

For  
**Riparian Restoration in a Contaminated Environment**

**20 April 2012**

**Deer Lodge**

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I've been asked to provide remarks that connect the work you discussed the last two days to the larger world of restoration in the state and nation.

Well, I'll be damned if I can actually do that.

However....

Certainly riparian and river restoration are occurring in many more places than in the Clark Fork watershed, with dam removal being perhaps the most dramatic example with the most public exposure.

We recently celebrated the spectacular breaching of the Condit Dam on the lower White Salmon River in Washington State, opening 33 miles of blocked habitat to anadromous fish. And many applaud the long awaited removal occurring now of two dams on the Elwah River on the Olympic Peninsula, accommodating salmon and steelhead movement into 70 miles of a pristine watershed. But there's more.

According to American Rivers, more than 600 dams have been removed for various reasons around the country during the last 50 years. But that's a drop in the bucket of where we will probably be in another half century. According to the Army Corps of Engineers, more than 66,000 dams plug the nation's waters – and this doesn't count tens of thousands of low-head structures that block small waterways across the nation. All these structures have finite lives; many are unneeded. The future of dam-removal and associated riparian restoration is bright.

My organization has long advocated for removing dams where it makes sense, including at Milltown and with the decommissioning of the Edwards Dam on Maine's great Kennebec River, where the benefits to riparian health, fish and local communities were almost immediate. Today, we look forward to removal of four aging structures on the Klamath River in Northern California. And hope springs eternal that the nation will eventually see the wisdom in removing four large dams of dubious value plugging the lower Snake River, potentially reviving what was once one of the most robust salmon fisheries in the world.

But riparian restoration entails more than just tearing down dams, of course. It implicates a broad constellation of activities -- in floodplains, in channels, in channel

migration zones -- including many tasks you are practitioners of, and which we've heard about these last two days. It certainly requires, first and foremost, restoring fluvial processes, as Karin Boyd so eloquently and effectively explains, and, as Tom Parker detailed so well, better understanding the intersection among the hydrograph, groundwater exchange and the demands of cottonwoods, birch and willow.

However, riparian restoration, also, it seems requires -- no demands -- focusing outside that green ribbon that comprises the lowest portions of our stream valleys. Riparian restoration is a ridgetop to ridgetop endeavor. Will McDowell was getting at that yesterday when he talked about upland restoration and its relationship to Dry Cottonwood Creek. We can remove the pollutants, fix the channel, restore the floodplain and plant the cottonwoods, but the water that sustains the system mainly comes from somewhere else, and it has to be of adequate volume, the right quality, and delivered at the right times in order to mobilize sediment, deliver woody material, distribute nutrients, create habitat complexity and drench root zones.

Further, in order to extract the highest biological benefit it requires designs that incorporate complexity to accommodate niches for the various life-stages of fish, bugs and frogs, and, in the best case, maximizes connectivity with tributaries.

That's why my organization, as well as the Clark Fork Coalition, and our wildlife agencies, have long encouraged investments of NRD dollars and other sources into projects off the Clark Fork corridor, which is a sum of many parts.

Of course, that's so easily said.

Also easily said is this: No river or watershed restoration effort in the country rivals the scale and complexity being tackled on the Clark Fork, where we have, or had, 100-miles plus of contaminated floodplain and streambed, billions of gallons of contaminated ground water, a reservoir laden with more than a million cubic-yards of metals-laced sediment and thousands of acres of contaminated upland. Fixing this seems incomprehensible. But so what? It's not impossible.

Achieving success means more than applying the wheels of science and technology to the task. It absolutely requires flexibility, acceptance, and perhaps a little humility even, among the human community.

Basically, to succeed, the neighbors have to like this stuff. That's certainly what Bryce Andrews expressed so poignantly yesterday.

People break things. People fix things. Many people -- many more than, say, a couple of decades ago -- are determined to fix the Clark Fork.

But it's been quite the ride getting neighborhood buy-in. And without it, much of what has been discussed these last two days would not have been possible.

It was inconceivable to think we'd see cutthroat trout in Silver Bow Creek, as we do today, in 1980 when the Washoe Smelter closed. Believe it, few were thinking then about restoring the Clark Fork, a river no one today, no one 50 years ago and no one 100 years ago experienced in even a half pristine state. No one was thinking about removing a dam when arsenic was found in groundwater at Milltown in 1981, and it wasn't a very popular idea until more than 20 years later.

Few thought about restoring the Clark Fork when the Berkeley Pit closed in 1983 during a previous deep recession. Well, except for a few visionary folks in the governor's office, at the Montana Dept. of Health and Environmental Sciences and at FWP, including my old friend and colleague, Stan Bradshaw, at the time chief legal counsel for Fish, Wildlife and Parks. One day in 1983, Stan jetted up to Great Falls on the last day of a deadline to file a complaint against Arco, citing historical damages to natural resources in the Clark Fork basin, and thereby testing a new opportunity to do right by the river provided by the still young federal Superfund law. Stan and DHES lawyer Frank Crowley weren't entirely sure what they were getting into, they just knew they needed to get into it.

Around that time, the golden age of Superfund kicked in, and remedial investigations of problems in Silver Bow Creek and at Milltown started. People loved it.

No, not really.

Agency folks were contemplating cleanup and restoration, as were some folks in the conservation community, but, a lot of other people, to put it mildly we're not on board, even as remediation progressed through the 1980s into the 1990s. These included more than a few politicians, community leaders, business folks, landowners and others, largely in the upper basin, but also in the Milltown-Bonner area. Superfund cleanup was seen as an impediment, a damper on rebuilding economies rocked by the closure of the smelter and reduction in mining. Early on the idea of removing contaminated tailings and soils was considered radical, impossible. The call was for stabilization, liming, seeding and going away. Preferably, as soon as possible. One upper basin legislator called for a global settlement for remediation and restoration with Arco, for \$50 million. Get it done with.

But the projects commenced and contaminated material was removed: Mill Creek, Mill-Willow bypass; Warm Springs Ponds; Lower area one, and eventually, now, Silver Bow Creek, Milltown, and in at least 46 miles of floodplain. This has been a long journey. At one time EPA had designated 77 operable units in the Clark Fork basin's Superfund constellation. When I was at the Clark Fork Coalition I tried, unsuccessfully, to convince my colleagues we could raise money by producing trading cards for all the Superfund sites. Hey, kids! Collect all 77!

Today, many of the former critics, and others in their communities, now say not enough Superfund works is being done, or, that NRD money should be focused on their priorities, their neighborhood. What a switch.

This has largely occurred because of the quality of science produced, but more importantly the quality of people doing the work -- many of you folks and your colleagues. Working, methodically, respectfully and persistently with the Clark Fork community. You listened. Importantly, many of you came back, year after year. You learned the context of the culture. Relationships and trust were solidified. Everyone, as Bryce referred to yesterday, dealt into a new game with a new hand with new chips.

I'm pretty happy with the progress I see. I never would have bet Milltown implementation would have proceeded with so few hiccups. Not long ago, I absolutely would never have bet on cutthroat trout reoccupying Silver Bow Creek in my lifetime. Nonetheless, much difficult work remains. More bridge-building is required. More debates will ensue over technical matters and results.

The last two days a lot of focus has been on how well projects met measurable objectives and design standards. Presenters have been candid about identifying shortcomings, chalking it up to experience, which in some arenas, say, politics, is the name given to what are otherwise bad mistakes.

But I don't think it's always necessary to get everything to match pre-project expectations. Close enough can be good enough. That 20 percent failure rate mentioned in an earlier presentation? That might just be the difference between science and art. It's okay to have a little disorder in the system, the occasional unplanned avulsion, the slightly off-kilter grade control, the moderately misplaced point-bar. After all, ultimately the river will get it right.