Secrrets of the Magic Valley

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Many years ago, when the great buffalo herds still grazed the plains, two lovers trysted above a mighty waterfall the Shoshone called Pah-chu-laka—hurling waters leaping. Every night the strong warrior met his slender maiden on a smooth rock that overlooked the foaming green cascade. One day he went away to lift the scalps of white men. She never doubted his return, but many moons grew full and died away. Still, she waited faithfully each night on the water’s brink. Then one night, a warrior stepped from the deep shadows and whispered in her ear. After he disappeared, she stood a long time looking down into the cauldron that threw sparkling mist at the stars. Her arms lifted slowly, then her proud head. She poised on tiptoe for a moment and dived into the wild roar, shattering the mirror of water. “Since that hour,” spoke Quish-in-demi, “the river has never been the same.”
Idaho's Magic Valley reflects a storied place. Its legends and myths serve to explain what environmental historian Mark Fiege calls "our deeply entangled and problematic relationship to the natural world." A landscape like the Magic Valley's remarkable lava, lost rivers, hidden canyons, and epic falls "is not just a place," he says. "It is a story." A wilderness transformed by water, it tells how life persisted and evolved against incredible odds. When people impacted the valley, they created new environments. Shoshone legend saw the Snake River changed when a maiden gave her life to its awesome power. Engineer D. W. Ross, in 1894, saw the Snake River changed when its terrible force was "harnessed [and] made to do the work of half a million horses." Humans alter nature, but nature bites back in a continuous process that results in a mythic landscape both human and natural with surprising secrets and unexpected twists.

The Magic Valley lies at the heart of the Snake River Plain, in a southern Idaho crescent that sweeps east to west, border to border, dipping south from Rupert to Twin Falls. Designated magic by promoters in the early 1900s, the valley's regional identity extends west from Caldron Linn to Glenns Ferry, north from Jackpot to Sun Valley. Its population of over 150,000 covers eight counties—Blaine, Cassia, Minidoka, Jerome, Lincoln, Twin Falls, Gooding, and Camas. Its culture resides in small towns like Eden, Hansen, Kimberly, Jerome, Filer, Buhl, Wendell, Hagerman, Bliss, and Gooding. Water has always worked its magic here. Prehistoric seabeds left coral and...
ammonites on later desert steppes. Floods uncovered fossils radioactive from water-leached uranium. Irrigation drawn from an underground aquifer system like Hawaii’s bloomed a sagebrush plateau that lies on lava identical to the moon’s. Today the sound of sprinklers vies with the rush of canyon rapids. “Topographically,” wrote historian Vardis Fisher, “Idaho is one of the strangest States in the Union ... the last frontier, delivered to rock and desolation.” His 1937 view echoed the voices of westward travelers whose eastern experience of land gave them little vision or vocabulary to interpret the plain’s geography. They had to invent new ways to see and describe. As they did their sense of the place evolved, and so did the stories surrounding it. A written-off wilderness was now recognized as a singular place. Explorer Clarence King’s desert waste became Washington Irving’s picturesque landscape. Natural wonders became natural resources. Wilderness became monuments, and monuments became part of what Wallace Stegner called “the geography of hope.” That hope stemmed from the western version of the ancient garden myth. In 1893, Frederick Jackson Turner made manifest destiny a frontier imperative and recast the garden myth to fit the American wilderness. Turner’s frontier thesis pictured humanity conquering western wildness and claiming it for productive use. In turn, the process of making the desert bloom produced the uniquely American traits born on the frontier: “that dominant individualism, working for good and for evil, and withal that buoyancy and exuberance which comes with freedom.” Eden was found, mankind redeemed, and American identity forged in the crucible.

Each successive wave of civilization Turner described passed across the Magic Valley, and each brought its own view of the place. Indians thought Shoshone Falls a powerful totem, and fur trappers called it a navigational block. Oregon Trail emigrants stood speechless at its sublime chaos, and miners knew it as the liquid gold that brought placer gold from upriver. Homesteaders harnessed it for hydraulic power and pro-
moted it as a tourist attraction. Scientists used it as a window into the earth. But the Magic Valley existed long before humanity came to imprint it—a dynamic landscape with its own identity distinct from those who later claimed it.

The Magic Valley’s origins lie deep in antiquity and basalt. Fifteen million years ago, the North American continental plate drifted over a hot spot, a place where semimolten magma erupts from the earth’s crust and flows out as lava. This black basalt layers the Snake River Plain hundreds of feet deep and covers a trail of ancient volcanoes that slowly moved east to Yellowstone as the continent moved west. The hot spot responsible for the Magic Valley’s fractured cliffs and ragged rock piles originated where Idaho meets Oregon and Nevada. The volcanoes that emerged over it were violent, exploding clouds of gas and rhyolite ash miles into the air. Heavy basalt magma followed in flows over millions of years. The Snake River Canyon today is banded in rhyolite red and basalt black.

As the crust moved over the hot spot, scorching magma bulged it into a 900-miles-wide rift that collapsed into a great basin. Lake Idaho filled this basin 10 million years ago.
and covered southern Idaho. The mammoth lake rose and fell over millennia as the climate changed; at its highest it reached 3,800 feet above sea level. Basalt continued to ooze beneath the water, forming glassy pillow lava shelves, thick cones, and twisted pillars—the unique geologic markers Fisher called “so varied and sometimes so appalling.” A tiny tributary of the Salmon River eventually cut its way through to Lake Idaho a million years ago. The water flooded north up the tributary in a huge drainage that ultimately created Hells Canyon and left behind the Snake River. All the streams that fed the lake were left high above its bed to erode out the canyons that score the plain today.

During the life of Lake Idaho, sediments from gravel, sand, silt, and volcanic ash settled on the lakebed in the Glenns Ferry formation, a deposit covering the Snake River Plain up to 1,700 feet thick. About the time the lake drained, almost half the species alive then went extinct, their fossils preserved in the sediment. Buried in the porous basalt beneath the formation flows an underground water network called the Snake River Aquifer. Snowmelt and rainfall feed the aquifer, and the aquifer feeds the Snake, sometimes spectacularly. Thousand Springs near Hagerman cascades white against black canyon walls in some of the biggest springs in the United States.

The Glenns Ferry formation provided a spillway for another ancient lake. The McKinney Butte volcano nine miles northeast of Bliss poured basalt across the plain and into the Snake River Canyon, creating a natural lava dam southwest of Bliss that backed water upriver past Thousand Springs. Lake McKinney lay 600 feet deep at the dam. When clay deposits sealed

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**Seven Wonders**

- **Shoshone Falls**
  The Bonneville Flood carved this 212-feet plunge over a horseshoe rim of basalt. The stunning falls have been a Snake River icon since Oregon Trail days, impressive even when drained by irrigation. Highway 30 east of Twin Falls.

- **Malad Gorge**
  Named for bad beaver meat that poisoned French and Canadian fur trappers (*malad* means sick in French), the Malad River churns into Devils Washbowl in the gorge’s 250-feet deep chasm. Interstate 84 west of Bliss.

- **Hagerman Horse Quarry**
  A Pliocene fossil treasure trove, the quarry brought national monument status to 4,281 acres of river and bluffs. Smithsonian scientists discovered the ancestor of the modern horse here. Highway 30 south of Hagerman.
the porous lava, water spilled across the formation's soft sediments and eroded a new canyon south of the old one. The pillow basalts that flowed into the lake behind the dam lie exposed in canyon outcrops today.

The last great Ice Age accounted for the last great flood on the plain. Lake Bonneville slowly rose to fill the Great Salt Lake basin. Cooler temperatures reduced its evaporation, and the precipitation that fed mountain glaciers increased its volume until it poured over the natural dam at Red Rock Pass near Pocatello about 14,500 years ago. Its torrent cut the little canyon 350 feet deeper in an output greater than the Amazon's annual flow. In the Magic Valley, the flood filled the river canyon, scouring walls and cutting deeper. It left behind a series of steep rapids in the gorge and falls like the stunning Shoshone near Twin Falls, taller than Niagara at 212 feet high. The big "melon gravel" boulders around Hagerman stand as witness to the deluge that covered the valley here eighty-five feet deep with sediment.

- **Box Canyon**
  This black basalt cut, invisible except at its rim, deeply slices cultivated farmland. The hidden spring at the canyon's base pools incredibly blue and streams out to the Snake River. Highway 30 southeast of Hagerman.

- **Gooding City of Rocks and Little City of Rocks**
  Richly colored shale and sandstone rise up in pillars, spires, and pyramids that overlook two deep canyons. Sculpted by water, wind, and sand, the rocks present a four-mile panorama. Highway 46 north of Gooding.

- **Niagara Springs**
  One of the least developed of the spectacular Thousand Springs, this Natural Landmark pours out up to 300 cubic feet of water per second, water filtered pure through lava and perfect for trout. Interstate 84 south of Wendell.

- **Shoshone Ice Caves**
  A glacier lives beneath the desert in lava flows left behind by the hot spot that now bubbles sulfur pools in Yellowstone. Ice eight to thirty feet deep and ice crystals on the walls chill the long cavern. Highway 75 north of Shoshone.
The Ice Age also spawned more subtle events than catastrophic floods. For millennia the Snake River Plain's climate had been subtropical, warm and humid. After the formation of the Snake, volcanism subsided and it grew more arid. The Ice Age ushered in a million and a half years of cooler, wetter conditions that spread freshwater lakes and stream-fed marshes across the plain. After the Bonneville Flood, the climate warmed again. Increased evaporation dried up lakes, and decreased precipitation shrunk snowpacks. Wind drove the fine silt sediments called loess from western lakebeds in giant clouds. Loess filled every crevice, blanketed the plain, and drifted into towering dunes like the ones at Bruneau. Today it covers a desert steppe that grows potatoes, grain, and beans when it is irrigated, sagebrush when it is not.

Life did not wait for the landscape to settle. From microscopic to mammoth, it took hold on the plain in successive waves. Swamps and marshes supported tree palms, rhinos, and four-toed horses fifty million years ago. Thirty million years later, horses had lost a toe and grazed with camels in redwood, oak, maple, and willow forests that also hid saber-toothed cats. When the Cascade Mountains to the west uplifted five million years ago, they blocked the rain and created an arid grassland bordered with pine where mastodons, giant sloths, and bears joined the first ancestors of modern horses on the range. In Ice Age times, aboriginal humans saw musk ox, beaver, and bison added to the plain's populations.

Ancient Lake Idaho's oxygen-rich shallows contained some ninety species of mollusks. Most of them died when the lake dried. Their small bodies sank into the Glenns Ferry sediments to make fossils that help track the history of the Snake River drainage and early life in the Magic Valley. Amazingly, one member survived. The Bliss Rapids snail is the only living mollusk native to a river west of the Continental Divide, and the only member of its North American family to reproduce asexually. About the diameter of the date stamped on a penny, it lives in fast-water habitats below Lower Salmon Falls Dam and Bliss Dam, and in Thousand Springs.
and the spring at Box Canyon. The Bliss Rapids snail has persisted for more than three million years in spite of the volcanism and climate swings that continually rocked its habitat. Today, pollution and the artificial adjustment of river levels make it an endangered species candidate.

The white sturgeon in the Snake River belong to a primitive family far more ancient than the snails. When teleosts began evolving the bony skeletons that distinguish modern fishes about 200 million years ago, the sturgeon kept its softer cartilage skeleton. Its barbed hide and unique spawning habits helped it adapt to grow as long as twelve feet and live as long as a century. Unlike salmon, sturgeon survive after they spawn, repeating the long migration upriver many times. The Hagerman reach of the Snake provided good habitat, and fishermen capitalized on the abundant fish at the turn of the twentieth century. They pickled, dried, or smoked its flesh and collected its eggs for the caviar market, though area Indians seemed to prefer the more easily caught salmon. Dams dramatically decreased the Magic Valley sturgeon population. Today, Snake River aquaculture offers the best hope for reestablishing it.

"Nature is dramatic in Idaho," wrote Harold Rhodenbaugh for The Idaho Statesman in 1929. "All of nature is significant, nothing is irrelevant or useless." Most significant of all for the arid West was water. Environmental historian Donald Worster distinguished western hydraulics as something "more than an advanced version of modern agribusiness." This region's irrigators did not buy water from time to time for mere production enhancement; they needed it to survive. "The western farmer ... lives or dies
by the level of water in his ditches." Pioneers streamed into the wilderness with a mandate to use it. Not until the late nineteenth century did wilderness preservation conflict with the critical necessities of the garden myth. Dams brought the debate to the Snake River. "Man, the magician, has entered this once desolate region," a citizen wrote in the first decade of the new century, "and, with a touch of his wand of gold, has bestowed water on millions of acres of desert land." In 1970, the long national fray divided the Magic Valley over what to do about Thousand Springs.

"No one owns water in Idaho," said Keith Higginson, director of the Idaho Department of Water Administration. "You can, however, own a right to divert and use water for some beneficial purpose." Norman Standal thought his fish hatchery was beneficial, both commercially and environmentally. But in the summer of 1970, his Hagerman aquaculture operation faced fire from people concerned the new industry would use up a landmark. Standal said he laid out his hatchery to make the falls at Thousand Springs accessible to the public, and his preservation efforts "actually increased Horsetail Falls from 15 to 60 feet in height by simply digging the rock away." He cited runoff from cow pastures as a greater pollutant than fish hatcheries, which had
A Magic Valley

Idaho's Magic Valley rose like a desert phoenix on the bombast of promotional writing. Milner Dam above Twin Falls was "the certain prophecy of a prosperous civilization," said a booster in 1907. Left: Gooding's water nymph from a Union Pacific brochure, about 1910. Below: Idaho corn harvest.

For genial showers you need not wait. You only have to hoist the gate, And let the waters overflow, Our valleys rich in Idaho.

A Song of Idaho, 1905

Magic Valley Profiled:
Area: 10,115 sq. miles
Population 2000: 162,397
Croplands: 1,463,245 acres
Pasture & Range: 1,278,295 acres
switched from horsemeat to scientifically prepared food. Standal claimed when his waters were tested, "they [came] out clear as a swimming pool."

The Idaho Environmental Council claimed otherwise. According to their attorney, Bruce Bowler, aquaculture "requires not only the water, and pollution of it, but also clearing and bulldozing the land ... the kind of things that scar the landscape." The council also feared Idaho Power's impact. Once like Niagara, Thousand Springs was now a disappointment, Bowler said, "because it's not a thousand ... it's only about four."

Idaho Power did run the flow from many of the springs through flumes to electrical generation turbines. Moreover, said Hagerman resident Aldrich Bowler, "They were very secretive about how and who they were letting land out to." Bowler believed Idaho Power released land for aquaculture to help pro-
tect its own water rights in the area. Idaho Power’s vice president of engineering and operations, Glenn J. Hall, countered with the company’s history of releasing land for recreational purposes to such organizations as the State Parks Department, the Boy Scouts, and the State Fish and Game Department. As for water use, Hall said, “The plant does not consume the water it utilizes for electric power generation. It does not heat nor contaminate water. It does not interfere with fishing. It does not decrease the river flow.”

Thirty years later, some of the Thousand Springs still pour from basalt cliffs, and aquaculture thrives in the Magic Valley. It has even taken an exotic turn. The aquifer-filtered water—hard, alkaline, and oxygenated—is not only perfect for trout, sturgeon, tilapia, and catfish; it works for alligators and tropical fish, too. Alligators answered Buhl fish farmer Leo Ray’s dead fish disposal problem. They also gave him a new market for meat and finished hide products like purses, belts, and
boots. Ray mixes water from the hot geothermal springs with cold surface water for the warm environment the alligators need. The University of Idaho's Hagerman Fish Culture Experiment Station does the same for its tropical fish. Researcher Ron Hardy sees multimillion-dollar potential in the tanks of ornamental zebra fish, neon tetras, discus fish, and angelfish. Ornamentals sell for almost three times the price of caviar and top trout by more than $20 a pound, a lucrative possibility for the valley's hundred hatcheries.

Preservation and use still define the evolving environmental landscape here. "To leak or not to leak" is the question today for Magic Valley water management, according to groundwater geologist Neal Farmer. The Snake River splits the region in more ways than one. On the east side of the canyon in Hagerman Valley, irrigators intentionally leak water from canals and holding ponds to replenish the aquifer they pump from. Leaking also helps offset irrigation's draw.
on surface water that can decrease springs like the one in Box Canyon. On the west side of
the canyon, irrigators line ponds and canals to reduce seepage and conserve water. This

practice created "perched" aquifers by raising water levels unnaturally high above the regional Snake River Aquifer. Leaking produces cattails and other greenery incongruent to the arid
canyon slopes. Not leaking produces landslides.

Farmer calls Hagerman Valley "the landslide capital of Idaho." It lies at the boundary of a major geologic contact running east to west through the Snake River Plain. Slope failures like the huge block failures in Malad Gorge are an ancient phenomenon, but eight slides in the area since 1979 seem more than natural. "Mix in water," Farmer says, "and they start popping off." Idaho Power reservoirs raised canyon water levels as much as 40 feet, saturating sediments and undercutting slopes. Irrigation added to the
instability. But the story is not simple. When agriculture first developed on the plain at the
turn of the century, reclamation projects diverted water from the river and delivered it to the
desert steppes. A large part of that water seeped into the underlying basalt, flowing through
the porous lava and feeding back into the area's natural springs. Flood irrigation actually
increased the flow of Thousand Springs until the 1950s, when sprinkler technologies turned
the trend around. Water harnessed by humans might trigger landslides, but it has also increased subterranean groundwater storage by millions of acre feet.

Pioneers came west to find Eden and fell from grace again. The garden myth hinged on a contradiction: people were to conquer the same untouched nature they needed to redeem themselves. No sooner had they pushed back the wilderness than they clamored to restore it, and the new age of environmentalism saw almost any human intervention as exploitive. While the West did experience what Worster called “a ruthless assault on nature,” the landscape has adapted and persisted just as the people on it have, not in Turner’s straight-line progression but in cycles and seasons. “As Idaho’s irrigated landscape demonstrates,” Fiege wrote, “our activities are not always opposed to nature and do not necessarily dominate or wreck it.” Mankind’s capacity to control the environment is matched by nature’s capacity to stamp mankind, a story of symbiosis. Maybe author Norman Maclean offers a landscape perspective as good as any: what we see plus what we know equals a beauty different than the sum of its parts.
Magic Mirror