To sing of egrets: Water use culture and conflict on Montana's Bitterroot River

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To Sing of Egrets: Water Use, Culture and Conflict on Montana's Bitterroot River

by

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The Bitterroot River in Southwest Montana is wildly over-appropriated, to the detriment of the associated aquatic community. While over-appropriated streams are a common occurrence in the West, the Bitterroot does not fit the pattern of the concentration of power that accompanies large-scale irrigation projects some scholars. Although Bitterroot River water is heavily used for irrigation, and the watershed even sustains a few large irrigation projects, the valley lacks the characteristic concentration of power and disintegration of democracy that historian Donald Worster describes.

This paper examines the climatic, geophysical and historical factors that did not result in a so-called hydraulic society in the Bitterroot Valley. Bitterroot irrigators developed water resources earlier than most western communities and managed to hold their small-scale irrigation projects in private hands. The Bitterroot made a significant break from more typical western water development after the Reclamation Act passed in 1902 and the government began promoting large-scale, government-owned irrigation projects throughout arid regions of the West. By then, most of the available water resources in the Bitterroot were already developed. By the 1930's when the dam-building era was at its zenith, the Bitterroot Valley had more water available for irrigation than land available to be irrigated.

As a consequence, Bitterroot society did not experience the accumulation of power by a few that leads to the failure of real democracy in other irrigation societies. As people across the country became more aware of the negative environmental and ecological effects of dewatering that results primarily from irrigation in the West, the Bitterroot had more democratic possibilities in place to begin the process of rewatering the river and its tributaries. I examine two significant events contributing to maintenance of minimum instream flows and their genesis within democratic processes -- the purchase of supplemental water from Painted Rocks Reservoir and the closure of the Bitterroot hydrographic basin to new water rights claims -- as well as some of the continuing barriers to restoring a healthy aquatic community in the Bitterroot watershed.
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Introduction

The planet holds a legion of cultures in the dry zones who have confronted the deserts, the steppes, the rainless mountains. These various groups of people have used resources at different rates with different results. Often this record of human activity in arid lands is obscured by such pufferies as tributes to human ingenuity or celebrations of a sense of motion called progress or loose talk under the heading of the conquest of nature. Underneath this skin of language a basic process is always going on: people are using different devices and forms of organization to influence the flow of materials at specific sites.

Charles Bowden - Killing the Hidden Waters

If I get on the highway from my home in Missoula, Montana and drive south to Idaho, there are two routes that I can take. I almost always chose to drive Interstate 15 -- it is a bit longer, but the road is wider, faster, better maintained. The Continental Divide at Monida Pass marks the Idaho-Montana border, and from there, the highway drops slowly but continuously for almost fifty miles into the Snake River basin. The transition from the sage-washed gray-brown hills to the alluring emeralds of this part of the Columbia Plateau is anything but gentle: suddenly, the most conspicuous feature of the landscape is irrigated agriculture. Irrigation here is so conspicuous, in fact, that it often goes unnoticed -- irrigated fields are a common "landform" in the modern West.

Lately, however, I've been taking the time to notice. The brilliant green fields and the irrigation that creates them are among the most visible and widespread symbols of how water is used and considered in the West. When I take the time to look carefully, I can often follow the water all the way from river to crop: Fifteen-foot-wide diversion canals come straight out of the Snake, lead to five-foot-wide canals, which lead to one-hop-wide ditches that eventually dissipate into the furrows of sown fields. Even from the highway, I can tell where canal meets ditch by the square concrete structures that stand above the junctions, holding guillotine-like headgates that irrigators snap open to spill life-giving water over the fields. The planted rows that lead away from the headgates are neat and tidy, following orderly lines; taken together the lines form a
carefully plotted grid. Just as commonly, canals lead to pipes that feed the long-armed sprinklers that circle around and around, delivering the agent of growth in protractor-perfect circles. This irrigated landscape is coordinated and meticulous, implicating the human influence in its design.

The Snake River Basin and Columbia Plateau are, undoubtedly, some of the most heavily irrigated areas in the western United States. However, the scale and impact of irrigation and reclamation projects in Idaho are by no means unique -- California, Arizona, Colorado, Nevada -- practically anywhere in the West where rainfall is scarce and soils are even minimally fertile, irrigated agriculture is part of the landscape and economy.

These carefully laid-out, verdant landscapes are the image that most Americans conjure if they think about water-use in the West. Likewise, it is the social and ecological consequences of large-scale, carefully planned, and highly controlled irrigation systems that have often been described and analyzed by authors of agricultural and water histories of the western United States. Most histories of western water use focus on the transformation from small-scale farms producing for local markets to large-scale, market-driven agricultural production and the manipulation of land and water systems -- irrigation -- that make such production possible. These studies describe a clear progression of human-created water-control systems and emphasize the connection between the control of water and the creation of political and economic power differentials in society. Many consider the implications of these differentials for how democracy functions in the West.

Walter Prescott Webb's classic history The Great Plains turned an assumption -- that the West, as a region, is defined by aridity -- held as long as the region has been traveled by whites into historical cannon. In a essay on the West, Webb champions this theory:
The overriding influence that shapes the West is the desert. That is its one unifying force. What is at the heart of the West? Where is the center from which the shaping force and power radiate? The answer is a simple one if only we would see and accept it. The heart of the west is a desert, unqualified and absolute.

The assumption that follows is that if aridity is the (or even a) defining feature of the region, one should be able to draw conclusions about and suggest solutions for water-related issues for the entire West by extrapolating from the experience of any western area.

Donald Worster, in Rivers of Empire: Water, Aridity and the Growth of the American West, considers the consequences (and implications for democracy) wrought by aridity. He uses case studies of irrigation projects from around the West, particularly California's Imperial Valley, to chronicle the "trend toward larger and larger units of organization and domination and the reign of expertise and profit" that he dubs a "hydraulic society." Worster lays out a spectrum of societal water-use models, posits that the American West fits into this spectrum as a modern (capitalist) hydraulic society, then denounces that system and its political consequences.

Worster offers three basic models for his water-control spectrum. First, small-scale irrigation infrastructures, authority and expertise within the local community, and little ecological disturbance characterize the local subsistence mode. Although he attributes the local subsistence model to indigenous irrigation cultures that have been largely destroyed by the onslaught of white settlement, such as the Papago and Hohokam, he suggests that a few such communities still exist in the modern West. The next level of water control he calls the agrarian state mode and characterizes these as societies that have "interfered on a massive scale with the natural flow of the watershed," requiring "bureaucratic organization to design and administer the water system," and ultimately causing a "loss of autonomy to an entrenched, extrafamily or clan authority." As examples, he suggests pre-high-technology water-dependent societies such as ancient Egypt. The third model is the capitalist state mode, in which the power elite (private
agriculturalists and public technicians/bureaucrats) views water as a commodity which they manipulate to increase their wealth and power, stripping the small, water-dependent farmer of his/her autonomy and political power. Worster clearly defines the modern, capitalist “hydraulic society” and its effects:

There is nothing harmonious, nothing picturesque about the western world that has developed beside an irrigation ditch. There is little peace or tidiness or care, little sense of a rooted community. There is no equitable sharing of prosperity.... There is however, ...a techno-economic order imposed for the mastering of a difficult environment. People here have been organized and induced to run, as the water in a canal does, in a straightline toward maximum yield, maximum profit.... A hydraulic society, which is to say, a social order based on the intensive, large-scale manipulation of water and its products in an arid setting ... is increasingly a coercive, monolithic and hierarchical system, ruled by a power elite based on the ownership of capital and expertise. *

Law scholar Charles Wilkinson draws similar conclusions about water control and political power in the West in the water-related chapter of his book Crossing the Next Meridian: Land, Water, and the Future of the West. Notably, he also chooses an example from California -- the Owens Valley project and the Los Angeles Aqueduct -- to support his conclusion that, “The lasting lessons of the Owens Valley ... involve forces that resolutely hammer out a steel-framed system that fosters, shelters and legitimizes the exercise of broad and unexamined power.” ^

These authors describe and exemplify an important paradigm for western politics: the concentration of power based on precisely-controlled water systems. Examples of this paradigm are numerous and conspicuous throughout the arid regions of the West. However, other historians, geographers and western scholars illuminate less-conspicuous, more place-specific examples of how water has been used and managed in the region, examples that reveal that the paradigm does not fit everywhere. Their examples of western water-use fit into different parts of Worster’s water-control spectrum, often displaying characteristics from more than one model. While these alternative models of how water is used and managed do not necessarily refute the hydraulic society model,
they do offer an essential additional component to the study of the relationship between water-use and democracy in the West.

There is another route from western Montana to the fields of Idaho's Snake River basin. I rarely choose to drive this route unless I have plenty of time and some special purpose. Highway 93 through the Bitterroot Valley has only two lanes, and it passes through towns, slips along creek bottoms and finally stretches over a mountain pass at the valley's southern terminus. On the way, one can see mountains in all directions, but the view to the west is most dramatic: the highway runs snugly along the base of the Bitterroot Range that marks the western border of the valley.

Typically, my eyes are drawn more readily to the snow-covered mountains than to the flat valley bottomlands, but even giving careful attention to the lowlands, there are few conspicuous signs of irrigation. Unlike the Snake River Plain to the South, the valley is closely contained by forested, snow-capped mountains that hold snow late into summer, so first impressions indicate a lusher climate, muting the contrast between irrigated and non-irrigated landscapes. You might notice hayfields, golden-green even at summer's peak, belying the season's aridity, but from the numerous vantages along the road, the Bitterroot River appears as a meandering, undiminished waterway with nary a diversion ditch in sight. This irrigated landscape seems affected by human occupation but not entirely commanded by it.

But don't be fooled into thinking that irrigated agriculture isn't important in this valley, or that water is any less of a contested, over-appropriated resource here than it is in the more conspicuously irrigated parts of the West. A locally-written and locally-known history of the Bitterroot Valley titled Montana Genesis (1971) clearly states the value of irrigated agriculture: "The development of the entire Bitterroot Valley is directly related to the development of its irrigation system, which is unusually extensive for the economy of the valley." It is precisely the early, extensive development of irrigation,
coupled with continuous population growth and new demands on the valley's water resources, that have kept water-use at the forefront of critical resource issues in the Bitterroot for over a century.

But if you want to uncover the irrigated landscape here, a few place-specific detours are quite revealing. In late summer, follow Highway 93 just past Darby and turn towards Lake Como, noting the listless trickle of Rock Creek where it joins the main Bitterroot River. Just a few miles up, the road crosses a seemingly different creek -- the water here, above a major irrigation diversion, tumbles lively among the rocks that give it its name, even as the season wanes. Anglers on the Bitterroot River just downstream of its junction with Rock Creek have to duck their heads to avoid a painful run-in with a slowly rusting, 36-inch diameter metal pipe -- the irrigation "ditch" that carries Rock Creek's flow all the way across the main River to eastside benchlands.

If you get off 93 and travel south along the old Eastside Highway you will start to see indications the long tradition of agriculture in the valley. It may take an extra twenty minutes to make these side trips, longer if you want to peruse the well-kept farmhouses or stop at an old general merchandise in Corvallis, but if you are not content with generalizations about how water is used in the West, it is well worth the journey.

The literature, too, reveals more if one is willing to take the time to detour off the beaten path. One of the earliest alternative voices came from John Wesley Powell, an explorer of western rivers and, later, in charge of the nascent U.S. Geological Survey, an outspoken proponent for local determination of western water development. Speaking in the 1890's, Powell warned that a thorough study of the attributes of each region to be irrigated was necessary before settlement, recognizing not only regional differences in soils and precipitation rates, but that unplanned development of irrigated agriculture would lead to water disputes and political chaos:

Very speedily the question of water rights -- who owns this water, is to be the important question in this country, remember the question of lands.
rights is comparatively a minor one compared with water rights, and water cannot be measured out to you by meets and bounds; you cannot lay out lines and drive stakes in the clouds of the heavens from whence the waters come .... Disputes will arise from day-to-day about the waters. 

Thomas Vale, a modern scholar, uses place-specific basic geographic information to debunk the notion that the entire West fits into the same paradigm of aridity and irrigation culture. In his article “Mountains and Moisture in the West,” Vale makes the point that aridity is not the consistent, dominant feature of the western landscape by illustrating that, although the West is distinctly arid throughout much of its area, mountainous regions of the West may be remarkably wet:

The collective conviction is simple ... those who believed in irrigation in the west brought about disaster, particularly ecological disaster, because they tried to create agricultural land in a landscape to arid to support it. After all, the West is a desert. . . . In fact, precisely because western water is locally abundant, the belief in the western garden seems rational, at least in certain locales; it is the extrapolation to all of the west that is unreasonable. 8

Local differences in the amount and timing of precipitation have as much of an influence on water-use systems as any other single factor, suggesting the need to account for the physical setting in any place-specific discussion of water-use and its political implications. Historian Robert Dunbar supports the notion that there are many alternative water paradigms in the West. He cites less conspicuous and often smaller water projects that provide important, alternative models for the kinds of social order that water-control can cultivate. He diligently chronicles the creation of early irrigation projects and the subsequent development of western water law in his book Forging New Rights in Western Water. The numerous and diverse examples of small, self-determining irrigation projects he studies mostly predate the development of massive federal projects that are so conspicuous today, and serve to remind us that for every large, hydraulic-society-creating water project, there are numerous smaller projects with their own lessons and influence on the development of water in the west. Not all the west is a hydraulic society.
Of course, Donald Worster also recognizes and is careful to acknowledge exceptions to the hydraulic society model that he tosses over the West like a brightly-colored saddle blanket used to hide the sway in an old mare’s back. He describes some of these exceptions:

... there are those scattered communities in the American West made up of Hispanics, Mormons or Montana ranchers, who continue to hang onto some part of their self-determination in the face of federal bureaucratization and external market pressures. What those communities have in common is that their technology, like their economy, is the handiwork of water users themselves; it is an indigenous, not exogenous, artifact. There is not much need for capital or specially trained experts in their creation. Typically a river in such communities continues to run largely on its natural way, giving up only a little of its substance to human demands, answering to the need for sustainability more than efficiency.®

In this description of exceptions to the modern West’s hydraulic society, Worster presents several key criteria for what is so wrong, in his mind anyway, with the dominant model. He considers self-determination and autonomy as essential to a functioning democracy, but he also suggests that some kind of ecological sustainability is a necessary component of a healthy society. Although Worster is careful to acknowledge western water-control systems other than the hydraulic society, his book focuses on the not-to-be-repeated lessons of the hydraulic society, and there is little in-depth examination of potential positive lessons offered by the exceptions.

The purpose of Donald Pisani, a historian who has examined the rise of agribusiness in California, is to illustrate the failure of state and federal governments to create a unified and, hopefully, efficient water policy, creating fertile ground for power centralization wrought by companies that control large-scale reclamation projects. Nonetheless, in To Reclaim a Divided West: Water, Law and Public Policy, 1848-1902, he argues for examining place histories individually before applying conclusions to the entire region.

The study of the West must begin from the ground up, rather than from the top down; the parts must be understood before sense can be made of the whole. Most of the authors [on Western water history] find a stages-
of-development history attractive because they look at the West as a whole ... and fail to appreciate the region's diversity. 10

This purpose of this paper is to furnish just such an example of regional diversity, beginning "from the ground up," by placing the history of water-use in the Bitterroot Valley of Southwest Montana in the context of national, regional and state policies and trends. I will focus on aspects of the valley's water-use history that clarify where the Bitterroot falls within the Worster's spectrum of water-control and then examine some of the social and ecological implications of how water is used and considered in the valley today. My conclusions explore the place-specific legal and political possibilities for creating a more sustainable social and ecological approach to water. Like many of its residents, the valley's history eschews archetypes in favor of individuality. The Bitterroot has its own story to tell.

6 Montana Genesis (Stevensville, MT: Stevensville Historical Society, 1972), 144.
7 John Wesley Powell, in Proceedings and Debates, Montana Constitutional Convention, 1889, 822.
9 Worster, 36.
I. Place: Hydrogeography and Climate of the Bitterroot Valley

The climatic conditions along the Missoula and [the Bitterroot] are markedly different from those on the Hell Gate and Big Blackfoot Rivers, allowing much more diversity of crops and intensive cultivation.

S.T. Harding, Irrigation Development in Montana

The Bitterroot Valley looks radically different today than it looked to the earliest white explorers and settlers. Members of the Lewis and Clark Expedition were the first known Euro-Americans to come through, arriving at the headwaters East Fork of the Bitterroot River (at the southern end of the valley) in early September, 1805. With hopes to get over the mountains and complete their journey to the Pacific before winter set in, they traveled hurriedly north along the river, keeping an eye on the mountains to the west that they knew they had to cross. During that time, Meriwether Lewis respectfully referred to the Bitterroot Range as "Those unknown formidable snow-clad mountains." Sargent Patrick Gass, another member of the expedition, was more intimidated by their appearance, describing them as "the most terrible mountains I have ever beheld." After a brief layover at the mouth of Lolo Creek, the expedition followed their Salish Indian guide west through Lolo Pass on their arduous journey across the mountains.

Descriptions by early settlers favor the valley over the mountains, depicting more heavily wooded bottomlands than what modern travelers encounter. But the geophysical attributes of the valley have changed very little since Lewis and Clark first found a "Traveler's Rest" at the mouth of Lolo Creek, and it is these attributes -- the size and shape of the valley, its climate, and the configuration of rivers and streams -- that helped determine and still affect water-use patterns in the Bitterroot.

The Bitterroot Valley is synonymous with the approximately 3,000 square-mile Bitterroot River watershed, and the entire watershed, with the exception of a small section near the mouth of the river, constitutes Ravalli County, Montana. The river
flows north, collecting tributaries for over 100 miles from the confluence of the West and East Forks at Conner, Montana, to its mouth southwest of Missoula. It is only at the northern end of the valley that the mountainous perimeter defining both county and drainage gives way and the river makes its escape, spilling into the Clark Fork River and continuing a slow descent into the Columbia River and the Pacific. Flow records from 1930 to 1971 show that, by the time the river reaches its mouth, average annual run-off is 1,641,000 acre-feet. In comparison, the Clark Fork, draining 22,000 square miles, is the largest river flowing out of the state of Montana, spilling 15.22 million acre-feet of water yearly into Idaho. The flow of the Missouri, although it will eventually dwarf the Clark Fork, averages only 6.43 million acre-feet where it leaves Montana.

The valley itself is long and fairly narrow, slightly wider toward the headwaters of the West and East Forks. Marking the western boundary is the crest of the dramatic Bitterroot Mountains, which rise from under 4,000 feet to over 10,000 feet, often in less than a few miles. The eastern flank of the valley is kept by the gentler Sapphire Mountains, whose rolling topography ambles up to elevations of 7,000 - 8,000 feet. At times, the distance across the valley floor between the two ranges may be as short as 8 miles, although 12 miles is a more common stretch.

The peaks of the Bitterroot Mountains, covered with snow from late October well into July, are immediately striking for both their elevation and the steep pitch they ascend to attain it. These features, elevation and slope angle, so captivating to the eye, are "captivating" to non-human elements as well, and in large part help define the climate of the valley. Technically speaking, "climate" is the precipitation and temperature patterns of a particular place over time. These climate measures (precipitation and temperature), their interactions, and their consequences contribute to the physical characteristics of the Bitterroot valley and help explain the land- and water-use patterns that developed there.
The Bitterroot Mountains are the terminus of an intrusion of warm, moist air masses that gather heat and moisture from the Pacific Ocean and are blown east across the continental United States by the prevailing trade winds. These ocean-influenced air masses that keep winters mild and wet along West Coast are funneled inland all the way to Montana through the Columbia River basin, skirting obstacles keep such weather localized in other parts of the northwest. Here, the air masses are forced up over the mountains in a process called orographic (mountain) lifting. As the air moves up in elevation, it encounters colder and colder atmospheric temperatures until it reaches the specific temperature at which water vapor turns to liquid. At this temperature -- the dew point -- moisture condenses out of the air and falls as rain or snow over the mountains. A quick glance at a precipitation map of the western United States reveals that the Bitterroot Mountains and their surrounding area receive more precipitation annually than any area between the Cascades and the famed hundredth meridian.

With up to 100 inches of annual precipitation along the Bitterroot Crest, one might consider flood control a more pressing issue than irrigation. However, while precipitation is exceedingly high in the mountains, it is astonishingly low in the immediately adjacent valley. Named a rain-shadow effect, this phenomenon is common in mountainous regions. After the moisture-laden clouds release their precipitation over the mountains, the water-depleted air masses tumble into the lee valleys. Ambient air temperature warms with the descent, increasing the masses' ability to retain the little moisture they have left, leaving the lower valleys remarkably dry.

In Hamilton, Montana, in the central section of the Bitterroot Valley, sources estimating average annual rainfall vary, but consensus among them could likely be reached at 12 inches/year. To place this figure in perspective, one simple climatic definition of a desert is an area that receives 10 or less inches of rain a year. For example, Tucson, Arizona, receives an average of ten inches of rain annually. Under this classification system, Hamilton (like most valleys in the Mountain West) would be
considered semi-arid — not a climate considered favorable for agriculture. Notably, the
rain shadow effect extends to the Sapphire Mountains on the east side of the valley as
well: even at 8,000 feet in the Sapphires, average annual precipitation is only 40 inches,
less than half that of the Bitterroot Crest.\textsuperscript{11}

However, while the mountains steal moisture from the air as it passes over,
resulting in much drier areas just to the east, they do not similarly steal heat, and the
Bitterroot Valley receives frequent influxes of relatively warm Pacific air, keeping winter
temperatures in the valley consistently warmer than many other parts of Montana. In
recognition, the Bitterroot Valley is referred to throughout Montana as "the banana
belt," and "the tropics."

Another effect of the Pacific air intrusions that is relevant to land- and water-use
patterns in the valley is that milder winters mean a longer growing season. Spring comes
a little earlier and fall lingers a bit later. Various sources claim that the average growing
season in the Bitterroot is between 90 and 150 days, but the most reliable sources place
the average at around 120 days between killing frosts.\textsuperscript{12} For comparison, irrigated areas
along Montana's Rocky Mountain Front have growing seasons closer to 90 days. The
longer growing season accommodates slower growing crops, or, in some cases, may allow
for two successive harvests within one summer.

Coastal-Northwest weather systems reach the Bitterroot Valley in the summer as
well as the winter. The Northwest's temperate rainforest biome is characterized, in part,
by a summer drought, and most of western Montana typically receives little precipitation
in July and August.\textsuperscript{13} Instead, the majority of precipitation arrives in winter and spring,
arriving in the mountains as snow. Water is stored in those chilly months as frozen
crystals until longer days and warming temperatures break the matrix and release a
turbulent burst of spring run-off. Unfortunately for farmers, by August and September,
when rainfall is lowest and crops are thirstiest, Bitterroot creeks are spent and
lackadaisical, too small for their spring-scoured banks, and what little water remains to
moisten the creek bed often trickles right past irrigation ditches cut in its high banks. Flow statistics for the Bitterroot River confirm the annually tumultuous pattern: "Spring run-off in April, May and June accounts for over 60% of the total yearly flow of the river."  

Patchy flow records for the river make some comparisons difficult, but the highest recorded flow on the Bitterroot River at its mouth was in mid-June of 1899, with 37,500 cfs, plunging to 2,500 cfs by September. These days, numerous dams throughout the Bitterroot's watershed have tempered the fluctuations, but in 1997, the second highest peak flow on record, the river ran at 24,000 cfs in mid-May, dropping to a relatively steady 1000 cfs by September. For comparison, the lowest recorded yearly peak flow occurred in 1992, reaching, in early May, only 6,500 cfs. Generally flows are run relatively consistently at 1000 cfs from September through April, when spring run off starts to fill the river again.  

These accumulation and run-off patterns are typical throughout the uplifted belt that forms the Rocky Mountains. But the mountain topography creates a unique spatial distribution patterns of water as well. Snowmelt is channeled into the valleys, which cut down through the range with the consistency of fingers on a hand, reaching for the river at the valley bottom. The regularity of these drainages feeding the river from both the east and west creates a convenient grid (if you want access to water) of over fifty tributaries across the valley floor. The proximity and distribution of water in numerous tributaries made early irrigation easier, because most tracts of arable land are reasonably close to a steady supply of water and diversion ditches need not be too long. Additionally, the steepness of the drainages allowed steady flow in irrigation ditches diverted high above cropland. These factors made it possible for individuals and small groups to develop effective irrigation systems long before the technology and expertise for more ambitious projects was available.
So put yourself in the Bitterroot in the 1870's, ready to give homesteading a go. The valley presents a perplexing amalgam of traits: there is plenty of free land adjacent to water and relatively warm temperatures, especially around the edges of winter. The alluvial soils are well drained and contain plenty of nutrients to bolster crops. However, the distribution of precipitation and run-off, with wet winters, spring melt and dispersal, and dry summers is particularly ill-suited to agriculture. What are you going to do? It's a lot of work, digging an irrigation ditch, even with a team of horses to help, but the consistent distribution of tributary streams dissecting the valley floor means you can have your pick of homesteads with water through the property.

For Bitterroot farmers, especially the early ones, all that stood between prosperity and penury was a ditch. While there were a number of other factors that conspired with climate and hydrogeography to bring agriculture to such pre-eminence in the Bitterroot valley, it was these essential physical conditions that made the valley such an prime location for the development of an economy based on irrigated agriculture. It was no simple coincidence that when the very first settlers arrived, they immediately set about the task of ensuring water for their crops.
2 Ibid, 284-287.
5 Ibid, 3.
8 Farnes and Shafer, 6.
9 Ibid, 5.
10 One of the most notable examples of the rain-shadow effect is Death Valley and the Nevada deserts along the east side of the Sierras. The Interior Columbia Basin is likewise notably drier than the west side of the Cascade Range.
11 Farnes and Shafer, 5.
13 Paul Alabeck, "Plant Biogeography" University of Montana lecture, March 12, 1996.
14 Farnes and Shafer, 9.
INTERLUDE – Pilgrimage

Perceptions. That is what it’s all about -- filtering our knowledge and experience into the stories that order our universe: What this means to me, what that means to you; how we interact with and use the land and resources around us based on our beliefs about what they hold potential for, how they can empower and enrich our lives.

My first knowledge of Bass Creek was apples. I knew that the Bass brothers, who lived at the mouth of this valley, owned the first commercial fruit farm in the Bitterroot valley. I assumed they lived nearby, and that they needed and harnessed the creek’s flow to nourish their trees, to support their dreams of production, stability, and wealth.

My second knowledge of Bass Creek was that five men founded the Bass Lake Reservoir Company in 1918 “to provide a water supply for irrigation of lands at the lower end of the Creek.” Five men built a dam over 20 feet high, holding 1,600 acre-feet of water, 8 miles past where the mountains ascend, steep and ragged, out of the valley; eight miles and 3,160 feet above the nearest irrigable lands. Not one of them was named Bass.

My perceptions of Bass Creek consider the consequences of the apples and dry summers and a human-created purpose for the intractable physical phenomenon of water collecting in a steep drainage on the eastern slope of the Bitterroot Mountains, just one in the more-than-100 mile long string of them from the West Fork to Lolo.

My first experience of Bass Creek was winter -- Super Bowl Sunday 1997. I put on my skis in the parking lot of the multifarious trailhead for the Charles Waters Fitness Trail, the Bass Creek trail and the road-that-turns-to-trail that leads up St. Joe’s Mountain.
I came seeking beginnings. I wanted to experience the origins of the water, the water that is the creek, the creek that moistens the fields, ripens the apples and swells the belly of the Bitterroot River. The water that slakes the thirst of the people of the valley. Most of the water comes in winter -- this year it has come in droves.

The January day is cold and pale, with temperatures hovering in the low teens at noon. We start up a wide trail in a narrow valley, punctuated by shrubs and trees and cliffs of schist. We gain elevation gently but steadily, passing slender firs and heavy thickets; past an old fish weir, glazed in chillingly beautiful patterns, the concrete form seeming as much a part of the creek as the rocks surrounding it. Little moves in this cold -- even the creek is sluggish -- and the moisture that escapes the frozen surface hangs as frozen daggers from tree limbs, or clings like miniature down feathers to my wool hat.

About two miles up, the constricted canyon gives way. The valley is more generous and open, offering a willow-filled bog, mature forest, views up ahead. Still no movement except ours and the busy chickadees. The trees here are larger, more protective, but the cold tightens in and the sun tumbles into the cleft of the valley, gone for the day. We turn back, navigating odd trail bumps and skirting grabby branches. I am pleased that the trail is wide enough to accommodate my efforts to slow down.

My journey offers no answers, tells no stories. Nothing in the experience explains how it all came to pass -- the dam upstream, dwindling fish downstream, the vehicle-passable road that marches boldly past the Wilderness boundary. I have only felt the muzzle of snow and ice and cold, heard the coquettish calls of the chickadees, and savored the eternity of water's continuous motion.
Back at the trailhead, my mittened fingers fumble with bindings as I pause and look back at the twilight-shrouded mountains. Unconsciously, I name them like a child arraying marbles: a benign effort in universe ordering.

Most of the features in the Bitterroot are named for local dignitaries, like Bass, Sheafman, Chaffin, Blodgett, Moose and Bear; or for local geography, like the East Fork, the West Fork, the Burnt Fork, the Big Creek, the Roaring Lion. But the dignitaries surrounding Bass are of a different ilk. Locals speak fondly of Big St. Joe's and Little St. Joe's, names that sound like sandwich offerings at the local deli. But when I stop to consider these names, I realize that Bass Creek divides a very important couple -- St. Mary's Peak to the south, St. Joseph's to the north; Mary and Joseph, the parents of Christianity. The creation I seek includes the baptism of this once-primeval landscape. There is a beginning to this story.
II. Beginnings: Early Irrigation and Markets

The catehumans [Indians] having assembled in the chapel for the immediate preparation of their hearts prior to baptism...now heard the melodious sounds of the organ for the first time in the wilderness.\(^1\) Father DeSmet, at St. Mary’s Mission, 1841.

Father Pierre-Jean DeSmet was born in Belgium in the first year of the nineteenth century. By the time he was 21, he had already completed the better part of his religious instruction, broken the hearts of family and friends, and sold all his belongings to pay for passage to America. He knew he wanted to be a missionary from the time he was a youth, and the Indian lands west of the United States seemed a perfect place to begin his life’s work. Little did he know that he would become perhaps the best-known, well-liked, and respected missionary in North America.

After a long training and eventual ordination in the Catholic Church’s westernmost outpost of St. Louis, Missouri, the new Father became ill and returned to Europe to recuperate at home. When he finally returned to the States “as the robust, congenial, energetic, buoyant and good-humored Father DeSmet they had known,”\(^2\) the Catholic Bishop immediately dispatched DeSmet on the kind of mission he had been yearning for all along: he was to establish a mission among the Potawatomies in what is now Council Bluffs, Iowa. Here, Father DeSmet first met envoys from the Flathead (Salish) and Nez Perce tribes in 1831. Those tribes had learned about the white people’s faith from Iroquois traveling through the west with fur trappers, and were on their way to St. Louis to make requests of Captain Clark (of the Lewis and Clark expedition) and the Catholic bishop to send them a “Black Robe” of their own.\(^3\)

The bishop eventually sent DeSmet to fulfill the request, but it wasn’t until nine years after the first petitioners came through. On the Father’s first journey overland to establish the Salish mission (he called them Flatheads),\(^4\) he never even made it to their homeland. Ten tribal members met him at the Green River Rendezvous and led him on
to meet the whole band in Pierre’s Hole (today’s Teton Valley, west of Jackson Hole). He spent the rest of the summer traveling with them: to Henry’s Lake, over Red Rocks pass, and down the Jefferson River. But he felt he needed more supplies and support, so they parted ways at the Three Forks of the Missouri. DeSmet left them with the promise that he would return, and took with him the conviction to keep that promise.

Father DeSmet, two other priests and three laymen left St. Louis for good the next April, following a slightly different route to rendezvous with the Salish at Fort Hall (on the Snake River in Southeastern Idaho), then journeying north over the divide into the Deer Lodge Valley, down the Hell Gate River (the Clark Fork) through the “Hell’s Gate,” and finally arriving in the Bitterroot Valley with the cold winds of winter. It was September 24, 1841. Not daunted by the season, the Fathers immediately “entered upon the religious portion of their work with determination, zeal and devotion. They struck directly at the evils of savage society as they understood them.”

Father DeSmet noted in his journals that he was pleased with the location that the Salish offered him for the new Mission, and named it after the holiest of women, the Virgin Mary. He was equally pleased about his prospects for success in converting the Salish and surrounding tribes. In a letter to the presiding Bishop in St. Louis, he explains why: “Their position is central, the land is fertile, and the country surrounded by high mountains. They are independent of all authority except that of God.”

But success would not come without constant work. Although the Salish survived quite well by hunting and collecting “bitter roots,” the purple succulent that was a staple of their diet and for which the valley is named, Father DeSmet and the missionaries desired a more consistent, and, likely, more traditionally European fare. He also knew that religious conversions required more than just preaching: he had to show that a lifestyle close to God was a lifestyle of abundance by creating not only a self-sufficient post in the wilderness but also by providing reliable food for mission residents and whoever else might find themselves in need.
Catholic authorities put a moral spin on maintaining a stable food supply as well. Early Catholic missionaries were instructed to accompany the Indians on their hunting excursions so that: “they would not be for several weeks without religious instruction” and because “the presence of Black Robes in the hunting camps might restrain the Indians from indulging in disorders and excesses that successful hunts usually inspired them to commit.” Agriculture was considered the only alternative to the itinerant native lifestyle that included warfare, indulgences and excesses, and other heathen behavior. Although offered mostly through example rather than preaching, the stable, prosperous and settled agricultural lifestyle was as much a part of the missionary’s goals for the natives as was acceptance of the word of God.

Lewis and Clark and the ensuing explorers to the valley were skeptical of the agricultural potential of the valley. But, as always, the "flamboyant and robust" Father was eternally optimistic and strikingly practical, and his journal suggests that he recognized immediately that the advantageous aspects of the climate and topography could overcome the disadvantageous ones:

The soil yields abundant crops of wheat, oats and potatoes -- the rich prairie here is capable of supporting thousands of cattle. Two large rivulets, now almost useless, can with a little labor, be made to irrigate the fields, gardens and orchards of the village. . . . Irrigation, either by natural or artificial means is absolutely necessary to the cultivation of the soil, in consequence of the long summer drought . . . however, the whole region is well supplied with numerous streams and rivulets.

DeSmet acknowledged that irrigation is necessary to successful agriculture in the valley, but was not intimidated by the prospects of it. Observing that water is plentiful and well-distributed, he held faith that men can take advantage of the available resources to improve upon the natural productivity of the land.

Inspired by these observations and beliefs, Father DeSmet set out again soon after he arrived. Leaving most of his party in the Bitterroot, he traveled to Fort Colville (in eastern Washington) with a few native guides, detouring to the Flathead Valley along the way to meet Couer d’Alene tribal members, who had also requested a
missionary presence. When he reached the Hudson's Bay Company outpost, he obtained a supply of seeds and manufactured goods for planting, and was back at St. Mary's by December.

When spring finally slipped in over the mountains with tidings of summer's fecundity, the missionaries prepared the soil and planted the seeds. By summer solstice, awash in light and warmth, they found that one critical supply was dwindling rapidly. However, the Blackrobes did not have to travel all the way to Fort Colville for the last appropriation. They diverted water from nearby Burnt Fork Creek, a tributary of the Bitterroot River that drains the West side of the Sapphire Mountains. In doing so, they (unintentionally) established the first permanent right in the state of Montana to use of those waters under laws that did not even exist yet.  

Although the establishment of that first diversion of water is significant now, in an era when water is relatively scarce and people are not, one must imagine that what was significant to the Bitterroot missionaries was quite different. They did not come, like the fur trappers before them or the miners and railroad speculators after them, to turn a quick profit and return to (or create their own) "civilization" as wealthy men. Instead, the missionaries wanted to save the natives, as much from the advancing white heathens as from their own animistic religions, and gain their eventual entry to heaven. In his journals and letters, Father DeSmet makes much of the challenges of his work: readying the Indians for baptism, explaining monogamy and marriage, and offering divine gifts of prayer, confession and blessings. He also refers to more mundane and practical matters, such as obtaining supplies, constructing buildings, or managing affairs, but there is scant note of irrigation or other aspects of raising crops. Food was simply a means to make these other, more important tasks possible.

Other missionaries were more circumspect about their role in the advancing tide of western civilization than DeSmet. Dr. Marcus Spaulding, a protestant missionary who
settled among (and was eventually murdered by) the Cayuses near the Walla-Walla river
made this observation:

I have no doubt our greatest work is to aid the white settlement of this
country and help found its religious institutions.... It cannot be hoped that
time will be allowed to mature the work of Christianization or Civilization
before the white settlers will demand the soil and the removal of both the
Indians and the missions.... What Americans desire of this kind they always
effect, and it is useless to oppose or desire it otherwise.

Spaulding realized that, although his goal may have been to convert and civilize the
Cayuses by offering them some measure of independence and self-determination, he was,
more than anything, just an advance guard for the oncoming wave of settlers.

The passing of time reveals that Spaulding was right, that he and DeSmet and
other missionaries, Protestant and Catholic alike, made a significant contribution to the
rapid settlement of the American West. For politicians and western promoters, the
success of missions like St. Mary's and subsequent settlement established the possibility
of creating a community of peaceful, agrarian (and notably non-Indian) citizens.
Although there was, literally, no government for that part of the country when Father
DeSmet made his debut, the United States was watching the happenings in and around
the contested Northwest Territories with keen interest, hoping to step in and claim that
area for their burgeoning republic. Possession meant settlement (inspired by generous
government incentives for transportation and other infrastructure), and settlement
would open the way for a vast, wealthy republic buoyed by the natural resources, labor
and taxes that the West could provide. Additionally, malcontents, indigents and
wanderers could take their fortunes West and make some living using the land and
resources available there. For these reasons, the West was widely considered a "safety
valve" for democracy, an alternative to the increasingly industrialized and class-divided
society in the East.12 According to Thomas Jefferson and the "Republicans" that
followed him, these landed agrarians would be the self-supporting, independent middle-
class that was the foundation of democratic republic.13
As Henry Nash Smith explains in his classic monograph, *Virgin Land -- The American West as Myth and Symbol*:

The perception . . . that the waiting West promised an indefinite expansion of a simple agricultural society became the most certain guarantee that the United States would for a long age maintain its republican institutions. Not for many centuries would the vacant lands be filled and an overcrowded population fall into the depravity of Crowded Europe. The policy of the Government should obviously be to postpone this unhappy day as long as possible by fostering agriculture and removing all impediments to westward expansion. ¹⁴

Father DeSmet departed the summer after his arrival, but the care of St Mary’s Mission and its converts were passed from priest to priest, including a stint by Father Ravalli, for whom the county that encompasses the Bitterroot watershed is now named. But by 1850, DeSmet sent one of his trainees, Father Joset, from Idaho to close the mission and sell the buildings (which by then included a sawmill and gristmill built by Father Ravalli). The purchaser, Major John Owen, continued growing grain, improved the grist and saw mills, planted an orchard, brought in cattle. He converted the grounds to a fort and set up a trading post, which, as the only one for hundreds of miles in any direction, encouraged commerce and a cluster of settlement in the vicinity. Trading posts brought people, and Fort Owen’s reputation held that all travelers stopped there. ¹⁵ DeSmet’s original mission (subsequently Fort Owen) was the first permanent white settlement in the State of Montana. ¹⁶

It wasn’t until 1848, six years after the first successful crops were harvested by the fathers at the St. Mary’s, that Britain ceded a considerable portion of its Northwest territories to the United States and the Bitterroot Valley was placed under the jurisdiction of the Oregon territory. Five years later when territorial boundaries were shuffled, the Bitterroot was incorporated into the Washington territory. One of the first priorities of the territory’s governor, Isaac I. Stevens, was to solidify the land claim by resolving “the Indian question,” developing transportation networks and opening the land to homesteaders. Between 1853-54, Stevens conducted four railroad surveys, one of
which passed through the Clark Fork Valley. When he engaged in treaty negotiations with the Native Americans the following year, he expressed concern that the Bitterroot was a poor place for them because the valley was so close to the Northern Pacific line that would soon chug past the valley’s mouth and the onrush of settlers that would accompany it. One history of the Bitterroot Valley conveys the attitudes and intent of Stevens and his territorial government succinctly: “Until the Indian difficulties were ironed out, the full potential of the Bitterroot country could not be realized.” To Stevens, “full potential” most likely meant potential for a community of prosperous farmers and businessmen who would contribute taxes and stability to the territories and speed their progress towards statehood.

Governor Stevens’ solution to the “Indian difficulties” was standard government fare: “cessation of their aboriginal lands and removal to reservations,” where clear, established boundaries would protect both the settlers and the natives from squabbles over the white concept of property. Pursuing this goal, Governor Stevens negotiated the Hellgate Treaty with the Salish, Kootenai and Pend Oreille tribes in 1855 that established the Flathead Reservation in the Jocko Valley. When the Salish complained that they wanted to stay in their traditional Bitterroot homeland and that the Jocko was poorly suited to agriculture and settlement, the government promised to complete a survey. If survey results showed that the Bitterroot Valley was, indeed, notably better for planting, they would establish the reservation there.

Once the territorial government and the tribes concluded negotiations and signed the documents, Congress had to ratify the treaty before the government could allow active settlement. In the meantime, all affected lands (including the Bitterroot Valley, which was still under survey) were officially closed to settlement. However, what is written on paper is often not what happens, and information about the valley during this period suggests that white settlement continued apace. For instance, in 1855, the same year the Hellgate Treaty was written, St. Mary’s Village was incorporated as the
town of Stevensville -- named for the Washington territorial governor who negotiated the treaty -- signaling the new residents' intention to establish a permanent community. Additionally, between the time the treaty was signed and when the valley was officially reopened for settlement four years later, 24 irrigation water rights were filed, indicating at least that many new settlers.

The Hellgate Treaty was finally ratified in 1859, but most of the Salish chose to stay in their Bitterroot homeland. Twelve years later, as more and more settlers came to the valley seeking land, the natives' presence was conspicuous enough (which means it was perceived to hinder white settlement enough) that President Grant issued an executive order requiring the Salish to move. They refused, but after further federal intervention, negotiation, and a few forged signatures, two lesser chiefs, Arlee and Adolph, agreed to the move. The rest -- Major Chief Charlos and his now landless, destitute band -- remained living illegally in the valley their tribe had called home for centuries, pushed out by the whites that they had originally invited there.

Favorable climate, ease of diverting water, and the missionaries' successful example encouraged homesteading and farming in the Bitterroot valley at a time when transportation networks were arduous and rudimentary, and settlers expected to grow most of their own food to survive. By 1865, there were approximately one hundred white inhabitants in the valley. They were almost entirely of American origin and largely from south of the Mason/Dixon line. With the exception of a half dozen people, they were engaged in agricultural pursuits. Despite such hardships, by the 1850's, word of the similarly favorable conditions in the Oregon territory was luring a flush of settlers and rapid development there. Partly in response to this massive overland migration, Lieutenant John Mullan proposed a road from Fort Benton on the Missouri (the farthest upstream point serviced by steamboats) to Walla Walla on the Columbia. The 624-mile long road he completed in 1864 "cut through 120 miles of most dense forest a width of
thirty feet, 150 miles through open pines, and thirty miles of excavation in earth and rock.”

Apparently it was worth the effort, because numerous homesteaders followed the Mullan Road or other, less established short-cuts through Montana on their way to the fertile Oregon prairie, stopping to purchase or trade goods, even overwintering occasionally. Not all these Oregon pilgrims actually continued all the way to their original destination, choosing to stop wherever homesteading seemed feasible. Of those who made the journey all the way to the Columbia, not all stayed. Elijah Chaffin, one of the preeminent early settlers in the Bitterroot, came back to the valley after spending a winter in Oregon. Supposedly the wagon caravan he led back to Montana in 1866 contained 80 settlers, not all of them family members. His grandson, Glenn Chaffin, tells the story with a touch of humor:

Elijah, the amble-footed family leader, Elijah, the dedicated, Elijah, the purposeful pioneer of long strides bent on plowing the rich lands of Oregon, didn’t like the country [Oregon]. . . . Granddad and his traveling companions bought several dozen milk cows during that rain-splashed winter along the Willamette and headed back for Montana in early summer . . . joined by three or four other families who preferred the aridity of the Montana mountain valley to the “Oregon mist.”

However, no matter how favorable to climate and soils for agriculture, how steady the flux of able-bodied farmers, homesteaders remained a trickle compared to the gush of immigrants seeking other fortunes. It was the glitter of gold that sparked a frenzied migration to the mountainous West in the latter half of the nineteenth century, beginning with the California rush of 1849 and followed by successive profitable strikes in Nevada, Oregon, Washington, Colorado and Idaho. Prospectors weren’t ignoring Montana, and many had come through the country en route to the rich claims in Idaho and Canada, but there were no promising reports from the region. So when the news of John White’s July 28th, 1862 “rich” discovery at Grasshopper Creek in the Beaverhead valley got out, miners came in earnest to the land that is now Montana. The following year, Bill Fairweather and Henry Edgar discovered gold in Alder Gulch in the Madison Valley,
and, in 1964, precious metals were found in Last Chance Gulch, the center of present-day Helena. Perhaps in response to the discovery of valuable minerals and the wave of migration that was just beginning, Montana was named a territory and a legislature was convened that spring.

Interestingly, one of the earliest acts of the newly-established Montana territorial legislature was to establish a system of water rights. On January 11, 1865, the legislature ratified the doctrine of riparian rights that derived from English common law and was practiced throughout the eastern states. The riparian rights system gives individuals rights to water flowing on their property, allowing them to use that water however they please so long as the water stays in its channel and continues downstream substantially “undiminished in quantity or quality.”

Surface mining, however, except for the most primitive means of collecting ore, such as placer mining or “panning,” usually follows a sequence like this one: water is diverted and/or put under pressure, then used to blast gulches, creeks, and their banks, forcing dirt and rocks into sluice boxes which separate heavy materials (like precious metals) from lighter ones (like dirt). The water that makes it back to the original streams and riverbeds is a turbid jumble, diminished in both “quantity and quality” by anybody’s reckoning: clearly illegal under traditional riparian rights. [See Illustration 1, Appendix A].

The first Montana territorial legislature met in Bannack, a relatively large and stable settlement for the time. These days, however, Bannack is noted on state maps as an oft-visited ghost town. Sprouted along the cottonwood-lined banks of Grasshopper Creek, Bannack was the site of Montana’s first gold “rush,” and its economy oscillated with the classic booms and busts of the mining economy. Walking along the dusty boardwalk of today’s Bannack -- a state park and tourist attraction -- one can well imagine that the legislature that first met in the close, dark days of a northern-latitude January was heavily influenced by residents of the town and the activities that founded
it. One might even presume that miners themselves were prominent members of that first territorial legislature.

So the story goes: the miners and ranchers were incensed at the legislature's newly-adapted water conventions, and protested so vehemently against the riparian doctrine that, the very next day, the legislature approved the rudiments of doctrine of prior appropriation as well. Historians of water law development suggest that this pattern of adopting both the riparian and prior appropriation systems was common. The riparian system, was, after all, essentially the national system of water law, but it did not reflect the ways or the needs of those who mined and irrigated. Adopting both allowed westerners to honor tradition on paper, while asserting their individuality and protecting their economic interests in practice.

Western water law, or the doctrine of prior appropriation, evolved at the very edges of the frontier -- in the mining camps that lured dispossessed easterners to California, Nevada, the Black Hills in search of fortune. Because riparian rights were so obviously ill-suited to the mining camps, and mining camps were so far from any law enforcement anyway, miners created their own codes to govern conduct for contested resources. The miners' code was created to favor those who arrived first, who used as much as they could get, who took the risks and did, literally, the dirty work of mining for gold. Unlike most other laws that determine resource use and allocation, water law varies from state to state. However, there are several principles that are consistent throughout the West that have largely defined water law. First, water must be diverted -- removed from the actual streambed -- in order to establish a right. This is the process of appropriating water: diverting it, using it, and thereby claiming it. Second, water rights are secured and maintained chronologically: first in time, first in right. Third, water that is diverted must be put to a "beneficial use." Importantly, beneficial was legally defined to include only consumptive uses -- domestic, agricultural, municipal,
industrial. Fourth, once a water right is established, the holder gains a property right to the water: a private right to a public resource.

"Once the right is established, the water must be used continuously -- if it is not used for a prescribed set of time, then the right is considered abandoned, and the holder loses his or her right. One can also lose a right by using it wastefully. Wasting water means, of course, putting it to a non-consumptive use, such as leaving it in the stream or river to benefit fish or wildlife, or for recreational activities such as boating, fishing or simply aesthetic enjoyment. Those are the basic rules: use the water or lose the right."

Although today the notion of beneficial use seems restrictive and ecologically corrupt, the concept of requiring that water be put to beneficial use came as an attempt to protect water resources from monopoly and speculative development. In Colorado, where prior appropriation was tested and developed by early settlers, companies soon picked up on the easy profits to be made by claiming large water rights (at no cost), developing the infrastructure for irrigation, then charging the farmer a perpetual fee to use the water (above and beyond operations and maintenance fees). By creating the rules of, first, appurtenancy (water rights are tied to the land to which they are applied, beneficially, of course) and second, of beneficial use (the water must actually be put to consumptive use) irrigators protected themselves from water monopolies and speculation.

State and federal officials, at least at that point in time, obliged the water users. In the Homestead Act and other National land laws there was a limit on the amount of property that one could acquire. Of course, those limitations were easy to overcome through corruption and fraud; nonetheless, water laws, both riparian and appropriative, set no limits on how much water (which is considered property under the appropriative law) could be claimed. In place of strict limits, the doctrine of beneficial use worked as a check by limiting the individual to claiming only as much as he/she could use "proceeding with reasonable diligence according to his means." This latter clause also protected the small farmer from a wealthy appropriator diverting water and claiming a
right before an irrigator of less means had the time or money to finish complete a project
that he/she began earlier.

In Bannack, January of 1865, prior appropriation wasn't quite so circumscribed,
and it is worth reading the language of the "Act to Protect and Regulate Irrigation of
Land in the Montana Territory," closely to see how the territorial legislature initiated the
doctrine of prior appropriation in this state:

Section 1 That all persons who claim ...title to any land or parcel of land
within the Montana territory . . . when those claims are on the bank or
margin or neighborhood of any water, creek or river, shall be entitled to the
use of the water of said stream for the purpose of irrigation, making said
claim available to the full extent of the soil for agricultural purposes.

[Affirms riparian rights are still valid, particularly for agriculture]

Section 2 Any person owning claims in such a locality that has not
sufficient length of area exposed to said stream to obtain sufficient fall of
water necessary to irrigate his land, or that his farm or land used by him is
too far removed and that he has no water facilities on those lands, he shall
be entitled to a right of way through farms or tracts which lies between him
and said stream...for the purposes hereinbefore stated.

[Affirms that you do not have to be a riparian owner to claim a water right, and protects
that right by allowing one to transport water across someone else's property.]

Section 3 that such right of way shall extend only to a ditch, dyke or
cutting sufficient for the purposes required.

Section 4 That in case the volume of water in said stream or river shall not
be sufficient to supply the continual wants of the entire country through
which it passes, then the nearest justice of the peace shall appoint three
commissioners . . . whose duty it shall be to apportion, in just and equitable
proportion, a certain amount of said water ... to different localities. . . as
may in their judgement think best for the interests of all parties concerned
and with due regard for the legal rights of all.

[Note that disputes about water are to be settled by appointed local commissioners --
note that there is no mention of court involvement to settle water disputes, nor does it
confirm explicitly that those with the earliest rights get the water -- only that the water
shall be apportioned in a just and equitable manner. The statute does acknowledge that
the legislators are anticipating disputes over water rights, most likely a lesson from
contentions in California and other mining states]

Sections 5-7 These sections discuss the duties of the water commissioners -
they have to be local, have to be disinterested, have to take into
consideration the rights and necessities of each party, and the size of the
cutting, consider the damage, then the Justice of the Peace shall render
judgement based on the commissioners findings. If it's beyond the scope of
the Justice of the Peace, contestants must bring their concerns to the county judge.

**Section 8** Allows for machines to raise water for the purposes of irrigation along stream banks, even if you don't own the streambank property.

**Section 9** Allows for payment to the Water Commissioners.

**Section 10** That the provisions of these sections of this act shall not conflict with any rights of mills...or interfere with any milldam, race or watercourse which already exists.

[Does this mean first in time first in right? It isn't explicit, but it does seem to imply that.]

**Section 11** that the provisions of this act shall also entail upon the parties using water as provided above, the careful management and control of said water, that in their waste they shall not injure anyone, and if so injured, damages shall be assessed as hereinbefore provided.

[Calling for some measure of prudence in claiming water and a means to enforce it].

**Section 12** That this act to take affect from and after its passage.

Only five years after the Bannack Statutes, in 1870, the Supreme Court of the Montana territory reconsidered the role of water commissioners in resolving disputes, ruling that the water law of 1865 was unconstitutional because it violated the territory's organic act which granted the judiciary exclusive power to decide what is "just and equitable in conflicts over property." 35 This seemingly slight change in the law would have tremendous implications later on as the issue of who would and how to settle water disputes was to become one of the most contentious issues in Montana water law.

If the territorial legislatures had not adopted the prior appropriation doctrine, the West would be a very different place today. Irrigated agriculture utilizes more water than any other consumptive water use in the western states.36 Because irrigation inherently diminishes both water quantity and quality, the general acceptance of mining's prior appropriation doctrine as a water allocation system made irrigation uses possible, especially during early settlement when government arbiters were far away.
And while it was miners who created the system and pushed it into the legislatures, it was irrigators throughout the West who contended and tested both the rights and the enforcement of those rights until they became fully codified in state laws. However, this legacy from mining -- the prior appropriation doctrine -- is only one of many ways that the quest for mineral wealth encouraged the development of irrigation.

Mining brought people into the state, people whose energies were occupied by digging their fortune out of the earth. Miners had little time for the production of basic goods, such as food and clothing, but their demand for such goods was high, providing an incentive for the creation and maintenance of various market infrastructures, including transportation networks, farms, mills, etc. Most of Montana's early settlers came hoping to pan for gold and silver, strike the mother lode, work their claim and retire to a life of relative ease. They did not come hoping to till the soil and commit their lives to coaxing their living from it season by season. But at most of the mining strikes one had to arrive early to make a lucrative claim. And the mineral lodes were typically found in mountainous regions and narrow valleys poorly suited to agriculture. So latecomers faced with overworked lodes and crowded gulches made their own claims to mining's bounty by staking out a homestead and selling goods and services.

So farming was left to those who were willing to forego the allure of immediate riches for the more staid agricultural life. Close scrutiny of water-rights records reveals that where miners went, farmers and businessmen were sure to follow. For example, the year after gold was discovered at Alder Gulch, irrigation diversions in that area were initiated. The Penwell brothers dug an irrigation ditch to divert water from the nearby East Gallatin River in 1864, and water was appropriated from the West Gallatin River shortly thereafter.  

Although precious metals were discovered in various parts of the state, it was the Butte-Anaconda area that provided the "Motherlode." By 1866, Montana was producing more gold than any other state save California, and one of the several boom towns near
the site of present-day Butte called Silver Bow City housed 5,000 people. Although the Butte mines are over one hundred miles from the Bitterroot Valley, in the era before the railroad, the Bitterroot enjoyed as easy access to that market as any developing agricultural area of the state. Travelers could follow the Clark Fork River (then called the Missoula River) through Hell Gate Canyon upstream all the way to Silver Bow City without crossing any mountain passes. The mines in and around present-day Butte provided ready markets for Bitterroot agriculture, encouraging the growth of that sector of the Bitterroot economy.

Literature on the developing economy of the Bitterroot supports this thesis. One author claims that, following DeSmet’s experiment with irrigation and basic subsistence for settlers, “the next step was raising supplies for the mining camps” and another suggests that producing for the mines was lucrative: “with the discovery of gold in Idaho and Montana, agriculture in the Bitterroot received its first commercial impetus. Vegetables, dairy products, potatoes, and grain were in demand at the mines and brought almost unheard-of prices.”

The mines provided impetus for agricultural growth across the state by offering steady markets, but the Bitterroot Valley’s relative proximity to large, consistently-productive mining centers, including the Butte, Couer d’Alene and Kootenai mines, was not its only advantage in securing steady markets for agricultural goods. Bitterroot histories show that only four years after gold was first discovered in Montana, a gentleman farmer named Thomas Harris planted apples, plums, pears, strawberries and raspberries — the first cultivated fruit in the Bitterroot valley.

There is a reason why most cash crops grown in the northern regions of the U.S. are annual grasses such as wheat, barley and rye. These plants require the extra work of yearly planting, but are exceedingly well adapted to harsh winters. They naturally survive the winters as seeds, and usually only sprout and grow after killing frosts are over for the season. Many perennial plants, particularly fruit trees, cannot tolerate deep
frosts for long. Although they have various strategies to prevent tissue death from freezing, they are generally adapted to moderate winters. Both the wind-scoured plains of eastern Montana and high elevation valleys in mountainous parts of western Montana are more influenced by bitter arctic air masses from the north than by the warmer Pacific air masses that influence the Bitterroot’s climate. The relatively warm winters that characterize the Bitterroot valley are more favorable to fruit production, which gave Bitterroot (and other western Montana valleys’) growers a natural advantage by allowing the development of specialty crops that other agricultural regions did not produce.

Early experiments with fruit in the valley were more to diversify settlers’ diets than for financial gain, but they soon realized that profits from fruit could be substantial. Valley historian Glenn Chaffin explains the origins of fruit-growing:

The majority of the Bitter Root Valley’s early settlers had come from the South and Middle West. . . . and they grew a variety of fruit. So it was natural for them to continue familiar agricultural practices. . . . One might say that the farmers were also “bugged” by plaintive appeals from their farm home kitchens. Their wives missed the variety of fruits and pressed their longing for them by urging the men folk to set out fruit trees and berry plants. It was an experiment difficult to refuse. 

In the 1870’s, the Bass brothers planted the first successful fruit orchard in the valley. By 1890, the business was well-established and they shipped their apples to Butte. Their financial success -- the produce earned them “thousands of dollars”-- provided encouragement for other farmers to diversify their crops as well.

Another factor that propelled the Bitterroot’s agricultural economy was pure happenstance. Although mining in Montana never drew as many people as the California, Nevada or Colorado, the mining boom still provided impetus for the creation of an agricultural economy. But mining did not always boom. After Montana’s original “rush” settled, the ready market for agricultural and manufactured goods began to dry up. A Montana agricultural historian described the bust across the state:

The 1870’s were generally poor years for the approximately 2,000 farmers who were in the business. The placer mining boom had ended, reducing the market for farm products, and prices declined. Furthermore, because the railroads has not yet reached Montana, farmers were unable to expand

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markets due to isolation and the high cost of slow, uncertain overland transportation."

Butte was the exception. The fabulously rich veins between Butte and Anaconda yielded just enough gold to draw in a population of miners, but those who stuck around to mine quartz veins for silver and, later, copper, were handsomely rewarded and production of precious minerals, albeit diminished, continues there today."

Thus, while mining and its markets for food and other goods dwindled across the state, Bitterroot crops remained in high demand, and prices remained stable until the depression of 1893."

Another aspect of the deflating gold rush in Montana in the late 1860's was the creation of a disappointed, landless band of prospectors. Some of these folks probably returned to eastern homelands or set off across the mountains chasing the next "rush," but some of the would-be miners planted their feet and started digging for the less lucrative but more stable returns offered by agriculture."

As long as Butte continued to provide a market for Bitterroot goods and farming was profitable, the decline of mining elsewhere contributed a supply of settlers, eager to find their fortune by tilling the soil.

The Bitterroot was as good a place as any for these folks to settle. The climate was favorable; irrigated agriculture was well-established and profitable; and the valley was close to transportation infrastructures and markets. These factors built upon each other, resulting in a steady expansion of agriculture and settlement reflected in the consistent filing for water rights and concurrent construction of irrigation ditches. The first year that water rights were recorded in the Bitterroot was 1852, and records show 58 irrigation claims that year. In the next decade, the most numerous claims in any one year was 25, but several years post 0, and all but two years are in the single digits. Settlement in the valley was slow, and the years with numerous claims more likely reflect one or two caravans (like the one Elijah Chaffin led) than twenty-five independent settlers. In contrast, the decade following the discovery of gold (1862 - 1872) shows a marked increase in new claims, reaching its zenith with 162 filings in 1872.
alone, and an average for the decade of 56 claims a year, ten times that of the previous decade.48

By the 1870's, the success of agricultural markets and products and the steady influx of settlers prompted a new kind of neighborliness among Bitterroot irrigators. Constructing and monitoring irrigation systems -- digging and maintaining ditches, building and monitoring headgates -- is an arduous, time-consuming and expensive undertaking, more readily tackled en masse than alone. Obviously, the larger and more complex the system, the more work there is to be done. The first arrivals tended to choose fertile, easily-watered bottomlands for their agricultural plots. As more farmers arrived, they were pushed farther and farther from the mainstem and tributaries that offered easy access to the water. The more-distant parcels might be just as numerous and fecund (especially after applying water!), but getting the water there required a longer, and, assuming that it serviced several farms, bigger ditch.

In 1871, nine men founded the Etna Mutual Ditch Company, the earliest recorded cooperative irrigation project in the valley, to divert water from the mainstem of the Bitterroot River.49 Although the men filed for 9,000 Miner's Inches ((MI), one of the original water measurements, equivalent to approximately one-fortieth of a cubic foot per second), the ditch they built has the capacity for only 1500 miners inches, and irrigates approximately 1060 acres (an average of 120 acres per person). It was typical of these early companies 1) to file for far more water than they actually used and 2) to convey a relatively small amount of water and irrigate a relatively small parcel. In mutual corporations, typically one share is the equivalent of one portion of water, and members obtain and maintain their shares with both money and labor. Shareholders' portions in the Etna Mutual ranged from 70 MI (1.5 cfs) to 360 MI (8.8 cfs). The incorporation of mutuals and other ditch companies signaled a decline in the availability of homesteads readily suited to individual projects.
The Bitterroot was not so settled in 1871 that the Etna Company irrigators could not find land adjacent to a creek, but water wasn't the only criterion people used in choosing a homestead location. Access to schools, churches and other social services was better close to established population centers, providing incentive for relatively clustered rather than dispersed settlement. Some land was naturally more open or easily cleared, and digging a ditch to a distant property was sometimes less daunting than removing a forest of cottonwoods, alder, or ponderosa pine right next to a stream.

Rail service arrived in Missoula in 1883. Although the specific impact of the Northern Pacific on agriculture in the Bitterroot is not well documented, generally the railroads brought settlers; made transportation of products easier and cheaper, expanding markets; and allowed farmers to undertake bigger projects using the tools and technology that more efficient transportation allowed. In the Bitterroot, the decade of the 1880's had, on average, three times more irrigation water rights filed (approximately 165 per year) than any other decade in the history of the valley, with 265 rights claimed in 1883 alone.

The trend towards group irrigation projects initiated by Etna Mutual in the early 1870's gathered momentum in the 1880's. The C&C Ditch Company was incorporated in 1880 followed by a spate of irrigation companies appearing on the heels of the railroad including the Surprise Canal Company in 1884 and the Republican Ditch Company in 1885. In 1889, the Union Ditch Company started diverting water from the mainstem of the Bitterroot. Most of these small ditch companies were an assemblage of neighbors created to share the costs and labor required to build and maintain ditches. Like the corporations formed before the railroad arrived, these companies were small -- both in number of acres irrigated and number of incorporated members -- and three of the first five in the valley were mutuals, financed and managed equally by all members. Although the creation of these irrigation companies indicated a change in the scale of projects required to irrigate as yet unoccupied land, all the early irrigation companies
were self or locally financed, falling into Donald Worster's "subsistence mode" of agricultural production.

While easy transportation encouraged settlement, the 1880's irrigation boom wouldn't have happened without a source of settlers and stable markets for their goods. Back East, the Civil War had ended, releasing a scurry of veterans and landless speculators into a ravaged landscape and uncertain economy. Throughout the late 1870's and 1880's, entrepreneurial easterners and newly arrived immigrants came west, many to the Montana territory. Some were optimistic homesteaders, others came west to exploit the nutrient-rich grasses and wide-open range that characterized Montana's prairies, creating vast cattle "kingdoms" on the eastern plains. Markets for grains and produce were relatively steady and profitable, yet open space and water were still plentiful enough in the valley to accommodate newcomers.

In 1887, Butte's notorious copper magnate Marcus Daly arrived in the Bitterroot and literally created the town of Hamilton. He designed and platted the village, funded the construction of lumber and flour mills, and built his now-famous mansion and stables (the Bitterroot Stock Farm). He is less well known for the Daly Ditch system -- the extensive irrigation works he developed to irrigate vast hay fields required for his prize racehorses. The publicity, capital and services that Daly brought to the valley created wage-labor jobs and an early urban infrastructure that diversified the economy and further encouraged and secured settlement.

In the fifty years since Father DeSmet first irrigated crops in the Bitterroot, the valley was transformed. At a time when other parts of the Northern Rockies were just developing infrastructure and economies, the Bitterroot valley already housed several stable agricultural communities. Due to a number of factors, including favorable climate, ease of diverting water, early agricultural development and success, access to natural and, later, finished transportation networks, and proximity to markets, irrigated agriculture came to dominate the economy and culture of the Bitterroot Valley.
Although there was still land and water for the taking in the last decade of the 1800's, most of the easily irrigated lands were claimed and "proved up."

Later settlers weren't the only ones who felt the impacts of rapid settlement of the valley. In 1890, Chief Charles's remaining band of Salish, unable to legally own land in the valley and pushed out of traditional hunting and fishing grounds, left the Bitterroot to join the rest of their tribe on the Jocko Reservation. The Indians were assisted in their move by General Henry B. Carrington, who came "to provide for the removal of the Flathead and other Indians from the Bitterroot Valley, in the territory of Montana" and "to the appraisement and sale of said lands, under the provisions of an act of Congress, approved March 2, 1889," and transfer them to the Jocko reservation. General Carrington recognized that Chief Charles never signed the 1872 removal order, and that the Indians were entitled to the money from their lands. However, "due to the expense incurred by the white settlers, who acted in good faith, or carelessly, it was not deemed wise to mark these lands at their highest value, but at a price so fair that the settlers could afford to buy them in without straining sacrifice, and yet invite competition." The goal, typically, was to put the land immediately back in to productive white settlement, not to get money for the natives.

Carrington also made it clear that his resettlement plan would produce productive citizens among the Salish as well:

I recommend that from the very start the Indians who are able-bodied be made to understand that they are not to be rovers on a vast reservation, but must have a domicile and a fixed home, where they are to be industrious, orderly and co-workers with the authorities for their benefit. They have been advised, upon signing their "consents" that the proceeds of the sale of their lands will not be distributed in a loose way for their indiscriminate use, but under the direction of the Secretary of the Interior, who will consult their several interests. They are also advised that while said funds would make their settlements on the reservation one of greater comfort than belonged to their old homes and surroundings, they must bear their part in building cabins and raising grass, stock and grain. 

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The "farming as salvation" ethic is clear in his words. And that is how the Salish finally lost all their Bitterroot land, and any water rights that went with the land, except for a two-acre burial ground near St. Mary's Mission.

Although the Salish never planted crops, they lived in and around the Bitterroot valley for the same reason the settlers now came: because it provided a reliable abundance of food. The Hellgate treaty of 1859 and the Garfield agreement of 1872 legally took away rights to their native homeland and gave the valley to Euro-American settlers, but the date of their final physical departure is significant. By that time, the patterns of agriculture and structural development still visible today had been firmly established in the valley. Towns were spaced at relatively even intervals along the mainstem of the Bitterroot River, with farms and a few orchards leafing out from the tributaries. Where the Salish had once dug bitterroots and hunted game, there were now wagon tracks, branded cattle, and horse-plowed furrows of potatoes and oats. The valley was well on its way to being firmly established as the kind of solid, democratic, agricultural community envisioned by Jefferson and his cronies, with no room left for the people who had originally invited them in. As Henry Spaulding had noted when he founded his mission among the Cayuses in Washington: "What Americans desire of this kind they always effect, and it is useless to oppose or desire it otherwise."57


Catholic missionaries were called black robes because of the religious garb they wore even on the frontier. De Smet, because he was so well-traveled and well-liked among the Indians, was often referred to simply as “Black Robe,” the only one.

The name Flathead may come from related Pacific Northwest tribes who bound their babies heads, giving them a pointy-headed appearance. Or it may come from the Salish practice of placing a palm on a speaker's head to indicate that they are listening.

Chittenden and Richardson, Vol. II, 40.

Father De Smet, letter from St. Mary's Mission, October 20, 1841. In Chittenden and Richardson, 327.

Terrell, 128.


Although Mormons are often called the earliest Euro-Americans to irrigate in the West, protestant missionaries used ditches to irrigate their crops before the Mormons. In 1840, Henry Spalding and Marcus Whitman both used ditches to irrigate crops at their missions in Oregon. Robert G. Dunbar, Forging New Rights in Western Waters, (Lincoln: University of Nebraska Press, 1983), 18.

Chittenden and Richardson, Vol. I, 571.


Terrell, 157.


Terrell, 128.


Walter H. Baumgartel, "A Social Study of Ravalli County, Montana," (Bozeman: University of Montana Agricultural Experiment Station, 1923), 9.

Irrigation Water Rights by Priority Date Year for Bitterroot Drainage, 76th basin (Helena: Montana Department of Natural Resources and Conservation, Water Resources Division).

Hamilton, 186-87.

Baumgartel, 9.


Hamilton, 79-84. Also Robert Dunbar, Forging New Rights in Western Waters (Lincoln: University of Nebraska Press, 1985), 73. Major John Owen noted in his journals that he had
found gold in the Bitterroot in February of 1852, and that Samuel Caldwell found gold up Mill Creek later that spring.

Simplified discussions of the development of prior appropriation suggest that Americans adopted riparian rights essentially intact from English common law and remained unchanged throughout the Eastern States. Several scholars point out, however, that riparian rights were tested in courts and altered considerably even before the Civil War, most likely setting the foundation for appropriative rights. See Donald Pisani "Enterprise and Equity: A Critique of Western Water Law in the Nineteenth Century," in *Western Historical Quarterly* 18 (Jan., 1987): 16, 18-19.


*Forging New Rights*, 70.


Dunbar's thesis is that the appropriative rights were an indigenous adaptation to the landscape and circumstances of settlement in the West.

Under riparian law, rights to water are tied to the lands abutting the water from which the right stems, but the water itself is a common resource. One of the keys to western states' assertion of the appropriative right was the assertion of states' control over water. Water was part of the public domain, but the federal government wasn't managing it. The states (especially California) legislated the water codes that miners created in order to avert chaos and maintain the economic benefits of the mining industry. Once the states codified water laws, the feds left it to them to make the decisions about how water is used and appropriated.


John W. Duffield, Thomas C. Brown and Stewart Allen, "Economic Value of Instream Flow in Montana's Big Hole and Bitterroot Rivers" (Fort Collins: USDA Rocky Mountain Forest and Range Experiment Station research paper RM - 317, 1994), 1.

Dunbar, 19-20.


S.T. Harding, "Irrigation Development in Montana" (Bozeman: Montana Agricultural College Experiment Station Bulletin No. 103, 1915), 215.

Baumgartel, 21.

Zeisler, 22.

Chaffin, 58.

Zeisler, 23.


Hamilton, 95.

Chaffin, 103-4.

Howard, 17.

*Irrigation Water Rights by Priority Date Year for Bitterroot Drainage, 76th Basin* (Helena: Montana Department of Natural Resources and Conservation, Water Resources Division).
51 Ibid, 45-64.
52 Hamilton, 267.
53 Zeisler, 34.
54 General Henry B. Carrington, "In re appraisement and Sale of the Bitter Root Valley Lands, Authorized 1890 A Report to the Secretary of the Interior, (Washington, D.C., Office of Indian Affairs, January 29, 1890) section II (d).
55 Carrington, section III (a).
56 Carrington, section IV (c).
57 Chittenden and Richardson, Vol II, 27.
Interlude – Coming of Age

How do you go seeking the middle when the middles were extremes? The _Fin de Siècle_ is always a time of turbulence, fear and change.

We know this: In 1893, Frederick Jackson Turner published his famous essay "The Significance of the Frontier in American History," claiming that the frontier was closed. He alerted Americans to the dire conclusions that he drew from the 1890 census -- that there was no more land for people to settle. The remaining acres open to homesteading were too parched or too drenched, too frozen or too baked, impossible in one way or another for the individual to make an adequate living. Only patches of land remained, miniature blank spots surrounded by -- ee gads! -- settlement and civilization. Turner's warning explained the necessity of the frontier to America – it was our character-shaping force, as well as our safety valve against migration and poverty and unrest, the cornerstone of our democratic system.

On the far side of the country from the frontier that no longer existed, Edith Wharton was chronicling the decadence and frivolity of life among high society New Yorkers – exactly the people who had made their fortunes on land speculation, transportation systems and other types of development. They were the ones who drew the dots around the West, connected the lines and eventually colored in the frontier until it just didn't – in Turner's mind anyway - exist anymore. But they all had one thing in common: In the late 1800's, from the wind-battered sod houses of the prairies to expansive eastern brownstones, people everywhere were trying to skim the butter from the cream of the country before it disappeared for good.

And then people everywhere felt the depression. I'm not sure which came first - - the drought or the hard winters -- but they followed one upon each other like a hound after a fox, cinching tighter and tighter circles around a bloody conclusion. In the West, it was mainly cattle that died -- hundreds of thousands of them; but the people, too,
were cold, and hungry; no relief was coming, and some of them simply perished. I'm not sure today's well-fed Americans can imagine the kind of cold, hunger, or economic loss that are the stories of that era, but in 1893, it descended like a thick blanket of fog, with no view out.

The drought and ensuing depression emptied the West. Settlers who had taken three steps West now took two steps back: if they had come to Wyoming from Kentucky, maybe they settled in Missouri, leaving the carcasses of their cows to the magpies and their homesteads to the mice. And so the field of the West opened once more, offering a living for those who wanted it badly enough, although it seemed more grim, more confined, riskier. Some historians argue that it reopened Turner's frontier.

Now consider the landowners who kept their western holdings: The rich, who fretted away that vicious winter from heated city manors, who suffered the losses but not the destitution -- there were more of them who owned land in the west than you might think, even then. And the plucky -- those who had planted the hardy grain, raised the lucky stock, whose irrigation ditch tapped a bountiful creek -- those who knew how to hunker and to hunger with their sights determinedly aimed on the far side of suffering.

And when it was over, when the rains came back, and the blizzards eased their grip, they knew how to shout! Their voices began to rise as a chorus from across the West. Whether they were in agriculture or transportation or real estate, they wanted assurance that it wasn't going to happen again. The government had given the people their myth, and now they wanted the government to assure it.

You see now that the middle is an interesting place to be - the government wants to settle the land, fill it with reasonable, responsible respectable citizens who will work hard for the republic. And the citizens want continued settlement because they want opportunity. And because whatever Americans want they will get (Henry Spaulding), it's just fine if it's at a bit of government expense.
III. From Ditch to Dam: The Irrigation Crusade and Changing Land and Water Policies

The water necessary to fertilize the agricultural lands... falls upon these mountains... Every iota of value there is to these lands to be redeemed for agriculture depends upon the water with which they are supplied... The intrinsic value exists in the water... all the great values of this territory have ultimately to be measured out to you in acre feet.

- John Wesley Powell, Montana Constitutional Convention, 1890

By the turn of the century the Bitterroot valley was a relatively settled and stable place, with patterns of land and water use well established, irrigation works firmly in place and established crops and markets for them. But across the country, the patterns and means of agriculture were not so firmly in place, and various factions were in the throes of a well-concealed skirmish about agriculture, irrigation and settlement in the West.

Reclamation promoters agreed that the region needed development of more land into agriculture and that irrigation was the means to accomplish that end. It was an easy agreement given the continual and intense immigration of people and development of land in the nineteenth century. The only lands available to provide those opportunities were arid. But the subtle and highly political questions of the individuals, interest groups and means by which irrigation would be promoted, funded and ultimately controlled were fiercely, if quietly, contested.

By the late 1870's, one could find small, private irrigation works throughout the West that had been created and were comfortably managed by pioneering individuals, families or mutual associations. And more were on the way: the word was out on the Homestead Act, government had accepted the rudiments of prior appropriation, and cross-continental railroad lines provided relatively efficient transportation. More importantly, scores of immigrants and, to a lesser extent, war veterans, were seeking new wealth and new opportunities -- opportunities that everyone assumed only the West could provide.
But it was not just these physical, legal and technological factors that encouraged settlement of the arid- and semi-arid western lands: current social and political notions provided the impetus for most of the migrations. Agriculture was "talked up" and small farmers were repeatedly assured that they epitomized all that was good about American society. One author described the going sentiment: "His [the farmer's] outstanding character, according to the conventional notion, was his independence, at once economic and self-sufficiency and integrity of character," and reflects on the tenacity of that type of sentiment: "The Western Yeoman had become a symbol which could be made to bear an almost unlimited charge of meaning."2

Such declarations, though not new, were common to the late 1800's. They were reiterations of one of the indefatigable founding myths of the republic, the one that spurred westward expansion and generated and affected policy, settlement and development in the West. The belief that Americans could achieve a kind of democratic perfection (personal, regional and national) by applying labor and technology to abundant, disposable resources (as many people perceived the West's resources to be) is a recurring theme in western history.3 Indeed, the prudent reader will note how long it takes for that myth to loosen its grip on the American consciousness. Like some radioactive element with a long half-life, the stories (myths) that built the West knew few barriers, emanating a warm glow from the granite halls of Capitol Hill through the far loping prairies to the remotest parts of the West for over a century. The lack of any popular recognition that undisturbed landscapes and their resources might be both inherently and humanly valuable shielded ecologically and socially destructive (and often lucrative for a minority) western developments -- such as agribusiness and the hydraulic society described and disparaged by Donald Worster -- from cynical inquiry for over half a century.

Nonetheless, the myth, both pervasive and persuasive, held sway, emboldening the people. The people clamored for opportunity, and the government wanted nothing more than to oblige them into coaxing "useless" land into small, stable farming communities. But
most Americans, from immigrants or native-born to government officials, realized that the opportunities were dwindling. It was true that the more humid lands that didn't require irrigation were mostly settled, and, even in the arid regions, model pioneers made settlement look easy as they farmed the easily-irrigable plots. The remaining lands with agricultural potential, as confirmed by the United States Geological Service's (USGS's) newly funded surveys, were mostly arid bench lands, without sufficient rainfall and/or too far from water for one person or family to irrigate without extra labor or capital -- no matter how much land they had. Would-be agriculturalists were left to choose among upland parcels that were irrigable only with highline canals -- arduous but possible for mutuals and corporations to build, if they could get the water to fill them. Unfortunately, water rights early enough for low-flow times of year had already been claimed.

But westerners were never much daunted by unfavorable natural rhythms. The operative assumption, part of the myth, was that virtually any problem could be overcome with enough money, effort and know-how: certainly spring run-off was no exception. Even before all the prime riparian land in the West was explored, people in settled areas were scheming for the construction water storage reservoirs to supplement their water supplies. Of course, building a dam is a far bigger task than building highline canals, and it was virtually impossible for the individual to construct and maintain one big enough for market crops. However, these facilities captured water when it was most abundant and offered it back when it was most needed, overcoming the duplicitous natural scarcity caused by mountain snowpack and run-off.

This progression in the development of irrigation facilities became a predictable pattern as settlement advanced in the West in the late 1800's. Settlers everywhere encountered the same barriers to further development: First, individuals came and claimed accessible, fertile riparian lands and often built short ditches to irrigate them. Next, irrigators joined or created a mutual or private corporation with the labor and capital necessary to build longer and more elaborate canals to distant or elevated bench lands.
Eventually, farmers and investors began building reservoirs to store water for low flow times of year, requiring even more capitol, labor and technological expertise.®

In this typical progression, land was always available if only one could get the water to irrigate it. And most westerners believed that the water, too, was available, if only one had enough money and know-how. When water became too costly or technologically difficult for farmers to get for themselves, they simply upped the ante, called out the cavalry and demanded the big guns: whatever it took to keep land from lying fallow, if there was a hardy soul willing to till it. And in the vast, empty domain of 19th century America, the imperative to fill the land and settle the wanderer was strong enough that the government eventually responded.

The development of state and federal (in that order) land and water policies followed the progression of private irrigation works, but at a distance, more like a feisty pack mule, strung along and balk ing at every unexpected turn, than like the charging cavalry that the people wanted. As a rule, the government’s laws and policies were reactive, trailing the innovations and dreams of private interests, and most were too seriously flawed to accomplish their goals.

Water law exemplifies this theory. In most parts of the frontier west, water laws were established locally as miner’s codes and later sanctioned by the state or territorial governments. The federal government’s failure to act regarding prior appropriation was taken as tacit approval until the federal government slowly began the process of condoning prior appropriation by recognizing property rights for minerals and water in the mining laws of 1866 and, later, with stronger language, 1872.®

As the federal government slowly adopted prior appropriation as an acceptable method to distribute and regulate water, most western states were working from the opposite direction, slowly annihilating the riparian doctrine and the other alternative methods of water distribution and control, such as the Spanish-Mexican system in the Southwest.® Dams and storage reservoirs inherently violate the riparian code so, although

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most western states had dams before they finally disallowed riparian rights, the desire to increase water storage was just another reason for western states to condemn and eventually eliminate riparian rights. Beginning with Colorado in 1876, state after state ruled in favor of prior appropriation across the West.8

This is how it happened: Non-riparian appropriations were legitimated by the 1861 Colorado territorial legislature; then, in 1872, the territorial court upheld non-riparian landowners the right to build ditches across others' property, effectively undermining riparian rights (although riparian rights were still recognized). The Colorado constitution of 1876 then gave dominion of all waters to the state, partly out of a concern that if waters were federally controlled, the "national" (riparian) system would dominate.9 Finally, in 1882, the well-known Coffin v. Left Hand Ditch Company decision made Colorado the first state to rule decisively against the riparian doctrine.10

Other western states followed suit over the next two decades, slowly pushing the riparian frontier back east to the humid zone. Montana lagged far behind in making a final decision, and though the question was brought to the courts on a number of occasions, differing opinions kept both riparian and appropriative rights legal until well into the twentieth century.11 For example, in an 1872 case, Thorp v. Freed, respected territorial bench judge Decius S. Wade gave surprisingly strong support to riparian rights because he feared that priority rights threatened equity and would lead to a "monopoly of water."12 The final dissolution of riparian rights in Montana came in 1921 after a series of drought years. Seeking more water, the Ames Realty Company moved its diversion ditch, which captured the entire flow of the stream in question, upstream from the property of Anna Mettler, who had long asserted riparian rights from the creek. In Mettler v. Ames Realty Company, the judges concluded "that the common law doctrine of riparian rights has never prevailed in Montana since our enactment of the Bannack Statutes in 1865; that it is unsuited to conditions here."13
A small group of Utah Mormons are purported to have built the first reservoir for irrigation in the United States in 1871, but it was the people of California who pushed irrigation technology to its conclusion. Prior appropriation originated in California, and it was also perhaps the earliest western state to develop a full-fledged agricultural economy, both "firsts" propelled by the mining industry. So it was logical that California was also the first place where the federal government, under pressure from western senators, assigned the USGS to do preliminary irrigation surveys.

The 1873-74 surveys were, despite their name, less general irrigation surveys than specific reservoir surveys. They mapped and measured streamflow and sought out the most efficient and technologically feasible places to build water storage facilities. The surveys were limited in scope and produced few direct physical results, but this small bit of federal interest in reclamation titillated irrigationists with the possibility of a federal reclamation program. And, although the role of the surveyors was to disclose facts, not make policy, their final report recommended just what irrigationists wanted to hear. The surveyors suggested 1) the development of a comprehensive federal reclamation plan, including scientifically determined amounts of water for irrigation of each acre to be reclaimed; 2) building drainage facilities and canals as well as reservoirs; 3) taking control of water, which was in the states' hands and; 4) requiring that water rights be tied to the land they serve.

Despite the commission's findings, the federal government was a long way from even considering a federal reclamation policy. Instead, it was still struggling to enact legislation to facilitate private development. Public land laws meant to alleviate the paucity of arable land were even more conspicuous in their ineffectiveness and inappropriateness than the sluggish water laws. President Ulysses S. Grant, pursuing solutions from his perch over a war-rent country, echoed the sentiments of many of his compatriots just two years after the irrigation survey's recommendations. He stated that "the [arid] land must be held in larger quantities to justify the expense of conducting water upon it to make it fruitful or to justify using it as pasturage."
In response, Congress passed a law giving people more land: the Desert Land Act of 1877. The act offered the largest source of wealth available to the government at the time -- the public domain and its natural resources -- as opportunity to those willing to do the work to improve it. Under the law, individuals could purchase a full square mile of public domain (four times more than the Homestead Act's allowance of 160 acres) for only $1.25 per acre. Interested parties paid $0.25 per acre when they filed, and then had three years to prove-up with irrigation works and pay the balance on their debt.

Unfortunately but not surprisingly, neither the federal nor territorial governments had an inkling of how much arid land was available, nor where the best tracts were for agriculture, nor did they appropriate money to administer the law. In a vaudeville-like show that rivaled the one prompted by the Homestead Act, stockgrowers, speculative ditch companies, everyone but those for whom the law was intended, took advantage. Speculators put up dummies to enter claims for them and soon amassed huge holdings; or scratched out dry "ditches;" or just counted on the government's inability to supervise their claims and did no improving whatsoever. The only real advantage to filing under the Act was acquisition of a larger parcel of land than was previously available, but for the intended small farmer-citizen beneficiaries, 160 acres was already more than they could effectively irrigate.

The Desert Land Act of 1877 also sealed federal approval to the evolving doctrine of prior appropriation, allowing states and territories to determine for themselves the character of the property right in water within their jurisdictions. Although one historian argues that the law succeeded by inspiring growth in private irrigation companies, the Desert Land Act failed to effectively promote irrigated agriculture in the arid west.

But the quest for the creation of well-watered independent farms in the West continued. The success of a few small dams, the perceived dearth of land suitable for settlement and the obvious "waste" of spring run-off continued to prompt widespread interest in irrigation across the United States -- particularly "reclamation" of the arid lands to arable soil. Private corporations and western politicians were determined to people the
arid lands, and set about laying the groundwork and writing the laws to make it happen. The most active proponents of reclamation in the 1880's and early 1890's saw cession of public lands to the states as the most effective way to advance irrigation, and they (unintentionally) created a multi-pronged campaign to make it happen.

It was a colorful cast of characters: William Ellsworth Smythe was the preacher/storyteller of the campaign, publishing the periodical "Irrigation Age," and traveling the country on promotional tours about the equality and independence that irrigation-based communities would naturally occasion. Smythe's rhetoric, from one of his "irrigation conventions" is lively:

> We are laying today the cornerstone of the Republic of Irrigation. It shall not be laid on avarice and cemented with greed.... That would not be fitting for a people living in sunlit valleys guarded by eternal mountains, for the men of the mountains have ever been the defenders of liberty.... We will write on its white cornerstone "sacred to the equality of Man."^{19}

More politically savvy and far less idealistic, Senators (actually, both held numerous public offices) Thomas Warren and Joseph Carey from Wyoming were desperate to succor their state and their own investments through federal irrigation legislation, even though at times they both actively worked against the small farmers whom they were purportedly representing.^^ An editorial in the Cheyenne Daily Leader (Cheyenne was Warren's hometown) was suspicious of Warren's legislation:

> When they [the public] hear him talking about protecting the small settler or cattle owner and consider that for years he has pillaged and ridden rough shod over them in the midst of his tyrannical power, is it any wonder that they should have at least grown suspicious and construe his meaning according to the rule of contraries?^{21}

The third party to this odd triumvirate was Wyoming's state engineer and author of its unique water code. Representing the cool logic of science and engineering, Elwood Mead provided the expertise and on-the-ground specifics for legislation and promotion of irrigation, recommending and occasionally writing pieces of legislation introduced by the Senators. Mead comes down through history as neither wildly passionate nor calculatedly unscrupulous, but entirely committed to irrigation nonetheless.
Each of these characters believed that the federal government should cede the western public lands to the states for irrigation development and worked together as a formidable team to accomplish that goal — Smythe publicizing the idea nationwide, Warren and Carey (with occasional help from congressman Stewart from Nevada) schmoozing Congress and introducing legislation, and Mead providing information and ideas to all of them. Yet their various interests in and motivations for promoting agriculture exemplify a classic schism. Smythe believed in the social rewards of irrigation-centered communities; Warren and Carey worked to protect the opportunity to develop their state and achieve personal wealth (particularly for themselves and their cronies); and Mead, with none of Smythe's social idealism or the senators' pursuit of pork, sought the most practical approach to immediate development of water resources in an effort to help Wyoming achieve its ultimate agricultural potential. As peculiar a team as they were, they were remarkably effective in making irrigation a well-known and understood concept throughout the country, yet it would be a long time before the federal government stepped in with the kind of help that the storyteller, the senators and the scientist wanted.  

Smythe, Carey, Warren and Mead actively promoted government-sponsored irrigation. Other interest groups, such as the Mormons and the well-known Greeley colony in north central Colorado, already had their own water-distribution systems that were aimed less at speedy development than at dependable, communitarian production of crops. Horace Greeley, who founded the utopian irrigation colony in Colorado, described hope he hoped to accomplish in making the homestead system work by providing water to the arid homesteads: "The homestead system will greatly lessen the number of paupers and idlers and increase the proportion of working, independent, self-subsisting farmers in the land evermore." Major John Wesley Powell, the one-armed explorer, geologist and ethnographer, offered yet another approach to irrigation development. Powell did not believe in the endless bounty of the West, and so sought to maximize available resources through careful study and planning.
A perceptive student of the native landscapes and societies of the American West, Powell first elucidated his unique ideas on arid lands and their reclamation in a smallish monograph published as a government study in 1878. The now famous treatise, "A Report on the Lands of the Arid Region of the United States, with a More Detailed Account of the Lands of Utah," was premised on a belief that might have fit better in the Progressive era of conservation a half a century later. In it, Powell espoused closing all the remaining public lands to settlement until the completion of a scientific inventory determining which lands were most suitable for agriculture, and where to locate reservoir sites. Only with the expert information provided by the skilled surveyors did Powell believe that the land could be used to its best potential.

Playing on the national concerns about agriculture and settlement, Powell coerced Congress to fund the surveys by reminding them of the state of irrigation in the West: "The smaller streams are no longer a consideration because by now they are mainly utilized... Now the only course is to concentrate on the larger streams, on reservoirs and storm-water basins." His political finagling paid off and on October 2, 1888, Congress passed the Sundry Civil Bill funding Powell's irrigation surveys. In deference to the influence that Big Bill Stewart of Nevada exerted to secure the funding, he started his surveys in that state.

Ultimately, Powell veered from the course that the later progressives would take. He believed in scientific input but not technocracy: Once the experts surveyed the land, determined suitability for agriculture and gave technological and physical assistance for building reservoirs at the determined sites, then, he believed, it was time to turn the power of planning, governing and regulating over to the people. Not even all the people, just the people who lived in the hydrographic basins that were Powell's ideal unit of local government. At the time Powell was offering his ideas, much of the West was under territorial rule, so it was still possible to order political units along watershed lines and achieve his proposed program.
Convinced of the efficacy of his ideas, Powell took time out from his hydrographic surveys and visited several constitutional conventions to urge politicians to adopt them. He spoke, as usual quite loquaciously, at the 1889 Constitutional Convention in Helena:

The agriculturalists must own and control not only the lands they own themselves, but also the lands where the timbers grow, and also the land where the waters fall that make their lands valuable . . . Now, without entering too largely into the question of pointing out the necessities for regulating the use of waters and the measurement of waters, etc., I want to present to you what I believe to be ultimately the political system which you have got to adopt in this country.... I think that each drainage basin in the arid land must ultimately become the practical unit of organization, and it would be wise if you could immediately adopt a county system which would be coincident with drainage basins, for in every such drainage basin you have got to have first the water courts.

Powell also recognized that water use was an inherently contentious subject and that it would only become more so as time passed and available water became more scarce.

Recognizing how any consumptive natural resource use ultimately affects all the resources in a given area, he pushed for local, democratic governance of all resources as a commons.

Powell believed that people, enlightened with knowledge of the interactions of resources such as those he just described, would make decisions for the best of their community, preventing the manipulation of resources by monopolies and private interests to their own advantage. He warned Montanans:

Disputes will arise from day-to-day about the waters.... The general government cannot, the State government will not measure the water for you, neither can they measure it for themselves, and you have got to have local self government to manage that matter. Then the people who are interested in these waters are also interested in the timber, and the people who are interested in the waters and agricultural lands are also interested in the pasturage of those lands.

But for all his seemingly foresightful ideas, Powell was no preservationist. He actively campaigned such ideas as cutting down entire forests to speed water run-off and increase irrigation capacity; he also accepted the notion that all natural resources, including water, should be used in their entirety.
Powell's ideas were so broad in scope yet so very precise in formulation, ranging from truly compelling to downright appalling, that Powell's character and ideas continue to be a rich source of academic banter. Without belaboring those views, I would like to highlight two of Powell's more perspicacious ideas. The notions of determining water issues within hydrologic, as opposed to political, units and allowing locals (those within the affected watershed) to have significant control over related-resource decisions are more relevant now than anytime since miners first created, then codified, their own rules about water. One could argue that westerners have a long tradition of self-determination in water issues.

The federal government never did close any public land to settlement, and, in fact, Powell never even got to finish his irrigation surveys. Powell's ideas were too wacky, too slow to achieve results, and too far outside the myths of rugged individualism and the individual's opportunities to acquire new wealth for the politicians or the people to accept them. A mid-century scholar explains:

The unimpaired survival of the yeoman society, with its idealism only slightly tarnished...threw over the facts an imaginative veil which furnished the pretext for a sincere, if shallow, opposition to so drastic a reforming program as Powell's. He was asking a great deal. He was asking that the west submit to rational and scientific revision of its central myth, and indeed that the nation at large should yield one of the principal underpinnings of the faith in progress...The demand was too stringent; the myth could not be transformed so easily.

While Smythe traveled the country pontificating on irrigation's potential to transform society, Senators Stewart of Nevada and the Wyoming gang schemed in Washington to turn their states into bustling Edens, and Powell tried desperately to keep his irrigation surveys afloat, settlement, as always, continued apace. The yeomen (and occasional yeowomen) farmers who sought relief from the city squalor or a lowly inheritance or just plain wanted to strike out anew were relatively oblivious to these men's machinations -- as long as there was land to be had, the myth said it could be made productive, and people came.
Although Wyoming and Nevada politicians were perhaps the most conspicuous promoters of federal aid to irrigation, all the western states were involved. Montana, as affected as anywhere by the immigration, dreams, and other factors that blew in the irrigation crusade like a prairie thundershower, was no exception, especially after the droughts of the late 1880s hit.

The "white" winter of 1886-1887 and the drought that came hard on its heels decimated the range industry in western states. Hundreds of thousands of cattle and sheep died, and those that made it through the winter were dumped on the market as people sold out and moved on. Montana was one of the hardest hit states, with losses of up to 60%. Prices on the then-glutted market were too low for stockgrowers to break even financially, and the drought that followed meant hard times for those who held onto their stock in hopes of better conditions.

But few took the hard conditions as a sign to abandon agriculture in the West; if anything, it just proved what a noble and virtuous citizen the farmer really was. Although irrigated agriculture had been developing slowly and haphazardly throughout the state, with individuals and some small groups digging ditches and overseeing their own maintenance and upkeep, it was not until the severe conditions of that late 1880's that state and local officials began to show a concerted public interest in this previously private enterprise. In 1887, right after the white winter, the territorial governor of Montana wrote to the secretary of the interior in support of agriculture (by which he meant ranching as well as farming): "The most conservative industry, the one best calculated of all to yield the necessaries and comforts of life and most certain to produce a hardy, virtuous and patriotic people, is agriculture." For some time, the Montana Territory had sponsored "Farmer's Institutes" where agriculturalists discussed their latest troubles and new techniques to solve them. Inspired by the Institute's potential for problem-solving and creating agricultural prosperity and sealed by the poor conditions resulting from the drought, the state officially set up the
Montana Agricultural Experiment Station in 1893 "to experiment, innovate and do formal extension work." This oft-overlooked subsidy shows that, early on, Montana was dedicated to promoting agriculture throughout the state. The Agricultural Experiment Station is a direct predecessor to the more elaborate forms of technical expertise that became popular in the Progressive era, continuing today with organizations such as soil conservation districts. The founding of the Montana Agricultural Station reveals that state promoters recognized that the typical homesteader had never worked a plow or turned earth in their life and those who had were used to other places, other conditions.

While many western states responded to farmers’ needs for help in numerous ways, from clarifying water law to creating experiment stations, states were limited in the amount of capital and expertise they could actually offer. Because most of the “easy” irrigation diversions were dug and appropriations early enough to ensure water in a dry year had been claimed, irrigating much of the relatively empty western states required larger, more capital-intensive and technically ambitious storage projects than those currently in existence. Large reservoirs demanded capital and expertise that was not only beyond the means of the average homesteader, but even, often, beyond the new states’ and territories’ means. As a result, as the settlers turned to the states for aid, the states turned right around to confront the federal government. After three years of hard winters and a pronounced summer drought, territorial governor J.H. Cooney wrote to the Secretary of the Interior requesting "the adoption of a comprehensive scheme of irrigation for the new waste lands of Montana".

Predictably, the federal government did not respond immediately to this request. The successive droughts and blizzards of the late 1800s finally pushed the bottom out of the national economy, and when the Philadelphia and Reading Railroad failed in March of 1893, it plummeted the nation into one of the worst depressions in U.S. history. Suddenly, the president and his administration found further cause and less means to help develop irrigation in the western states.
But across the capitol lawn, Senator Carey of Wyoming, who had spent years trying to pass a reclamation bill, found the opportunity he had been waiting for, using depression-era public sentiment to push through a federal reclamation bill. Just a year after the national economy cratered, Congress passed the Carey Land Act of 1894. The act offered states up to one million acres of federal land within their borders to reclaim and then dispense to settlers. The states would receive title to those lands when they were irrigated and settled and all incurred expenses paid. The bill gave any money left over from irrigated land sales to a state reclamation fund. The act included limitations on how much land each settler could claim, how many of those acres he/she had to irrigate, etc.

More successful than the Desert Land Act in terms of the number of acres put under irrigation, the act still failed to produce the flurry of reclamation that promoters of irrigation and settlement envisioned. Wyoming and Idaho, states with the least settlement and most unappropriated water, led the West in number of acres irrigated under the Carey Act, followed by Utah and New Mexico. Montana had very few.

Ironically, historian Donald Pisani describes the act as potentially beneficial specifically to Montana, stating, "The Carey legislation... was designed to serve the needs of those states whose largest streams still carried plenty of unclaimed water, such as Wyoming, Montana and Idaho." Pisani fails to note, however, that Montana's main distinction under the Carey Act is that it produced so few irrigation projects relative to its potential, particularly in comparison with its neighbors.

Despite the success of states like Wyoming and Idaho to develop lands under the Carey Act, scholars still point out that the act did not generate an effective irrigation program -- federal, state or private -- throughout the West. By 1900, irrigators had reclaimed less than 12,000 acres under the Carey Act, mostly as moderate-sized, individually initiated projects. As with the Desert Land Act before it, the Carey Act offered land in lieu of the capital and expertise that states and individuals needed to further reclamation.
As years passed and the public observed few results from the Carey Act, western congressmen (they were all men) continued to demand more federal involvement in irrigation. Citizens continued to clamor for federal aid to irrigation despite the seemingly apparent (from the "failure" of the Carey and Desert Land Acts) economic conclusion that reclamation was so cost intensive with such uncertain returns that private investors could not make a profit.\textsuperscript{40} Certainly irrigation promoters recognized that large reclamation projects were not economically feasible, which is exactly why they were demanding government intervention. Without ever calling or considering it a subsidy, the Reclamation Act gave 20\textsuperscript{th} century westerners what would amount to one of the largest federal aid programs in the U.S.

The tide turned with the election and subsequent support of progressive Theodore Roosevelt. Roosevelt was familiar with and fond of the West, believed in a strong federal government, and, perhaps most importantly, hated monopolies. Roosevelt could easily justify a federal reclamation program as long as it would support the individual against large corporations and monopolies. Francis Newlands, a Nevada congressman trying to promote state development and thereby assure himself a senate seat, took advantage of the political milieu and introduced legislation that dramatically increased the government's role in reclamation.\textsuperscript{41}

The Newlands, or Reclamation, Act passed in 1902. Under the Act, the federal government gave up to one million acres of the public domain to each of eleven western states to reclaim through a combination of state and private investments. Congress appropriated a rotating fund to provide the initial capital for irrigation projects and replenished it with money the projects generated. The specific mandate of the Reclamation Service (created by the Reclamation Act) was to "build, maintain and supervise irrigation projects too large for cooperative financing."\textsuperscript{42} The huge dams and associated irrigation projects that characterize much of the arid West are the legacy of this legislation. It is these dams, the ecological damage to the rivers they plug, the deserts they water, and the technocratic societies they create that are critiqued by scholars such as Donald Worster.
It is also these dams by which people take measure of the Reclamation Act. If you regard success as the number of projects completed, or the creation of large federal reclamation projects throughout the West, then the Reclamation Act was one of the most successful pieces of federal "land" legislation ever passed. However, even by those measures, it wasn't an immediate success. Many of the biggest Reclamation Act projects -- the massive dams that people consider awe-inspiring testaments either to human ingenuity and enterprise or to the destruction those characteristics have wrought -- were not built until almost a half a century later.

Donald Worster aptly describes the pitfalls of the act, which he regards as a failure and as a precipitator for the eventual rise of the hydraulic society. He concludes that the act passed because it served to "promote accumulation of profit and power" and "offer men of property and means a way of maintaining social peace . . . [while] enlarging, for their own ends, the country's wealth and influence. The Reclamation Act "quickly proved to be even more hopelessly unrealistic, expensive, unworkable and naïve" than previous legislation.\(^{53}\) Worster offers examples of Reclamation Act projects that benefited private land and already-wealthy landowners. Reclamation was too expensive, and completion of projects took too long, for it to be useful to small farmers.

Financially, the act was notoriously a failure, and Congress sporadically had to pass legislation to increase the payback time, eventually forgiving much of the debt incurred. The Reclamation Act certainly set the stage for the creation of a hydraulic society: only people who thought they could afford it bought into reclamation, then, when it turned out they couldn't make their payments, their debt was forgiven, and they were left with waterworks that gave them tremendous advantages over those who didn't.

The Reclamation Act did, however, catch the national economy in an upswing: markets were reviving, jobs were more readily available, and the general mood of the country was optimistic. As one agricultural historian explained:
A prosperous new era of growth and opportunity characterized the nation during the first decades of the new century, as the national economy recovered from the slump of 1894. Nowhere was this recovery more rapid or more dramatic than in agriculture. Widening markets, new technologies, and an accumulation of competence all brought new faith in an agricultural way of life.44

Such positive economic indicators gave citizens faith in the economy and the government, and alleviated much of the desperation people felt in the 1890’s depression era. Basic prosperity and the numerous small- and medium-sized reclamation projects resulting from the act’s passage generated a positive vision of reclamation that may have shielded people from weighing the actual costs and benefits of federal reclamation projects to the average citizen.

Ironically, the most immediate, tangible legacy of the Reclamation Act was not dams -- it was a widespread reformation of western water law. In the late 1880’s and early nineties, as irrigation projects shifted to the relatively unappropriated larger streams and rivers, states were goaded by tiffs over interstate waters to increase their control over and knowledge of their water rights. States quickly realized that waters that might be unappropriated in a headwater state might "belong" to prior users in a downstream state. Endless inter- and intrastate litigation and conflicts prompted several states, starting with Colorado and followed shortly by Wyoming, to choose different solutions to the problems of reinning in the absolute authority of local custom in determining water rights. The deeply cherished doctrine of prior appropriation remained with its basic tenets unaltered, but many western states made changes in their filing and administrative procedures. Most created an administrative body to, at least, measure flows, administer claims and maintain centralized records, and supervise diversions, but some distinctions about the states’ various methods is important.45

The Colorado Constitution held that all water belonged to the people, with the state controlling all unappropriated waters and state water engineers measuring and administering future appropriations. The Colorado system also provided for final adjudication of water disputes in the courts (with recommendations and data provided by the water engineers).
In contrast, the Wyoming system held that all waters belonged to the state, but water could be appropriated by anyone who would put them to a beneficial use. Interestingly, Wyoming's definition of beneficial use, encouraged by Elwood Mead, its first state engineer, reflects insight that Mead gained while working on Colorado water issues. The Wyoming code specifically stated that appropriations could be denied if the use of the water was not in the public interest. For decades, Wyoming was the only state with strict enough use criteria that it could actually deny a water right (although it rarely did). The Wyoming system also uses an administrative commission, not the courts, to adjudicate water rights. Remarkably, the commission's findings are considered final, whereas unhappy litigants in other states can (and will, if it involves water rights) appeal a judicial decision or find a way to open a new suit. Most other western states modeled their water rights reforms after either the Wyoming's code.

When the federal government went to implement the Reclamation Act, it faced the same dilemma that Wyoming and Colorado had faced: reclamation agents needed to know exactly how much water was appropriated and how much was available before investing money in expensive storage and diversion projects, only to discover that someone had priority rights on that water. As a result, the federal government demanded that states develop and discernible and enforceable water codes before Congress would appropriate money for reclamation. This requirement forced almost all of the western states to choose either the Colorado or Wyoming system of administering water rights. Some states, like Nebraska, adopted a system wholesale (in this case, Wyoming's), but most western states adapted codes to their needs.

Montana, as usual, lagged behind other western states when it came to law and policy. While other states were having their administrative and judicial mettle tested determining and adjudicating water rights so that they could enter into interstate compacts, build dams and develop booming metropolises' fed by productive, irrigated agricultural lands, Montana's water code still smelled of rawhide and gold. And the Montanans involved in
water law and irrigation were keenly aware of this fact. As early as 1883, the Montana legislature passed a water rights registry bill -- until then, claimants obtained water rights simply by diverting (and notifying the county courthouse if he/she thought of it). Montana had no written or official record of date of priority, amount of water claimed and other relevant details for most appropriations. But the governor vetoed the bill because it set no restrictions on the amount of water an individual could claim.49

Two years later, a similar bill was passed, not replacing the diversion method of claiming rights, but legalizing a second, more standardized approach. The 1885 law encouraged water users to register claims in the local county courthouse before he/she diverted water. Users "perfected" their claims on the filing date as long as he/she completed the work required for the beneficial consumptive use in a reasonable amount of time. The 1885 bill still provided no administrative body to oversee registrations and all water disputes were settled in the courts.50

What became clear to Samuel Fortier of the Montana Agricultural Experiment Station and others who sought Montana water law reform was that states like Wyoming, with clearly recorded and adjudicated water rights, had the distinct advantage of knowing who held how much water what its priority date was. Montana, with no such records, was having trouble attracting large, federally funded storage projects. Endless water disputes cost remarkable expenditures of time and money, both personal and governmental. Even after a court judgment was made, rights were never secure and lack of records meant that appropriations were continually challenged.

In a 1902 "Report on Arid Land Grant Commission" to K. Ross Toole, Governor of Montana, author F.H. Ray describes the problems in no uncertain terms:

The future of Montana, her growth in wealth and homes, depends first and most on the development of her agricultural resources and that means irrigation . . . . Measured by her agricultural possibilities, Montana is the foremost state of the arid region . . . . greater area of reclaimable land, larger volume of available water supply, however average altitude, a home market, extensive railroad facilities, favorable climatic and soil conditions, enterprising citizens -- all these factors ready to serve us, -- yet we lag. Why? Montana's
irrigation laws are fundamentally wrong; they do not embody the best experience of other states and instead of promoting irrigation are a menace to it. . . . the burden already imposed upon her taxpayers for court costs of water right litigation is considerable and increasing. . . . Litigation is as natural a byproduct of the absence of public control as are weeds in a neglected field. There can no stability under the present situation. The law affords no means of enforcing a right when adjudicating except through another lawsuit. . . . Court Clerks, attorneys and irrigators [are] often as much in the dark regarding the real status as an outsider . . . a continuance of this lack of system for another twenty-five years would cause a confusion impossible to clear up.\textsuperscript{51}

But resistance to reform was substantial. Despite numerous efforts to pass legislation creating a system to prevent and resolve water disputes, established agriculturalists, particularly in the Gallatin Valley, feared losing their rights if the laws changed and lobbied successfully against reform. A reform bill introduced in the 1903 legislature by Samuel Fortier received national attention. After stout opposition from many camps, including a petition signed by over 40 Gallatin Valley ranchers, the bill was dismissed in committee. Fortier wrote a letter to a colleague commenting on the defeat with wry humor: "You may write on the tombstone of the bill, 'Killed by the residents of Bozeman and vicinity.'\textsuperscript{52} Montana created the Office of the State Engineer in the same year, but got no substantive water-law reform until 1973.

Despite rising costs of irrigation for individual farmers, (between 1899 and 1909 irrigation costs (excluding maintenance) rose from $4.92 per acre to $13.68 per acre),\textsuperscript{53} Montana did not pursue federal irrigation projects as aggressively as many other western states under the Newlands Act.\textsuperscript{54} However, several substantial irrigation projects were initiated during the boom period of agriculture in Montana with some federal assistance. Two of those, the Milk and Sun River projects, drain the Rocky Mountain Front. The state also completed a large irrigation project along the Lower Yellowstone and Huntley Rivers.\textsuperscript{55} All of these projects were on relatively large and almost entirely unappropriated rivers far from the state's borders, where lack of water rights records had little bearing. "Valleys like the Bitterroot, where both land and water were already substantially appropriated, were left to further develop water resources on their own.

My ideas here are derived from Gordon Morris Bakken, Development of Law on the Rocky Mountain Frontier, Civil Law and Society, 1850-1912 (Westport, CT, 1983), 70.


Several scholars point out that riparian rights, although still the common law rights in water, were already much changed by the time prior appropriation came to the fore, and that it was actually modifications of the riparian doctrine forced by Eastern entrepreneurs that set the stage for appropriative rights. See Lawrence Friedman, A History of American Law (New York: Simon and Schuster, 1973) and Pisani, "Enterprise and Equity."

The decision reads "the common law doctrine giving the riparian owner a right to the flow of water in its natural channel upon and over his lands...is inapplicable in Colorado. Imperative necessity...compels the recognition of another doctrine in conflict therewith." (Coffin v. Left Hand Ditch Co., 6 Colo. 443, 1882).

Dunbar, "The Search for a Stable Water Right," 140.


61 Montana 152, 201 Pac. 702 (1921).

Pisani, To Reclaim, 131-132.

Congressional Record, 44th Congress, 2nd session, Senate, Dec. 5, 1976, 32.

Cronon, 615.

Dunbar, 78.

Pisani, To Reclaim, 90.

Ibid, 249.

Warren and Carey were perhaps the most important perpetrators of the Johnson County War in Northeast Wyoming, using their wealth and influence to organize stockgrowers in a vigilante attack against small farmers.

Pisani, To Reclaim, 246.

See Pisani's discussion of the cession crusades, To Reclaim, 233-251.


Smith, 198.

Wallace Stegner, Beyond the Hundredth Meridian: John Wesley Powell and the Second Opening of the West, (Lincoln: University of Nebraska Press, 1953), 213.

Stegner, 303-304.

Ibid, 304.


Ibid, 822.

For more information on John Wesley Powell in the historical literature, see: Wallace Stegner, Beyond the Hundredth Meridian; Donald Worster, Rivers of Empire; Donald Pisani, To Reclaim a Divided West, and Marc Reisner, Cadillac Desert.

Smith, 200.

Pisani, To Reclaim, 139.


Howard, 21.

Pisani, *To Reclaim*, 248.


Cronon, 617.

Bakken, 81-82.


Cronon, 29.


Pisani, "Enterprise and Equity," 33.

Pisani, in *To Reclaim a Divided West*, argues that Wyoming adapted these progressive standards partly out of economic necessity — 1) Wyoming had much more unappropriated water 2) There was very little mining and prior appropriation wasn't well established 3) the blizzards of late the 80's deeply affected stockgrowers and the state wanted settlers to farm and diversify, and 4) Wyoming didn't have established communities of farmers with long-vested rights like Colorado. Wyoming also (along with Nebraska, which followed Wyoming's lead) tied water rights to the land, whereas in Montana and other western states water rights can be sold separately from the land they water.


Oregon created a system mixing Colorado's and Wyoming's water codes called the Bien system. That system was subsequently adopted by several western states. Dunbar, *Forging New Rights*, 120-121.

Dunbar, "The Search for a Stable Water Right," 141.

Ibid, 141-142.

F. H. Ray, "Irrigation, Ought Montana to Aid It, If So, How?," (Helena: A Report to Governor Joseph K. Toole, December 20, 1902), 3, 10 & 16.

Dunbar, "The Search for a Stable Water Right," 146.

Howard, 38.

S. T. Harding, "Irrigation Development in Montana," (Bozeman: Montana Agricultural College Experiment Station, Bulletin No. 103, 1915), 223.

Hamilton, 626.
IV. Staying Small: the Bitterroot in the Era of Reclamation

Government Projects

Those who have water rights under government projects are fortunate in that they are almost always able to secure an ample supply of water at the right time. . . . Not only are the farmers who have water rights under these government projects fortunate in enjoying the benefits of the high grade engineering, and reliable construction of dams, head gates, weirs, ditches, etc., but they have the opportunity to learn the best methods of irrigation direct from engineers and agriculturalists of wide experience."

Cooperative or Commercial Irrigation Enterprises

To the person who contemplates buying shares or stock in a cooperative or commercial irrigation enterprise, a few words of warning may prove of value. There is no law in Montana to prevent people from claiming water rights much beyond the available supply of water in a stream. On many streams and rivers there are "prior rights" which have been decreed by the courts which must first be supplied, and these generally take all the water. Water rights are often secured which are totally valueless.

H.B. Bonewright, Irrigation Practice in Montana, 1913.

The era following the Reclamation Act was a progressive, productive and optimistic time. Despite dire predictions about how the closing of the frontier would destroy democracy and the American way, there was still land to be had, still space for migrants and adventurers and the down-and-out. Perhaps there weren't wide open spaces where one could stake a homestead amidst the prairie bunchgrasses without another house in view or slip up a river after beaver and not see a soul for months, but there was plenty of infill space for the thousands who came looking.

The pronounced closing of the frontier did have an impact, however, on the myth that governed the West, especially how public land could be used to create and maintain a democratic society. Like stones from a foundation, as more and more pieces of land were removed from the public domain, the frontier era crumbled into an era of planning, government involvement and technological expertise that became known as the Progressive Era. In particular, the federal government was starting to give some thought to protecting and managing the public domain rather than just giving it away to whoever
was brash enough to claim it first. For example, the Forest Service Organic Act passed at
the end of the last century and a formal system for managing the forest reserve system
began early in the next; likewise, the National Park Service was founded in 1916. Both
agencies were created to manage land that was set aside from private development and
hired "experts" to oversee their use for the benefit of the republic. The Antiquities Act
of 1906 allowed the federal government to administratively reserve lands to protect both
their scenic and cultural values. Other aspects of the public domain, however, were not
treated equally. For the most part, the federal government kept water, mineral rights,
and other extractable resources up for grabs, with their extraction, not their
preservation, legally protected.

In the Progressive Era, (the 1900's into 1930's) people still believed that there
were enough semi-arid western lands to provide for everyone who wanted a piece of the
proverbial pie, and farming was still touted as the best use, farmers the most virtuous
citizens. But the revised myth put the government squarely in the position of managing
people and resources, confirming that there was, at least, some recognition that
resources were actually limited. Yet Americans still expected opportunities to prove
themselves in a frontier-like setting. The progressive version of the myth celebrated
technology and relied on elite technocrats to achieve that famous but ill-defined goal of
"the greatest good for the greatest number over the longest time."2

The Progressive Era, in many ways, created the paradigms that still define
western resource battles today. For the most part, Americans accept protected lands but
fight the bureaucracies that manage them - "expert" control over our federal lands -
although environmental laws have increased public participation in management
decisions. The Reclamation Act has many elements of classic progressive legislation:
apply government money and expertise to the "problem" of limited resources to create
new opportunities for individual wealth within a larger system of government planning.
The newly-narrated myth had its impact on Montana, even if the specific impact of the Reclamation Act was scant compared to other western states. The state continued to pursue settlement and agriculture, offering more aid in the forms of planning and technical expertise whenever possible. A year after the 1894 Carey Act, the state created the Montana Arid Land Grant Commission to research and administer Carey Act development, completing three projects by 1902, and another five over the next 12 years. The number of Agricultural Experiment Station projects and publications increased steadily, as did state-sponsored or state-abetted irrigation projects. But irrigated crops weren't the only benefit: Montana promoted ranching and farming, irrigated and dryland.

But it was private interests, with various forms of government aid, that enthusiastically and effectively accomplished the lion's share of agricultural development in Montana in the early nineteen hundreds. The railroad companies, particularly the Northern Pacific, aggressively promoted land development and homesteading: Northern Pacific owner James J. Hill explained to the people of Havre, Montana, in 1912 that every single 160 acre parcel of public domain in Montana would soon be a family farm. Hill believed in settlement for Montana and had, since before the Reclamation Act, sponsored experimental farms, agricultural laboratories and “dry farming” exhibitions. The railroads had their motivations, certainly -- every property owner would ride those trains at some point, every farmer would ship grains to eastern markets and equipment back from them. And they succeeded to a large extent. The string of “highline” towns strung out along the Northern Pacific's route through the Montana's short grass prairie can be attributed, in large part, to Hill's vision and will.

Although certainly the biggest promoter of agricultural development in Montana, private interests had government support. The federal government eased homestead requirements, first increasing the amount of land one could claim to 320 acres (in 1909) and subsequently reducing the amount of “proving up” time from 5 to 3 years (in 1912).
State and local governments promoted and offered incentives for agriculture and business. Backed by national, state and private encouragement and led forward by the myth, a songline stretching west across the plains, people poured into Montana in the early 1900's. In fact, the most prolific homesteading/land acquisition period in Montana occurred between 1910-1922, when 42% of Montana's total land mass was claimed for homesteads (although most of it was unfit to farm). Wheat, the most popular crop, increased from 258,000 acres in 1909 to 3,417,000 acres in 1919.7

So perhaps it's not surprising that Montana agriculture boomed once the frontier was officially closed — many settlers appreciated having a small town to land in, and a few neighbors, and were encouraged by and dependent upon the smattering of infrastructure that existed by the early 1900s. And, despite the frantic pace of homesteading, many folks who came west weren't necessarily interested in farming. They came for the free land and to see what fortune and hard work would bring, but were happy to sell out their farms and move into town if an opportunity presented itself after proving up on their homesteads. So while the number of "farms" in census counts claimed during this era is amazingly high — 57,677 in 1920, the highest number in Montana history 8 — the number is more revealing as an indicator of settlement than as an indicator of intent agriculturalists. Some farms were abandoned when other opportunities arise; some farms failed; and many were claimed for pure speculation to begin with. This pattern was true across the West: people came out to farm or ranch, then settled into whatever patterns of commerce suited them and their ambitions best after the land was legitimately theirs.

Especially in irrigated parts of the West, this was the period, as the settlement and land speculation boom was deflating, when the slow accumulation of land and water rights occurred, initiating the aggregations that would lead to agribusiness later. In this regard, agriculture followed the well-worn path tread by miners: individuals eventually joined in informal groups, then formed joint-stock companies and, finally, those
companies bought by bigger companies and the original owners ended up as employees (or water share holders) dependent on large corporations. A agricultural historian explains the fallacy of the myth:

The dependence on new technology, from irrigation systems to mechanized equipment, became slowly more essential to staying competitive for developing markets. Because technology and expertise were expensive, requiring capital to obtain and upgrade, small farmers were susceptible to buy-outs from larger organizations with more capital.

Another historian is explicit about the consequences of rapid technological advancements and corporate buy-outs:

Steam Power hastened the transition from subsistence to commercial agriculture, caused the accumulation of capital in units of unprecedented size, transformed the older western cities... When the mechanical revolution introduced tractors and threshing machines to the wheat regions of the NW, the pattern of small freehold subsistence farms was in danger of being wiped out... These changes spelled the end of the simple economy, which in the first stages of settlement had corresponded at least approximately to the agrarian ideal. In the long run, the virtuous yeoman could no more stand his ground against the developing capitalism ... in the NW than he could against the plantation system in the southeast.

The end result – the slow disappearance of small family farms and rise of large companies that controlled both land and water resources – was Donald Worster's hydraulic society. In the 1920's, agribusiness hadn't fully "fluoresced" (to use Worster's word), but it is worthwhile to note and reiterate the factors that led to the hydraulic society precisely because it didn't happen in the Bitterroot.

People continued to settle in the Bitterroot valley during Montana's agricultural boom, but not in the ways they did on the Northern Plains. The Bitterroot boom, in terms of sheer numbers of new water rights filed, occurred all the way back in the 1880s, and by the late 1890's, agricultural production, although still mostly wheat, was surprisingly diversified. As early as 1898, Ravalli County produced 20,000 bushels of apples. A statement written about California applied all over the West: “the distribution of irrigation systems and various methods by which they were implemented
became important determinants of settlement and productivity."¹³ Such determinants were already mostly in place in the Bitterroot -- land and water systems were well-established and there simply wasn't much land left for development. But it wasn't from lack of trying.

In the 1890's, as the Reclamation era was just beginning to shuffle its feet, the federal government was conducting irrigation surveys (Powell's surveys) throughout Montana, and decided that the Bitterroot valley did not need or was inappropriate for a federal reclamation project. Shortly afterwards, residents of the valley petitioned for a land trade with the state, so that certain tracts of land could be developed by Montana under the Carey Act program and eventually turned over to local irrigators.¹⁴ The federal government, however, would not change its original opinion about the valley. Nonetheless, the Bitterroot eventually got its share of irrigation development during the reclamation era. Two large projects were completed, neither supported by government money or guided by much federal technical expertise.

As settlers came into the valley, they settled and filed water rights in the places most logically suited to agriculture. In the Bitterroot, the best places were not always the areas with the richest topsoil but the areas closest to water. Because the Bitterroot Mountains collect so much more moisture than the Sapphires, there are considerably more streams, generally with more consistent flows, on the west side of the valley. Valley maps show this pattern visually: the number of creeks draining the Bitterroot Mountains is much higher than those draining the Sapphires. Although soils on the west side were considered less favorable for agriculture -- they tend to be rockier and the land less level -- easy access to somewhat stable water supplies was more than enough incentive for farmers to settle there. Areas adjacent to east side creeks were also readily settled, but because there are fewer creeks on that side, there were larger areas of unreclaimed land. The east side also has large, semi-flat, elevated "benchlands" running along the base of the Sapphires that had so far been too complicated to irrigate and were
undeveloped was further disincentive to irrigation. It was these areas -- the tracts between creeks and benchlands on the east side of the valley -- that remained unsettled by the early 1900's.\textsuperscript{15}

The success of small private orchards in the valley, evidenced by the bustling production of farmer-businessmen such as the Bass brothers, and the steady demand for produce in Butte, Anaconda, and elsewhere (Butte was the largest city in the state in the early 1900's, with a whopping 39,000 residents in 1910) proved that apples were a lucrative crop.\textsuperscript{16} One local history brags: "The Montana McIntosh Red apple was marketed in hundreds of [train] carloads up to 1910."\textsuperscript{17}

These facts, along with the general speculation and settlement fervor throughout the country, caused residents, local newspapers and state organizations such as the Montana Agricultural Experiment Station and the Horticultural Society to vigorously promote both irrigation and fruit growing in the Bitterroot valley.\textsuperscript{18} Many people thought the Bitterroot would become one of the primary apple producers for the entire country - if Bitterrooters could create the irrigation to water every inch of tillable land.

However, the combination of unused land, developing irrigation technology and steady markets for Bitterroot produce provided ample incentive for investors to reclaim land that was previously not even considered for agriculture. Private sector investors, encouraged by the new optimism, belief in technology and bustling economy were willing to risk large gains and losses with irrigation projects. Despite all Theodore Roosevelt's trust-busting rhetoric, there were still plenty of wealthy investors to invest in enterprise if the right opportunity presented itself. Apparently, in the Bitterroot it did.

The first large irrigation project in the Bitterroot valley was initiated and financed by copper magnate Marcus Daly. Supposedly, Daly had contemplated funding some of the early east side irrigation schemes but was reluctant because the crop they planned to raise --wheat -- did not bring a high enough price to make the ditches economically feasible. However, by the first decade of the new century, the Bitterroot was well-
enough known for its fruit production that, when the state legislature authorized two sub-stations for the Agricultural Experiment Station in 1907, it created one for horticulture at Corvallis in the Bitterroot Valley. Later, as apples and orcharding gained more notoriety, Daly reconsidered the project because of the higher returns associated with produce.

What finally got Daly involved in irrigation, however, was his own property. A portion of his 28,000-acre stock farm included dry east side lands, and, as early as 1893, he posted notice for diverting a considerable amount of water to his farm through the existing Hedge ditch. In order to accommodate the water needs of his property, Daly soon financed expansion of the ditch, and eventually built several new ones, mostly diverting from nearby Skalkaho Creek.

While Daly invested huge sums of money and developed many a new mile of ditch, he did so for his own purposes, developing water for his own property and agriculture for local use. He sold neither the irrigated acres nor the crops that came off them, nor did he borrow money or sell bonds to fund his project. There was no need (and no way, really) to determine if Daly made an economic return on his investment, and the project simply ended with Daly’s death in 1900(21). Nonetheless, the Daly Ditches are a significant part of the valley’s water infrastructure, and probably offered some measure of confidence in the possibility of reclaiming benchlands and the economy of the valley to those who followed. One historian of the Bitterroot remarked succinctly on the scale of Daly’s venture: “The project was unprecedented in the valley.”

But the biggest reclamation project was yet to come. Even as Daly’s workers were digging the last ditches, another valley promoter was conceiving plans for many of the remaining unirrigated eastside benchlands. Perhaps the most ambitious irrigation scheme was the project that today is encompassed by the Bitterroot Irrigation District. Around 1900, Samuel Dinsmore formed the Bitterroot Orchard Company with the intention of reclaiming eastside lands. Dinsmore’s plans were enthusiastic: he intended
to build a canal and flume system extending north from the West Fork of the Bitterroot river for over 80 miles, crossing the mainstem of the Bitterroot River and several smaller (but steeper!) tributaries to water some 70,000 acres north of present day Stevensville.34

After 6 years of personally financing land surveys and other preparatory work for the “Dinsmore Canal,” money began to run short. Undaunted, Dinsmore decided to seek outside financing for his project and headed to Chicago to secure “eastern” financing. One of the more renowned and notable backers was William I. Moody, who is credited with the idea of building a reservoir at the existing Lake Como on Rock Creek for storing supplemental water for the project.25 A three-page letter full of precise and reassuring figures and sums from accredited surveying engineer Paul S.A Bickel no doubt impressed the rest of the financiers with soundness of Moody’s idea. Bickel’s letter appealed to the investors on many levels:

This feature [Lake Como Reservoir] of the proposition is exceptionally good, and it is an inexpensive way to store water . . . Any of this land with value is worth $75 an acre and it is my opinion that as conditions change in the way of new settlers who are coming in to settle the country, who are farmers, not stockmen and miners, the price of land will go up with the thrift of the small farmer. These higher bench lands produce some wonderful crops, and will some raise in value. The Bitterroot Market is excellent. Butte and Coeur d’Alene mines at all times furnish high prices for every kind of produce.26

Note that even Bickel, an engineer and man of science, slips into his measured and technical report a reference to the indomitable myth -- that farmers are the best settlers, and that land values will go up due to farmer’s “thrift.”

Together, the investors modified Dinsmore’s original plans, reducing the irrigated acreage to only 40,000 acres and diverting solely from Rock Creek (draining Lake Como), 22 miles closer than the West Fork. Despite scaled-back plans, the project was behind schedule and over budget almost immediately. Within a year and a half, the project was bankrupt and the owners had reorganized as the Bitter Root Valley Irrigation Company, earnestly continuing construction of the irrigation infrastructure.
With the water works well under way, and the financial machine rolling, the next step was to purchase the lands the project was to irrigate. By 1910, the company had built 80 miles of canal and acquired and begun irrigating 15,000 acres of bench lands north of Stevensville with water from both west and east side creeks. It was a substantial accomplishment, but a far cry from the planned 40,000 acres. The company had spent over 6 million dollars and hadn’t even built the dam at Como yet. Still determined despite continuous financial setbacks, Dinsmore et al. modified their reservoir plans, changing the proposed height of the dam from 74 feet to a modest 40 feet, explaining the choice in a letter to the Colorado State Engineer (a consultant on the project):

The fact that this entire proposition is costing us a great deal more than we originally contemplated does not suggest to us that we should jeopardize our proposition by not building a dam of sufficient size, but the position that we are taking is that we have a right to take a slight chance and build a smaller dam... Our theory now is that a 40-foot dam will take care of our entire enterprise.

When the dam was completed, it towered 50 feet above the original outlet creek and spanned 2,500 feet. At the time of its completion, the Big Ditch and its associated irrigation works were the most expensive (both total cost and cost per acre) ever completed in the United States. Although the entire project proceeded without any government funding, the Federal Department of the Interior lent (or required, perhaps?) expertise and supervision to the actual construction.

At the outset, the project did well -- the reclaimed land, over 15,000 acres of it, sold for a premium price – between $200 and $300 per acre. Despite Engineer Bickel’s faith in the thrift of the farmer to perfect the project, the newcomers were a far cry from the yeoman farmer of the myth. Most lots were only 10-20 acres, already or soon-to-be planted in Macintosh Red apples, sold to out-of-staters, particularly targeting the wealthy “eastern” intelligentsia. As one historian explains: “As many ...were university people, the development lacked the Pioneering spirit. The area was made into divisions
known as University Heights, Sunny Side, Summer Dale, Home Acres.... Large inns were built on each division with servants in attendance and golf courses laid out.\textsuperscript{32} Purchasers were offered virtually unlimited water. Some people bought the plots as vacation homes with value, or as speculative interests, but few intended to actually farm them and live there year round. Nonetheless, Dinsmore still created and sold his project on the premise that apples were lucrative; that the lots and the irrigation works would pay for themselves.

Thus began the famous Bitterroot apple boom. The valley is still known for this project, and orchards remain a part of the valley's economy and charm. But boom implies "bust," and, despite aggressive promoting, advertising and the numerous clients, the inability to recover costs eventually forced Dinsmore and Moody into bankruptcy.

The expenses that sunk the entrepreneurs were the same ones that plagued many irrigation projects around the West: they didn't anticipate the labor and money required to maintain the extensive irrigation structures (earthen ditch and berm, metal pipes, and wooden flumes, etc.) and to fix costly leaks, seepage, and evaporation.

Additionally, the orchards never did as well as they were expected to, and historians cite many factors for this failure. The soils were low in nitrogen, a disease spread among the trees, and the now-famous orchards in Washington and Oregon were beginning to provide competition for the Bitterroot market.\textsuperscript{33} For at least the next five years, apples remained the most important fruit crop in the Bitterroot, bringing approximately a million dollars annually to the valley. These statistics confirm that there is more than a hint of truth to the speculation that the newcomers did not know what they were getting into, and that ignorance about what was required to manage a profitable farm was ubiquitous.

A Montana Agricultural Experiment Station bulletin published in the 1920's to promote, cautiously, agriculture in the valley elucidates the prevailing opinion:

The easy plan of ownership and operation whereby the purchaser was given five years for payment, during which time the company's trained orchardists
were to take care of the growing orchard, appealed to many people not ready to go to Montana to live. So the orchards and plots were sold; so many settlers moved into the valley; and so disappointment came to many of the settlers when their orchards turned out to be on soil unsuited for fruit growing. And so, moreover, many purchasers of orchard plots—purchasers who never even came into the county—let their orchards run down after the five year period... some had no choice but to stay, and those who won out did so either by a resort to other work than farming, or to other farm work than orcharding.\textsuperscript{34}

After the Bitter Root Irrigation Company (BRIC) filed bankruptcy in 1916, landowners who relied on BRIC's water kept the project in operation for years while the proceedings moved through the courts. The company was briefly bought by a group of private interests calling themselves the Ravalli Water Company (RWC), but they, too, were unable to meet costs and, by 1920, almost 600 landowners receiving RWC water petitioned to create an irrigation district.\textsuperscript{35}

An irrigation district is user-owned body that can levy bonds against its assets to cover expenses as long as a majority in the district vote in favor. This time, there was no outside money, no golf courses and servants mingled among the orchards. The water users that remained were almost exclusively farmers, dependent upon Big Ditch water for their livelihood. They simply couldn't afford to lose the water.

By December 1920, when the Bitterroot Irrigation District was formed, World War I had driven up prices for all agricultural products, and farming was, once again, profitable. The district soon decided to invest their profits in necessary upkeep of the irrigation works. In 1924, Bitterroot Irrigation District issued a $600,000 bond and, over the next several years, replaced the dam's spillway, and many of the flumes, canals and laterals with more permanent and less-soluble materials, including steel and concrete.\textsuperscript{36}

Both Daly's stockfarm and the Big Ditch were large projects, fantastic for the time, their promoters expending huge sums of money, incurring huge losses, and, in the process, altering the economy and ecology of the valley. Although Daly's motivations differed dramatically from Dinsmore's—Daly wanted to increase the value and self-sufficiency of his holdings and grow feed for his prize racehorses, while the Bitterroot
Valley Irrigation Company's owner's intent was speculative -- the projects shared a
grandiose vision for developing water resources. Both Dinsmore and Daly responded to
opportunities to expand agricultural capacity in a valley that already had established
markets and an irrigation infrastructure and made real the possibility of reclamation of
lands long ignored.

Although Daly vastly increased the amount of water that could be moved from
creeks and applied to farmland, a considerable portion of the Daly Ditches project
involved expanding and improving existing infrastructure, rather than developing new
systems. Dinsmore's project was unique in that few people would have considered
building a dam with private investments -- the costs of dam building were just too high.
Both projects are testaments to the Bitterroot's unique history and climate -- the early
existing irrigation structures and consistently successful crops and markets convinced
Daly, Dinsmore and company that they were making profitable investments.

The Big Ditch and Daly Ditches projects, which brought water to areas that had, as
yet, remained unplowed, were the exception rather than the norm in the valley,
especially after the turn of the century. For all their bulk in a relatively small valley,
either project directly affected the average Bitterroot farmer much -- he or she probably
had a relatively senior water right from before the Reclamation Act of 1902, with,
perhaps, additional rights to storage water from some small dam tucked up in the
mountains. Between 1900 and 1918 ten new irrigation projects were registered in the
valley, including the Daly Ditches and the Big Ditch. Of the remaining eight, three built
ditches for new diversions from the mainstem and tributaries. All three were
incorporated by 1905: Rock Creek Water company in 1901; Ward and Woodside Irrigation
Companies in 1903 and 1905 respectively, both diverting from the Bitterroot River itself.
All of the remaining projects were small storage projects -- dams -- intended to
supplement irrigation water late in the growing season for people who already held water
rights, albeit low-priority rights. The original incorporation language for one of these
projects -- the Blodgett Creek Irrigation District -- is explicit about its goals: "... for the purpose of obtaining and supplying supplemental water to the landholders with late priority rights in Blodgett Creek." 37

Thus, although the dam-building era in the valley coincided with the reclamation era throughout the West, the Bitterroot dams were of a different scale and for a different purpose. The Bitterroot dams were not built to water new homesteads, divert untapped creeks, and encourage new settlement. Instead, irrigators who had already settled the valley and drew water for irrigation through well-established canals, ditches and headgates now sought to protect their rights and ensure themselves water through the dry late-summer season with supplemental water. By 1915, with both the Big Ditch and the Daly Ditches completed, a report by the Agricultural Experiment Station in Bozeman described the situation in Bitterroot valley aptly:

The irrigable land of the Bitterroot Valley has been quite largely developed at present. The high values of land make practical the construction of systems whose cost would as yet be above the economical limit in many other parts of the State. . . . In the early years, farmers got water directly from ditches, but recently have come to rely upon storing floodwater to be used versus direct flows. 38

The legacy of this period of developing supplemental water often intrigues valley visitors today. If you walk up trails along almost any of the westside drainages, well into what is now the Selway-Bitterroot Wilderness Area, you will see small dams situated near the headwaters of creeks high in the mountains. If you turn and look down toward the valley below, you are likely to see signs of the crops that these dams help irrigate: green pastures of alfalfa or oats, maybe the occasional family orchard.

Indirectly, however, both projects may have affected agriculturalists in the valley by helping keep agribusiness and large corporate water monopolies out of the Bitterroot. Daly developed water rights and mostly kept them off the market, and the Big Ditch properties were never profitable enough to tempt large companies to take over. Perhaps more importantly, the private Bitterroot projects began relatively early in the era of reclamation, snatching up the few remaining opportunities that might have become

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conspicuous as time passed and reclamation became more popular. And the Bitterroot was remote and cold compared to the large agricultural valleys that dominated public and corporate attention, such as the Central Valley of California or the Willamette in Oregon.

The late 1920s and early 1930s were a slow time for Bitterroot irrigation. The apple boom had come and gone. In contrast to the 1880's, when an average of 74 new water rights were claimed each year, the late twenties and early thirties averaged only 11 new filings per year. Likewise, only three irrigation projects were recorded during this time, all small storage reservoirs for supplemental water rights permitted between 1924 and 1926. The first was a reservoir on Twin Lakes draining into Lost Horse Creek, with a capacity of 620 acre-feet, irrigating a maximum of 970 acres. That reservoir is owned and operated by the Charlos Irrigation District (named after the Salish Chief who waited until 1890 to reluctantly leave the valley). In 1925, three small reservoirs were permitted on tributaries of Skalkaho creek, on the East Side, to increase the late season flow through the Daly ditch system. The next year, twelve men organized a small water user's association to construct a dam on Holloway Lake/Sweeney Creek, with a capacity of 280 acre-feet irrigating 650 acres. All three of these projects were small storage dams for late season supplemental rights only. Although a few new diversion rights were recorded every year from 1926 on, people likely did not have the capital to think of building a dam -- even a small one -- and the next storage project in the Bitterroot wasn't conceived until the late nineteen thirties.

In contrast, the legacy of big reclamation, though perhaps minor compared to other western states, is quite visible in certain parts of Montana. A few of the earliest federally funded projects serve as a vivid comparison to the large irrigation projects in the Bitterroot. The Greenfields project, which diverts water from the Sun River on the Rocky Mountain Front near Choteau, was begun in 1913 (after the Big Ditch/Como project was finished) and reclaimed 45,000 acres of land. These days the land is sown almost entirely in barley used by brewing giant Anheuser-Busch. A later federal project on the
Yellowstone reclaimed 33,000 acres of benchlands for grain crops above the Yellowstone River near Billings. The Big Ditch/Lake Como project irrigated only 16,000 acres at its zenith.

In the 1930's, when Oklahoma's blown topsoil seemed the only thing available to fill empty pockets and hungry mouths, federal reclamation hit its stride. Franklin Roosevelt's "New Deal" legislation created thousands of federally funded jobs in an effort to spend the country out of the depression. FDR created the Works Progress Administration, the Civilian Conservation Corps, and other infrastructure-building agencies to create jobs; he organized the resettlement, domestic allotment and other agricultural adjustment programs; and he significantly increased the budgets of agencies like the federal Bureau of Reclamation, which started building the really big dams during this time.

All agricultural communities were affected by the depression, and the Bitterroot was no exception. Like other communities around the West, valley residents repeatedly requested federal aid to build new dams, but were turned down. Apparently the Bitterroot was already well enough watered that even administrators of the bloated Depression-era budget weren't offering money for new projects. However, the federal government didn't ignore the valley -- when the Bitterroot Irrigation District (operators of the Big Ditch) could not pay off even the interest on its $600,000 loan, Congress approved the first of several classic Reclamation Act-style debt relief packages. In 1931, Congress lent the District $750,000 dollars, $500,000 of which was to refinance the original loan. In 1936, the government extended another $200,000 interest-free loan to the company and forgave the interest on $250,000 of the $750,000.

The Bitterroot valley still does not have a single federally funded reclamation project within its borders. Essentially, the valley was considered full -- both the physical diversion structures and established water rights necessary for irrigated agriculture were
already in place at a time when the rest of Montana and the West were beginning to expand into large-scale, government-funded irrigation projects.

Ironically, it was the state government that eventually built the next substantial irrigation project in the valley. Historian Robert Dunbar explains that the Carey Act -- the cession of public lands to the states -- was born of drought and depression. So was the Montana Water Conservation Board (MWCB). The crop years of 1930-31 had been especially dry and that of 1934 would be drier. The economy across the country was as dry and unforgiving as the rains. So Montana Governor F. H. Cooney called a special session of the legislature to "create an agency to conserve and utilize the waters of the state" and to use "the unemployed labor and unused water supplies... to rehabilitate our state and its people." The legislature responded by creating the Water Conservation Board to construct, operate and maintain small irrigation projects. The Board also began the arduous, thankless process of sorting through water rights claims to determine what water was available for development.

With some assistance from the federal Works Project Administration and the Public Works Administration, both part of Franklin Roosevelt's New Deal legislation, the MWCB set to work. By 1966, it had completed 181 Projects, including 141 reservoirs that stored 438,000 acre-feet of water and 815 miles of canals. Some of their better-known projects include the Deadman project on the Musselshell River and the Ruby River irrigation project. Interestingly, the literature describing these projects assures the reader that "these [dams] brought winter feed and stability," helping ranchers as much as farmers. The Board also turned its attention to their Bitterroot constituents, and found perhaps the only drainage remaining in the valley with enough unclaimed water to make a new irrigation project possible.

The West Fork of the Bitterroot River tumbles straight off of the highest peaks in the Bitterroot range, building and dispersing log jams, circuiting moss-covered rocks, undulating across gravels and providing sustenance for the tangles of shrubs, dark firs
and shy aspen that line its banks. Because of where the MWCB chose to situate the West Fork dam site, at almost 5,000 ft in elevation on the Bitterroot National Forest boundary, the river's water, above the dam, was entirely unappropriated when the Montana State Water Conservation Board began building in the mid-1930's.

Impounding water behind a dam, although not exactly the same as removing it from its original channel, legally constitutes diverting. Thus, when the dam was completed in 1938, the State Water Conservation Board acquired the only and oldest water right on the West Fork of the Bitterroot River. The reservoir, full, holds 32,362 acre-feet of water, a little less than Lake Como. For comparison, other dams built high in the Bitterroot to ensure water to junior users with low-priority water rights range in capacity from 3,000 acre-feet to 280 acre-feet.51

Originally, the Water Board built the dam to supply extra water to irrigators along the west side of the valley, assuming that they would then be able to turn over management of the dam (and the associated operations and maintenance) to a water users association. But an amazing thing happened when the Board went to distribute the water: almost no one needed water for irrigation. A water users association never formed, and, atypically, the State Water Conservation Board was left at the helm.

Why the federal government did not see fit to finance irrigation in the Bitterroot is unclear, but the result was that the big projects in the valley were state or privately funded. Private investors were willing to put money into irrigation because the product - apples -- was considered more lucrative, and perhaps because the financiers were caught up in optimistic, technology-oriented fervor so prevalent across the country. No matter what prompted these projects, the result is that the Bitterroot Valley never got the type and size of reclamation projects associated with Worster's hydraulic society.

Descriptions of the hydraulic society and agribusiness in general come mostly from studies of agriculture in California. This description of the situation before the Depression from William Preston's detailed study of agricultural development in the Tulare

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Lake Basin of California, *Vanishing Landscapes*, provides a useful comparison to the Bitterroot:

By 1926 small farmers had to maximize their returns by intensive cultivation of a particular high yield crop, investing in the specialized machinery it required.... High yields could sustain a family farm and meet the land taxes, but small farmers remained extremely vulnerable to the financial disasters wrought by droughts, freezes, cost increases and falling prices. In earlier eras, small farmers had an important advantage: they became involved in irrigation projects early and held the lions share of irrigated land.\(^\text{52}\)

In California and many agricultural regions throughout the West, large farmers backed by corporations could afford the continually improving technology needed to stay ahead of the competition (in this case, groundwater pumps). With secure access to water, the larger farmers could also grow irrigated crops and out-compete the smaller farmers. Smaller farmers eventually had to band together in co-ops or form corporations, often borrowing large sums just to stay current.

In the Bitterroot, it was the combination of established patterns of water use and a reliably profitable market for small farmers with low overhead in their irrigation works -- partly due to a climate that allowed diversified farming, partly due to the size and shape of the valley that made diversions easy -- that allowed the Bitterroot to stay small in the era of big reclamation. Because the valley was already extensively laced with low-technology irrigation works, built and maintained by groups of farmers, and the climate allowed diversified, profitable crops, the small farmer did not need to invest in (or sell out to) large corporations with enough capital to invest in high-tech irrigation systems.

And the valley was small in other ways. It may have been the aesthetics of the standing ovation that the peaks seem to confer on the fertile bottomlands that attracted the likes of Marcus Daly, but the ring of mountains containing the valley had other consequences on its development. By the time the state stepped up offering with 33,000 acre-feet of water from Painted Rocks Reservoir, no one wanted it. Water up for grabs and no one claiming it, no one even willing to purchase and speculate -- the West Fork Dam certainly created an unusual situation for the "arid" West. Most other
irrigation projects, such as the federal Reclamation Act projects in Montana, impound mountain rivers that spill onto open, seemingly unending plains. No matter how much water gets pumped through canals and laterals and ditches, there is more land waiting, thirsty, and people ready to fulfill the promise of an agricultural paradise. But in the Bitterroot, the ratio of water to land is particularly high, which is why the valley was successfully settled and irrigated early on, entrenching the irrigated agriculture and protecting the small farmers from hopeless competition for technologically-advanced water resources. The Bitterroot ran out of land to develop before it ran out of water.

For all of the reasons above, the Bitterroot did not develop a hydraulic society by Donald Worster’s standards. Worster delineates different consequences of a hydraulic society. The first, more conspicuous consequence is social – the creation of a community that is dependant upon and dominated by a power elite who control water resources and the technology used to manipulate them. Remember this description of the exceptions to the hydraulic society in the American West? “What those communities have in common is that their technology, like their economy, is the handiwork of water users themselves; it is an indigenous, not exogenous, artifact. There is not much need for capital or specially trained experts in their creation.”

Bitterroot irrigators, with the exception of Big Ditch users and the handful who get water from Painted Rocks Reservoir, use this kind of indigenous technology – ditches and dams that were built and can be maintained by individuals or small groups. As a result, the valley never came close to developing the kind of social structures that may have grown up around large, particularly federal, reclamation projects elsewhere in the West: they retained some measure of political self-determination about water issues.

The Bitterroot valley shows that the second consequence does not necessarily follow from the first, and the next sentence in Worster’s discussion of exceptions pulls the Bitterroot back into the hydraulic fold: “Typically a river in such communities continues to run largely on its natural way, giving up little of its substance to human
demands, answering to the need for sustainability more than efficiency.” Ecological
criteria – implied here though not stated as such – like whether a river flows “on its
natural way” and supports a healthy biotic community, is a critical measure for the
sustainability of any water-use system, whether agricultural, industrial, domestic, tribal.
Starting in mid-century and for more than three decades following, the Bitterroot gave
up all its substance to human demands, and there was nothing, for humans or for the
native ecology, sustainable about it. Though the citizens of the Bitterroot Valley
avoided the social consequences of a hydraulic society, they suddenly found themselves
squarely facing the ecological ones.
5. Howard in Malone and Roeder, 235.
13. Preston, 162.
15. Howard, 34.
16. In 1910, Butte was the largest city in the state with a population of 39,000 people. Harding, 223.
18. Ziesler, 41.
22. Ziesler, 34.
23. By 1915, Daly’s estate comprised only 22,000 acres; 8,000 of which were for sale. Even at this diminished acreage, his farm had more irrigated acres than the whole big Ditch project. In S. T. Harding, "Irrigation Development in Montana," (Bozeman: Montana Agricultural College Experiment Station, Bulletin No. 103, 1915).
24. Donlan et al., 5.
25. Donlan et al., 3.
27. Donlan et al., 7.
28. BRVIC letter to TW Jaycox, December 23, 1909 in Donlan et al., 8.
29. Donlan et al., 13.
31. Donlan et al., 11.
32. Ibid, 11.
33. Ziesler, 100.
In 1907 the legislature passed a resolution authorizing the formation of agricultural districts that could issue bonds and levy taxes under the direction of the county commissioners. Two years later, the legislature transferred the authority to the district courts, then to a state irrigation commission formed in the same year. In 1929, probably cutting costs, the commission was abolished and supervision of the districts returned to the district courts. Hamilton, in Malone and Roeder, 612 - 620.

[34] Walter H. Baumgartel "A Social Study of Ravalli County, Montana," (Bozeman: University of Montana Agricultural Experiment Station, 1923), 11.

[35] In 1907 the legislature passed a resolution authorizing the formation of agricultural districts that could issue bonds and levy taxes under the direction of the county commissioners. Two years later, the legislature transferred the authority to the district courts, then to a state irrigation commission formed in the same year. In 1929, probably cutting costs, the commission was abolished and supervision of the districts returned to the district courts. Hamilton, in Malone and Roeder, 612 - 620.


[38] Harding "Irrigation Development in Montana" 216, 323.

[39] Irrigation Water Rights by Priority Date Year for Bitterroot Drainage, 76th Basin (Helena: Montana Department of Natural Resources and Conservation (DNRC) Water Resources Division.


[42] Irrigation Water Rights, DNRC.


[45] Marc Reisner, Cadillac Desert: The American West and its Disappearing Water (New York: Penguin Books, 1987), 123. Interestingly, New Deal agricultural policy was formulated in part by the Assistant Secretary of Agriculture, M.L. Wilson, who came from Montana. Wilson was the Director of the Agricultural Experiment Station in the 1920s. Hamilton, 622.

[46] Donlan et al., 44.

[47] D.P. Fabrick, in Howard, 64.


[52] Preston, 196.

INTERLUDE - Tributaries

In October 1989, I went to the Sistine Chapel. I had to -- I was in Rome, and the chapel is, after all, required fare for tourists, especially tourists from countries that were careening along without civilization, art or glory while the great Renaissance masters were just beginning to illuminate Europe from the dark and gloomy Baroque. After considerable deliberation, the Catholic Church had decided to renovate the aging ceiling's frescos.

We tourists shuffled along a well-lit hallway waiting our chance to view the wonders of Michaelangelo's anatomical accuracy, vibrant colors and stunning vision. When we finally entered the high-domed chapel, we were confronted with a maze of scaffolding, in some places completely blocking our view of the painting. Looking at the sections what was visible through the restoration work was like watching the most spectacular sunset you've ever seen through a thick screen door.

Maybe, as an American, it was fitting. When David Brower led the Sierra Club's fight against two dams slated for the Grand Canyon in the mid 1960's, he took out an extremely controversial, full-page advertisement in the New York Times that read: "Should we also flood the Sistine Chapel to get closer to the ceiling?" The ad was controversial, of course, because it was successful, and public outcry eventually stopped the dams. At the time, no rules differentiated how and in what capacity non-profit organizations could seek to sway politics, and the ad lost the Sierra Club their non-profit status.

But the message of the text was clear: the Grand Canyon is as sacred as the Sistine Chapel, and should be treated with equal reverence. I had been reading about both Michaelangelo and David Brower before I visited the Chapel, and the irony did not escape me.
The fight to save Dinosaur National Monument that preceded the Grand Canyon fights and empowered the Sierra Club and environmentalists around the country is now remembered as the fight that compromised Glen Canyon dam and Lake Powell into existence. Despite the true aesthetic and ecological travesties incurred with the loss of Glen Canyon, the fight -- both the victories and the losses it incurred, signaled the beginning of the end of the big dams. Americans started to pay attention to their "natural wonders" and began to understand some of the concepts of ecology, thanks to the publication of Rachel Carson's Silent Spring, the emergence of Aldo Leopold's writings on the land ethic, the initiation of the fight for the Wilderness Bill.

You've heard it before, but Rachel Carson was real - her book and her struggles, their message and their impacts. And so were all the other important, no matter how quiet, trickles of voices that started to raise people's awareness of our impacts on the rest of life - the fragile ecology of the places we call home. We are still awaiting the flood.
V. Eddied Out: The Dewatering and Rewatering of the Bitterroot River

A lot of what people are trying to ‘save’ is already gone.
- George Groff, Bitterroot native, 1995

Our past and the stories that shape it create cultures and ways of being, each with their own consequences, sought or unintended, helping some, hurting others. In the Bitterroot, history and circumstance prevented the valley from developing a true hydraulic society, with its concentration of power and undermining of democracy. Yet the valley still became a particularly American irrigation society – the Bitterroot in many ways escaped becoming a hydraulic society precisely because it was so well suited for irrigated agriculture -- and it suffers the consequences.

Fed by mountain snowpacks that melt through talus slopes, then percolate across alpine meadows before seeping into swift tributaries that spill, finally, into the braided mainstem, the Bitterroot River has always had a natural water storage and regulation system. Before irrigation drained it, even in a year without much precipitation, the river was still a river, albeit a shallow one, year round. But historical processes in the valley built an agricultural community totally dependent on water used a certain way, water dammed and diverted, spilled over the land and held back from the river except for the slow return trickle through the aquifer.

The consequences of such use were clear: by mid-century, you could literally step across the Bitterroot River in the late summer of a dry year and keep your feet dry.

Probably every significant stream or river in the West is periodically dewatered and perpetually over-appropriated. Original water filings often vastly overestimated the amount of water diverted, so in many cases the claims, technically “appropriations,” far exceed actual use. For example, the Big Hole River, a neighbor of the Bitterroot that drains erratically east towards the Missouri, has claims for over 173,000 cubic feet per second (cfs) even though the annual flow of the river is rarely more than 5,000 cfs.
Unfortunately, such monstrous discrepancies are not uncommon; in Montana, where definitive appropriations may variously be found in county courthouses, judicial decisions or the actual flow through irrigation ditches, they are ubiquitous. In the midst of such murk, most irrigators are accustomed to simply taking whatever they need, and perhaps a little a bit extra, in order to maintain their right. Especially when the legal doctrines demand that defending those water rights means using the water consumptively - and then keep using it so that no one else can.

In this legal context the dewatering of the Bitterroot makes some sense. In a traditionally agricultural economy where irrigation is necessary to keep the crops alive, farmers get defensive about their water rights. Though the Bitterroot is also wildly over-appropriated, there has always been enough water to supply all the irrigators with a relatively senior right. There is only “enough,” however, if we agree that it is acceptable to bleed the river dry.

These days, few people would. Rivers are, of course, much more than just water. The Bitterroot, for example, is a cobbled highway; home to countless macroinvertebrates, ducks and dippers; the perpetrator of a lush riparian corridor; a source of inspiration and contention; a providence of irrigation water; and a well-known blue-ribbon trout stream. In fact, anglers come from all over the country to drop hooks and cast flies in its clear waters, accounting for over 40% of all recreation use on the river.1 Fisherfolk are more likely to catch rainbows or browns than the native westslope cutthroat or bull trout; but these native species still live and spawn in the Bitterroot and its tributaries. The Bitterroot River, as measured by the health of its entire associated biotic community, was not faring so well in around mid-century, but it was the plight of fish that first got people’s attention.

Dewatering of the Bitterroot River is the main cause of declines in fish populations, and the main cause of the dewatering is irrigation. Although fish have always encountered the widely varying flow regimes that are a natural result of local
precipitation patterns, the additional stresses of late-summer dewatering magnify the effects of overuse. The Bitterroot Fisheries Management Plan describes the situation explicitly: “The most serious problem limiting fisheries habitat is the lack of water in the middle mainstem of the Bitterroot, the dewatering of tributaries, and the loss of fish due to irrigation facilities and practices.”

Biologically, the effects of dewatering are numerous. The most basic problem is simply lack of water -- lack of habitat -- to feed and spawn, and in some years the most severely dewatered section of the river (between Hamilton and Bell Crossing) has dried up completely. But low water is almost as harmful as none. Reduced flows diminish the river’s capacity to absorb and dilute toxins, and in the case of the Bitterroot, the main source of the toxins is also irrigation. The majority of pollution in the Bitterroot comes from nutrient and chemical-laden return flows -- water that seeps back into the river after it has been applied to pesticide and herbicide covered crops. Low flows also draw the water away from the river, reducing vegetative cover for hiding. Under low flow regimes, more water is exposed to direct sunlight, heating it rapidly. High stream temperatures are stressful to fish, especially the native cold-water species. Finally, fluctuations in nutrient levels, such as phosphates, cause fluctuations in the algae populations of lakes and streams. Algal blooms can limit visibility or radically alter dissolved oxygen levels. And fish, like humans, need oxygen to breathe. Algae can also inhibit the growth of macroinvertebrates, the trout’s main food source.

Another stress on fish results from the purely physical impacts of dewatering. Many species that spend the majority of their lives in relatively large bodies of water, such as the main stem of the Bitterroot, seek the slower current and reduced predation pressure of smaller tributaries to spawn. Low flows can limit or eliminate reproduction by making it impossible for fish to return to their spawning grounds. In such years, the worst effects are noted the following year, when no young trout are born.
Fred Nelson, fisheries biologist for the Department of Fish, Wildlife and Parks in Bozeman, summed up what every state employee who knows anything about the Bitterroot or fish populations in Montana has expressed: "The Bitterroot," he says emphatically, "is a serious problem."

If you follow the course of events backwards from the parched gravels of the 1950's, 60's and 70's, like seeking the snows that endow the river, the ultimate cause of dewatering is the myth that brought people west; that encouraged settlement of the frontier through individual opportunity; that produced western water law; that led progressives to try to eliminate scarcity through careful management and applied technology; that held that natural resources had little inherent value but for human use and said it was okay, if not imperative, to use the West's resources until they are gone. By 1950, all the slow accretion of history -- of settlement and values and an agricultural economy -- had built up to a dramatic and daunting conclusion: humans had captured the water. Who would return it to the river?

Ironically, it was the fish that got it back. Not the testimony of a particular bull trout in the state legislature, but the inspiration that the fish gave people to act. In May of 1957, a resolution supported by the governor, the State Water Conservation Board (later to become the Department of Natural Resources and Conservation), and the Montana Fish and Game Commission (later to become Department of Fish, Wildlife and Parks) arranged for the purchase 5,000 acre-feet of water from Painted Rocks Reservoir. The sole purpose for the purchase was to release water into the main stem of the river to supplement in-stream flows for fish.

Buying dam releases for fish preservation, like preserving waterfowl habitat along the Mississippi Flyway or elk habitat in the Rocky Mountains, was the brainchild of sportsmen's organizations. In the case of the Bitterroot, it did not take a fisheries
biologist to grasp the extent of habitat loss from the dewatering of the river: the river simply ran dry. Defining the problem was one thing, however; solving it was another, as the language of the original legislation helps illuminate:

Whereas water has been held behind the dam for 17 years when it has been needed for the preservation of game fish... and the same waters have been released in large quantities at times when they are not needed by fish, to the further detriment of fish... and, whereas the water could be released at times when it would be useful to fish... and if so released would also be of value to users of agricultural irrigation by keeping the stream level high... and whereas there is no law in the State of Montana that water used for the preservation of fish would be used for a beneficial purpose and there is no legal right to use water for the preservation of fish, then let it be resolved that Fish and Game buy an experimental quantity of West Fork dam water for 1957 and 1958 to release it over the period of time and in such quantities as they deem beneficial to game fish of the Bitterroot River (DFWP, 1957).

There are several notable points here. One is that the concern for fish, at this point, is limited to *game* fish. Furthermore, the scriptors of the original contract were careful to point out the advantages of such a plan to irrigators as well as sportsmen. The contract also points out that “there is no law in the state of Montana that water used for the preservation of fish would be used for a beneficial purpose, and there is no legal right to use water for the preservation of fish....” Clearly, the people who wrote the contract were aware of the legal limitations on preserving in-stream flows, and understood that this purchase was one of the few, if not the only, option then available to acquire in-stream flows.

A careful look at the water purchase contract also shows that there were signators other than the participating state agencies, including the Western Montana Fish and Game Association and the Ravalli County Fish and Wildlife Association. Two years later, in 1959, when a final purchase contract was negotiated, it was these two organizations, along with the Montana Department of Fish and Game, who provided the money for the purchase.
Although the releases of water in 1957 and 1958 did not generate noticeable increases in the amount of water in the river, fishing interests and the Fish and Game Commission persisted in pursuing a longer-term purchase contract, which was secured in 1959. The later contract contained very similar language to the 1957 agreement. It was, however, ambitious and practically revolutionary on three points. First, the 1959 water purchase agreement provides for “the purchase by State Fish and Game Commission for a perpetual right of water to be released from Painted Rocks reservoir.” The contract set one price, $110,000, for that perpetual purchase. Additionally, it states that “use of such water be for a useful and beneficial and legal purpose,” maintaining the legality of the water for fish despite the absence of such provisions in Montana state law. Finally, the contract demands that “State Fish and Game be legally entitled to the flow of such water as released in such river from the point of release to where it reaches the Clark Fork, so that such water may be used for the purpose it is purchased.” Not only is the water guaranteed into perpetuity, but the delivery point -- where the 5,000 acre-feet is officially required to show-up -- is the mouth of the Bitterroot, almost one hundred miles from the point of release. It was a tall order.

No one ever challenged the legality of that purchase in court, either its intents (preserving water in-stream for fish) or its intended point of delivery. Perhaps no one challenged it because the purchase of water on paper essentially made no difference on the ground. If anything, the releases put more water in the river for irrigators to then remove for crops. As it turned out, the only people to challenge the terms of the agreement were the interests who originally paid for it.

Between 1958 and 1962, the Fish and Game commission tried a variety of release requests, none of which seemed to help increase flows in the West Fork, let alone in the mainstem of the Bitterroot. In 1962, because of the difficulty of tracking releases through the river to the delivery point, Fish and Game decided to request a minimum
gauge height instead of specific release and delivery points. This tactic proved no more successful than the previous release schedules.

By 1963, it was clear that, despite the guarantee in an amendment to the 1959 purchase agreement that “the agent of the purchaser (i.e. Fish and Game personnel) may order the releases in the quantities, times and delivery points he designates,” the supplemental 5,000 acre-feet was not accomplishing the desired goals of augmenting instream flows.

In a Fish and Game intraoffice memo dated that year, the Commission’s attorney, W. Everin, tried to determine if the agreement specified how the water is to reach those points. He asked, “Does the water have to go down the river to reach this point [the mouth], or can delivery be made through some of the ditches?” Although different sources fingered various river reaches between Corvallis and Stevensville as the “most dewatered” sections, all sources agreed that once the river ran past Stevensville, “return flows” were beginning to bring water levels back up. That meant it might be possible to measure 5,000 acre-feet at the mouth, even though that water was not in the river in the sections critical to the fish. Everin poses his question in order to ascertain whether the contract makes clear enough how the water is to get to its delivery point. If the Fish and Game Commission cannot find language to support keeping the water in the river all the way down, then there is little they can do, even with 5,000 acre-feet, to preserve instream flows. Although there is no response to his query in the records of the Painted Rocks purchases, the reader perceives its rhetoric: water that is diverted and dispersed across the landscape will not help the fish.

At that time, the State Fish and Game Commission fisheries division chief was Arthur Whitney. In a letter to a fellow staffer discussing the water purchases, he is more direct about assessing the problem:

“It is doubtful that any of our released water has a beneficial effect on the main Bitterroot River. The river is still totally dewatered at times in the area between Hamilton and Corvallis even with our releases. Thus, until Montana law requires
that some minimum flow be left in the stream channels for fish and wildlife habitat, we have no hope of using our stored water to benefit the main Bitterroot River."

This is the last mention by Fish and Game personnel about their efforts toward and frustration at trying to keep their purchased water in the Bitterroot all the way to the Clark Fork. Constrained by a limited budget and having tried every release-schedule permutation it could conjure, the commission turned its attention to other issues.

Sportsmen, however, were still concerned. In 1966, Lester Ruskoff of the Western Montana Fish and Game Association wrote a letter directly to the director of the State Water Conservation Board (SWCB) to express two concerns. The first regards a statement allegedly made by SWCB director Andrew McDermott claiming that "the use of water for recreation or for wildlife is not and will not be a beneficial use." Lester argued in return that:

> It is not clear that such uses are not beneficial under the present law [and] we protest against the attitude that recreational use of water can not be a beneficial use. Fishing is an important source of recreation for Montanans and a source of income from out-of-staters."

He also wanted to know "why the water that we purchased is not being delivered to the final point of delivery in the contract, which is the confluence of the Bitterroot and the Clark Fork rivers?"

Lester received a pair of telling responses from the Water Board. On September 20th, Robert Buzerin, counsel for the Water Conservation Board, addressed the continually perplexing question of how to insure that the purchased flows stay in the river. He began by reassuring Lester that "we do know that at the Stevensville crossing, and most assuredly, by the time you reach Bass crossing, the volume of water in the river is adequate for fish and wildlife purposes." He does, however, acknowledge that the aforementioned flow "does not represent the return flow plus 5,000 acre-feet of water from the West Fork reservoir." Buzerin insisted that the essential problem was monitoring flow and suggested establishing three gauge-stations along the river to
measure “the amount of your purchase.” He also pointed out that it is impossible to fulfill the contract because water losses, even assuming no water removals for irrigation, could easily reach 20%. And he ended with a promise that the SWCB would eventually place three gauges along the river: at the confluence of the East and West Forks, at Hamilton below Surprise Canal, and below Victor. The only mention he made of one potential solution to keeping water in the river -- hiring a water commissioner -- was to assure Lester that “he [Buzerin] won’t go through the trouble.”

In November, the SWCB director Andrew McDermott wrote to Ruskoff to explain that he never said water for fisheries should not be considered a beneficial use, but that he didn’t think it would get legislated as such by the current legislature. In the meantime, the implication was that there was nothing he could do.

The correspondence between Ruskoff, representing fishing interests, and the Montana Water Board illuminates the challenges of purchasing water for in-stream flows in the 1950’s and 60’s. The most significant barrier was legal: the origins and interpretations of western water law since the earliest territorial legislatures precluded legal protection for in-stream flows, regardless of the values that those in-stream flows have sought to preserve. Technology also limited options: monitoring each ditch and enforcing appropriations, even on a decreed river such as the Bitterroot, was almost impossible. Within the cultural construct of the “use it or lose it” water mentality, as long as “extra” water remained in the river or its tributaries, someone would take the opportunity to divert it. One source suggested that Fish and Game was so frustrated with the impossibility of getting its water delivered that eventually it simply stopped releasing the 5,000 acre-feet and, in fact, there is no correspondence in the record regarding the water purchase from 1966 until 1980.

Other people across the country were beginning to get frustrated with the problems that western water law had created as well, including federal legislators and
administrators. In 1961, a year you could probably walk across the Bitterroot river, a U.S. senate committee report on national water resources remarked:

The present system of water rights, which provide diversions first in time to have the most secure rights, provides little stimulus toward more efficient use of water, and, in fact, may promote inefficient and wasteful use of water to prefect larger rights. As the demands on the water resources of the west grow, it may well be an economic necessity for some of the Western states to review water laws with a view to changes which will bring about more efficient use of water, or else accept a ceiling on their potential growth.\textsuperscript{12}

It is also telling that the SWCB director Andrew McDermott suggested in his 1966 letter to Ruskoff that the current legislature was not ready to make such changes. This admission implies that the legislature has at least considered the concept of changing water law to recognize in-stream flow uses has been considered, and though the legislature isn't ready now, it might be someday soon.

Indeed, in 1973, after almost a century of the most regressive water law in the West, the Montana legislature finally revised the state's water code. The act not only "provided a procedure for the determination and confirmation of existing rights [and] establishing a system of centralized records of all water rights,"\textsuperscript{13} but also included language that acknowledged fish and wildlife purposes as beneficial uses and allowed reservations of water for in-stream flows. The law states:

Section 2 (3) It is the policy of this state and a purpose of this act to encourage the wise use of the state's water resources by making them available for appropriation consistent with this act, and to provide for the wise utilization, development, and conservation of the waters of the state for the maximum benefit of its people \textit{with the least possible degradation of its natural aquatic ecosystems.}

Section 3 (4) "Beneficial use" means a use of water for the benefit of the appropriator, other persons or the public, including, but not limited to, agricultural (including stock water) domestic, \textit{fish and wildlife}, industrial, irrigation, mining, municipal, power, and \textit{recreational} uses.

and:

Section 26 \textbf{Reservation of waters}. (1) The state or any political subdivision or agency thereof, or the United states or any agency thereof, may apply to the board to reserve waters for existing or future beneficial uses, or to maintain a minimum flow, level or quality of water throughout
the year or at such periods of for such length of time as the board designates.

(3) the Board may not adopt an order reserving water unless the applicant establishes to the satisfaction of the board (a) the purpose of the reservation; (b) the need for the reservation (c) the amount of water necessary for the purpose of the reservation; (d) that the reservation is in the public interest...

(5) a reservation under this section shall not affect any rights in existence when the order reserving the rights is adopted.

(6) The board shall, periodically but not less than every ten years, review existing reservations to ensure that the objectives of the reservation are not being met, the board may extend, revoke or modify the reservation.”

As legal language, it was a leap into the future, a crack in the safe of western water legislation. In practical terms, one still had to acquire a senior water right to put to that beneficial use in order to get any water. In Montana in 1972, there were very few senior water rights that were in any way negotiable: there were none in the Bitterroot valley. Even though it changed little on the ground, the shift in law opened an important possibility, available for opportunity to walk right in. For the time being, another way to acquire water for in-stream flows had to be found.

A few minor changes occurred as well. By 1980, the State Water Conservation Board had become the Water Resources Division under the auspices of the Department of Natural Resources and Conservation (DNRC), and the State Fish and Game Commission, reflecting a slight change of values since the late sixties (or hoping to hide a lack of change), had changed its name to the Department of Fish, Wildlife and Parks (DFWP).

It is unclear whose idea it was to purchase the additional 10,000 acre-feet of water from Painted Rocks reservoir, but by 1981 concerned citizens revived interest in “saving” the river and its wildlife. In 1981, these negotiations were acknowledged in the Painted Rocks files at DFWP in the form of an “application for loan or grant funds” to be submitted to the state Water Development Bureau. In early 1982, a DFWP intra-office memo noted that “successful rehabilitation of the Bitterroot River fisheries appears to be linked to maintaining a 200 cfs minimum flow at Bell Crossing during summer and fall.”
That memo then recommended the purchase of an additional 10,000 acre-feet from Painted Rocks reservoir.

Later that year, Dennis Workman, fisheries biologist for DFWP, recorded minutes from one of a series of meetings that his department held throughout Ravalli County to discuss water allocation issues. He wrote, “there is a general concurrence with the concept of buying water from Painted Rocks and managing it to benefit the fishery....people feel that this project can only succeed as a community project and that everyone will benefit from a cooperative effort.” By 1982, an unsigned, undated draft agreement for the purchase of that water appeared in the file.

What happened in the Bitterroot valley in the late seventies and the early eighties that made people begin to reconsider releases of water from behind the dam to supplement in-stream flows for fish? As with most value shifts, it is impossible to quantify, but several factors seem to have conspired towards success.

For one, the population of Ravalli County increased rapidly in the 1970s. Though not always an augury of positive change, the population boom brought people with different values into the valley. Interviewees for the Social Assessment of the Bitterroot Valley, Montana describe the changes in simple, stark terms: “[Before 1970] the valley’s historic nature, sparse settlement patterns, open farmlands, and dependence on agriculture and natural resources persisted.” Between 1970 and 1980, the population of Ravalli County increased by more than a third -- from 14,500 to 22,600 residents, the equivalent of a compound annual growth rate of 4.5% per year, matching some of the fastest growing counties in the world. The population boom that occurred in the 1970’s strained the schools and services, but eventually stabilized in the 1980’s.

Another interviewee explained: “Very few people make a living farming now. During the nineteen seventies, a pattern developed in which incomers with relatively large amounts of money by Bitterroot standards moved here and purchased real estate. As land prices rose well above the level which could be justified agriculturally, farms and
ranches went out of business and were subdivided.” Newcomers to the valley, unless they purchased a large piece of land and the accompanying water right, would not be involved in irrigated agriculture. It was much more likely that they would value the Bitterroot River and its tributaries for traditionally non-beneficial uses, such as fishing, floating, or simply for the scenery.

Dave Odell is an example of such a newcomer, if an extreme one. A fishing guide and trout fanatic, Dave watched the Bitterroot dry up every year and began monitoring its flows. Dave felt strongly enough about the plight of the fish that he was willing to do a little research, organize some support, and speak out. With a slight grin on his face, Dave describes what he did: “I lit a fire under ‘em.”

He began by re-forming the Bitterroot Valley Trout Unlimited chapter. He claims that there were only six or eight people who got involved, but they sat and talked, wrote letters, eventually began a media campaign. “We had very little money, but we raised hell,” he explains, “Everyone had given up on the Bitterroot -- you’d go to Helena to talk to people and they’d say ‘Why even try? Isn’t it just a gravel pit?’ I was one of the first people to recognize its potential.”

Dave was incensed because “the river was so beat-up, but the reservoir was full. Problems aren’t as bad as they seem if people just put their heads together. I just proved that there was enough water. Once we realized we could buy water from the dam . . . then it was just a matter of getting the money.” He found support for his idea at DFWP but got resistance, not surprisingly, from the water conservation district. “They got really defensive...but once they realized that it was a win-win situation, they eased up.” The last faction to jump on the water-purchases bandwagon was the politicians. According to Odell, “Once you’ve got something that looks like its going to succeed, politicians will jump in – and then the money will come from somewhere.”

Another perspective on the social-political milieu in the early eighties comes from Mike McLane, a staffer in the water resources division of DNRC. He begins his
explanation of the changes that occurred by picking up a voluminous report published in
the late 70s. The two-volume compendium raised awareness about basic geology and
streambank stability of the Bitterroot. "The river," Mike confides, "was broken and
diverted and dewatered. The greater public started to see bank erosion as a serious
problem. Property damage was occurring, and they looked to irrigators as the source of
the problem." The irrigators, in turn, were frustrated with the difficulties of diverting
water from dewatered channels. At the very least, they wanted enough flow in the
main stem to get their legally-entitled water into their irrigation diversions without
periodic bulldozing or the river. Additionally, many of them had lived their whole lives
along a perennially dewatered river. Once they realized that they could get the water
they needed for crops, and still have some water in the river, they were supportive of
improving the fishery.

The Bitterroot valley today is not the predominantly agricultural, rural valley that
it was in the 1950’s. Other industries have gained (and sometimes lost) stature in the
economy, services have increased, and remarkable demographic transitions have occurred.
Dave and Mike are illustrative of the some of the critical, not-entirely tangible changes
that have occurred throughout the country in the latter half of the twentieth century.

Dave was in the second class of Environmental Studies Masters candidates to
matriculate at the University of Montana in Missoula, and he promptly moved down to
the Bitterroot valley when he graduated. He was one of many who were attracted to
the valley because of its rural nature, aesthetic and pristine wild landscapes, and easy
proximity to urban services. Many of the new folks were retirees or people whose income
was not based in natural resource extraction.

Mike McLane, perhaps unintentionally, raises awareness of another, more
universal shift that wrought changes in people’s attitudes and values about natural
resources. The tome about channel morphology that Mike pointed to elucidated the
specific consequences of altering the Bitterroots riverine ecosystem. The publication
couldn’t have been better timed, because in the late 60’s and 70’s, people across the country were just beginning to pay attention to the study of the interactions of organisms and the disturbing consequences to humans that could result from disrupting natural systems. The popularization of ecological studies that illuminate the destructiveness of many of our entrenched approaches to natural resources use resonated, especially with people like Dave Odell who didn’t depend for their living, like most Bitterrooters had since the valley was settled by whites, on natural resource extraction.

The changes in demographics and scientific knowledge were slow to take hold, and almost impossible to track other than by the discrete actions that seem to appear out of nowhere after thoughts have matured. For in-stream flows, the marker of change was a letter in the file dated 1982 from the Bitterroot Conservation District – the very people cited by Dave Odell as originally opposed to the idea -- to DFWP expressing their support for the water purchases, and noting their cooperation with other supporting entities.

The release of 5,000 acre-feet is only adequate as supplemental stream flow for fish for about two weeks of a dry summer [and] the problem with low flows is not only the actual loss of water, but the subsequently raised temperatures . . . . We therefore recommend and support the purchase of 10,000 acre-feet from Painted Rocks reservoir for administration by the Montana Department of Fish, Wildlife and Parks. This proposal also has the support of the Ravalli County Fish and Wildlife Association, the Bitterroot Chapter of Trout Unlimited, DFWP, DNRC and the majority of landowners in the Bitterroot Conservation District who have decreed water rights in the Bitterroot river (Bitterroot Conservation District, 1982).

But even as disparate forces came together in support of the additional water leases from Painted Rocks Reservoir, the realpolitick questions of who would pay for the water, how the purchase agreement would be negotiated, and how the water would be released continued to plague both DNRC and DFWP. Perhaps the most difficult question of all was almost 30 years old: how to ensure that the released water made it to the assigned delivery point. Mike McLane points out that this aspect of the purchase
negotiations made the Bitterroot issue uniquely challenging, because: "if each small company just takes out a little more [water] than their share, there is nothing left at Bell Crossing. It's stealing, really. But we didn't know what to do about it."^^

In 1984, Department of Fish, Wildlife and Parks attorney Bob Lane walked into Mike's office and asked why a water commissioner couldn't be employed to police the river and see to it that the water was actually delivered. It was another signal of changing times, and Mike was instantly amenable to the idea. He suggested that Vern Woolsey might be just the person for the job.

Mike describes Vern as a tall, gaunt cowboy, sun-weathered and strong. He has spent almost all of his eighty-odd years in and around Stevensville, and his family had been in Ravalli County for generations. Both of his children were killed in car accidents within 6 months of each other, and Mike said that Vern just "dropped out" after that. Mike thought that accepting the post as water commissioner -- which Vern did -- returned Vern to important involvement in the community. He recommended Vern because Mike knew that he had the ability to remind an irrigator about the time the two of them got into a fight in third grade, or to reminisce about the way it hailed to beat heck at so-and-so's wedding. Vern converses in a way that ties people to relations and community. "He's sharp." said Mike "As a water commissioner, especially in the Bitterroot, you gotta match to your audience, and that is what Vern is all about."

Mike feels that by putting Vern on the river, irrigators realized that it was in their best interests to work together. Vern explained to people in no uncertain terms that if one group was taking too much water out before the next person had a chance, everyone, including fish and wildlife, would lose out. He encouraged people to look at who was downstream and work with their neighbors. Mike explains Vern's strategy: "It used to be that in dry years everyone would take a little extra. Now, Vern has it so that if it's a 90% year, everyone agrees to cut back 10%. And they still have enough water to do fine."^^
Another deceptively simple solution to water poaching came out of a series of meetings that DFWP held throughout the Bitterroot Valley. Instead of negotiating through the DNRC (because the agency owns the water rights in Painted Rocks), the DFWP and irrigators sat down directly across the table from each other and came to their own agreement, which they brought to DNRC for implementation. The product was a dam release/irrigation schedule whereby irrigators remove most water in the spring, leaving more in the river in the late summer and fall, when crops are maturing and don't need as much, for the fish.

A final key event precipitating the additional 10,000 acre-feet purchase was the sudden procurement of a substantial amount of money to fund the purchase. In 1982, the Northwest Power Planning Council decided that its efforts to mitigate for fish losses from Bonneville Power Administration (BPA) hydroelectric facilities on the Lower Clark Fork river, as mandated by the Northwest Power Planning Act, were failing. Despite numerous attempts by DFWP and industry biologists, fish populations at the Thompson Falls dam power generating facility remained well below desired levels. But the legislation required mitigation somewhere within the Lower Clark Fork watershed, and Pat Graham of the DNRC was well aware of the problems of dewatering on the Bitterroot. He was also aware of DFWP's desire to purchase the additional 10,000 acre-feet of water, and some of the budget constraints that were slowing negotiations. So he made a proposal.

Supported strongly by Dave Odell and other fisheries interests, the proposal for Montana Power (with the BPA) to pay for the purchase of 10,000 acre-feet from the Painted Rocks Reservoir met with almost unanimous approval. In 1982, the Northwest Power Planning Council adopted DFWP's recommendation to purchase the additional 10,000 acre-feet of water as off-site mitigation for fish losses from Thompson Falls dam.

The final purchase agreement for 10,000 acre-feet of water from Painted Rocks water is signed and dated May 5, 1992. In keeping with restrictions on in-stream flow rights from the 1973 Water Use Act, it expires in 2004, when DFWP will once again have
to negotiate purchase prices and terms for their water. By then, the $250,000 mitigation fee paid by Montana Power /BPA should have accrued enough interest to pay the yearly purchase price of $16,300 for the water. DFWP also learned lessons from its 30-plus year unattainable original goal of delivering all the releases to the mouth of the Bitterroot. The 1992 contract acknowledges some inherent loss, and DNRC has fulfilled its contractual obligations if 80% of the released water is measured in the river at Bell Crossing.

The Painted Rocks purchases mean that Bitterroot river, though it will not likely to run as full as it once did in a July, August or September of my lifetime, will just as likely not run dry. The purchases are the essential foundation piece in the puzzle of putting the river back together, and it was the unique circumstances in the Bitterroot that allowed the purchases to happen.

Dave Odell loves to talk about the Bitterroot because it's a success story, because everyone is better off than they used to be - state agencies, irrigators, trout and osprey. Despite this optimism, he encourages people to stay "on guard." He acknowledges that in the Bitterroot, all the key players fell into place at the right time. "The only reason that the purchases from Painted Rocks worked is that DNRC had the senior water right. Without that, we would have been lost."

Perhaps more importantly, he acknowledges the power of entrenched Western water law, and the difficulty of finding creative ways around the culture that created it. Because the Bitterroot wasn't a hydraulic society, controlled by a non-local "power elite" that has "induced [farmers] to run, as the water in a canal does, in a straightline toward maximum yield, maximum profit," there were more opportunities for citizens to work together to protect their water and save the river. For example, if the irrigation district, the lynchpin in getting the agreement according to Dave Odell, had been a large agribusiness company headquartered in New Orleans or Sacramento, who knows if Dave and DFWP would have been able to garner their support. Likewise, Vern Woolsey might
not have been able to work his magic - in fact, hiring a water commissioner would be a wasted exercise.

The Painted Rocks story shows that the Bitterroot does, in fact have a social order where people can initiate change, and that enough people in the Bitterroot care about their fishery and are willing to work together to shift entrenched patterns of water use. Agricultural interests could just have easily not lent their support to the leasing/purchase process, since the leases don't directly affect their rights. But they didn't. In fact, they even went so far as to let Vern regulate water to ensure in-stream flows. It is a hopeful, if slow in coming, beginning.

These days the river that was once considered a “gravel pit” is one of the better trout fisheries in the state. Nonetheless, there is still a lot of work to be done, and a number of factors that make the situation in the Bitterroot stable are tenuous or short-term solutions. DFWP uses all 15,000 acre-feet practically every year just to maintain minimum flows for viable fish populations, and a dry year could prove that the releases are inadequate. Dennis Workman, a now-retired fisheries biologist for Fish Wildlife and Parks who helped determine the yearly release schedule, said: “every year we hope that they won't need to release all the water, but we seem to use it all every year anyway.” Vern Woolsey, the water commissioner, is getting older and will be extremely difficult to replace. Other threats to fisheries, such as logging, road-building, grazing and rapid growth and subdivisions all point to the need for continued vigilance to maintaining stable in-stream flows. Hopefully, the Bitterroot Valley, with its non-hydraulic society, is up to the task.
If you float the Bitterroot River, like I did one early September day, you don't have to travel far to see and feel all of the pressures on the river. I appreciate the myriad benefits this body of water provides. Although hardly warm, the water is a comfortable swimming temperature, and in pools and overhung banks, it is easy to spot trout. We only floated a short stretch, but during that time, we encountered numerous other recreationalists -- fishing, floating, or picnicing on the banks. Despite the immediate sensations of the float -- warm sun, cool water, and the determined, if gentle, pace of the water downstream, hints of the capricious moods of the river grounded us in the continuum of water flowing. Occasional debris caught in vegetation high on the banks suggested substantial spring flows, and numerous dry or low side channels indicated a meandering course. It seems proper that a river like this, relatively unimpounded, unrip-rapped, and unchannelized, should shift back and forth across the valley bottom. And, indeed, the flat valley floor and loose, alluvial soils encourage almost whimsical switches between the numerous braids and cottonwood lined channels. The floater enjoys the experience of free-flowing water: inexorable motion, unintimidating natural caprice.

I appreciate the sensations and the scenery, the trout and the birds. But most of all I appreciate the simple fact of water, present in the channel, because I know that not all that long ago, there wasn't any. In a dry year in the 1950's, 60's and 70's, I could have stepped across this river and kept my feet dry. I also have the opportunity to look past the channel at occasional diversion headgates and note that they are partially or completely closed. It is thanks to those closures, thanks to irrigators working with recreationalists and fisherpeople and river managers, that there is water in the river.

Approximately two-thirds of the way through to the Stevensville bridge from our put-in at Bell Crossing, the view state-side temporarily underwent a radical change. For a stretch of Bitterroot perhaps as much as a quarter mile long, both banks of the river are
lined with old vehicles in various states of decay. If one has a historical interest in vehicles, the site is a gold mine -- you could entertain yourself guessing the make and year of various old Fords, Chevies and perhaps an occasional Mercury. But I fall into a different sort of speculation regarding this spectacle: why? Whoever thought to put cars, some complete with transmissions, engines, and various other tanks full toxic substances, along this scenic and vibrant stretch of the river?

I never did the research to uncover the story behind the cars, but the implications bore down on me like the brights of a Chevy on a dark night. These vehicles, deliberately placed and now comfortably settled, represented someone's attempt to manage this river -- perhaps it was a desire to channel flow, or stabilize the banks, maybe even to create hiding cover for fish. Perhaps someone thought to prevent tired old vehicles from taking up space in a landfill: whatever the original intent, it juxtaposes a profound ignorance about the river's vibrant living community with a disturbingly human desire to control one's immediate environment.

The story of water in the Bitterroot is one of fish and crops competing for that dynamic resource, and about the efforts of conservation-minded individuals to incorporate new water uses into an entrenched water code. It is not an unusual story, but it is one that weaves unique local threads into the archetypal warp of western resource allocation issues. These are the common threads: scarce resources, especially water; capricious natural patterns; and a settlement history whereby the new natives -- the few generations of settlers that have so diligently filled the vast openness of the West -- try to control nature and manipulate resources to their own advantage. This modern western myth plays itself out over and over. The Bitterroot story is not about miracles, but it is about creative approaches to resource allocation conflicts.
VI. Moving Downstream

It is far easier to decry a dam and sing of egrets than it is to unseat a culture drunk on plenty, impatient with restrictions and determined to make the desert support more people than it possibly can.

- Ellen Meloy, Raven's Exile

The Bitterroot valley tells its own tale, a particular story of the development of an agricultural economy in a western Montana valley. The protagonists in the Bitterroot irrigation story are not government officials or power-hungry land barons; they are just hard-working people living life as laid out for them by the myths handed down to them. As a result, the Bitterroot did not develop the kind of social institutions that grow up around typical agribusiness irrigation societies. Agriculturalists still took too much water, so much that there was none left to sustain the natural biotic community that a river should sustain. But the Bitterroot, more resilient than a hydraulic society, is starting the long journey back to a viable river, thanks to a social order in which individuals still have voice.

Donald Worster argues that democracy is a key element for creating more ecologically sound water management: "The promotion of democracy, defined as the [giving] of power into as many hands as possible, is a direct and necessary, though perhaps not sufficient, means to achieve ecological stability.... A social condition of diffused power is more likely to be ecologically sensitive and enduring."¹

The Bitterroot proved him right, at least so far.

Like in the 1910s and again in the 1970s, the Bitterroot boomed in the 1990s. Between 1990 and 1996, Ravalli County was among the fastest growing counties in the entire upper Columbia River Basin, with a population increase approximately of 26% in 5 years.² That kind of growth -- bringing in new faces, new values and, in the Bitterroot, a whole host of new water issues -- will trip up even the best-prepared cultures.
For the first time since whites settled there, the valley is, arguably, no longer predominantly agricultural. The boom brought thousands of people to the valley, attracted partly because of the rural character, open space, mild climate, proximity to urban centers and, not surprisingly, the surrounding mountains that are such essential providers of water as well as scenery. Property values went up as land became more dear and, following a well-known western plot line, farmers who couldn’t quite keep up with taxes or competition subdivided their property or sold to developers.

The newcomers are a diverse lot, but they are more likely to be from an urban than rural background and derive their income from a source that is not tied to where they live — they may be retirees living off investments or “cyber-commuters” or their valley houses are a second or vacation home. Regardless, the purposes and values they attach to their Bitterroot properties affect water use and in-stream flows.

In some subdivisions, usually smaller, suburban-style homes, the developed areas use less water than the flood-irrigated ranches they replaced, which may mean more water in-stream. But because the Bitterroot is so over appropriated, junior rights holders who never get their full claim of water except during peak flows have the legal right, and are not shy about exercising it, to remove any water that gets back in the River or tributaries. A second scenario is that an irrigated, working ranch gets divided into ranchettes (horse-heaven hobby ranches, as one interviewee described them to me), which may actually use more water, especially if they have a few head of horses to feed and water, a small irrigated pasture, a wetland for duck hunting and a freshly dug fish pond.

Whether subdivision or ranchette, many of these residences are actually second homes, and often the owners aren’t farmers don’t know the ins and outs of how to irrigate to conserve water. In fact, many don’t even know the ins and outs of Montana water law — what water is theirs to use and what isn’t. “Incomers” may acquire a senior right with the property and irrigate wastefully, forgetting or not knowing to turn it off. Several
Bitterrooters that I interviewed cited situations in which newcomers simply took water out of ditches that ran across their land without realizing that they were stealing someone else’s water. Additionally, some folks like the ambiance of having a brook (a ditch, really) babble across their property and divert someone else’s water for that purpose.

There are consequences at the interface of water quantity and water quality as well. Because the Bitterroot has always been predominantly rural, the suburban infrastructure to accommodate the plethora of new residences doesn’t exist. Regardless of size or purpose of the building who buy property without plumbing or sewer, newcomers dig wells and build septic systems, which can affect groundwater, surface water or both. To complicate the matter, some wells actually depend on return flows from flood irrigation to recharge, and some groundwater tables and associated wells are actually drying up as irrigation in the valley decreases.

Rather than create a hydraulic society where none existed or simply drive agriculturalists out of the valley en masse, the new boom, if anything, has sparked renewed efforts to stabilize the water situation and secure both established water rights and more water for in-stream flows. Now that large water purchases have been made, people continue to seek small-scale, incremental change – ways of improving instream flows that aren’t dependent on big money and big luck - and the non-hydraulic nature of Bitterroot society makes that kind of change possible.

Despite numerous useful studies of wetted perimeter, fry survival, aquatic predator-prey interactions, etc., etc., concerned citizens don’t even really have a specific minimum flow to target. It is both difficult and tedious to determine exactly the amount of water needed in which sections of rivers or exactly when to deliver it to optimize flows for fish. Biologists have attempted to set minimum in-stream flow recommendations for various river reaches in Montana, but variables such as sediment load, channel size and shape, and the amounts and types of pollution, range widely from river to river and make any blanket standard useless. But we all know that more water will help. In the Bitterroot, specific
technical targets are almost moot anyway, because even if one could say exactly what is needed where, there is no guarantee that you could get it.

Nonetheless, there are endless non-exact permutations for getting more water into the river and, more importantly, people are encouraged about the current state of the fisheries and hopeful about improving them. Though the dialectic continues between processes that help and hinder fisheries, knowing what the threats are and some ways to balance them with more water in the right places is the critical starting point to maintain a healthy aquatic ecosystem. What follows is list of some of the factors that will affect flows in the Bitterroot and possibilities to improve them.

**Water Leases/Flow Reservations:** The most permanent protection for leases – to allow permanent purchases of water rights for in-stream flows, rather than temporary reservations -- has yet to be legally sanctioned in a systematic way. There are case-specific exceptions, like the original Painted Rocks water purchase. However, water law throughout the west continues to evolve, and legislatures have recently made numerous changes that integrate instream flows in the Montana water code to improve the health of aquatic ecosystems. Nonetheless, leasing, or water reservations, remain the best (and only) way within existing Montana law to systematically protect in-stream flows – asserting them de facto by leaving them in the channel, but actually requiring a delivery point and enforcing it.'

Both the DNRC and DFWP are continually seeking places to acquire leases for senior water rights on the river and its tributaries. While it was relatively easy to purchase water out of Painted Rocks Reservoir because DNRC held the senior water right, leases are typically much harder to come by in other circumstances because somebody is using the water. And if she isn't, he/she probably still wants to retain the right. If water is not used for a certain amount of time under certain conditions, the right may be considered abandoned, and DFW&P can temporarily lease the flows for instream augmentation.
So far, DNRC has acquired one other water lease - From the Waddell ditch that
diverts from Tin Cup creek, where an irrigator, due to technical/maintenance problems, was
no longer able to divert his water. The lease, acquired in 1995 to improve spawning
conditions for rainbow and cutthroat trout, expires in the year 2000, when the water may
well return to its consumptive uses. The EA for the project explains: “The Waddell users now
believe that leasing is their only short-term workable option for protecting their right while
they search for a solution to their problem.”

Though it is still illegal to sell water rights for instream flow purposes, the leasing
laws are slowly changing. A 1995 change made it possible for individuals, not just
government agencies, to lease water, and Montana Trout Unlimited (TU) is now actively
seeking places to lease senior rights. Laura Ziemer, attorney and director of Trout
Unlimited's Western Water Project for Montana, cautions that leasing from individuals
produces deceptively small gains for stream flows. The leases that TU is working to acquire
are often very small - 1, 2 or 3 cfs - and won't always make a conspicuous difference to the
creeks they benefit. But even small amounts can have a valuable impact, especially on the
tributary streams where most of TU's rewatering efforts are concerted. Tributaries not only
feed the mainstem, but also often provide critical spawning and rearing habitat for fish that
eventually end up in the mainstem. Laura also pointed out that many of the potential
lessors actively support the Bitterroot fishery, so they may already leave their water
instream, but leasing will provide them with the security of enforcing their leases. Trout
Unlimited is also pursuing options to give people tax credits for donating water leases to the
organization - just as you would receive a tax credit for any donation to a non-profit
organization. It is an astute way to give something back to people who understand that
throughout the west, water means money.10

In fact, there may be other ways to increase money for in-stream flow lease
purchases (or permanent purchases, if legislation ever permits). Like land trusts, one could
create a Bitterroot water trust that acquires water rights - either through leases or by

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buying the land with attached water rights, and then file a change of use permit to leave the flows in the river. Even though water rights are expensive, a report sponsored by the U.S. Forest Service's Rocky Mountain Forest and Range Experiment Station, reveals that in a fairly extensive survey of Bitterroot fisherpeople, most would be willing to pay into a trust fund to pay for in-stream flow preservation.¹¹

Ironically, existing leases might provide the next boost to in-stream flows. As Mike McLane, DNRC, points out, evaporative losses from reservoirs in Montana are greater than any consumptive use.¹² And TU's Laura Ziemer suggests that the amount of water actually released from Painted Rocks is probably less than the leased amount, because the leases are based on the amount of water that the reservoir can hold without accounting for evaporative losses. Since DNRC holds the senior right, DFWP (the leasee) should get the full amount of the purchase agreement and any reduction in the amount released due to adjustments for evaporation should affect more junior rights.

**Adjudications:** Partly in response to changes in the water law, the State of Montana is undergoing the tedious process of untangling the jumble of water rights, watershed by watershed, that have accumulated over almost one hundred and fifty years of first come, first serve water law and the resultant over-appropriations. Because Montana did not have strict rules about filing for water rights, nor did local counties keep tidy records, the issue of adjudicating water rights, or officially establishing who has the right to how much water and the chronological hierarchy of those rights, has been a slow and sticky process.

The Bitterroot is somewhere in the middle of that difficult process. First, DNRC sorts though water rights, and turns their estimation of who has what over the Montana water court in Bozeman. The water court gives it another review, changing the decrees as it sees appropriate, then issuing a Temporary Preliminary Decree. Then interested parties have 6 months to file complaints, protesting others claims or correcting their own. Once the water court has heard and decided all the complaints they issue a decree. Although many parts of
the Bitterroot have been decreed previously, this process attempts to make final adjudications throughout the watershed.

In deference to the complexity of water rights in the Bitterroot basin - a well-watered valley means lots of claims on lots of creeks, and a long history means lots of changes of ownership and rights transfers - DNRC has divided up the Bitterroot adjudication process into sub-basins. Of the four Bitterroot sub-basins (North, South, East and West), the North and South adjudications are complete, on the west side, the water court has issued a temporary preliminary decree and people have filed their objections, and the east side is still in the process of creating a temporary preliminary decree.

Although adjudications will have no direct effect on in-stream flows, once the adjudication process is complete, hopefully less water will be illegally taken, and water-interested parties will have a better sense of who uses what water when - and what water might be available for instream flows. But, again, because streams are so over-appropriated, junior holders will likely snatch up any extra water that turns up. Nonetheless, the process should clarify further where problems are and help identify possible places where water might be left in-stream for the fish.

**Water Commissioner:** Another key to maintaining flows in the Bitterroot River is the work of the River's Water Commissioner, Vern Woolsey, as well as the commissioners on the tributaries. Vern is over 80 years old and many people are concerned about who will - and how someone possibly could - replace him. Vern has not only been able to get people to work together and encourages more efficient irrigation, but people trust him, so he is able to do what he sees as necessary to a well-functioning river without written agreements or complex calculations. The great advantage of Vern's system is that it works. The down side is that no one knows just exactly what Vern does. Several parties have suggested creating a written drought plan for the Bitterroot watershed, which is, in essence, what Vern has in his head -- and doing it now while flow levels are relatively high and people are not feeling
pinched and defensive about their water. One priority for maintaining in-stream flows on the Bitterroot is to ascertain and in some way codify the work of Vern and other successful water commissioners.

Efficiency: Of course, one way for irrigators to use less water is to irrigate more efficiently. In the Bitterroot many agriculturalists flood irrigate — they simply pour water out over their crops. Other methods of irrigating that apply water judiciously where it is needed can reduce the amount of water coming out of the ditch and even, because evaporative losses can be so high, increase the amount that gets to the crops. Another potential problem with flood irrigation is that it doesn’t always mix well with septic tanks — another consideration for all the new subdivisions — and EPA regulations actually put limits on their proximity. Although not appropriate in all cases, several Bitterroot ranchers have successfully made the switch from flood to drip irrigation (often with some technical assistance) and reduced water their consumption. But switching from flood irrigation alters the century-old hydrologic patterns that irrigation created. Studies in the Upper Clark Fork basin show that flood irrigation does, in fact, recharge the water tables, and in many instances is a well-established part of the valley’s hydrology. Regardless, it seems reasonable to offer some incentive — tax breaks, for example, to encourage efficiency among consumptive water users.

Federal Reserved Rights: Both the federal government and the Confederated Salish and Kootenai tribes have some reserved water rights in the Bitterroot Valley. Federal agencies are granted the water rights necessary to complete their mission and purposes, and may occasionally include water claimed for other purposes. In the Bitterroot, there are few federal entities with much claim to water, but the largest — the Bitterroot National Forest, surrounds the valley. The Supreme Court rulings on federal reserved rights allow the National Forests to use the water to grow trees and protect the watershed (derived from the Forest
Service's Organic Act) but refute the notion that watershed protection includes in-stream flows. But because of where the Bitterroot forest boundary is, well above the valley's contentious water-diversion zone, in-stream flow rights on the forest would make little difference to the river. One interviewee explained that her field trips showed, and research corroborated, that forest stream reaches, even if they are logged, are the healthiest components of the watershed. She also noted that part of the reason the river bounced back after so many years of dewatering was recruitment from the Bitterroot forest's relatively healthy fisheries.

Native Americans also have federal reserved water rights, and the Salish were given fairly broad rights in the Stevens, or Hellgate, Treaty of 1855, including hunting and fishing rights throughout the Upper Clark Fork Basin. Asserting these rights, the tribes filed objections in the last hour of the adjudication processes in the basin. Recent case law in Washington and Colorado has ruled against tribes acquiring federal reserved rights under the Winters doctrine in some cases, but they still have fishing rights. It's an obvious argument that healthy fisheries are critical to asserting native fishing rights, but as far as I know that has not yet been tested in court.

Storage: There are 21 dams along the Bitterroot face on National Forest land, and most of them are in the Selway-Bitterroot Wilderness Area. Although dams do store spring run-off and make it water available during the dry times of year, dams have their downsides as well. Winter mortality is higher than summer mortality, even dry summers, partly because of ice scouring and partly because fish all end up in the same deep holes, competing for resources and preying upon one another. So dams that capture winter water can be more detrimental to fish than the benefits they receive from supplemental flows. Dams create a host of other ecological problems, dampening the natural flood cycles that rejuvenate floodplains, flush sediments, etc. Dams are also expensive to build and maintain, and, even with today's technology, rarely cost-efficient. In the Bitterroot, where most of the dams are in federally designated wildernesses, maintenance requires special

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considerations that may make dams more costly. In an era when many Bitterroot farms and ranches are being developed and subdivided, we must ask whether the ecological and economic cost of dam building and maintenance stacks up against the value of providing water for more green subdivision lawns in late summer.

**Basin Closure:** In 1995, five women in the Bitterroot Valley – all grandmothers – brought together their concerns about growth and water and their belief that people working together could devise solutions to some of the more intractable water problems that were cropping up in the valley. They started the Bitterroot Water Forum, a consensus-based group of people with diverse ideas who meet once a month to gather information and work towards change. Their mission, explained by grandmother Darlene Grove, was to: “get lots of information, educate ourselves and the greater public, then look for solutions.”

Willy Crist, one of the founding members, has been in agriculture all her life. She helped collect people, each from a different background “who knew the importance of water to life and what a person wanted to do in life. Plants, people, animals are [all] dependent on water, and it has to be good water – that’s why we look at quantity and quality.” Willy believes that people intend no harm: “I think people just didn’t know what they were doing – with insecticides and pesticides, and all that.” The starting point for the Water Forum was gathering information: “there is all kinds of information – studies that people don’t know about” to teach people how to do things in a resource-friendly manner.

So they gathered folks from all different interests, inviting representatives from Trout Unlimited, the County Extension Service, Irrigation districts, DNRC, etc to sit at the table. The Water Forum got some administrative aid from county Resource Conservation and Development office, including its facilitator Kit Sutherlund, got a state grant, and eventually hired a part-time staff person, Roxa French, who does research and follow-up, and updates the Water Forum’s web page and GIS data.
The year the Water Forum got started, there were applications for over 500 new wells a year on the eastside of the Bitterroot valley alone. So, naturally, the focus of the group was more on water quality than quantity from the beginning. But one of the Water Forum’s greatest successes to date is more directly related to water quantity. It is a story worth telling, because it is a terrific example of how people working together, unhampered by a water control elite, can make progress to protect natural resources, and it suggests that the Water Forum itself can be considered another vehicle for positive change to benefit instream flow.

No one I interviewed from the Forum was sure of the exact date when the idea for the Bitterroot basin closure first came up, but everyone agrees that it was in the fall of 1996, and that the Upper Clark Fork basin closure served as a model and inspiration. The closure simply disallows people from filing for any new water rights. In a basin as overappropriated as the Bitterroot, it is hard to imagine that there are any rights available. But new rights filings are surprisingly common, mostly for small fish pond diversions, creating or mitigating wetlands, or digging a well for domestic or light stock use.

When the topic was first discussed, members felt that the timing was too close to the ‘97 legislative session to fully flesh out the ideas and gain the support they would need to pass the bill. One member felt that irrigation interests in particular—ranchers and farmers—were leery of idea, uncertain of what it would mean for their water rights, and that agriculturalists lukewarm reception to the idea dampened the original effort. Basin closure was placed on the back burner, simmering gently, for almost two years. Other ideas to address both water quantity and quality issues also came up, but none quite hit the right balance of support from all members of the forum.

Newcomers continued to land in the valley, many of them ignorant about water rights and responsibilities. But one of the umpteen newcomers to stick a water pump into someone else’s ditch chose the wrong irrigator to steal from. Brian Langton is from a long line of Bitterroot irrigators, and, in fact, uses part of the original St. Mary’s Mission water
right to water his crops. He holds some of the earliest and most senior rights in the valley. (The rights actually are listed as dating back to Fort Owen, because the mission was established so long before anyone even thought to record rights).\textsuperscript{22} After more than $3,000 worth of lawyer’s fees and negotiations defending his rights, Langton decided he would be willing to really put some time into enacting a basin closure.

As Darlene Grove explained about the water Forum: “the neat thing about it is as soon as the government knows you’ve got a nucleus of diverse interests, the government beats down the door to help.” Once the “aggies” got on board, the Forum had the diverse support it wanted and things started to click. Not that there weren’t bumps along the way — several issues came up that required amendments to the bill to maintain everyone’s support. Roxa French explained the Forum’s approach: “There were lots of people’s concern’s that we could address – we were able to make changes to the bill as long as they didn’t affect our goal.” So Roxa got busy scheduling Forum representatives onto as many agendas as possible, meeting with county officials, realtors, irrigation districts, anyone they thought should or would be interested in the basin closure. Then they listened to people’s concerns and answered questions as best they could.

A couple of the Bitterroot closure bill’s unique features reflect this willingness to adapt. For example, the closure is temporary, to remain in place until two years after the final adjudications in the valley. Once everyone knows and has had some time to sit with the final decrees, then DNRC can reconsider new permits. And some folks in the sub-basins that are furthest along in the adjudication process didn’t want to wait to lift the closure in their sub-basin until two years after the last basin was finished. So parties agreed to lift the closure by sub-basin, as each became ready. A similarly sticky point was adjudication of federal reserved rights – Forest Service, Fish and Wildlife Service and the tribes, which likely will take considerably longer than the rights that are filed with the states – so the basin closure and subsequent lifting affects only state adjudications, not federal.
Roxa French was clear that the one thing that Forum members just could not compromise on was the closure itself, or anything that affected that ultimate goal. And there was one group that wanted compromise on issues that were the heart of the basin closure. In a full-page advertisement published in the *Ravalli Republic* in March, “Water Rights, Inc.” water rights consultants warned Bitterrooters:

> If you are a water user in the Bitterroot Valley, you will be affected by this closure. Whether you are planning agricultural expansion and/or development, or you have water uses developed after July 1, 1973 that are not recognized by the water court, or appropriately permitted, you must take action immediately to avoid losing water. Please contact Water rights, Inc. to assist you in reviewing, researching and if necessary, permitting your water uses before its too late.”

The private water consultants who wrote the ad were more clear in their letter of concern to the Bill’s champion, freshman representative Jim Shockley of Victor: “If basin closure legislation must be advanced ... we suggest several modifications: [The closure should be] limited to July 1 through September 30... and should allow *de minimis* uses and non-consumptive use,” etc.

The water consultants’ stand surprised the bill’s supporters because everyone involved in the process was so pleased with broad-based community support that the project held. A fact sheet on the basin closure bill written by the Water Forum proudly asserts: “The Bitterroot Water Forum, made up of people from all walks of life in the Bitterroot Valley, have [sic] been meeting for several years to discuss and resolve water conflicts. The basin closure bill is a direct result of this community process. It is a citizen-driven, responsible way to respond to a community need and a valley-wide problem.”

As it turns out, Land and Water Consultants were the only real objectors, although in the house Natural Resources Committee, a water lawyer and representative from Bozeman amended the bill to exempt “non-consumptive” uses. Currently many of the problematic new water permits in the Bitterroot are for such non-consumptive uses, including trout and duck ponds and wetlands creation. Marshall Bloom, of the Bitter Root Chapter of Montana TU makes the argument that “the only real non-consumptive use of water is diverting it in a
leak-proof pipe and dumping it right back into the river.”

Ponds and wetlands lose water to leaking pipes, seepage, and evaporative losses, keep water out of the stream for an uncertain amount of time, and warm the water considerably before its return to the creek.

Luckily, basin closure proponents did not have to make up wry epitaphs like Samuel Fortier of the Montana Agricultural Experiment Station did when his attempts at water reform early this century were stymied: “You may write on the tombstone ‘Killed by the residents of Bozeman and vicinity.’” When the closure bill passed with the non-consumptive use amendment attached, Rep. Shockley, the bill’s champion, quickly reintroduced another amendment to return it to its original form and it passed by an overwhelming majority. Diverse support was even more evident in Senate hearings than at house hearings, including testimony by DNRC, Montana Power, the head of DFWP, and the slew of interests represented by the Water Forum. On Monday, March 29th, 1999 the bill passed easily in the Senate and became law.

What difference will the closure make? Marshall Bloom, who has been active with fisheries issues in the Bitterroot for over 20 years, says, “it won’t make a huge difference – everything that can be irrigated, is. But it will help with the “non-consumptive” uses – trout and duck ponds, and it will help the tributaries [although] it won’t actually re-water anything.” He notes that “it is a convenience for current rights holders – it will save them hassles and money - and it’s an educational tool – helping people to realize that water resources are limited.”

Fly-fishing guide and Water Forum member Dave Jones agrees, but has a slightly different take on the benefits of the bill’s success: “[the closure] isn’t a huge benefit to the fishery in a direct way. But,” he continues, “it’s a good idea – and it could help with organization, getting something together at a grassroots level, building trust.”

Founding Water Forum member Darlene Grove is unconditional in her estimate of the closure: “It’s been a really historic thing in our valley – that that many groups could come together on a water issue – I don’t think people realize how historic it is!”

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If groups like the Water Forum can get together and create dialogue, it is amazing what kind of change can happen — including change like the basin closure, which skeptics would have scoffed at years ago. But the Water Forum isn't a perfect product — it is an ongoing process, one of many that offers hope for changing conditions to improve the ecological health of the Valley and its namesake river.

Water Forum members agree that their most useful function is as a discussion group — "concentrating on facts and destroying perceptions." as Harvey Hackett, past water commissioner for the Bitterroot Irrigation District and strong-willed advocate for agricultural interests, likes to remind people. In the case of the Basin closure, it perhaps just took a little educating and some first hand experiences for agricultural interests, who might have been less likely to support the closure at first, to realize that the closure actually supported their values — the water rights and, perhaps the democratic processes, that they depend on to survive.

And the Water Forum chose to work on basin closure over issues that might have produced a greater benefit to in-stream flows because it was the easiest idea to agree on — agricultural interests, conservationists, even realtors got behind the idea. As one interviewee explained, the Water Forum can't — and won't — take on contentious issues, because contentious is defined by the members and the group is based on consensus. Other changes in water use and water culture in the valley — more potentially contentious ones — will require the work of interested groups or individuals like Dave Odell — folks who are willing to take a lonely stance to speak up for what they believe in.

The non-hydraulic nature of the Bitterroot allows both these and numerous other venues for change in the entrenched laws and values that determine resource use in the West. The physical nature of the valley: mild, dry summers, the ring of mountains with their gift of water, the closeness of the river, the bounty of fish — and its history: early settlement, lucrative, idealistic private investors and their ultimate failure, the booms that fill valley niches with people and new ideas — allowed the scattering of power throughout
the Valley and kept the Hydraulic Society out. These factors kept the valley closer to the agrarian ideal than most parts of the West because more farmers actually were self-reliant, independent of money and technology from outside sources. Likely these factors contributed to Bitterrooters fierce independence that characterizes many valley residents, and while that independence has its own drawbacks to creating an ecologically sustainable society, it has proven an antidote to a hydraulic society, a boon for democracy.

There are no miracle resolutions to natural resource conflicts, not in the Bitterroot and not in Montana and not in the West as far as I know. It is hard to unseat a culture drunk on plenty and determined to make the desert, or the semi-deserts, support more than they can, and it truly will take a long-term, multi-pronged approach to create a culture drunk on fish and egrets instead of water – a more sustainable, ecologically healthier culture. But in the Bitterroot, at least we did not have to unseat a hydraulic society. Instead, in a culture of dispersed power, changing laws, demographics and values empowered new voices to use the law, galvanize people and champion the fish. Folks like Dave Odell and the 5 grandmothers were empowered – they felt like they could (or should) do something, so they did, and it worked. What the next step will be is anybody's guess.
Several examples exist of cases where instream flows are protected under other statutes - like the 8 "Murphy rights" streams that were chosen for instream flow protection to preserve blue-ribbon fisheries in the 1960's. Murphy rights were a one-shot deal; although they are still legally protected, no more streams can be protected under the Murphy rights legislation.


Tin Cup Creek Water Leasing Project Environmental Assessment (Helena: Montana Department of Fish, Wildlife and Parks 1994), 2.

For more information on what Vern does, see University of Montana Master's Thesis by Patrick Berry, expected 2000.
Conclusion

In a Paradox that is at the heart of the human experience, and of the humanities, we are possessed by what belongs to us—the land, our language, our hopes and our fears, our songs and our stories.
- J. Edward Chamberlin, Bury the Dead and Pay the Rent

The story of the Bitterroot River's capture and return has lessons for all of us—some which we can quantify and consider and act on; others harder to explicate, but embedded in the story. Hopefully the telling of it will teach us some of what we need to know. There are several central lessons—lessons of place and ecology, of creating a true participatory democracy, and of story and myth and how they inform our lives and culture. Of course these lessons lie tangled and intertwined, despite the last hundred-plus pages I have written to ease the knot.

A River, to be sure, is a means to economic production, but before that it is an entity unto itself, with its own processes, dynamic and values. In a sense, it is a sacred being, something we have not created, and therefore worthy of our respect and understanding... to use a river without violating its intrinsic value will require much of us.¹

Of place, I can say this: the Bitterroot is a unique place, as all places are, whether defined by watershed or human community or a certain flora and fauna, and their physical and biological “stories” will tell you much about how and why a place was settled and how to live in it now. One of the things that make the Bitterroot unique is that most of its denizens care about the river and the valley that contains it. Why? Perhaps because the valley is narrow, because the river defines it, because proximity and presence make the river feel intimate, and because, as Willy Crist says, water is life—not just to us but to so many other species. Likewise, each place has its own history and ecology, its own intimacies. We have to take the time to understand each one, to recognize how they affect us, and what they ask of us. To come to understand place, however imperfectly we as humans are doomed
to, we must learn its ecology—sometimes through careful experimental study, most times from watching and listening in a way that our culture, currently, places little value on.

However we learn or absorb it, we have to bring that understanding of the ecological community back into the human fold—and that is another key lesson from the Bitterroot. People emptied the river, platted the land, plowed fields, dug mines, felled trees; and the myth, not an indigenous myth,—said Okay, good job, you go, guy. The myth and its people didn’t consider the consequences—cutthroat, osprey, wolf—until it was almost too late.

My intent is not to complain about what people did to the land in the early nineteen hundreds—after all, the Bitterroot stayed small, the ecosystem isn’t so vastly changed that we can’t begin to restore it, and people still care. But I can say that now we know better: we have enough studies, we have witnessed enough consequences.

We have to learn to live in a place, not just how we want to live there, but how the place requires us to. John Wesley Powell, for all his quirky and sometimes destructive ideas, was enamoured by place—his place was the American West—and he devoted his adult life to unveiling the ways that he believed people ought to live there. He studied everything from precipitation patterns to native peoples, rocks to rivers. He even tried to define its essential character (he claimed it was aridity) but then was wise enough to step away from area-wide generalizations to call for a peculiarly tribal method of governance. Powell recommended using watersheds as political boundaries because he understood that people’s actions within a given watershed would so inherently affect everything else within that hydrographic basin that people would have to consider one another and the consequences of their actions. They would be compelled to participate. The Bitterroot valley is de facto one of the few experiments in watershed-defined county government, following Powell’s radical notion.

Though created by happenstance, it is nonetheless a useful model.

It is a useful model because it works and it doesn’t work. People in the Bitterroot Valley very much define themselves by place, and, luckily for them, they can vote along the same lines. And though voting records don’t necessarily show that the Bitterroot has
significantly higher voter turn-out than other parts of the west, Bitterrooters know better than the rest of us who and what they are affecting when they vote.

Which brings me to participatory democracy. Despite my criticisms of Donald Worster's over-broad application of the hydraulic society to the American West, his discussion is an essential warning about what agribusiness and precisely-controlled water systems can do, and in some places already have done, to democracy. Concentration of power derived from control of resources - no matter what "resource" is affected - is the prime factor in the disintegration of democracy. That knowledge - as old as democracy itself - was the basis for Thomas Jefferson's faith in an agrarian society; ironically, the foundation for the myth itself.

I agree with Worster's premise that democracy on a local level offers the best hope for preserving the integrity of place. While it may not be the only way to preserve our natural communities, it seems like one of the essential ingredients. And an ideal local democracy functions with empowered people, because it is empowered people who listen and think and participate. In the Bitterroot, people like Dave Odell, Willy Christ and Darlene Grove, Brian Langton and Harvey Hackett, Dave Jones and Marshall Bloom are empowered. Without them, the river would be warmer, drier, bonier, much closer to dead.

But my version of democracy also includes a voice - and a vote - for the land and its communities of life. We have to change our values so that they incorporate the natural biotic community that is, after all, the community that sustains us. Changing values is, of course, the trick: it is the challenge that confronts cultures that have changed too fast themselves or encountered rapid change in the world around them, so that they don't know how to make good decisions anymore, by which I mean place-based, ecologically-sound decisions. Good decisions can come from an elite technocracy (such as government agencies), who might make good ecological decisions (but often don't) without the support of the people. Such decisions are far too fragile, too easy to undo. Good decisions should
come from the people, and it is all of our jobs to empower ourselves, restructure how we think about the land and its resources, and start making good decisions.

"The tongueless man gets his land took," says a Cornish proverb. Constitutions should give tongue to the dispossessed, instead of giving them names. And so should the humanities, for the humanities have always provided our central constitutional texts, defining for us who we are, and where we belong.\(^2\)

Without understanding the heritage of water use for agriculture, the difficulty of determining water rights, and how sacred those rights are to their owners, one can not fully understand how to move towards fixing the system. It would be foolish to deny the past or its importance by creating a whole new system for water rights, partly because we can't deny the stories that possess us \textit{and} because one would likely be killed for trying. But the story, the original myth that settled the West, gave no tongue -- it entirely dispossessed -- the natural world. And I'm not sure we can give a voice to the voiceless without recreating the myth.

Some part of doing that rests with the humanities – changing our language, naming things not after white people but after the values they hold, telling the stories that need to be told, letting the myth transform. Right now our names and stories are created and chosen by the people who are often the farthest from living in a place – by the media, the corporations that control the media, and sometimes by a government that kow-tows to them all.

So, let's start with names. Then we can build up to the stories of good decisions and the rewards that they hold. And those we can tell to more and more people, and our new names and our new stories will be a phoenix rising form the ashes of our resource conflagrations – they will become the new myth.

Here’s an example: Water rights. Water \textit{RIGHTS}? That’s it? That’s our name for the privilege of taking part of a living, public resource and doing whatever you want with it because your grandfather lived here before I ever showed up? Plenty of people are doing
good things with their water rights – feeding us or keeping land in open space or filling the
banks a little more so fish can jump as well as wiggle their way downstream. Shouldn’t our
measure of appropriate water use be not if you can use it all up, but how it benefits your
community? And isn’t that a huge responsibility? Let’s file claims for water responsibilities.
Or water rights and responsibilities. We just can’t have one without the other. The law does
describe both (though fewer responsibilities than rights) but our language only
acknowledges what we get.

How about “resources” – water resources, natural resources, resource conflicts. I
hate to succumb to a dictionary definition here in my conclusion, but here it is: “Resource -
1) a source of supply, support or aid, esp. one held in reserve.” Supply, aid, source for who?
people, of course – natural resources are things nature supplies for people to aid
themselves – kind of like rights, it doesn’t suggest we need to aid anything in return, but
it’s still not such a bad definition). But there are others -- 2) "resources: the collective
wealth of a country or its means of producing wealth." Since I’m on this tirade, I’d ask that
we redefine wealth to mean happiness and health rather than money. But that’s not really
the kind of wealth this definition of resource is all about, judging from the last definition,
which is - 3) "money, or any property that can be converted to money."

Part of our myth is that resources are things to be converted to money. Even that
may not sound so inherently bad until you consider that resources are lives – sometimes
humans’, sometimes other species’. I’m not convinced it’s right to convert others’ lives into
money. When the playing field is even, when we start asking what we really need to survive
and we consider in our decisions we are trading lives for lives, well, then we will start
making good decisions about our… how about “community?” Water is a scarce part of our
community here in the arid West. Do you treat your community differently than you treat
your resources? I hope so.

There is other cause for hope. The rule of law, the way we govern ourselves, is, of
course, one of our stories. Some societies, like ours, are so big that we have to write our
laws down, in detail, because we've traded in values for details. And then all those details make it obscure and complex and we have to pay people lots of money to explain it to us, and pay the police to enforce it and, and ... That's not the hopeful part of this story. The changes in Montana's water law have started to give names, though not tongues, to the dispossessed. The Water Use Act of 1973 specifically states that the purpose of the law is "to provide for the wise utilization ... of the waters of the state for the maximum benefit of its people with the least possible degradation of its natural aquatic ecosystems" (emphasis added). It calls fish and wildlife purposes beneficial. These are critical names. And there are more that we haven't though of yet.

We have to keep enhancing our understanding of the natural world, trusting the intrinsic value of rivers and hope that others do too, and then if we have empowered the people, changed our language and bent the myth, maybe we will have miracles. But if we don't, we will still have change, maybe slow, hopefully fast enough. That is when the American West can begin its journey back to health. And I pick on the American West - certainly an over-broad generalization myself - because in many places the community of life here is still intact enough that it can, like the Bitterroot River, revitalize, step by step. As Donald Worster says, it will require much of us.

Now let me, in the finest storytelling tradition, circle back to where I started. Our natural communities have no tongues, so we have to speak for them, and we can't do that until we have some idea of what they would say. So listen to the land. Learn about ecology and integrate its lessons into your conscience. Educate and empower yourself. Then participate, vote. Name and rename things. And tell your stories.

2 J. Edward Chamberlin, "Bury the Dead and Pay the Rent, Practicing the Humanities in the American West," (Boulder, CO: Lecture for the Center of the American West), 8.