Water–the Lifeblood of Idaho, Part 1

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Across eastern Idaho, congregations are praying for moisture. It has been an unusual winter and Idahoans understand: Water cannot be taken for granted.

Water is one of the most extraordinary substances on Earth. Its molecular polarity creates surface tension and viscosity that make life possible. It acts as a universal solvent—cleaning things, carrying nourishment to cells, and carving mountain ranges. Its ability to exist as vapor, liquid, and solid within Earth's natural temperature range drives a global water cycle that distributes life-giving moisture around the world. Without water, life–and civilization–would not exist.

This reality is especially clear in Idaho.

Economically, water gives life to more than two million acres of irrigated farmland, supporting thousands of Idaho families. Nearly one-fifth of Idaho's economy and one in every eight jobs depend on irrigation water.

Much of Idaho's farmland is irrigated with surface water delivered from rivers through canals and ditches. But Idaho is unique. Beneath our feet lies an enormous underground water body: the Eastern Snake Plain Aquifer (ESPA). Groundwater pumped from this aquifer supports nearly half of Idaho's irrigated farmland.

The ESPA fills vast spaces between layers of volcanic rock beneath the Snake Plain. The aquifer is fed by seepage from the Snake River, as it meanders across southern Idaho, as well as seepage from mountain streams that disappear into the ground before reaching the river. Its scale is immense–and still not fully understood.

In fact, the aquifer's full size remains a mystery. Experts estimate that it holds roughly one million acre-feet of water per foot of depth. In some locations, geologists have drilled down over 5,000 feet and still found water. If those estimates hold, southern Idaho sits atop enough water to cover one million acres beneath a lake a mile deep! The $1\frac{1}{2}$ to $2\frac{1}{2}$ acre-feet required to grow a year's crop using sprinkler irrigation is—quite literally—a tiny droplet in this enormous bucket.

We also know surprisingly little about how water moves through the aquifer. Scientific models exist, but geologic experts readily acknowledge their inadequacy. We know a few things: For example, a massive underground formation called the Great Rift acts like a subterranean dam forcing groundwater to the surface through springs near Twin Falls; and we know that the ESPA behaves less like a bathtub and more like a leaky bucket–or a gigantic sponge–with water moving at different speeds and directions, sometimes even at different depths in the same location.

Beyond this there is much to learn. Funding more extensive geologic research is critical if Idaho is to effectively manage and maximize this vital resource—this liquid gold we call water!

Idaho's first foray into water management began in the 1800s as pioneers transformed desert into farmland through sheer determination and back-breaking labor. Canals and ditches were dug by hand or with teams of horses and crude equipment. Eastern Idaho led the way, diverting water from the Snake River in the late 1800s. By the early 1900s, Twin Falls followed suit.

Throughout the first half of the twentieth century, monumental efforts continued. Reservoirs and dams were built, and a lace-like network of canals and laterals spread across the Snake Plain.

Coordinating access to and distribution of water is a constitutional duty of Idaho's state government. Early management was characterized by the "Two Rivers" policy. Milner Dam, located halfway across southern Idaho, served as the dividing line. Above Milner—just before the Snake River plunges into a deep, inaccessible gorge—every available drop was diverted into canals, reservoirs, and surface-water systems. In practical terms, the Snake River ended at Milner Dam. Downstream from Milner, the river regenerated from spring flows and tributaries and continued across the state.

Under Idaho's Constitution all water above Milner is allocated for "beneficial use" distributed on a principle of "first in time, first in right." Senior water rights are satisfied first; junior users go without during a shortage.

The above-ground benefits of this system were understood; but no one fully anticipated its impact below ground.

Flood irrigation—the dominant method of the time—used eight to ten times more water than modern sprinklers to grow the same crop. Much of that water percolated back into the aquifer. By the 1960s, the ESPA had risen significantly from its early-1900s level. As aquifer levels increased, pressure on springs near the Great Rift intensified. These springs functioned like an overflow valve, returning groundwater back to the Snake River.

What emerged—almost by accident—was a remarkably efficient system: water diverted in eastern Idaho to water a first crop was stored underground, reemerged near Twin Falls, and irrigated a second crop before the river continued downstream and out of state.

Understanding this history—and the limits of our knowledge—is essential as Idaho faces the future. Water has always shaped Idaho. How wisely we manage it will determine what comes next.

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