Executive spoke those words on the banks of Bear Creek, and he went on to call the creek “an important

county stronghold for wildlife, . . . home to coho, sockeye and Chinook,” concluding “It feels like a mission to bring back those fish” (#56).

The efforts of the 7 stewards have certainly contributed to a vast improvement in the chances of salmon surviving local challenges. None of these people would accept congratulations, as they harbor a healthy skepticism about the future. Most of them noted, for example, that freshwater mussels, “the canary in the coalmine,” have virtually disappeared from local creeks; “There are still some around but fewer and fewer, and they’re really important,” as Dick explained (#57). They worry that salmon in the creek will follow that same downward trend. I would agree and would note one more challenge facing salmon in their migration to and from Bear Creek; they must pass through the locks of the Lake Washington Ship Canal. The various measures taken to ease transit there are well-meaning but imperfect to say the least, leaving it as a challenge not only to Bear Creek salmon but to those in almost all the WRIA-8 streams (#58).

Thus, for all the good work done in the Bear Creek watershed, we will still be relying on the fish to sustain themselves. Given the previous damage we have collectively inflicted on the natural environment, it is amazing that each generation of salmon persists in completing its delicately balanced life cycle every 3-4 years. Considering the hopeful views of improvements expressed by Terry, Ray and Roger (and by Shirley through her horticultural work at Tadpole Haven), I am optimistic about the future of salmon of Bear Creek **but only** because of the fish’s resilience. They will find a way home as we continue to protect and rehabilitate the degraded habitat for their future as well as ours. We messed it up, but in certain areas we can fix it for salmon. In the face of so many national and international lost causes these days, we have so far safeguarded their home waters.

## ENDNOTES

*#1 While Cottage Lake Creek will be included in this study, Evans will not, as it no longer supports the salmon diversity and numbers found in Bear Creek due to significant hydrological differences. While their waterflows are comparable, “The two major drainages within the basin, Bear Creek and Evans Creek, are a study in contrasts” (Booth, 1987, p.5). For a description of Bear Creek basin and related topics see King County, 2018-02-16, URL landing page.*

*#2 Western Washington tribes had been assured the right to fish at “usual and accustomed grounds and stations” by Federal treaties signed in 1854 and 1855, but that right had eroded over the following decades. A campaign to reassert Native American fishing rights began in 1964 and resulted in the 1974 decision by Judge Boldt holding “that the government’s promise to secure the fisheries for the tribes was central to the treaty-making process” (Crowley, 2003-02-23, URL). Currently, no salmon can be taken from waterways in the Sammamish River Basin, but the possibility exists of a Kokanee fishery on Lake Sammamish; in fact, that is a goal of the Kokanee Work Group by 2025 (St. John, undated, URL).*

*#3 Within the last 20 years, a fresh-water salmonid related to sockeye salmon has blinked out on Lake Sammamish and its tributaries. In 2002, the early-run Lake Sammamish Kokanee was officially declared extirpated, leaving only the late-run Kokanee – and its numbers are sinking. Bear Creek appears to no longer host any regular run of these “little redfish,” only strays like the one I saw there 10 years ago and a few residual (i.e. non-anadromous) sockeye. Led by a UW professor, an ongoing salmon monitoring study of creeks in the Sammamish watershed is not finding many Kokanee on Bear Creek (Jensen, 2021-05-30. Email). That is a big change from the past, as another fisheries scientist with extensive knowledge of local waterways said, “folks really need to be aware that once upon a time Bear Creek was synonymous with the Little Redfish no question” (Mattila, 2021-05-24, 2:25AM, Email).*

*#4 (RD@p.4-Q15) Roger Dane sourced his reference to a 1897 USGS map copied in Smith, 2021-04-27, p.2. And he agreed that Bear Creek originally ran through Marymoor Park until it was diverted along a westerly course so that it now flows parallel to and just north of SR-520 (Dane, 2021-06-02, Email). Like the 1897 map, an earlier surveyor’s sketch also showed the creek running on a southwesterly course through the modern-day Marymoor Park into the Sammamish River near the park entryway (Smith, 2021-04-27, p.3).*

*#5 The book Willowmoor made no mention of the Clise family moving the creek, but did note that “Clise and his gardeners . . . planted a long row of poplars at the north border of the property, along Bear Creek where it flows into the Sammamish Slough” (Johnston, 1976, p. 18). Poplars were a natural choice for holding an embankment in place, and that row of trees would*



*likely have been planted after diverting and straightening the creek to align with the northern property boundary.*

*#6 (JM@2'37") In 2015, Redmond Mayor John Marchione organized a seminar at City Hall about the archeology of the 2009 Bear Creek site, and he introduced Bob Kopperl, one of the archeologists on the-dig. In an hour-long presentation Kopperl presented the highlights of the dig, going through the various stone-age artifacts and – notably -- one small bone along with animal residue found at the site. Because he is an osteo-archaeologist, Kopperl focused on that bone, "a tiny, little fragment," and found that it was from an indeterminate species of salmonid, concluding "it is a very strong indication -- between this and also finding that residue on that tool -- that before 10,000 years ago there was a viable salmon population in the Sammamish basin" (Kopperl, 2016-09-21, URL, timestamp 42'17").*

*#7 The location of that Indian fishing camp can be approximated from this quote: "The Sunday school held a picnic on the Fourth of July one year where Helvor Stensland's house later was built. . . . This same picnic ground had been an Indian encampment for several years" (Hebner, 1966, pp 52-53, copied in Hebner, 2020). County records show that Stensland built a house on the property in 1905, but no artifacts have been found onsite, and the best feature remaining is the Grandfather Grove Preserve on an 11-acre piece now owned by the county (see map by King County WLRD Visual Communications, undated).*

*#8 (Dietz, undated-2, URL) The placename Salmonberg appears frequently in local lore and is first documented in an early account by Seattle historian, Clarence E. Bagley in his history of King County (Bagley, 1929). Indian names for the area and its water features are explained as part of the tribes' "Ethnographic Context" in City of Redmond, 2018-09-17, URL, p.6.*

*#9 According to Tom Hitzroth, "tract book records maintained by the Federal Land Office in Olympia and Seattle now under the Bureau of Land Management and the BLM website clearly show that no land claims were ever filed in T25 N R 5 E prior to June 14, 1871." And in his research for that year 1871, Tom specifically found that settler Warren Perrigo made the first land claim in the area now known as Redmond and that Luke McRedmond made his first claim soon afterward (Hitzroth, 2021-05-05, Email). They apparently argued over the name for the settlement with McRedmond eventually winning out.*

*#10 That description of forest cover comes from USGS, 1897, URL, documenting the 88% figure: "This land-classification sheet, representing the Seattle quadrangle, shows the area which at the time of survey, in 1894-95, was covered with woods. . . . Since settlement began in this region the timber has been destroyed on an area of 370 square miles, or two-thirds of the area formerly forested, leaving only 175 square miles in merchantable forests. On most of the land thus denuded, timber is growing again, so that the wooded area, including all land on which*

wood is growing, comprises not less than 495 square miles, or **88 per cent of the entire land area** [emphasis added].” For a screenshot of the 1897 USGS map, see Smith, 2021-04-27, p.2.

#11 Those estimates of tree canopy over time were based on widely variable measurements. In the century or so since the USGS survey, modern techniques have improved estimations so that City of Redmond can track very small changes of canopy from year to year using remote sensors such as LiDAR (Light Detection and Ranging). See City of Redmond, 2019-01-15, p.3, URL, for its current tree canopy estimate of 38.1% and its canopy goal of 40%. One explanation for those figures being higher than Terry Lavender’s 20% is that the city was including the Redmond Watershed Preserve and Farrel-McWhirter Park, which are non-contiguous parts of the city.

#12 Land grant documents for the original Lloyd homesteads are referenced with accompanying maps in Smith, 2019.

#13 Ray Heller noted that the Lloyds cleared small lots of land, 10-20 acres at a time, and that those still exhibit differing stages of growth (RH@7’55”). Terry Lavender and Dick Schaezel observed the same phenomenon on the land, and by way of contrast Dick showed me one of the few remaining old-growth trees there, an enormous spruce growing near Bear Creek. Regarding the Lloyd family’s logging activities, Tom Murdoch noted a PVCA trail built on a railroad line that David Lloyd used to transport his logs to a sawmill, which indicates extensive logging (TM@35’38”). That rail-to-trail is labelled “Old RR Grade” on a hand-drawn map (Snohomish County Parks, undated).

#14 (RH@9’59”) Natural historian and fisheries scientist Jim Mattila emphasized the historic importance of that Kokanee trapping program as a source for stocking other waterways: “Bear Creek was of massive import for the entire state inland fish program” (Mattila, 2021-05-24, 2:25AM, Email).

#15 (Mann, 1990, p.11) Quoting from his own introduction, “This is a true story about my life on Bear Creek in Avondale during the years 1918 through 1929” (Mann, 1990, p.1). That anecdote from the 1920s fits with the history of King County’s Kokanee harvesting program. According to natural historian and fisheries scientist Jim Mattila, “The County local trap or egg taking stations went in during the early 20s . . . with the one on Bear being located in Redmond near the south end of Avondale Road” (Mattila, 2021-05-26, Email).

#16 UW Professor Jeffrey Jensen agreed that Bear Creek has lost the strong numbers of its historic Kokanee run, and he has an ongoing research program for salmonids in local waterways, analyzing the Kokanee gene pool in the Sammamish watershed (Jensen, 2021-05-30, Email).

*#17 Ray Heller went on to list 6 main kinds of harm that settlers had done to fish historically: straightening the stream, rap-rapping the banks, removing in-stream LWD, clearing the streamside corridor, reducing forest cover, and increased flows (RH@11'55").*

*#18 WSDOT's consultant reviewed the historical traces of Lower Bear Creek, finding evidence of more than one move prior to 1995, and concluded, "In addition to the physical alterations of the stream channel, the aerial photographs show the progressive loss of wetland areas as a result of land filing over the years" (Watershed Dynamics Inc., 1994-10-17, p.2).*

*#19 Quote from Roger Dane's interview where he referred to the SR-520 highway project when the Army Corps of Engineers deepened and channelized Reach 1 (RD, p.4-Q15). But that 1960s work was part of a larger project on Lake Sammamish with a history going back to the 1950s when the Corps proposed to control the lake level and the waterflow at the outlet, as follows: "The Project would include deepening of the outlet of the lake with a suitable control structure to stabilize lake surface levels, enlargement of the river channel, [and] bottom excavation in the lower portion of Redmond Bear Creek" (US Fish and Wildlife Service, 1950-06-16, attachment – p.1). Taking note of that mention of deepening and channelizing Reach 1 of Bear Creek, state authorities answered US Fish and Wildlife Service with a warning about impacts on salmon migrating up the creek: "We might also point out that even minor channelization of Bear Creek in the vicinity of the golf course will undoubtedly have some effect of at least a temporary nature from the standpoint of reducing spawning areas and feeding areas" (Washington State Department of Game, 1950-06-30, p.1).*

*#20 Even though WaterTenders had only a couple dozen core members, they managed to raise their profile by showing up at public meetings where the group, according to Terry Lavender, "had a member on every Advisory Committee affecting the bear creek environment (Water District, Cottage Lake Park, Groundwater, Conservation Futures, Lake Washington Watershed Forum)" (Lavender, 2019, p.2). In addition, the organization had outreach and education programs in classrooms during the school year and on the creek during spawning season, and it also publicized issues by mailing out a newsletter to 250-300 local households twice-yearly (DS@14'20").*

*#21 For planning Waterways 2000, King County called together a group of experts, called the Waterways Advisory Panel or WAP (TL@18'06" and TL@1:09'53" – see also King County, 1997-07-31, p.i, URL). The WAP group produced an exhaustive, countywide ranking system that added up negatives as well as positives for each of the major drainage basins. That allowed field studies to proceed with objective criteria, resulting in reconnaissance reports, such as the one for Bear Creek (King County, 1987-06-01). The reports gave an overall grade for ranking purposes and listed specific problems and corrective actions that could be taken to improve the basin's water resources. Bear Creek received a positive report card: "Overall, the fish habitat in the Bear Creek system is presently in moderate to good condition. The system continues to*

support six species of salmonids . . .” (King County, 1989-03-01, p. V-17). The WAP added a warning about Bear Creek’s future, according to Terry Lavender: “Basically they said, if you can’t save Cold Creek, you can’t save Bear Creek” (TL@18’06”). Their reasoning was explained by Terry based on Cold Creek’s consistent flow of cold water (TL@1:08’20”).

#22 While King County was progressing on stormwater and stream work, Snohomish was making modest efforts in the same direction but with a less systemic approach. Tom Murdoch described SnoCo stream restoration projects under his management in 1984-1987, including a few in Upper Bear Creek (TM@22’08”).

#23 John Marchione recited the history of stormwater utilities statewide (JM@7’09), calling local municipalities the first to create these revenue streams and Bear Creek, one of the first watersheds to benefit from the program. As John said, “Bear Creek basin was one of the basins, and I worked as an intern with the Planning Department trying to identify the basins and the runoff and come up with best practices (JM@8’06”).

#24 (Lavender, 2020, section-5A) The key to understanding Bear Creek’s attraction for salmon is its cooler water, and one tributary – appropriately named Cold Creek – is a primary source. Dick Schaetzel explained its drawing power for Chinook salmon migrating up Bear Creek into Cottage Lake and then up Cold Creek (DS@34’50”). Terry Lavender asserted that it actually affects water temperature all the way down to the mouth of Bear Creek and thus draws Chinook off the Sammamish River (TL@1:07’32” and TL@1:08’20”). For more on Cold Creek – see the following:

- Cold Creek Natural Area Site Management Plan, 2001, URL.
- Cold Creek Natural Area map – King County GIS Center, 2001-09-01, URL.
- Technical study of Cold Creek’s hydrology – King County, 2007-12-31, URL.
- Comparative fish counts of Chinook and sockeye – Heller, 1993b, p.17, Table 3.
- Cold Creek Natural Area documentation landing page – King County, 2016-11-02, URL.

And to actually visualize Chinook in Cold Creek, see Lavender, 1998, for a striking photo – note the unclipped fin, denoting a wild fish, and the shallow water, showing how far it had migrated upstream.

#25 RH/TL@24’24” As a target for Waterways 2000 acquisitions, the Roberts property was mapped and described in King County, 1997-07-31, URL. (Note that Roberts was the homesteader’s name but King County bought the property from a subsequent owner named Whitelock -- see Lavender, 2021-05-31, Email.) That county study titled “Upper Bear Creek Conservation Area” has some outdated nomenclature for the parcels there. The areas named UBCCA #1 and #2 are now part of “Paradise Lake Natural Area,” which also includes the Roberts property, previously labelled UBCCA #3. See King County, 2005-02-17, for a newer map of these acquisitions.

*#26 All told in the Bear Creek watershed between 1994 and 2002, CFT bought 32 properties for a total of over 350 acres (see King County, 2002, for a parcel listing). As shown on that listing, the acquired parcels totaled 313 acres (plus an unlisted acquisition of the 40-acre Whitelock/Roberts parcel); and note also that Reach C is Cold Creek, which has over 100 acres of acquired land now in protection (for a full set of reach codes see Lavender, 2021-06-01, Email).*

*#27 (TL@1:02'57", TL@1:05'33", and RH/TL@18'16") To locate the drug parcel in a Waterways 2000 document, see the "Upper Bear Creek – Paradise Lake Reach" map and look for the DEA parcel labelled "Water Meadow" (King County, 1997-07-31, pp.2-3, URL). See also Terry's extensive account of the property's acquisition by King County (Lavender, 2021-09-05, parts 1 and 2). She also tells this marvelous tale in her video interview, starting at timestamp 10'55".*

*#28 Dick used the part of the county's Open Space program called Public Benefit Rating System or PBRS. See King County, undated-1, URL, and for all the current use taxation options for Open Space see King County, 2016-11-28, URL.*

*#29 Shirley's mother described the lake as "open space" in Norelius-Doolittle, 1996-07-01, p.10. For a map of the lake and other nearby open spaces see King County, 2005-02-17. Many conservation organizations offer similar programs for owners to protect their natural land with easements or TDRs (Transferable Development Rights). Nature Conservancy is the largest, perhaps too large for a small watershed like Bear Creek, but other national organizations allow smaller properties to come under their umbrella. For example, another WaterTender, Wendy Walsh, personally put her 62 acres along Bear Creek into a conservation easement under private sponsorship, and she helpfully wrote a short essay detailing the process of conserving green space with easements (Walsh, undated).*

*#30 The legislation establishing WRIAs across the entire state of Washington dates from the 1970s (University of Washington, undated URL), but the Interlocal Agreement (ILA) for WRIA-8's participating jurisdictions was not developed until the Chinook listing in 1999 (Mulvihill-Kuntz, 2011-10-31, URL). That agreement generated money for staffing, currently at 4 fulltime workers drawn from King County staff, as explained by Roger Dane (RD@p.2-Q6). The ILA members established a steering group, currently called the Salmon Recovery Board, and invited NGOs to join with the 28 participating jurisdictions at the table. Terry Lavender immediately became the WaterTenders representative on WRIA-8 and found it amazingly cohesive as a tax-paying, multi-jurisdictional entity (TL@22'28"). Other NGOs like Trout Unlimited and Forterra also have seats, thus widening the elected officials' dialogue with civil society. A full listing of the current members is online at WRIA 8 Coordination Team, 2021-01-15, URL.*

*#31 In the early 2000s Cascade Land Conservancy played a critical role in the transfer of Lloyd property to Snohomish County; according to Terry Lavender it "Cascade Land Conservancy was absolutely, incredibly important in negotiating the deal" (TL@1:29'27"). The organization later*

*changed its name to Forterra and expanded its role from land conservation into community development – for a history of the organization see Fearey, 2018-06-12, URL.*

*#32 According to Tom Murdoch (TM@32'15"), the majority of the 300+ people at the public meetings were opposed to restricting access, but those numbers were balanced somewhat by WaterTenders and equestrian groups who attended to speak in favor of controlling access. Many of the stakeholder groups joined in planning the recreational area and doing the ground work to map the trails, as shown on an early, hand-drawn map (Snohomish County Parks, undated), which annotated the original Lloyd homestead and the "Old RR Grade," now called Cascara Trail on the official county trail map (Snohomish County, 2015-09-01, URL).*

*#33 "While restrictive covenants were not placed on the new [recreational] parcel, it will share a common management plan with the original PVCA property" (Snohomish County, 2008-09-30, p.1, URL). To fully implement the plan, Tom enlisted help to survey the landscape and determine exactly what was on the 664 acres of public land. He called on WaterTenders volunteers led by Jeff Goold and supported by grants from both Snohomish and King Counties. Over a 6-month period the team walked the PVCA site and detailed the ecosystem's richness and diversity in two documents, each over 100 pages long (Snohomish County, 2016-11-16, and Goold, 2008-03-16, pp.1-2). The county document included a CD showing site photographs and field surveys of PVCA's natural resources (Snohomish County, undated). After their surveys were completed, many of the same people then worked on outreach and education in 2007, and in the following year WaterTenders undertook an extensive plant-salvage and replanting program under the overall theme of "PVCA – A Return to the Wild."*

*#34 Terry Lavender agreed with Tom's assessment of degraded streams to the west of Bear Creek (TL@28'58"), as did the Washington state Department of Fisheries: "An example of loss of salmon production habitat through encroachment by man exists on a tributary of North Creek. . . With proper planning this loss could have been averted" (Tellefson, 1969-12-29, p.3).*

*#35 Tom explained the delicate situation with private property owners (TM@38'30" and TM@41'14"). He also described his work identifying culverts elsewhere and called for action by government agencies (TM@53'33" – see also Schwarzen, 2005-06-15, URL).*

*#36 TL@57'16" Ray Heller added that the Sammamish River confluence was "critical" to the start of their homeward journey upstream (RH@54'43"). And Ray's emphasis on Lower Bear Creek's transport function in the salmon life-cycle was stated in the simplest terms by the Washington State Department of Fisheries: ". . .the major spawning occurs in the upper half of the creek [Bear Creek]. The lower portion of this creek, however, is extremely important rearing and transportation waters. The future of the salmon runs into this system will rely entirely on the plans formulated for further industrial and urban developments within the valley" (Tellefson, 1969-12-29, p. 2).*

*#37 WRIA-8 has given a substantial number of grants to projects in the Bear Creek watershed over the years (WRIA 8 Coordination Team, 2016-03-28, URL), and it frequently emphasized the wild salmon of Bear Creek to justify funding: “Bear Creek is one of the most productive salmon spawning streams in the Puget Sound area, often with over 30,000 wild fish returning annually, including an average of 200 wild Chinook salmon” (WRIA 8 Coordination Team, 2010-07-13, p.4). While the debate about hatchery-origin versus natural-origin or “wild” salmon continues to this day, the primary need for natural reproduction is undeniable. As the Washington State Director of the Fisheries Department stated over 50 years ago, “The importance of preserving and making fullest possible use of our natural salmon production habitats becomes paramount” (Tellefson, 1969-12-29, p. 4).*

*#38 Not only did Trout Unlimited members help us lobby locally, the national organization provided grant money to support water quality research at Lower Bear Creek sites along SR-520 where pollution was a potential issue for fish (Smith, 2014).*

*#39 To add detail to my observation here, I can confirm Dick’s visual memory of the SRO meeting. It took place between the November 2007 city election and the January seating of Mayor-Elect John Marchione, so he was there as well as the retiring Mayor Rosemarie Ives. The annual event brought the Mayor and City Council members together with state legislators representing districts on the Eastside to discuss items on Olympia’s legislative agenda that concerned Redmond. While the meeting was public, there was no time allotted for citizens to make statements. Nevertheless, as the meeting was being called to order, Rep. Ross Hunter asked what all the people were doing in the room, and WaterTenders President Shirley Doolittle-Egerdahl responded that we were there to protest the widening of 520 that was bringing the highway too close to Bear Creek. Mayor Ives pointed out that WSDOT’s plan did not comply with the city’s Special Areas Ordinance, and Mayor-Elect Marchione added that the ordinance specifically required a buffer of 150 feet, much wider than could be accommodated by the expanded highway. I recall that both Rep. Ross Hunter and Rep. Deb Eddy voiced interest in the issue, and I’m told that their help was critical in finding WSDOT funding for Bear Creek rehabilitation.*

*#40 Under political pressure WSDOT used mitigation funds from the new SR-520 bridge across Lake Washington, part of the same freeway widening project that continued into Redmond (#JM@17’19”). For details see Redmond Reporter, 2008-09-12, URL.*

*#41 For aerial photos of the creek before and after rehabilitation, see Smith 2021-04-27, p.1. And for a complete chronology on Bear Creek’s Reach 1 rehabilitation see Smith, 2015 and 2016.*

*#42 Roger Dane clarified the distinction between rehabilitation and restoration (RD@p.1-Q1) and referred to this definition: “We use ‘restoration’ to mean re-establishing a self-sustaining,*



*dynamic riverine landscape closely resembling the pre-settlement condition. We use ‘rehabilitation’ to refer to re-establishing certain historical process or features or certain habitats. . .” (Collins, 2002, p. 107-111, URL).*

*#43 John Marchione explained “wetland banking” at Keller Farm and the city’s role in first purchasing the property and then transferring mitigation money from Department of Transportation and Sound Transit into the mitigation bank (JM@27’17” and JM@28’56”).*

*#44 The Keller Farm and Evans Creek projects were years in the making while the properties were being assembled through long negotiations, as Mayor John Marchione explained (JM@27’17” and JM@19’57”). For the detailed plan of the Keller Farm Mitigation Bank see Woodward, 2015-05-21, URL, and for striking visuals visit Woodward, 2020, URL, then click on the drone video.*

*#45 To strategize about meeting new federal requirements for stormwater management, the county selected Bear Creek as the model watershed and put Jeff Burkey in charge as Project Manager in 2015. Simultaneously, the City of Redmond’s Watershed Planner Andy Rheame was assigned to manage updates to the city’s stormwater management plan, working jointly with Jeff on all aspects including public meetings (Burkey and Rheame, 2016-10-13, URL). The result was a comprehensive study on that one creek as a model for all (Burkey, 2019-01-03, URL).*

*# 46 At the confluence of Mackey with Bear Creek, King County bought and restored land which had housed a dog kennel and breeding operation for many years (WaterTenders, 2017-03-18, URL). That improved fish passage, but there were other challenges facing salmon migrating upstream through culverts and across trails, especially in the city’s Farrel-McWhirter Park. For problems in that Park, see a simple schematic showing the creek’s course through the park (City of Redmond, undated, URL) and a topo map showing one culvert which was a fish barrier (City of Redmond, 2012, URL – see red circle “25”). The joint city-county project managed to remove fish hazards and open all those blockages.*

*#47 (Kirkpatrick, 2020-09-02, URL, and Crowe, 2020-08-27, URL) While Friendly Village was the site of Tom’s largest project on Bear Creek, AASF has done even larger restoration projects in the Puget Sound region, as shown on Google maps (Google Earth, undated URL, Murdoch, undated-2, URL, and Murdoch, undated-3, URL).*

*#48 That earlier project on the Conrad Olsen Farm was designed and managed by King County after Redmond city had purchased the farm from the Olsen family (RH@22’10”). Coincidentally around that time in the 1990s, the county and city also cooperated in restoring part of the Bear Creek reach at Friendly Village. Ray described that as a flood control project installing rip-rap*

and LWD (large woody debris) on the creek banks (RH@23'54"). For a map showing the Olsen Farm and Friendly Village, see Smith, 2021-04-26, p.1.

#49 That channel change was at the upper end of Reach 3 as shown on page 1 of Smith, 2021-04-12. On the following pages of that document are several maps of the Avondale triangle, including the 1914 survey map showing a circle annotated with Bear Creek's "Channel Chg" (Hitzroth, 1914). It thus became one of the first photographs to name Bear Creek. Previously during the settlement period, it was known as Merritt Creek after the farmer who owned the land there, a homesteader named Miles Merritt (Hitzroth, 2021/05/05, Email – and see his article on the creek name, Hitzroth, 2017-01-02). Credit Tom Hitzroth also for the 1914 map.

#50 Ray Heller wrote an email about that reach in the Avondale triangle: "As I recall the City of Redmond has an impact along a portion of this stretch of Bear Creek with a paved trail right next to the creek" (Heller, 2021-04-13, Email). Terry Lavender added, "It is very constrained," and she broadened her criticism about the city's treatment of creek buffers in the Avondale triangle (TL@1:43'13" – for the "constrained" quote see Lavender, 2021-04-13, Email). For photos of that constrained passage, see Smith, 2021-04-12, p. 5.

#51 Terry Lavender reported an opportunity for the county to acquire a creekside property along NE 116<sup>th</sup> Street between city-owned Juel Park and Bear Creek, which is in King County (TL@1:31'48" – see also Lavender, 2021-05-17, Email). For a map see Smith, 2021-04-26, p.2.

#52 TL@1:37'54" Dick Schaetzel was not optimistic about WaterTenders' future because it has ceased most outdoor activities and public actions. As he said about the current members, "they're not around too much – they are in name, but not in action" (DS@19'48"). He took some of the blame because over the years as the membership was aging, "it was hard to get young people involved. Recruiting new faces, new ideas – that didn't work" (DS@19'17"). On the other hand, Shirley Doolittle-Egerdahl feels that WaterTenders can expand its online role, advocating for Bear Creek as a keystone in the future of the whole watershed. And she hopes to see a younger citizens group, safeguarding the "name, reputation and history of blood, sweat and tears" represented by WaterTenders (SD@32'50"). The future remains uncertain as well for the iconic URL -- [www.watertenders.org](http://www.watertenders.org) -- since the website is currently unreachable, perhaps under re-construction. In any case WaterTender newsletters are now archived at Redmond Historical Society.

#53 Ray Heller's 5 miles of restoration includes city and county planting projects over a 12-year period, 1991 to 2003 (RH@1:11'06).

#54 Quote from City of Redmond press release cited in Redmond Reporter, 2019-01-03, URL.

*#55 (US Fish and Wildlife Service, 1950-06-16, and Washington State's Department of Game, 1950-06-30) Note the state agency's name, which itself tells a story from the 50s, prompting later administrations to change the name eventually to Washington State Department of Fish and Wildlife.*

*#56 County Executive Constantine spoke those words on the banks of Bear Creek while dedicating a new natural area on the former Hussey property. All quotes from Mapes, 2021-05-16, p.2, URL, plus photocopy of the Seattle Times article. Note that in her article Linda Mapes, not the County Executive, used the phrase "stronghold for wildlife, . . . home to coho, sockeye and Chinook." For the official account of the event see King County, 2021-05-26, URL).*

*#57 Quoted at DS@44'46" – for more details on the decline of freshwater mussels, see TM@17'48" and TM@21'00".*

*#58 WRIA-8 covers the most highly urbanized area in the state of Washington, starting in the Cascades and ending in Seattle. One of its distinguishing features is that almost the entire watershed of 607 square miles drains into the ocean at the Lake Washington Ship Canal (several short-run streams drain directly into Puget Sound but only two, Pipers Creek and Hidden Lake Creek, are accessible to salmonids). So for the past 100 years virtually every salmon in the entire watershed has had to come and go through the ship canal. Let's hope they continue to make the round-trip.*

## Bibliography

For a bibliography of some 140 sources, including all the above references, see the separate document titled “Works Cited,” 2022. The bibliography covers a variety of books, reports, letters, maps, photos, emails and online resources. Most of them are available online or in Eastside Heritage Center and Redmond Historical Society collections, and the managers of those collections have offered to help in researching the sources:

- Stephanie Mohr, [collections@eastsideheritagecenter.org](mailto:collections@eastsideheritagecenter.org)
- Halee Turner, [manager@redmondhistoricalsociety.org](mailto:manager@redmondhistoricalsociety.org)

### **Research note for looking up citations:**

A citation has author’s last name, publication date and page number and refers to “Works Cited,” where entries are sorted by author, then by date: e.g. Booth, 1987 comes before Booth, 2000-09-01. Each entry has a title and a code for the type of work: book, report (usually in a Word or PDF document), photograph, website, or email: for example, Booth’s more recent publication is available both online and in a PDF document. That information should aid in locating the material but may require assistance by the collections managers at the local archives (see above).

When online works are cited, they are labelled URL: e.g. Wikipedia, 2021-01-23, URL. By going to “Works Cited,” you can find a link to each of those works (all links were active as of the beginning of 2022). When emails are cited, copies are held at the archives and available through the collections managers.

## **Appendix A: Questionnaires**

Covering 2 basic timeframes and 2 geographic foci

Early time (*looking for past environmental degradation to set the stage for modern period*)

Q1: Where are the headwaters of Bear Creek and where did it empty into the Sammamish?

Q2: Did Indian tribes have permanent structures near the creek?

Q3: Did the tribes have any impact on the creek?

Q4: When did pioneers settle along or near the creek?

Q5: What impacts to the creek did the settlers have, including clear-cuts, pollution and plantings?

Modern time (*to find the story of preservation and restoration efforts on the creek*)

Q6: How do you describe waterway preservation and restoration?

Q7: When do you date the start of organized preservation and restoration efforts on Bear Creek?

Q8: What was your role as an observer and participant in restoring the creek?

Q9: Do you see the tribes playing any role in recent creek restoration work (last 30-40 years)?

Q10: What NGOs are relevant to the creek? (WaterTenders, Adopt-a-Stream Foundation, others?)

Q11: What do you know about WRIA-8 and how do you see its role on Bear Creek?

Q12: How do you see the work of counties, including Snohomish County as relevant to Bear Creek?

Q13: How have the counties' roles changed in the modern period?

Q14: What role does City of Redmond play, including cooperation/conflict related to King County?

Q15: Any new prospects for restoration on Bear Creek?

Q16: Most successful restoration project on Bear Creek? Least successful?

Geographic foci (*to separate urban and rural effects on the creek and on its restoration*)

Q17: How do you picture the Bear Creek watershed in its entirety, excluding Sammamish River and Evans Creek?

Q18: How do you divide Bear Creek on its run from Snohomish County to the Sammamish River?

Q19: How do you see the creek and riparian areas differing in its upstream and downstream areas?

Q20: When and where did restoration work start, separating that into those upper and lower areas?

Q21: Anything else to add?

## **Supplemental Questions**

The following are additional questions for Roger Dane and John Marchione, referencing the City of Redmond (CoR) and its role, particularly on Lower Bear Creek and Keller Farm.

Q: What work has CoR done on Lower Bear Creek, from Conrad Olsen Farm to the Sammamish River?

Q: What do you know about the Bear Creek reach on Keller Farm, 1880 - 2015, before CoR acquisition?

Q: What history do you know about Lower Bear Creek near the confluence before CoR acquisition?

Q: Please tell us about the city's acquisition of Keller Farm and confluence property, especially regarding the creek's value as a natural resource.

Q: Is there a connection between the restoration projects at the confluence and the Keller Farm?

Q: How do you evaluate the stormwater services being provided in the Bear Creek watershed?

Q: What future benefits do you see from the city's work on Bear Creek?

Note that Roger elected to answer the questionnaire in writing rather than by live interview, and he kindly clarified follow-up questions as needed. For the full text, including edits and highlights, see Dane, 2020-10-21.

### **Questions for John Marchione:**

Video interview on Bear Creek, September 19, 2021

1. For the record please give me your name and your connection to this location, starting with your former position in Redmond and the describing the spot we're at right now.
2. Please tell me about your childhood memories of this location. Did you swim and play in this area?
3. When I interviewed you for the oral history last year, you referred to this Lower Bear Creek restoration as an "audacious" project. Who do you credit with taking that leap and landing it?
4. It's been 7 years since this Lower Bear Creek project was finished. What results can you point to? (Note beside the salmon return, you can mention the beaver dam)
5. Do you recall Roger Dane working on this project? He called "the completion of Lower Bear Creek rehabilitation and the Keller Farm mitigation the two biggest and highest priority of all City restoration projects." Your opinion?
6. Given the urban development that continues in Redmond, do you think it's really possible to save a salmon-bearing creek that flows right through the heart of downtown?
7. Thinking back on your college internship with King County 35 years ago, John, what lessons did you learn that helped you in your job as Mayor?

### **Questions for Terry Lavender:**

Video interview at Paradise Lake, October 11, 2021

1. For the record, pls tell us your name and where you live, connecting it to where we're standing here at Paradise Lake.
2. How and why did you get involved in community efforts to protect and restore the creek?
  - a. Follow-up on WaterTenders?
  - b. Follow-up on the Drug Parcel at WaterMeadow?
3. What's the importance of this lake (Paradise Lake) and the open space above it (PVCA)?
4. Do you see a difference in efforts needed on the upper reaches of Bear Creek as opposed to near the confluence with Sammamish River?
5. Do you see hope for a sustainable run of salmon on Bear Creek?
6. How about sustainable citizen involvement?
7. What's your picture of Bear Creek's ideal future?

## **Appendix B: Biographies**

### **Interviewer Gary Smith**

A city boy from Southern California, I had no experience with salmon -- and not much with cold water creatures of any kind. After graduating from college, I joined the Peace Corps and then enlisted in the Navy, serving 4 years on active duty during the Vietnam War. Following graduate study, I worked for the U.S. State Department for over 20 years, much of that time on assignment in Japan. Contrary to popular conspiracy theories, I was not a spy, but I do claim service in Peace Corps, War Corps and Diplomatic Corps.

As my wife Kerry and I were approaching retirement in the mid-1990s, we visited Seattle looking to buy. Having dutifully followed me on assignments around the world, she wanted a quiet place near our grown children and found a secluded house in Redmond, where our son worked for Microsoft and our daughter taught pre-school. So 25 years ago, we settled here, living on 3 forested acres along Tosh Creek, and that is where my fascination with and commitment to the local ecosystem began.

Tosh Creek is named after the homesteader who settled somewhere nearby on his 160-acre land grant in 1883, perhaps on the plateau above our house where Microsoft's worldwide headquarters now sit. Over 100 years later, I started expanding my footprint through the forest and down to the creek, where I spotted a small, silvery fish. Where did it come from? The creek flows ½ mile to the Sammamish River and empties near where Bear Creek joins from the opposite direction. I had heard that people used to fish the local rivers, and I knew that cutthroat trout spawn in smaller creeks like Tosh. So there I stood, creekside, pondering where I had landed out of a Tokyo high-rise. My diplomatic experience and acquired language skills were not going to help much in this little valley with trout, deer, coyote, racoons, and all sorts of birds coming in and out.

Then a friend took me salmon fishing, and after seeing the beautiful fish up close and tasting fresh-caught salmon, I became motivated to learn everything I could about their freshwater existence in our local waterways. I was first introduced to salmon on Bear Creek through an environmental group with the felicitous name of WaterTenders and later, through the local chapter of Trout Unlimited. Eventually I decided to interview people more familiar with these surroundings, starting with friends living on or near the creek, then with government and NGO staffers working on fish habitat. They all kindly provided not only scientific information but historical and political context for the current situation facing salmon. As dire as it is overall, the challenges will be met in certain areas for certain species, hence the title of this oral history about people saving Bear Creek for the salmon. And hence my appreciation to those seven interviewees for sharing their personal history. I would also like to thank Tom Hardy, Tom Hitzroth, Jim Mattila, and Jason Wilkinson for maps, photos and good advice along the way -- then finally, Nils Cowan for his magnificent video of the Bear Creek landscape.



## Interviewees

(AKA Narrators, in alphabetical order)

Roger Dane is an Environmental Scientist for the City of Redmond. Working in the Environment & Utilities Services Division (formerly Natural Resources Division), he was the lead scientist on the major rehabilitation project at the mouth of Bear Creek, which re-meandered the final quarter-mile of the channelized creek where it flows into the Sammamish River. (Roger answered the questionnaire in writing and in subsequent emails.)

Shirley Doolittle-Egerdahl grew up in the 1960s spending summers at the family cabin on Paradise Lake in northern King County. Her great-great-grandfather, Henry Davis, homesteaded the land-grant parcel that includes the lake. Her mother is Barbara Jean Norelius-Doolittle, who wrote the Davis family history that accompanies her interview. Early on, Shirley joined the environmental movement in various local groups trying to slow and mitigate development in the Upper Bear Creek area, and she continues living on the family parcel at Paradise Lake where she owns and runs Tadpole Haven nursery. She is an active member of WaterTenders, having served as President for several years.

Ray Heller (ret.) worked on numerous natural resource projects for King County Water and Land Resources for 30+ years, starting in the late 1970s with a county-wide wetland inventory. He was project manager of the nationally awarded 1985-86 Basin Reconnaissance program and subsequently managed the Bear Creek and Issaquah Creek Basin Plans. He was Basin Steward of Bear Creek from 1991 to 2003 while also stewarding the Sammamish River and portions of the Snoqualmie River until Stewards were hired for those respective basins. He concluded his county career as Basin Steward of Vashon and Maury islands, and after retirement in 2006, Ray served for 6 years on the King County Conservation Futures Advisory Committee.

Terry Lavender is a member and past chair of the King County Conservation Futures Advisory Committee. She has lived near Bear Creek since 1977 and in 1987 joined the first Bear Creek Basin Plan Citizen Advisory Committee. She was an active member of WaterTenders and has continued serving on the WRIA 8 Salmon Recovery Council since 1998. In the early 90s she helped the county procure its first piece of property on Bear Creek for conservation purposes by negotiating a federal donation of 2.2 acres confiscated in a drug deal. Terry remains active in various salmon recovery efforts and is sometimes known as “The Salmon Lady.”

John Marchione was Mayor of the City of Redmond, 2008-2020. He brought to fruition the final phase of Lower Bear Creek rehabilitation and considers it “the most successful project” on the creek during his administration, “moving Bear Creek further away from State Route 520 to enhance fish habitat and control stormwater flows.” He was also instrumental in establishing the Keller Farm mitigation bank, created officially after years of preparation on virtually his last day in office. Those will stand as the largest creek restoration projects in City of Redmond.

Tom Murdoch started working for Snohomish County's Planning Department in 1978. In 1984-87, as the county's Water Resource Supervisor, he initiated numerous watershed restoration projects, including some on Upper Bear Creek. In 1980s he also established the county's "Adopt A Stream Program," which evolved into a private foundation based in Everett. Housed at the Northwest Stream Center, the Adopt-a-Stream-Foundation has the mission, "To Teach People How to Become Stewards of Their Watersheds." And at the beginning of this century Tom was the key player in protecting the headwaters of Bear Creek by establishing the Paradise Valley Conservation Area under Snohomish County oversight.

Dick Schaetzel has lived on Bear Creek since 1996. His home property in the Woodinville area straddles the creek where it has enough gradient to cause riffles and create good spawning ground, which Dick has protected over the years. He has allowed county workers to monitor stream health at that site, has participated in their surveys of fish and mussels in the creek, and has also worked with Wild Fish Conservancy doing fish research. He was an active member of WaterTenders, serving on the Board in numerous positions over the years from 1992 to 2015 and is currently a docent at Tom Murdock's Northwest Stream Center.