

**THE TRAGEDY OF THE DEERFIELD RIVER:  
MONOPOLY CAPITALISM AND ECOLOGICAL CHANGE IN WESTERN  
MASSACHUSETTS**

by

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The Tragedy of the Deerfield River: Monopoly Capitalism and Ecological Change in Western Massachusetts

Thesis directed by Professor Paul Sutter

This thesis explores the interactions between people and the Deerfield River over the last two hundred years to demonstrate the social and ecological implications of various industrial developments between 1850 and 1994. Using primarily local newspapers and published reports, I argue that the twentieth-century transformation of the Deerfield River into a single-use entity manipulated solely for the purpose of generating electricity diminished the economic diversity within the region and led to a biologically poorer riverine ecosystem. Prior industries within the watershed, such as cutlery manufacturing, construction and operation of a major rail line, and logging, brought permanent employment to the region and depended on the river in ways that did not preclude other enterprises from capitalizing on the river's powerful flow. Conversely, the extensive hydroelectric developments undertaken by the New England Power Company between 1900 and 1970 altered the geomorphology of the river itself and changed the way in which local residents interacted with what had previously been an erratic and wild stream. The construction of an experimental nuclear power plant along the banks of the Deerfield River in the 1950's resulted in greater concern for the health of the river from the growing number of people who depended on the cleanliness and flow of water for their livelihood. After nearly fifty years of the New England Power Company monopolizing control over the river's flow, influence over how the river is used has recently shifted away from the hydroelectric company and towards the growing recreation and tourism industries that now define the river-based economic identity of the region.

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## INTRODUCTION

*What happens in a watershed seldom happens in isolation.*

-Theodore Steinberg, *Nature Incorporated*

One of the most notable events in the remarkably uneventful history of Deerfield, Massachusetts took place in the winter of 1704 when a French and Indian war party attacked the isolated frontier village, killing dozens of English settlers and capturing the prominent minister John Williams, his wife Eunice Mather Williams, and their five children. The historian John Demos informs us that the Indians invaded the town from the north, crossing the frozen waters of the Deerfield River before stealing themselves across a mile of meadowland and slipping over the walls of the town's poorly-guarded stockade. Once inside, the attackers "immediately set upon breaking open doors and windows," killing more than fifty settlers and capturing the minister and his family from their home.<sup>1</sup> With their captives secured, the attackers hastily retreated beyond the village walls, only to be surprised by a band of forty heavily-armed Englishmen, who, having seen the orange glow of burning homes in the distance, had "hasted from the countryside on horseback" to bring relief to the besieged settlers in Deerfield.<sup>2</sup> The French commanders quickly formed ranks to repel the unexpected attack, using the elevated bank on the far side of the Deerfield River for cover as they regrouped and traded fire with the English. Shielded from view by the high banks above the stream, John Williams and his fellow captives huddled together on the thick sheet of ice below, left to guess what their fate would be. After what must have felt like hours, the guns went silent, the English fled, and the French and

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<sup>1</sup> John Demos, *The Unredeemed Captive: A Family Story from Early America* (New York: Alfred A. Knopf, 1994), 18.

<sup>2</sup> Demos, *The Unredeemed Captive: A Family Story from Early America*, 18.

Indian attackers retrieved their captives from the frozen water below before striking out to the north, retracing their steps along the river that had led them to their target.<sup>3</sup>

The captors were led along the circuitous path of the Deerfield River as it bends to the east towards the Connecticut River before abruptly turning course and following a smaller tributary descending from the north. Along this narrow stream, known today as the Green River, Mrs. Williams' strength gave out. As her husband would later recount, "in passing through the abovesaid river, she fell down and was plunged over head and ears in water; after which she travelled not far, for at the foot of this mountain the cruel and bloodthirsty savage who took her slew her with his hatchet at one stroke." Searchers from Deerfield would find her frozen body along the banks of the river a few days later.<sup>4</sup>

Had the legendary 1704 raid on Deerfield taken place three hundred years later, the French and Indian attackers would have confronted a very different Deerfield River on their way to and from their target. The intricate network of more than a dozen dams and power plants that now punctuate the river have altered the geomorphology and temperature of the stream so much that even during winter's coldest months, the river's flow is managed in a way that prevents it from freezing solid. Once one of the most volatile rivers in New England, frequently escaping its banks during the spring thaw and slowing to a trickle following the heat of the summer months, the flow of the Deerfield River is now carefully regulated by a coalition of power company executives and whitewater kayaking enthusiasts. The high banks that proved so critical in the successful capture of John Williams and his family in the winter of 1704 now sit just a few feet above the measured flow of a river that remains remarkably consistent throughout the year.

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<sup>3</sup> Demos, *The Unredeemed Captive: A Family Story from Early America*, 18–30.

<sup>4</sup> Demos, *The Unredeemed Captive: A Family Story from Early America*, 29.

This closer examination of Deerfield's most famous episode underscores the importance of the Deerfield River in shaping the trajectory of human societies in the region over time. This study seeks to locate the Deerfield River at the center of the economic and social history of western Massachusetts and southern Vermont, particularly how the river fared as capitalism emerged as a driver of ecological change throughout the nineteenth and twentieth centuries. I argue that the construction of an extensive rail network along the river's steep banks beginning in the 1870s made possible the hydroelectric development on the Deerfield River that unfolded throughout the twentieth century, processes that not only transformed the riparian environment within the watershed, but also ushered in a crucial period in the region's energy history. Exploring the stakeholders behind the manipulation of the region's flowing water between 1870 and 1990 offers a valuable case study of regional modernization in the field of energy production as well as flood control politics within New England. The story of the Deerfield River over the past two hundred years offers a powerful lesson in how control over an entire river's flow for the purpose of hydroelectric development negatively impacts local communities that ultimately experience few of the economic benefits while absorbing all of the environmental costs. Although the fight over controlling the Deerfield River's powerful flow took many forms and included myriad characters, it was defined for much of the last one hundred and fifty years by a series of processes which diverted the economic prosperity derived from the river away from western Massachusetts and southern Vermont while transforming the river itself into a biologically diminished aquatic element, changing the way locals perceived and interacted with the river. The extensive hydroelectric development that took place between 1900 and 1970 is one of the major reasons why the area through which the Deerfield River flows remains one of the

least-densely populated and most economically depressed counties in the state of Massachusetts today.

Even by New England standards, the Deerfield River is short. The river flows a mere seventy miles from its headwaters in the mountains of southern Vermont to its confluence with the Connecticut River near Greenfield, Massachusetts. The Deerfield River follows a circuitous path – from its origins near the towns of Stratton, Somerset, and Dover, Vermont, the river quickly descends in a southerly direction, crossing the Massachusetts border before abruptly shifting course to the east as it makes its final thirty-mile course towards its eventual rendezvous with the Connecticut River between the towns of Greenfield and Turners Falls, Massachusetts. The Deerfield River drains approximately 665 square miles of Vermont and Massachusetts as it passes through thirty-six towns and five counties. Perhaps most importantly in understanding the long history of human interaction with the Deerfield River, over the course of seventy miles the main stem of the river drops more than 2,500 feet in elevation, carving its way through steep mountain gorges as it makes its way towards the languid waters of the Connecticut.<sup>5</sup> The steep gradient and rugged topography of the upper Deerfield River basin results in a relatively narrow river that flows swiftly and powerfully, providing a source of energy that humans have interacted with in various ways for more than three centuries.

This study carries forward the efforts of numerous historians who have positioned rivers at the center of understanding the evolution of human societies within a given watershed.<sup>6</sup> As

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<sup>5</sup> For context, the Connecticut River drops less than 2,000 feet over its entire 410-mile length. The Merrimack River, perhaps the most well-documented industrialized river in New England, drops a total of only 304 feet over the river's 117-mile meander to the Atlantic Ocean.

<sup>6</sup> Richard White's seminal study of the Columbia River, *The Organic Machine*, Philip Fradkin's extensively-researched narrative on the Colorado River, *A River No More: The Colorado River and the West*, and Ted Steinberg's analysis of the Merrimack River in *Nature Incorporated: Industrialization and the Waters of New England*, all written in the mid-1990s, represent only a fraction of the scores of monographs over the last thirty years that position rivers at the center of larger historical processes.

Steven Solomon notes in *Water: The Epic Struggle for Wealth, Power, and Civilization*, “water has always been man’s most indispensable natural resource, and one endowed with special, seemingly magical powers of physical transformation... every era has been shaped by its response to the great water challenge of its time.”<sup>7</sup> While the scale of the Deerfield River pales in comparison to the colossal watersheds that generally garner the attention of environmental historians, the history of the Deerfield River is no less powerful or complex (for example, the Columbia River which served as the basis for Richard’s White seminal work “The Organic Machine” is roughly 1,200 miles long and drains an area the size of Texas).

Additionally, the scale of the Deerfield River watershed offers an easily quantifiable area through which to study environmental and social change during the post-settlement era. Towns within the watershed have unusually well-preserved histories dating back to the seventeenth century, none more so than the town of Old Deerfield which boasts two historical societies and a museum.<sup>8</sup> Perhaps related to the region’s fascination with preserving its own history, the many fluctuations in the ecology and human populations within the watershed have been carefully documented by local journalists, anglers, and environmental agencies throughout the twentieth century, allowing for insightful observations into how the contest over the use of the Deerfield River altered the ecology of the river and the economy it supports. Further, the manageable scale of the Deerfield River watershed allows for greater access to and analysis of the local politics behind changing human usage of the river over the course of the twentieth century. Decisions to use the river as a source of logging, transportation, hydroelectric power, sewage removal, and

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<sup>7</sup> Steven Solomon, *Water: The Epic Struggle for Wealth, Power, and Civilization*, Reprint edition (New York: Harper Perennial, 2011), 34.

<sup>8</sup> Historic Deerfield and the Pioneer Valley Memorial Association have terrific archives of seventeenth and eighteenth century life within the town of Deerfield and surrounding towns. Historical societies in Rowe and Shelburne Falls, Massachusetts and Wilmington and Readsboro, Vermont proved especially valuable in this study.

eventually tourist-driven recreation often pitted local interests against regional progress, a battle that those living within the Deerfield River watershed rarely won.

There has been no comprehensive study of the Deerfield River's history. Bruce Lessels and Norman Sims offer a well-researched overview of the river's dynamics in the preface of their *Deerfield River Guidebook: Whitewater, Fishing, Kayaking*.<sup>9</sup> However, their research is carried out in the context of presenting a romanticized roadmap of the many recreational opportunities provided by the Deerfield River to the general public. The most useful study of hydropower along the Deerfield is "Ecology as Politics: Hydropower Development and Regulation on the Deerfield River, Massachusetts" by Robert Pirani, a graduate student at Hampshire College.<sup>10</sup> Completed in 1982 and kept in the Hampshire College library, Pirani's unpublished narrative captures the theme of human utilitarianism, but ignores the larger ecological implications of human development along the river as well as the concerted efforts of local organizations to mitigate the effects of industrialization on the Deerfield beginning in the late 1970s. Additionally, the timing of Pirani's study misses the decommissioning of the atomic energy facility in Rowe in 1992 and the birth of the whitewater tourism industry in the late 1980s. The Public Archaeology Laboratory report on the "History of Hydroelectric Development on the Connecticut and Deerfield Rivers" is useful in tracking the chronology of dam construction within the watershed, but it is mostly concerned with the architecture and efficiency of the various structures that harness the flow of the region's flowing water.<sup>11</sup>

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<sup>9</sup> Bruce Lessels, Norman Sims, and Jim Dowd, *The Deerfield River Guidebook: Whitewater, Fishing, Recreation* (New England Cartographics, Inc., 1993).

<sup>10</sup> Robert Pirani, "Ecology as Politics: Hydropower Development and Regulation on the Deerfield River, Massachusetts" (PhD diss., Hampshire College, 1982).

<sup>11</sup> Public Archaeology Laboratory, "History of Hydroelectric Development on the Connecticut and Deerfield Rivers," Cultural Resource Management Professionals, 2000.

The broader theme of water power in New England is covered in great detail by Theodore Steinberg in his 1991 book *Nature Incorporated: Industrialization and the Waters of New England*. Steinberg deals primarily with the major rivers in the eastern part of Massachusetts, particularly the battles of water rights on the Merrimack River that took place in Lowell and Lawrence during the nineteenth century. Christopher Manganiello offers a terrific essay on hydroelectric development in the American South prior to the New Deal in “Hitching the New South to ‘White Coal’: Water and Power, 1890-1933.”<sup>12</sup> As is illuminated by a closer study of the transformation of the Deerfield River during the first third of the twentieth century, Manganiello demonstrates the importance of manipulating rivers in the development of industry in the New South before federal dam projects began during the Great Depression. Similarly helpful in highlighting the importance of hydropower in relation to the national obsession with harnessing and distributing electricity is John T. Landry and Jeffrey L. Cruikshank’s *From the Rivers: The Origins and Growth of the New England Electric System*.<sup>13</sup> Sponsored by the New England Electric System, *From the Rivers* chronicles the origins and expansion of the New England power grid, a story in which the Deerfield River figures prominently for much of the twentieth century.

Beginning with the geological formation of the watershed, this study builds on the work of previous scholars by examining the interaction between natural and human history within the Deerfield River watershed. The story of this relationship is best divided into four distinct chapters, with each chapter marking important changes in the nature of the contact between humans and the energy of the Deerfield River. The river proved pivotal in the establishment of

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<sup>12</sup> Christopher J. Manganiello, “Hitching the New South to ‘White Coal’: Water and Power, 1890–1933,” *The Journal of Southern History* 78, no. 2 (2012): 255–92.

<sup>13</sup> John Landry and Jeffrey Cruikshank, *From the Rivers: The Origins and Growth of the New England Electric System* (East Greenwich, CT: Meridian Printing, 1996).

human communities in the region some 12,000 years ago and occupied an important place in the economic and cultural identities of native peoples up through contact with European settlers in the sixteenth century. As was the case throughout New England, English colonial expansion involved significant changes in region's hydrology, particularly in terms of utilizing the flow of the untamed Deerfield River to power mills and factories along the riverbanks. This first phase of human history within the Deerfield River watershed focused primarily on fishing and agricultural pursuits within the lower portion of the river valley.

Growing population and expansion into the upper, more rugged section of the watershed throughout the eighteenth and nineteenth centuries fueled the logging boom and the extensive rail network along the main stem of the Deerfield River that came with it. Building the railroad in such challenging terrain necessitated the construction of the Hoosac Tunnel, a project that in the mid-nineteenth century was the longest and most ambitious tunnel project in all of North America. This in turn dramatically altered the human demographics within the region, bringing thousands of people to areas along the Deerfield River that settlers considered previously to offer only marginal economic value.

Finally, the tremendous growth of the electrical industry nationwide beginning around 1900 fueled the most far-reaching changes to the Deerfield River watershed as various groups set out to harness every drop of flowing water in an effort to prevent the river's energy from going to waste as it flowed towards the sea. Not only did generating electricity from the Deerfield River necessitate the construction of numerous dams and reservoirs (including what was heralded as the largest earthen dam in the world) but it also resulted in the utility and economic gain derived from the river's flow being realized by people far beyond the sparsely populated communities of western Massachusetts and southern Vermont. This process overturned the

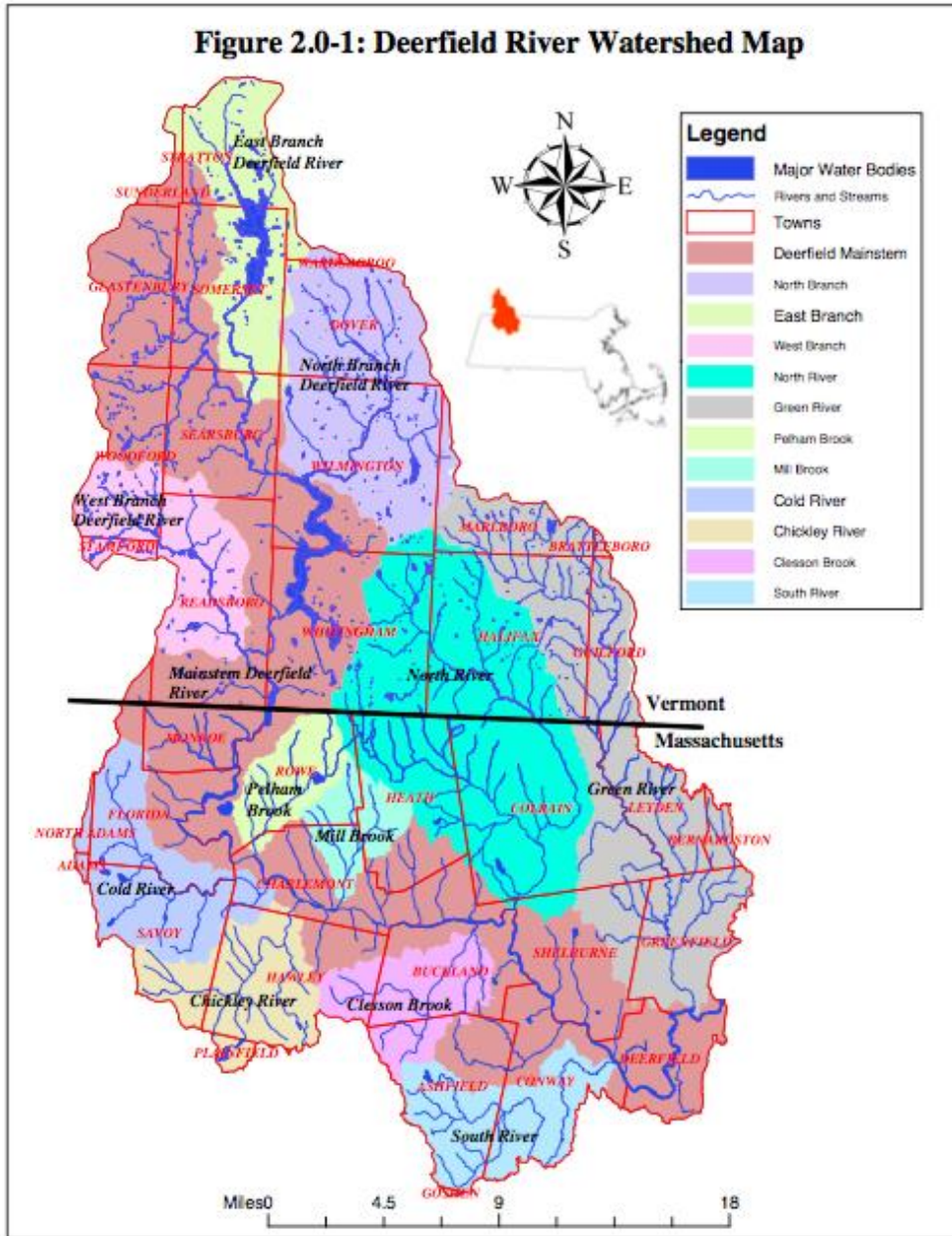
economic and ecological identity of the entire region, especially in areas that became sites of major dam projects such as Mountain Mills, Vermont and Shelburne Falls, Massachusetts.

Hydroelectric development during the twentieth century transformed the Deerfield River into “one of the most completely developed and thoroughly regulated streams in the field of water power production in the United States.”<sup>14</sup> This process brought regional and national attention to an area whose diverse economic identity had been determined in many ways by the relationship to moving water. While the various local economies had always reflected a specific interaction with the Deerfield River - tobacco farming in the lowlands section dependent on seasonal floods, cutlery manufacturing that relied on the steep drop of water through Shelburne Falls – those local economies had always existed in a way that shared the river’s flow and thus allowed for the economic diversity within the watershed. The hydroelectric development of the river from 1902-1974 essentially stole the river away from the local towns and industries, limiting the economic possibilities and hindering population growth within the watershed. Today, fewer people live within the over six hundred square miles drained by Deerfield River than did in 1950. Franklin County, through which much of the Deerfield River flows, ranks as one of the most economically depressed counties in the state. This unique reality is the product of the contest over control of the Deerfield River during the last two hundred years.

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<sup>14</sup> A. K. Botts, “Water Power Development on the Deerfield River,” *Economic Geography* 11, no. 2 (1935): 148–58, <https://doi.org/10.2307/140159>.

**Figure 2.0-1: Deerfield River Watershed Map**



Source: Executive Office Of Environmental Affairs, Deerfield River Watershed (2004)

## CHAPTER 1

### ORIGINS

*The best view, I think, is to stand on the verge of the upper and largest fall, and look down through the whole rapid descent of the river, as it hurries downward through its rock-worn path - the rocks seeming to have been hewn away, as when mortals make a road.*

-Nathaniel Hawthorne, "Trip to the Deerfield River" in *American Notebooks* (1838)

In the summer of 1835, a struggling writer named Nathaniel Hawthorne left his post at the weights and measurements offices of the Boston Custom House and set out on a month-long tour of western New England. After making a gradual ascent up the "long swells and ridges" of Massachusetts' highest peak near North Adams, Hawthorne descended towards the Deerfield River valley and was immediately struck by the contrast to the more forgiving peaks to the west. "Peaks on or two thousand feet high rash up on either bank of the river in ranges, thrusting up their shoulders side by side. They are almost precipitous, clothed in woods, through which the naked rock pushes itself forth to view...I have never driven through such romantic scenery, where there was such a variety and boldness of mountain shapes as this."<sup>15</sup>

The unique combination of river, rock, and forest that confronted Hawthorne in 1835 in the upper Deerfield River valley proved critical in determining the relationship between humans and the riverscape over time. The ground on which Hawthorne stood consists of what early-twentieth century historian and geologist A.K. Botts described as "old geological formations" – mostly ancient gneisses, granites, and phyllites.<sup>16</sup> According to local geologist Richard Little, the hard, V-shaped valleys of the upper Deerfield River were formed when "exotic terranes" collided

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<sup>15</sup> Nathaniel Hawthorne, *The American Notebooks*, vol. VIII, The Centenary Edition of the Works of Nathaniel Hawthorne: The American Notebooks Edited by Claude M. Simpson (United States: Ohio State University Press, 1972), 133.

<sup>16</sup> Botts, "Water Power Development on the Deerfield River," 149.

with North America roughly 500 million years ago.<sup>17</sup> Each collision resulted in the formation of mountains, and the compression and heat generated by these orogenic events transformed the landscape into metamorphic bedrock, composed mainly of gneiss, schist, and marble.<sup>18</sup> This upper section of the Deerfield River watershed is “generally characterized by a linear north-south uplift of resilient rocks belonging to the Archaen core and old and deeply metamorphosed sediments.”<sup>19</sup> As Dr. Little notes, “these [metamorphic rocky types] are typically very hard rocks, resistant to erosion, and the landscape records their unwillingness to yield to the forces of degradation by standing tall and steep.”<sup>20</sup>

As the river moves closer to its rendezvous with the Connecticut River near Greenfield, Massachusetts - a stretch of roughly ten miles that Hawthorne described as “deeper, broader, and more placid” - the riverscape changes dramatically. The impenetrable bedrock of the upper Deerfield River quickly gives way to softer sedimentary rock as the flowing water meanders through rich farmland in Conway and Deerfield, Massachusetts. The stark contrast between the two physiographic regions – the Berkshire Hills area of the upper Deerfield River Valley and the wide, alluvial floodplains of Connecticut River Lowlands - creates a unique riparian ecosystem that has shaped the evolving nature of human existence within the region for centuries.<sup>21</sup>

As recently as 13,000 years ago, the final ten miles of the Deerfield River lay beneath the turquoise surface of Lake Hitchcock, a massive body of water extending more than two hundred

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<sup>17</sup> Richard Little, “Deerfield River Valley Mysteries: How the Glacier Age and Other Geologic Events Shaped the Deerfield River Watershed,” accessed November 13, 2014, [http://www.academia.edu/8516462/Deerfield\\_River\\_Valley\\_Mysteries\\_How\\_the\\_Glacier](http://www.academia.edu/8516462/Deerfield_River_Valley_Mysteries_How_the_Glacier).

<sup>18</sup> Kristen Heitert, “Archaeological Reconnaissance Survey: Archaeological Resources Management Plan, Yankee Nuclear Power Station” (Boston, MA: PAL, November 2003), 11.

<sup>19</sup> Heitert, “Archaeological Reconnaissance Survey,” 11.

<sup>20</sup> Little, “Deerfield River Valley Mysteries.”

<sup>21</sup> Paul Friesz, “Geohydrology of Stratified Drift and Streamflow in the Deerfield River Basin, Northwestern Massachusetts” (U.S. Department of the Interior, 1996), 4.

miles from present-day Rocky Hill, Connecticut to Burke, Vermont.<sup>22</sup> This lake, the product of retreating glaciers that had once extended as far south as Long Island Sound, was largely responsible for the erosion of bedrock in what became the Connecticut Valley Lowlands, leaving behind the relatively flat landscape and fertile soil through which flows the southeastern reaches of the Deerfield River. The soft Triassic deposits in this area and the wide valley topography of the lower Deerfield create a slow-moving stream that contrasts starkly from the raging waters that descend through the more resistant rock and narrow canyons of its upper reaches.

The geological story of the upper Deerfield River, an area that sat just off the western shoreline of ancient Lake Hitchcock before it receded some ten thousand years ago, begins in the Paleozoic Era. Because of its drastic changes in elevation, the Deerfield River watershed also experiences significant regional disparities in climate. Like all of New England, weather fluctuates with the seasons, yet rainfall throughout the watershed “is heavier and more uniform than that of similar latitudes inland.”<sup>23</sup> What is interesting about the Deerfield River watershed, however, is the significant variation of precipitation within the watershed itself. The headwaters of the Deerfield River in southern Vermont experience on average 51.2 inches of rainfall per year, compared with only 39.4 inches at the mouth of the stream.<sup>24</sup> The disparity in both climate and topography in a stretch of only seventy miles drastically influenced how and when humans interacted with different areas of the Deerfield River over the last five centuries. The steep, densely forested upper region remained sparsely populated until the advent of a narrow gage railroad and the logging boom of the late-nineteenth century. Conversely, the wide alluvial

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<sup>22</sup> Richard Little, *Dinosaurs, Dunes, and Drifting Continents: The Geology of the Connecticut River Valley*, 3rd ed. (Earth View, 2003), 81.

<sup>23</sup> Botts, “Water Power Development on the Deerfield River,” 148.

<sup>24</sup> Botts, “Water Power Development on the Deerfield River,” 149.

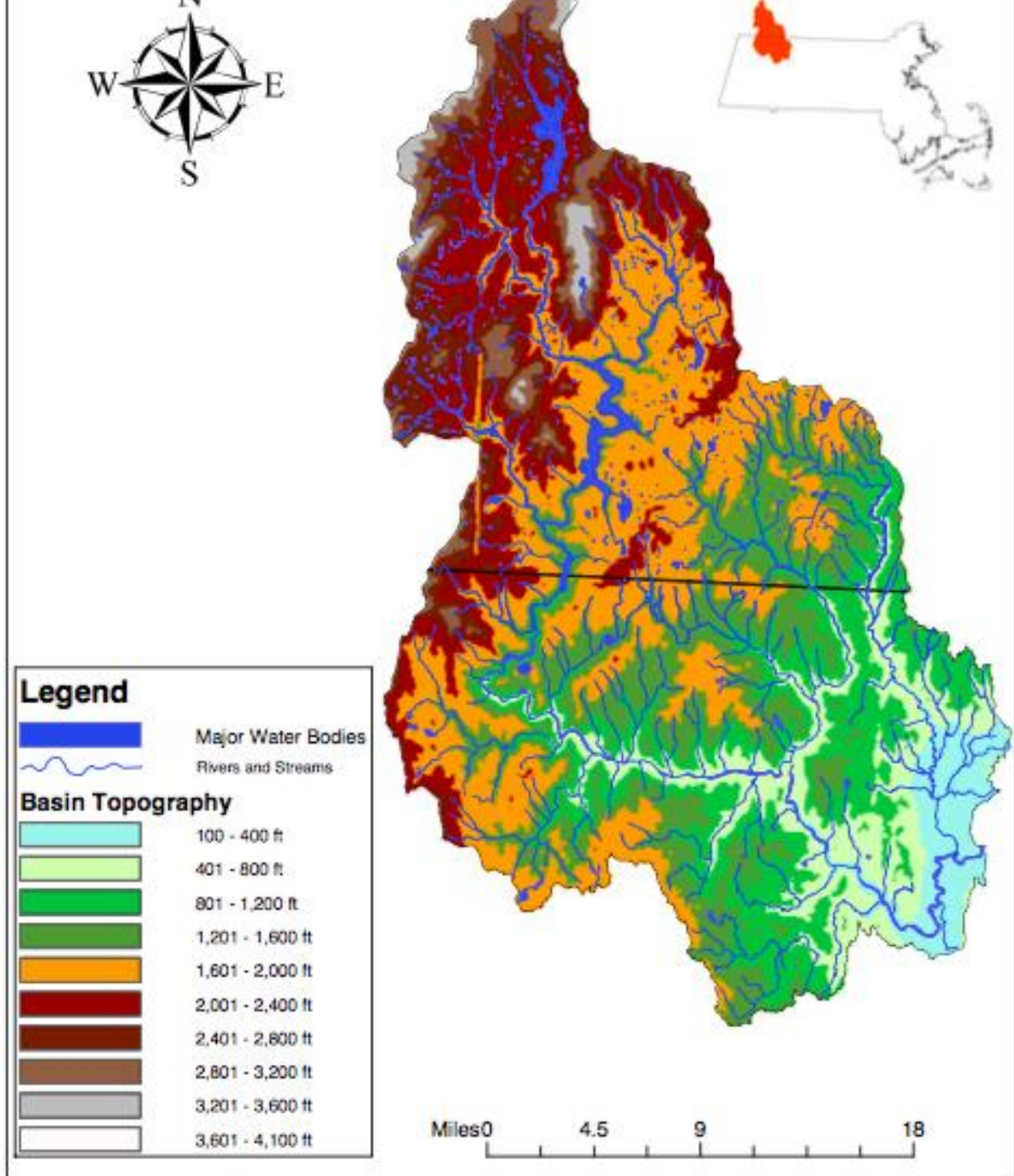
floodplains of the lower Deerfield River proved well-situated for human settlements dating back nearly 5,000 years.

The two distinct geological zones of the Deerfield River basin, ranging from the 3,000-foot peaks of the Green Mountains in southern Vermont to the wide, expansive lowland regions at an elevation of 120 feet above sea level, results in an amazingly powerful, albeit short, stretch of river. Within a length of only seventy miles, left to its own devices the Deerfield River naturally fluctuates between a maddening inferno of tumbling water to a placid stream. As one observer of the river noted in 1911, “there is probably no stream in the state in which the volume of water varies any more from freshet to drought. Frequently it is a raging torrent, spreading over meadows where that is possible, and when pent up in the hills, a seething volume against which nothing could stand.”<sup>25</sup> The unpredictable flow of the river caused by the unique combination of two geologically distinct zones, significant climatic variation, and the undulating topography of the majority of the region has for centuries both confounded and elated humans in their varied interactions with the Deerfield River ecosystem.

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<sup>25</sup> “Deerfield River to Be Developed: \$4,000,000 Project Already Well Under Way,” *The Hartford Courant*, December 12, 1911, Newsbank America's Historical Newspapers, 15.

**Figure 2.4-1: Topography in the Deerfield River Watershed.**



Source: Executive Office Of Environmental Affairs, Deerfield River Watershed (2004)

Human presence within the Deerfield River watershed began some 12,000 years ago, making the region one of the oldest sites of human habitation in New England. Dramatic changes in the environment between the Late Pleistocene and Early Holocene make estimating the Paleoindian population in the region challenging, yet archaeologists estimate that 7,500 years ago there was already a significant human population residing along the banks of the Deerfield River and its many smaller tributaries. Clovis-like fluted projectile points made of local quartzite have been unearthed throughout the region, mostly concentrated in the rich alluvial floodplains of the lowland region close to the present-day communities of Deerfield, Conway, and Shelburne Falls.

During the Late Archaic Period (5,000-3,000 B.P.), the most extensive prehistoric settlement within the vicinity of the Deerfield River existed within a five-mile segment along the western-most part of the river's central artery, known today as the "Great Bend" for the abrupt change in the river's usual southerly course. Extensive archaeological work in the region over the last twenty years offers a picture of a sophisticated and coherent settlement pattern in the area, with sites generally located on small terraces overlooking a series of rapids, suggesting that "fishing and fish processing, along with caching and quarrying lithic materials," were the primary human activities in the area.<sup>26</sup> The close proximity of prehistoric sites to the Deerfield River, and the concentration of these settlements near falls, rapids, and confluences of smaller tributaries suggests that early human populations interacted with the river primarily as a source of sustenance, relying on schools of anadromous fish such as sturgeon, shad, and smelt that returned to the river each year to spawn.<sup>27</sup>

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<sup>26</sup> Heitert, "Archaeological Reconnaissance Survey," 11.

<sup>27</sup> Heitert, "Archaeological Reconnaissance Survey," 14-17.

Despite an incomplete record, two clear patterns emerge from the archaeological studies of human habitation in the Deerfield River Valley prior to the arrival of Europeans in the mid-seventeenth century. First, an extensive population existed throughout the watershed dating back to the Late Archaic Period, with settlements clustered primarily within the lowland region. Second, the presence of communities in close proximity to the main stem of the river combined with findings of fishing weights and fish debris suggests that the powerful waters of the Deerfield River provided these early inhabitants with the calories necessary for survival.

By 1500, a regional core population had emerged within the Deerfield watershed, mostly residing either within the wide, fertile alluvial floodplains in the lowland region or along established fishing sites further upstream. The dominant group within the region was the Pocumtucks, a group described by Europeans as living in sedentary agricultural villages with a sole sachem as the principal leader of the community. Contact between Europeans and Pocumtucks began with the expansion of the fur trade in the mid-seventeenth century, an industry reliant on an intricate network of trails that connected the Deerfield River watershed with the rugged Berkshire Mountain range to the west.<sup>28</sup> European fur traders likely used the banks of the Deerfield River Valley as sites for seasonal hunting camps, linking the Pocumtucks and neighboring Mohawk peoples with the larger European trading hub in Springfield, some thirty miles south of the Pocumtuck's primary settlement in the lowland region near the confluence of the Deerfield and Connecticut Rivers.

There was no doubting who controlled the Deerfield River Valley when European settlers first arrived in the 1630s. "It was Indian land," writes historian Richard Melvoin, "used, maintained, improved, and shared – if not outright owned in the English sense – by the

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<sup>28</sup> Deerfield River Watershed Open Space Planning Committee, "Deerfield River Watershed Open Space and Recreation Plan 2004" (Greenfield, Massachusetts: Franklin Regional Council of Governments, 2004), 3-4.

Pocumtucks, one of the Algonkian Indian tribes of New England.”<sup>29</sup> In many ways the Pocumtucks were no different than neighboring tribes – they settled in small villages usually along waterways and found sustenance from the fertile ground and rivers around them. The heavy runs of anadromous fish in the spring brought the Pocumtucks and neighboring Indian peoples together at specific falls, and the relatively wide width of the Deerfield River as it flattened out near its confluence with the Connecticut made for an efficient source of transport and travel.<sup>30</sup> Although there remains considerable disagreement among historians concerning the size and strength of the Pocumtucks at the time of European arrival around 1600, most estimates put their population between 1,200 and 1,500. By 1660, however, the Pocumtucks were gone.

A series of events combined to spell doom for the Pocumtucks. Between 1633 and 1635, the Pocumtucks and their inland neighbors were ravaged by disease. Lacking resistance to pathogens brought from Europe, Indian populations throughout New England plummeted during the first third of the seventeenth century.<sup>31</sup> For the Pocumtucks, the results were grim, leaving by some estimation as few as fifty survivors.<sup>32</sup> What ultimately decimated the Pocumtucks in the mid-seventeenth century, however, was not an increasingly aggressive English population nor disease, but rather war with the neighboring Mohawks. After decades of sporadic conflict and tenuous alliances, in the summer of 1664 the Mohawks attacked the Pocumtucks from the west, utilizing the extensive trails along the banks of the Deerfield River, a route that would later become known as the “Mohawk Trail.” Although the Pocumtucks had clearly been impacted by

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<sup>29</sup> Richard I. Melvoin, *New England Outpost: War and Society in Colonial Deerfield* (W. W. Norton & Company, 1992), 28.

<sup>30</sup> Catherine Reid, “River of Change,” *Historic Deerfield Magazine*, Spring 2003, 1.

<sup>31</sup> Historian William Cronon estimates that in the first seventy-five years of the seventeenth century, the total number of Indians in New England dropped from over 70,000 to fewer than 12,000. See William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983), 89.

<sup>32</sup> Melvoin, *New England Outpost*, 33.

disease and the increasingly frequent presence of English settlers prior to 1664, Melvoin argues that “ultimately it was other Indians who destroyed them.”<sup>33</sup> Thus, when a group of English explorers from Dedham, Massachusetts scaled the five hundred foot ridge that separates the Connecticut River from the lowlands of the Deerfield River several years later, they saw in front of them a valley framed by steep green peaks to the north and west, into which flowed a swift-flowing river that fed large swatches of arable farmland. In a story reminiscent of the Puritans first arrival in Massachusetts Bay in 1629, the open valley that lay before them, seemingly devoid of human habitation, only strengthened the resolve of these early settlers to subdue and improve the new environment. In 1673, the small settlement erected by the English on the very soil where the Mohawks eradicated the Pocumtucks less than a decade earlier became the first officially incorporated European settlement within the Deerfield River Valley. Perhaps recognizing their good fortune, the English settlers named the frontier settlement “Pocumtuck” after the land’s former inhabitants.

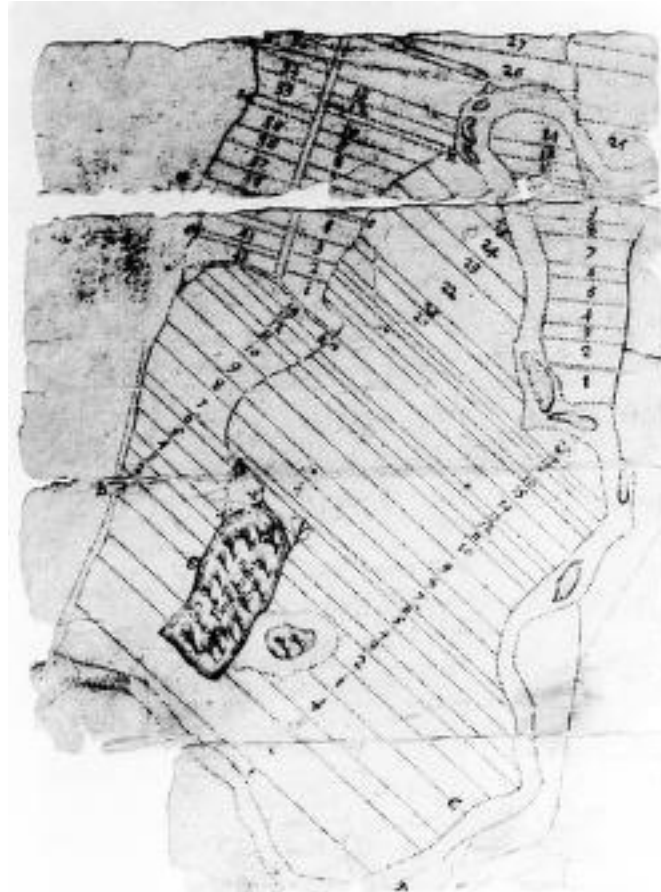
Despite close economic ties to the larger English settlements of Northampton and Springfield further down the Connecticut River, the village of Pocumtuck remained an isolated community throughout the late seventeenth century. The fifty miles of river to the west of Pocumtuck, an area that makes up the vast majority of the Deerfield River watershed, remained firmly in the hands of various groups of Mohawk nation. Only two years after the English established Pocumtuck, hundreds of Wampanoags, Nipmucks, and the remaining Pocumtuck Indians attacked the English at a small, muddy offshoot of the Deerfield River. In what came to be known as the “Bloody Brook Massacre,” more than sixty townsmen died, forcing the English to abandon their isolated outpost in the Deerfield River Valley.<sup>34</sup> Attracted by the agricultural

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<sup>33</sup> Melvoin, *New England Outpost*, 47.

<sup>34</sup> Melvoin, *New England Outpost*, 53.

possibilities provided by the nutrient-rich soil on either side of the Deerfield River as it flattens out before joining with the Connecticut, the English returned in 1680, reorganized the town and changed the name to Deerfield.



*Lot Survey of Deerfield, Massachusetts circa 1686*

The Deerfield River figured prominently in the establishment of English settlement in the lowland region of the watershed. Land was allocated in a series of strips, thus offering relatively equal access to flowing water as it moved past the outpost community. Seasonal flooding deposited valuable silt on farmland adjacent to the riverbed, providing the economic incentive that lured people away from the more established and secure towns in the eastern part of Massachusetts. Despite the opportunity to own land in one of the most fertile areas in New England, the dangers of living in a frontier town deterred many would-be settlers in the region,

and the English population along the Deerfield River remained low throughout the first half of the eighteenth century.<sup>35</sup>

Given the violence that characterized the first thirty years of English presence in the Deerfield River lowlands (including the infamous “Deerfield Massacre” of 1704), it is not surprising that the first expeditions into the western reaches of the river valley were military in nature. In 1744, the Massachusetts colonial government sponsored the construction of Fort Pelham on the banks of the Deerfield River some twenty miles to the west of the town of Deerfield, within the present boundaries of Rowe. Fort Pelham, one of more than a dozen forts built in western Massachusetts and southern Vermont designed to check French and Indian attacks on the growing agricultural and trade centers within the lower Deerfield and Connecticut River Valleys, stood for only ten years before it was abandoned due to the high costs of maintaining a garrison in terrain considered remote and unproductive.<sup>36</sup> Save for a few English outposts clustered alongside the river as it makes its final meander towards the Connecticut River, control of the river lay firmly in the hands of the Mohawks, Mahicans, and Pocumtucks throughout the seventeenth and much of the eighteenth centuries.

Following the initial settlement of Deerfield in the late-seventeenth century, it would take nearly a hundred years for the English settlers to establish permanence in Deerfield and begin expanding into the western and upland regions of the Deerfield River watershed. The biggest deterrent to European expansion upriver was not simply the presence of Indian populations but rather the steep topography and erratic flow of the Deerfield River and its many tributaries. It was not until 1760, almost a century after the English first settled on the former lands of the

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<sup>35</sup> “Turns of the Centuries - Lot Survey of Deerfield,” Pioneer Valley Memorial Association, accessed September 27, 2018, <http://memorialhall.mass.edu/turns/view.jsp?itemid=5711&subthemeid=6>.

<sup>36</sup> Heitert, “Archaeological Reconnaissance Survey,” 20.

Pocumtucks, that settlers began migrating to the western reaches of the town's original eight-thousand-acre land grant. The area, which would be named Conway after a member of the British ministry, was not officially incorporated as a town until 1786, a testament to the challenges facing settlement beyond the wide alluvial floodplains of the lower Deerfield River.<sup>37</sup> By 1800, the English had laid out only fifteen small settlements within the nearly seven hundred square miles of the Deerfield River watershed. These communities, in many ways isolated and distinct from one another in their development, were linked together through a network of trails that hugged the banks of the swift-flowing Deerfield River and its many tributaries, creating the foundation for a transportation artery that would come to revolutionize the economic and cultural landscape of western Massachusetts and southern Vermont beginning in the mid-nineteenth century.

The Deerfield River proved critical in determining the expansion of agriculture and manufacturing in the newly settled towns of Conway, Shelburne Falls, Charlemont, and Colrain between 1750 and 1800. Rapid population growth in Deerfield and the surrounding towns prompted scores of settlers – many of them landless sons of the old elite – to strike out on their own for the fledgling settlements scattered in the highland region.<sup>38</sup> The rugged topography and rocky soil of the area limited large-scale agricultural pursuits, and what arable lands there were tended to be used primarily for grazing livestock, especially sheep. Thus, while the population in the upland areas lagged behind the growing agricultural centers of Deerfield and Greenfield in the lower floodplains, by the turn of the century more than a dozen settlements had sprung up along the banks of the Deerfield River and its major tributaries. The growing population and

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<sup>37</sup> J. Ritchie Garrison, *Landscape and Material Life in Franklin County Massachusetts, 1770-1860* (Knoxville: University of Tennessee Press, 1991), 23.

<sup>38</sup> Garrison, *Landscape and Material Life in Franklin County Massachusetts*, 27.

productivity of towns in the highland region – most notably the rapidly expanding wool industry in Conway and Shelburne Falls - spawned the construction of a major river marketing center at Cheapside in 1795, just below where the Green River joins the Deerfield River and less than a mile before the river’s confluence with the mighty Connecticut River. Although population within the Deerfield watershed remained concentrated in the lowland communities of Greenfield and Deerfield, the last half of the eighteenth century marked an important change in the economic identity of the region. The primarily agricultural towns in the lowland region became increasingly reliant on raw materials and manufactured goods transported down from the upper stretches of the river valley, shifting their economic interests away from the growing markets of Springfield and Northampton to the South and instead linking them ever more closely with the communities along the Deerfield River to the west.

Less than twenty years after settlers established the first English community to the west of Deerfield in Conway, more than 5,500 people resided in the upland towns of Buckland, Colrain, Shelburne Falls, Ashfield, Charlemont, and Conway.<sup>39</sup> Given the significant topographical differences between settlements, it is hardly surprising that farming practices and community structures varied across the region. In towns further to the west, such as Heath and Rowe, where the terrain becomes more rugged and the soil thinner, farming proved essentially untenable. Temperatures fluctuated dramatically in these upland areas, often limiting the number of frost-free days to fewer than 100.<sup>40</sup> As a result, compared to the older towns within the rich alluvial floodplains of the lowland area, the more remote upland towns remained spread out and sparsely populated. Whereas agriculture persisted as the economic foundation of the lowland

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<sup>39</sup> Cristina Mingori and Heather King, “The Deerfield River Watershed: Landscape, Lifeform, and Human Impact,” 1994.

<sup>40</sup> Garrison, *Landscape and Material Life in Franklin County Massachusetts*, 13.

towns on the eastern portion of the Deerfield River watershed, in the upland areas families increasingly focused their production on a landscape of river, forest, and hilly pasture, using the river as the central means for transporting goods to the larger markets of the Connecticut River Valley.



*Photograph of The Old Mill Wheel in Charlemont, Massachusetts. The first grist mill in Charlemont was built in 1763, followed soon after by an adjacent sawmill.*

The cottage industries that developed in these upland settlements necessitated the erection of mills and shipping centers along the banks of the Deerfield River and its smaller tributaries. Enterprising New Englanders had long taken advantage of the power provided by region's many rivers, and it did not take long for the practice to take hold in areas of natural fall within the Deerfield River Valley. As William Cronon argues, "New England mill operators adopted water-power technology well in advance of their English counterparts," thus tying production in the region to the seasonal availability of water.<sup>41</sup> In 1800, Ruel Thayer built the first dam and power canal on the Deerfield River in Charlemont to run a sawmill, foundry, and

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<sup>41</sup> Cronon, *Changes in the Land*, 125-126.

clothing works. Thayer's enterprise proved modestly profitable, paving the way for more ambitious and ecologically invasive development that would unfold over the next century.

Towns situated along the Deerfield River developed an array of craft and cottage industries over the first half of the nineteenth century, the most notable of which was the niche industry of box-making centered in Colrain, Shelburne Falls, and Buckland.<sup>42</sup>

The success of these craft industries in upland communities came with ecological costs. Rising population necessitated clearing trees from the steep hills ascending from either side of the Deerfield River, dramatically altering the soil composition and causing more voluminous and unpredictable runoff during heavy rain and spring thaws.<sup>43</sup> The industrious farmers who transformed dense, rugged forest into arable landscapes in the early nineteenth century were thus unwittingly jeopardizing the safety and economic viability of scores of wooden dams and mills that dotted the steepest stretches of the Deerfield River. Summer rainstorms increasingly caused flash floods that astounded even the most seasoned residents. In June of 1824, the *Hartford Courant* reported that "a tremendous storm of thunder and lightning and rain commenced...in Vermont where the Deerfield and several of its branches originate." Absent the forest and vegetation that previously stored water and held soil firmly in place, the storm caused a massive deluge to race down the Deerfield River Valley, causing "a rise of water so rapid and extraordinary" to a degree never witnessed before. The 1824 flood swept away mills and other buildings valued at over \$2,000, a considerable sum in the early nineteenth century.<sup>44</sup>

Increasingly frequent and severe flooding did little to dampen the spirit of enterprise that propelled the region's economic growth during the first half of the nineteenth century, and by

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<sup>42</sup> Heitert, "Archaeological Reconnaissance Survey," 22.

<sup>43</sup> Garrison, *Landscape and Material Life in Franklin County Massachusetts*, 25.

<sup>44</sup> "Article 3 -- No Title," *Connecticut Courant*, June 22, 1824. Newsbank America's Historical Newspapers.

1870 more than 110 water-powered mills existed along the banks of the Deerfield. Of these, all but ten were erected in the upland communities, a testament to the sheer power of the Deerfield's water as it descends rapidly from its headwaters in southern Vermont before flattening out as it reaches the wide, expansive meadows to the west of the town of Deerfield.<sup>45</sup>

The topographical diversity within the Deerfield River watershed determined the ways in which people interacted with the river and the character of settlements that developed during the eighteenth and nineteenth centuries. While agriculture continued to dominate the regional economy, by the 1850's small-scale dams and water-powered mills increasingly dotted the banks of the main stem of the Deerfield River, developments that were dependent on the wild fluctuations in the river's natural flow. Seasonal flooding, unpredictable water levels, and inconsistent flow were the defining characteristics of the river throughout this period, limiting the growth of industries dependent on a steady and reliable water source. However, this period marked an important change in the demographics within the Deerfield watershed as Native American populations declined and white settlements expanded beyond the lowland meadows. Human interaction with the river during this time period – fishing, small-scale water-powered mills, and agriculture – was not limited to a single group and, aside from targeted deforestation around the growing towns of Charlemont and Shelburne Falls, this relationship with the river incited minimal change in the geomorphology and biology of the watershed.

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<sup>45</sup> Mingori and King, "The Deerfield River Watershed: Landscape, Lifeform, and Human Impact."

## CHAPTER II

### KNIVES, TRAINS, AND LOGS

*There is just as much chance that Noah's Ark will pass through town as there is that a train of cars will ever come within hearing distance of Wilmington."*

- Resident of Wilmington, Vermont in 1887

In addition to the deforestation in the immediate surroundings of the Deerfield River landscape, the expansion of permanent settlements in the upper Deerfield River watershed paved the way for important changes in the riparian environment through three distinct yet closely related processes. The first of these began with the construction of the Lamson and Goodnow cutlery plant in Shelburne Falls in 1837, a factory that at its peak in the 1880s would be the largest employer in western Massachusetts.<sup>46</sup> Second, the introduction of a railroad network that penetrated nearly every corner of the Deerfield River watershed (including a five-mile tunnel underneath Hoosac Mountain) provided access to and changed the landscape of areas that had remained isolated prior to 1900. Finally, the growth of the paper industry within the river's upper reaches caused extensive deforestation in southern Vermont while initiating the process of harnessing the Deerfield River's notoriously unwieldy flow. These three processes not only changed the way people envisioned the riverscape around them, but they also reconfigured the riparian environment in a way that made extensive hydroelectric development possible beginning in the early twentieth century. Further, while no single industry came to dominate the river during the late nineteenth century, the economic interests of cutlery manufacturers, railroad developers, and loggers combined to manipulate the river into an aquatic element that was more accessible and manageable for future development.

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<sup>46</sup> "Lamson & Goodnow Mfg. Co., Shelburne Falls," *Museum of Our Industrial Heritage* (blog), February 9, 2014, <http://industrialhistory.org/histories/lamson-goodnow-mfg-co-shelburne-falls/>.

Following the blueprint laid down a decade earlier by the Boston Associates in their harnessing of the Merrimack River to power their growing textile industry, two ambitious entrepreneurs named Silas Lamson and Abel Goodnow set out capture the power of the Deerfield River on a grand scale. To do so, in 1837 Lamson and Goodnow erected a crude wooden dam across the river in Shelburne Falls, raising the water level more than twenty feet and creating what was at the time the largest impoundment of water within the entire Deerfield River watershed. The reservoir created by the Lamson and Goodnow dam was capable of generating more than 300 horsepower of available energy as it tumbled over and down the wooden barrier.<sup>47</sup>



*Map of Shelburne Falls, Massachusetts in 1877. The Lamson and Goodnow Cutlery Factory is located just below the falls.*

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<sup>47</sup> "Lamson & Goodnow Mfg. Co., Shelburne Falls,"

With available power secured, Lamson and Goodnow next faced the question of labor. The relatively small population of Shelburne Falls, and the still smaller fraction of those people who had any experience manufacturing or marketing cutlery, forced the two entrepreneurs to import workers from abroad, many coming from the major European cutlery centers of Frankfurt and London.<sup>48</sup> Thanks in no small part to the power afforded by the heightened fall of the Deerfield River, the cutlery business boomed throughout the nineteenth century, marking an important change in what had previously been a predominately agricultural economy. In the 1880 census, 271 residents of Shelburne Falls listed cutlery as their occupation, making it by far the largest employer in the region. Many of the immigrant workers who found their way to the factory in Shelburne Falls brought their families with them – of the 271 employees of the Lamson and Goodnow Company in 1880, 138 were living in households where other family members were employed in the cutlery industry.<sup>49</sup> The prosperity of the Lamson and Goodnow cutlery factory proved pivotal to the growth of the town of Shelburne Falls, accounting for as much as ninety-four percent of the value of the entire town's manufactured goods between 1875 and 1900.<sup>50</sup> Thanks in no small part to the ability of Lamson and Goodnow to harness the power of the Deerfield River, by 1900 Shelburne Falls had surpassed the lowland communities of Deerfield and Greenfield as the drivers of economic growth in the region.

The extraordinary industrial growth taking in place in Shelburne Falls in the middle of the nineteenth century necessitated improvements in the region's transportation network. Roads and rivers were generally adequate to handle the demands of small-scale, seasonal agricultural

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<sup>48</sup> "Lamson & Goodnow Mfg. Co., Shelburne Falls."

<sup>49</sup> Michael S. Nassaney and Marjorie R. Abel, "THE POLITICAL AND SOCIAL CONTEXTS OF CUTLERY PRODUCTION IN THE CONNECTICUT VALLEY," *Dialectical Anthropology* 18, no. 3/4 (1993): 266.

<sup>50</sup> Heitert, "Archaeological Reconnaissance Survey," 23.

trade, but the ever-increasing amount of finished goods coming from Shelburne Falls required a fairly even flow of raw materials and finished goods throughout the entire year.<sup>51</sup> As a result, public agitation mounted for a railroad that would connect the upper Deerfield River Valley with larger markets throughout New England and eastern New York. What made the Deerfield River ideal for industry – its power and drop – made water-based transportation impossible. Seasonal fluctuations in flow compounded the inability of the river itself to serve the transportation needs of the growing industrial sector.

The appeals from businessmen in Shelburne Falls and Greenfield were eventually met by Alvah Crocker, a paper manufacturer from nearby Fitchburg, Massachusetts who proposed using the Deerfield River Valley as an artery for a rail line that would bypass the Berkshire Mountain Range, thus connecting Greenfield and Shelburne Falls with the larger markets of North Adams, Massachusetts and Troy, New York. Crocker, an incorrigible optimist who would later represent Massachusetts in the United States Congress, petitioned the state legislature for approval of a route along the steep banks of the Deerfield River, buttressing his proposal with an emphasis on the untapped industrial potential throughout the Deerfield River watershed. In his message to the state legislature in 1848, Crocker claimed that “the Valley of the Deerfield affords sites for factories at intervals of half a mile, and Shelburne Falls alone furnishes waterpower sufficient for ten or twelve manufacturing establishments of the largest class.”<sup>52</sup>

As Crocker envisioned it, the Troy and Greenfield Railroad would begin in Greenfield and run west along the banks of the Deerfield River until the river’s course shifted to the north at the base of the Hoosac Mountain. Rather than circumvent the nearly 1,500-foot mountain as was

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<sup>51</sup> G.A Fraker, Karinne Heise, and Tom Heise, *The Deerfield Reader* (New York: American Heritage Custom Publishing Group, 1996), 282.

<sup>52</sup> Edward C. Kirkland, “The Hoosac Tunnel Route: The Great Bore,” *The New England Quarterly* 20, no. 1 (1947): 103, <https://doi.org/10.2307/361732>.

originally his plan, Crocker simply suggested eliminating the obstacle. “The Hoosac Mountain is believed to be the only barrier between Boston and the Pacific,” Crocker proclaimed to the Massachusetts General Court in 1849. “To say it will not be demolished, is to say that the feudal, time-worn institutions of Europe, develop and mature the will of man *more fully* than the free air and more free institutions of our own youthful republic.”<sup>53</sup> Crocker’s patriotic appeal apparently convinced state legislators, and construction of the Troy and Greenfield Railroad began shortly thereafter, despite considerable uncertainty over the feasibility and cost of drilling a tunnel of unprecedented length.

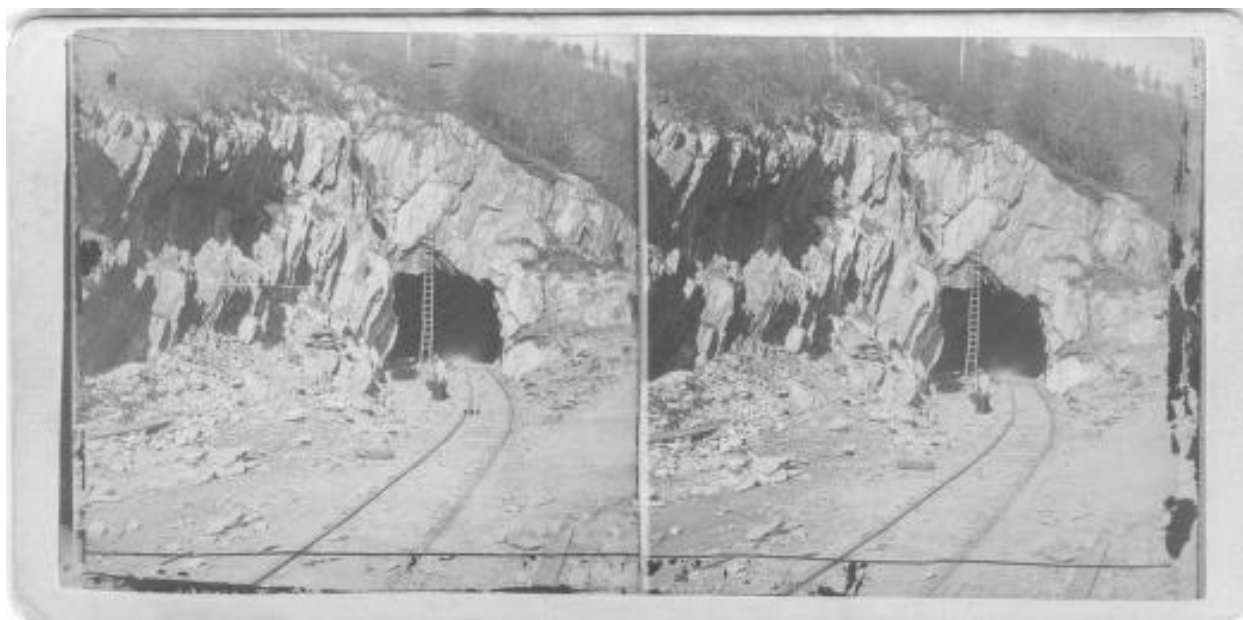
The tunnel through the base of Hoosac Mountain was to be the longest and most ambitious engineering projects of its day.<sup>54</sup> The fact that the Deerfield River was chosen by the Massachusetts State Legislature as the site for what was, at the time, the second longest tunnel project in the world is a testament to the untapped industrial potential of the river itself, for the tunnel and the railroad it served would rely heavily on the future growth of industry throughout the region. Originally planned as a seven-year, \$4.5 million project, drilling a tunnel through Hoosac Mountain would ultimately take twenty-four years at a cost of \$20 million. Nearly two hundred workers would lose their lives in what came to be known to impatient locals as “The Great Bore.”<sup>55</sup>

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<sup>53</sup> Kirkland, “The Hoosac Tunnel Route,” 95.

<sup>54</sup> Tyler Resch, “The Coming of the Train: The Hoosac Tunnel and Wilmington and Deerfield River Railroads and the Industries They Served, Volume I, 1870 to 1910,” *Vermont History* 77, no. 2 (Summer/Fall 2009): 1-7.

<sup>55</sup> Important works on the politics behind and construction of the Hoosac Tunnel are Carl Bryson, *A Pinprick of Light: The Troy & Greenfield Railroad & Its Hoosac Tunnel* (New England Pr. Inc., 1995); Brian Donelson, *The Coming of the Train: The Hoosac Tunnel & Wilmington and Deerfield River Railroads and the Industries They Served*, vols. I, II (Rowe, MA: NJD Publishing, 2008); Bernard R. Carman, *Hoot Toot & Whistle: The Story of the Hoosac Tunnel & Wilmington RR*, 3rd Printing edition (Stephen Greene Press, 1963); Edward C. Kirkland, “The Hoosac Tunnel Route: The Great Bore,” *The New England Quarterly* 20, no. 1 (1947)



*Photograph of the eastern portal of the Hoosac Tunnel, 1890*

Well before the Hoosac Tunnel was even close to completion, the Troy and Greenfield Railroad Company was already laying tracks westward along the banks of the Deerfield River, beginning in Greenfield and passing through Deerfield, Shelburne Falls, and Charlemont on their way to the eastern base of Hoosac Mountain. Thus, even before the Hoosac Tunnel opened in 1873, Greenfield became an important transportation hub in western Massachusetts, linking the growing industrial community of Shelburne Falls with the north-south transportation artery along the Connecticut River. Between 1840 and 1860, Greenfield's population nearly doubled from 1,800 to 3,200, with much of that increase happened in the 1850s.<sup>56</sup> The town's emergence as the transportation hub connecting the economies of the Deerfield River and Connecticut River Valleys was further enhanced by the long-delayed opening of the Hoosac Tunnel in 1873.

Drilling the longest tunnel in North America and the constructing the extensive railroad network that accompanied it impacted the ecology of the Deerfield River watershed in a number

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<sup>56</sup> Fraker, Heise, and Heise, *The Deerfield Reader*, 283.

of important ways. Construction crews working on the Hoosac Tunnel utilized the Deerfield River as a dumping ground for thousands of tons of rock and sediment removed from the base of Hoosac Mountain. This debris created a rocky peninsula that narrowed the river's channel and shifted the river's course, flooding acres of farmland on the east side of the river. The drilling process also eventually necessitated drawing water out of the river and pumping it up towards the tunnel site. In 1868, after more than a decade of painfully slow progress using outdated star drills and sledge hammers (the workers averaged 40-60 feet per month during the first decade of construction), the Massachusetts Legislature contracted the Canadian engineering firm of F. and W. Shanly Company to finish the job by 1874. The Shanly Company began by importing three new air-powered drills developed by Charles Burleigh of Fitchburg Massachusetts. To compress the air for these new drills, the engineers erected a dam across the Deerfield River a mile upstream from the tunnel site, water from which would be carried through a canal directly to the east portal construction site. Although the upstream wooden dam used to divert water towards the machinery buildings at the eastern portal was destroyed in a flood not long after the tunnel was finished, the altered flow and course of the river would never be the same.<sup>57</sup>

Additionally, piercing Hoosac Mountain with the longest tunnel on the continent brought national attention and thousands of workers to an area along the Deerfield River that had remained largely unpopulated over the past five hundred years. Traffic along the existing portion of the Troy and Greenfield Railroad increased significantly during the twenty-five years of construction as supplies and workers were shuttled between the rapidly growing towns of Shelburne Falls, Greenfield, and Charlemont and the eastern portal of the tunnel. Greenfield, dubbed an "embryo city" by the *Boston Courier* when plans for the railroad through the

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<sup>57</sup> Resch, "The Coming of the Train," 166.

Deerfield watershed were first unveiled, quickly became a gateway city into the rapidly changing interior of the river valley.<sup>58</sup> The company town of Hoosac Station, complete with hotels, company housing, blacksmith shops, and a general store, grew to accommodate the increasing number of laborers and engineers who worked on the project.<sup>59</sup> In 1870, more than 1,300 people called Hoosac Station home, making it the most populous community within the upper portion of the Deerfield River watershed. Rail workers spread out to surrounding communities as well, more than tripling the population of the nearby towns of Rowe and Monroe, Massachusetts between 1840 and 1880.<sup>60</sup>

In 1875, hundreds of dignitaries, local businessmen, politicians, and reporters gathered in Hoosac Station to witness the first passenger and freight trains pass through the Hoosac Tunnel. According to historian Edward Kirkland, “The Great Bore, so ancient a Massachusetts institution that many believed that the Hoosac Tunnel had come over with the *Mayflower*, was at last an accomplished fact.”<sup>61</sup> Riders and onlookers alike marveled at the accomplishment, praising the project for providing an all-important rail link between the two largest river valleys in the northeast – the Connecticut and the Hudson.<sup>62</sup> In addition to drawing thousands of people to one of the most remote areas in the state, building the Hoosac Tunnel cemented the economic bond between the western reaches of the Deerfield River and the more established eastern agricultural and industrial centers of Greenfield, Deerfield, and Shelburne Falls.

However, the east-west portal through the Berkshire Mountains did far more than simply connect the growing industrial cities at either terminus of the Troy and Greenfield Railroad. With

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<sup>58</sup> “Manufactures,” *Boston Courier*, February 3, 1845, Newsbank America's Historical Newspapers.

<sup>59</sup> Resch, “The Coming of the Train,” 166.

<sup>60</sup> Brian Donelson, *The Coming of the Train: The Hoosac Tunnel & Wilmington and Deerfield River Railroads and the Industries They Served*, vols. I (Rowe, MA: NJD Publishing, 2008), I-18.

<sup>61</sup> Kirkland, “The Hoosac Tunnel Route,” 109.

<sup>62</sup> Donelson, *The Coming of the Train*, I-18.

the Hoosac Tunnel creating a major east-west thoroughfare along the banks of the lower Deerfield River, suddenly the heavily wooded mountains and steep fall of the upper Deerfield River in southern Vermont became accessible. Had engineers chosen a different section of mountain to tunnel through, or had the incorrigible Alvah Crocker not insisted on going *through* the mountains rather than shifting the course of the railroad *around* the mountains to the north or south, the economic transformation of the upper Deerfield River Valley would have unfolded much differently. Once too remote to be commercially viable, the large strands of virgin spruce, hemlock, fir, maple, beech, and birch of the upper Deerfield stood only a dozen miles from a major segment of New England's rapidly expanding rail network. The combination of river, tunnel, and rails would alter the economic identity of the region in many important ways.

Prior to the opening of the Hoosac Tunnel, the mountains surrounding the upper Deerfield River were isolated from the economic mainstream. Only five thousand people resided in the 340 square miles of the Deerfield River Valley north of the Hoosac Tunnel's eastern terminus, a scattering of family farms and various small-scale mills that comprised the towns of Monroe and Rowe in Massachusetts, and Glastenbury, Readsboro, Searsburg, Somerset, Stratton, Whitingham, and Wilmington in southern Vermont. Few roads penetrated the heavily wooded and mountainous terrain, and no rail line offered connection with larger economic centers nearby. The only commercially produced good in the region for much of the eighteenth century was lime. However by 1890 no commercially viable mineral deposits had been found near the river itself and with no efficient means of transporting the finished goods to market, the region's brief mining boom came crashing to an end.<sup>63</sup>

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<sup>63</sup> Donelson, *The Coming of the Train*, II-10.

The demise of the mining industry in southern Vermont shifted economic attention to the landscape's two most prominent features – wood and water. Various small-scale logging enterprises had existed throughout the upper Deerfield River Valley for decades, but with no way to efficiently transport logs to major shipping hubs, the lumber produced was used primarily for the construction of various buildings within local communities. Transportation of logs along the river proved unpredictable at best, as severe fluctuations in weather and water flow made for difficult and sometimes deadly work. Logging in the region was usually done during the winter, as the snow and ice covering the ground made transporting logs from remote forests towards rivers and holding areas more efficient.<sup>64</sup> Loggers built crude wooden dams on many of the Deerfield's smaller tributaries, creating storage ponds that would hold hundreds of logs awaiting the spring thaw. When they opened the dam gates, logs rushed down the suddenly swift-flowing tributary towards their eventual rendezvous with the wider main stem of the Deerfield River. However, as was the case further downriver at the Lamson and Goodnow Factory, the inconsistent flow of the Deerfield created consistent challenges for loggers in the area. Marsh Underwood, who logged throughout New England in the late nineteenth century, claimed that the Deerfield was the toughest river he ever drove.<sup>65</sup>

The opening of the Hoosac Tunnel in 1875 and a huge injection of capital from a family of paper barons from Holyoke, Massachusetts transformed the isolated, small-scale logging industry in southern Vermont by connecting it with the emerging markets along the Deerfield and Connecticut Rivers. Four brothers - Daniel, John, James, and Moses Newton - grew up along the banks of the Deerfield River in Greenfield, just above the river's unceremonious rendezvous with the mighty Connecticut River. As boys they had explored the upper reaches of the Deerfield

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<sup>64</sup> Donelson, *The Coming of the Train*, IV-4.

<sup>65</sup> Donelson, *The Coming of the Train*, IV-17.

River Valley, hunting and fishing extensively in southern Vermont before their business interests led them to paper manufacturing further south in Holyoke. Following the Civil War, the Newton brothers built one of the largest pulp mills and paper plants in New England, contributing to Holyoke's growing reputation as the center of paper manufacturing in the Northeast.<sup>66</sup>

Although the location of the Newton brothers' pulp mill in Holyoke furnished plenty of water, extensive logging in the area had already denuded much of the surrounding forests, leading to sporadic shortages of available timber. Thus, up until the late-1870s, the Newtons competed with other paper mills for logs sent down the Connecticut River from northern Vermont and New Hampshire. Relying on this sole source of raw materials often meant that logs arrived in huge droves but once a year, making steady production of paper products all but impossible. Although their investments in Holyoke proved profitable, the Newtons realized that in order to expand their industry they needed an alternate source of timber to supply their paper mills. Remembering trips to the upper Deerfield River Valley during their early days spent in Greenfield, in 1875 the Newtons began surveying the untouched timber stocks of the upper Deerfield River watershed.

The hills surrounding the upper Deerfield provided the Newton brothers with everything they needed – “a handy source of pulp logs, plenty of water for processing and power, and an available labor force recently idled by the burning of a local tannery.”<sup>67</sup> The region that interested them most, ninety-five square miles of mountainous terrain just north of the Massachusetts-Vermont border covered with virgin spruce, fir, hemlock, maple, birch and beech situated between Readsboro (population 800) and Wilmington (population 1,200), had been

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<sup>66</sup> Bernard R. Carman, *Hoot Toot & Whistle: The Story of the Hoosac Tunnel & Wilmington RR*, 3rd Printing edition (Stephen Greene Press, 1963), 4.

<sup>67</sup> Carman, *Hoot Toot & Whistle*, 4.

deemed inaccessible to earlier prospectors. As a result, the area had been spared of the deforestation that had hit much of Vermont during and immediately after the Civil War. The town of Readsboro was particularly intriguing to the Newtons, as it already boasted the largest sawmill in the region and was strategically situated just below the convergence of the East and West branches of the upper Deerfield River.

The Newtons wasted little time, quickly buying up land and logging rights on either side of the main stem and east branch of the Deerfield River near Readsboro, Vermont. In 1882 they created the Deerfield River Company as a Vermont subsidiary of their paper firm in Holyoke, beginning what would become a formidable logging and mill empire in the upper Deerfield River Valley. To help control the river's wild fluctuations in flow, the Newtons invested \$60,000 in the construction of a fifty-seven-foot dam in Readsboro, a mammoth undertaking that at the time was reported to be the highest earthen dam in the country.<sup>68</sup> The dam created a twenty-acre storage pond, serving as both a source of power for the sawmill below and a holding area for logs sent along tributary streams descending from the surrounding mountains. Pulp production boomed in Readsboro, quickly exceeding the capacity of ox-drawn carriages to haul pulp down to dangerous road to Hoosac Tunnel where it would be transferred to railcars on the Troy and Greenfield Railroad and sent east along the Deerfield River. In 1884, the Newtons obtained charters from both Massachusetts and Vermont for the construction of a narrow-gauge railroad connecting the burgeoning mill industries of Readsboro with the recently formed town of Hoosac Station just ten miles to the south. The once-isolated towns of the upper Deerfield River Valley would now be linked by rail with the more robust and diverse economies throughout the lower reaches of the watershed.

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<sup>68</sup> Carman, *Hoot Toot & Whistle*, 4. Interestingly, this distinction would be later claimed in the construction of Somerset Dam further up the Deerfield River in 1911.

The new rail line, named the Hoosac Tunnel & Wilmington Railroad (HT&W), began in Hoosac Station and wound its way north along the steep banks of the Deerfield River, terminating eleven miles later in Readsboro, Vermont (ironically stopping short of the town for which the line was named). The three-foot narrow-gauge track cost the Newtons \$100,000 and further strengthened their control over the lumber and paper industries in southern Vermont. Logs and pulp could now be transported from Readsboro down to the major rail junction at the eastern end of the Hoosac Tunnel regardless of the condition of the Deerfield River, ending the seasonal limitations of water-based transport. The railroad brought swift change to the town of Readsboro; in the four years after the first locomotive arrived at the town's newly constructed rail yard, Readsboro's population nearly doubled. Not surprisingly, speculators in communities further upriver in Wilmington and Mountain Mills soon lobbied for an extension of the HT&W rail line. Once completed, the HT&W line linked those communities into the hugely successful timber and pulp industries emerging to the south.<sup>69</sup>

After nearly six years of agitation for extending the railroad to Wilmington led by the region's new weekly newspaper, the *Deerfield Valley Times*, construction finally began on June 1, 1891. Four hundred Italian immigrants from New York City provided the labor necessary to lay tracks through such challenging terrain, bringing with them many urban "luxuries" that proved quite disruptive to the sleepy logging towns of Mountain Mills and Wilmington. As the former newspaperman and public relations director at Union College Bernard Carman notes, "What with the Italians' colorful deportment and their stress of beer and wine in a state that had been dry for fifty years, visits to their camps became popular diversions, the next best thing to a Sunday afternoon at the zoo." Completion of the line in January was met with jubilation from

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<sup>69</sup> Donelson, *The Coming of the Train*, IV-3.

the people of Wilmington. Across the front page of the *Deerfield Valley Times* the headline read “The Deerfield Valley Railroad Opened for Business: Wilmington Connected With the Outside World By An Iron Band.”<sup>70</sup> The *Springfield Republican* reported that “the inhabitants of the valley of the upper Deerfield believe that a new era in their history has begun. Her in Wilmington there has come a genuine “boom.”<sup>71</sup> After decades of isolation and economic stagnation, the coming of the railroad meant “that long-looked-for time has arrived when we can step onto the cars at our village and go by rail to any place of importance in the country.”<sup>72</sup>

Although the region’s steep topography and the erratic flow of the Deerfield River made operating a railroad between Hoosac Station and Wilmington perilous at best, the railroad brought undeniable change and prosperity to the previously disconnected and economically depressed communities within the upland region of the Deerfield River watershed. The HT&W railroad spurred investors to quickly buy up timber rights in the tiny towns of Searsburg, Somerset, Stratton, and Glastenbury, whose collective 141 square miles were home to just 637 people in 1890. Seemingly overnight, new narrow gauge rail lines extended like fingers into the mountains on either side of the main stem of the HT&W line, and by 1908, more than forty miles of track had been laid north of Wilmington, the majority which came in the form of short three or four-mile spurs extending out from the main track along the banks of the Deerfield River deep into the surrounding woodlands. At the turn of the century, the Newton’s extensive logging and transportation network fed sawmills in more than a dozen towns, capable of producing more than three million board feet of hardwood each year.<sup>73</sup> Thus, between 1880 and 1900 the Newtons

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<sup>70</sup> Carman, *Hoot Toot & Whistle*, 7.

<sup>71</sup> “Emancipated From Inertia. Opening Of Deerfield Valley. Wilmington Past And Present. A New Railroad [Illegible],” *Springfield Republican*, October 31, 1891, Newsbank America’s Historical Newspapers.

<sup>72</sup> Carman, *Hoot Toot & Whistle*, 8.

<sup>73</sup> William Gove, “Mountain Mills, Vermont and the Deerfield River Railroad,” *The Northern Logger and Timber Processer*, May 1969, 17.

laid the foundational infrastructure for industrial growth within the upper Deerfield River watershed by creating hundreds of jobs, erecting an extensive railroad, and taking the first steps in controlling the power of the river itself through the creation of a storage reservoir near its headwaters.

To expand so suddenly, the timber industry in southern Vermont had to overcome significant obstacles. The steep terrain that had caught Hawthorne's eye in 1835 significantly hampered construction of rail lines from the start, and even once the extensive rail network was completed, accidents were frequent during the HT&W's brief history of operation. The HT&W branches off the main Fitchburg line at Hoosac Station at an elevation of 770 feet above sea level and climbs 1,560 feet during its twenty-four-mile course to Wilmington, Vermont. In Monroe Bridge alone, just below the Vermont border, the track rises 100 feet in a little less than half a mile, a grade that caused serious trepidation even for the most adventurous of railroad operators. The steepness of the grade, combined with inclement weather, resulted in frequent accidents and bailouts as passengers were forced to abandon the train before it went over the rails and plunged into the riverbed far below. Mike Boyd, a logger at Mountain Mills during the early 1900s, recalls one occasion when, after summitting a line along the Peck Branch of the Deerfield River, they found the rails so iced over that no amount of sand could help provide traction for the locomotive. With no braking ability, passengers were directed to jump off the train before its eventual crash into the river below. Despite the frequency of such accidents, the only passenger fatality reported on the HT&W during its thirty years of operation was a "fireman who once suffered a fatal heart attack while going over the high trestle at Pike Branch."<sup>74</sup>

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<sup>74</sup> Gove, "Mountain Mills, Vermont and the Deerfield River Railroad," 18.

In addition to the precarious terrain, the inconsistent level of the Deerfield River itself limited the expansion of the logging industry in the area. Major floods washed out entire dams and sections of track on more than one occasion, including a historic flood in 1896 that damaged the dam in Readsboro and completely swept away the dam and outbuildings of the Lamson and Goodnow factory on the banks of the river in Shelburne Falls. The flood caused such extensive damage in the lowland regions that it prompted Greenfield and Deerfield to redraw the boundary between the two towns, ending nearly a century of debate on which town would control the river as it collided with the Connecticut.<sup>75</sup>

The rapid growth of the logging industry in the upper Deerfield River watershed between 1880 and 1900 resulted in significant ramifications for the region's riverine environment. Thousands of loggers and laborers flocked to southern Vermont for the first time, and construction of the many logging camps that sprang up along the main stem of the Deerfield and its smaller tributaries caused the denuding of thousands of acres of surrounding forests. Growing population and extensive logging drastically reduced the stock of hardwood forest throughout the uppermost reaches of the Deerfield River Valley and the subsequent population growth caused increased deforestation in already established areas.<sup>76</sup> The *Springfield Republican* noted that "a general feeling of regret prevails among residents in Western Massachusetts that each year sees less and less of the forests on our hill sides," continuing on to profile the negative impact on tourism caused by this deforestation in the town of Shelburne Falls.<sup>77</sup> In addition to impacting certain industries within the watershed, denuding the steep hills on either side of the river encouraged erosion and run-off, narrowing the river's channel and causing the flow of water to

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<sup>75</sup> Fraker, Heise, and Heise, *The Deerfield Reader*, 306.

<sup>76</sup> Gove, "Mountain Mills, Vermont and the Deerfield River Railroad," 37.

<sup>77</sup> "Shelburne Falls Mourns for Woods: Deforestation of Hill-sides Mars Beauty of Deerfield River Valley," *Springfield Republican*, August 19, 1923, Newsbank America's Historical Newspapers.

become even more volatile than it had been before.<sup>78</sup> In 1915, the New England Hardwood Company erected a thirty-ton sulphate pulp plant along the Deerfield River in the tiny hamlet of Mountain Mills, Vermont. The mill, designed to make spruce pulp for Kraft paper, not only “put a drain on the remaining large areas of old growth spruce in the upper Deerfield,” but also emitted a putrid odor that could be smelled as far away as Monroe Bridge.<sup>79</sup> By 1910, the landscape and waterscape created by the Newton family and their logging successors was vastly different than it had been when they surveyed the area thirty years earlier. The dams and mills that now crisscrossed the river and its tributaries, combined with an extensive network of single-track rail lines, created an environment that was significantly more accessible and manageable for human enterprise.

In addition to the ecological degradation wrought by the growth of logging in the upper Deerfield River Valley – deforestation, increased erosion, and chemical runoff from the sulphate pulp plant - the introduction of major factories and an extensive railroad network transformed the economic identity of the region in a number of different ways. Importantly, construction of the railroad and the relative prosperity it brought abruptly “ended the isolation that had characterized the region since its settlement more than a century before.”<sup>80</sup> The railroad offered efficient transportation to and from some of the most rugged and inhospitable terrain within the Deerfield River watershed. Hundreds of passengers flocked to stations along the HT&W line, destined for the “big city.” Trips to Saratoga, New York, were particularly popular. In 1897, one travel writer for the *Deerfield Valley Times* reported “The trip from Hoosac Tunnel to Saratoga, seventy-one

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<sup>78</sup> Bernard W. Sweeney et al., “Riparian Deforestation, Stream Narrowing, and Loss of Stream Ecosystem Services,” *Proceedings of the National Academy of Sciences of the United States of America* 101, no. 39 (September 28, 2004): 14132–37, <https://doi.org/10.1073/pnas.0405895101>.

<sup>79</sup> Gove, “Mountain Mills, Vermont and the Deerfield River Railroad,” 36.

<sup>80</sup> Carman, *Hoot Toot & Whistle*, 18.

miles, was uneventful and made with few stops, once or twice to remedy some slight defect in the engine. During these stops numerous excursionists were observed running towards nearby hotels and groceries, presumably to get the toothpicks which they were chewing when they returned... The return trip was uneventful, save for a few slight disturbances by a few who were overjoyed, but we think on the whole the party were remarkably quiet, sober, and peaceable, considering that there were about 500 people of all classes and ages, a few of whom went especially to have a good time.”<sup>81</sup> Thus, the construction of the HT&W Railroad oriented the economies of the upper Deerfield River communities towards the growing transportation hubs situated on the Deerfield River further south, rather than east towards Brattleboro or west towards Bennington. What the expansion of the logging industry did, then, was link together the distinct ecologies of the Deerfield River watershed into a single economic unit. These changes would prove critical in the next phase of industrial development along the Deerfield River, a phase that would take shape as the logging market sagged following World War I.

Finally, the construction and operation of the Boston & Maine and HT&W rail lines resulted in a “massive population explosion” in the upper Deerfield River Valley. According to Kristen Heitert, many of these new arrivals “hailed from Poland, Ireland, and Italy and introduced new cultural ideals and religious practices to the predominately English-derived, Protestant population of the area.”<sup>82</sup> Mills and lumberyards became the lifeblood of communities like Mountain Mills, Readsboro, and Monroe, towns whose steep terrain made large-scale agriculture virtually impossible. The towns upriver from Greenfield, Deerfield, and Shelburne Falls evolved into rural industrial communities without a major agricultural base, relying instead on the power of the Deerfield River as an instrument for the production and shipping of

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<sup>81</sup> Carman, *Hoot Toot & Whistle*, 18.

<sup>82</sup> Heitert, “Archaeological Reconnaissance Survey, 25.

industrial goods. This phase of industrialization left the flow of the Deerfield River relatively unchanged – despite the erection of substantial crib dams in Readsboro and Shelburne Falls, the river continued to flood dangerously in the spring and frequently ran dry during summer and fall droughts. This unpredictability that had defined human interactions with the river for centuries would soon be challenged as the water itself became a resource through the production and exportation of pure power drawn directly from the energetic flow of the Deerfield River.

In addition to altering the flow and biological make-up of the Deerfield River, the introduction of large-scale cutlery manufacturing, a robust rail network, and logging operations within the watershed caused a dramatic shift in the regional economy. While all three of these industries relied on the river for their success, they did so in a way that generally did not inhibit the economic vitality of the relatively diverse economic interests in the area. None of these developments, for example, prevented the seasonal flooding that left rich silt deposits on the agricultural lands of the lower Deerfield River. No single interest came to dominate the river during this time period, continuing the pattern of shared utilization of the river that was responsible for the diverse economies within the early settlement period.

Further, cutlery production, constructing and operating a railroad, and logging all brought permanent employment opportunities into the upland area of the watershed. The growth of communities such as Shelburne Falls, Charlemont, Readsboro, Mountain Mills, and Wilmington depended on the economic opportunities afforded by these three industries, injecting capital into an area that had been largely divorced from the growing commercial New England economy during the early nineteenth century.<sup>83</sup> The nature of how humans interacted with and profited from the Deerfield River kept many of the profits local as cutlery makers, railroad men, loggers,

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<sup>83</sup> Garrison, *Landscape and Material Life in Franklin County Massachusetts*, 25.

and sawmill operators found steady work in a region that only a few decades earlier had been dependent on primarily an agrarian base. Those two attributes – the continuation of diverse utilization of the river and localized economic gain – would be challenged as the river was transformed into a source of generating cash through exporting electricity to the more populous and industrialized sectors of New England.

### CHAPTER III

#### ELECTRIFICATION

*The popular imagination has been caught in recent years by the spectacle of hydro-electric energy being carried all over the country on high-power transmission lines. Truly there is something of the conception of energy unlocked from the Pacific coast rivers and carried to Missouri, let us say, where it is used in manufactures or in saving labor in the homes or on the farms.*

-Walter H. Voskuil, "Water-Power Situation in the United States" (1925)

Between 1880 and 1930, major changes took place in the production and usage of energy in the United States. Oil and natural gas gradually replaced coal as the chief source of energy, and equally important for the future of the Deerfield River, "the shift from direct use of raw energy forms (coal and water power) to the use of processed energy forms (internal combustion fuel and electricity)" allowed factories to move away from sources of waterpower.<sup>84</sup> As Louis Bell wrote in *Electrical World* in 1891, "The electric motor may be cheaper than steam even when the latter may be used on a large scale; the only condition being that we shall be able to take advantage of cheaper production [elsewhere] by the ability electricity gives us to transfer power from a distant point . . . we must look upon electricity as an enormously powerful and convenient means of transferring power from one point to another with the greatest simplicity and very small losses."<sup>85</sup> Electricity became the primary driver of machinery during this period, and by 1930, just forty-five years after their first use in a factory, electric motors drove eight out of every ten machines in the United States.<sup>86</sup>

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<sup>84</sup> Warren D. Devine, "From Shafts to Wires: Historical Perspective on Electrification," *The Journal of Economic History* 43, no. 2 (1983): 356.

<sup>85</sup> Devine, "From Shafts to Wires," 356.

<sup>86</sup> Devine, "From Shafts to Wires," 349.

The first stage in the electrical power generation history in the United States centered around using coal to drive a steam engine which spun a generator to produce electricity.<sup>87</sup> The relative scarcity of coal in New England, combined with the complex technology involved in the process, kept prices high and limited demand. Coal-powered generating plants up until 1900 generally produced direct current sufficient only to serve a small geographic area, providing power to arc and incandescent lights. This changed in 1893 with George Westinghouse's power station at Niagara Falls, a plant that was not only able to generate large amounts of electricity but also to transmit that power over a distance of 26 miles to Buffalo, New York.<sup>88</sup> The "hydromania" triggered by the success of Niagara Falls had massive implications for the Deerfield River and the people who lived there. Regional obsession over "putting rivers to work" combined with the ability to transport that power cheaply and efficiently over great distances reoriented New England's manufacturing landscape away from major rivers and helped drive the most intense and far-reaching period of change in the history of the Deerfield River Watershed.

In their quest to turn the Deerfield River into the "ideal" stream for generating hydroelectric power, the New England Power Company transformed the regional economy from a mixture of relatively small-scale industries to one dominated by a single Boston-based electrical company. The intricate network of reservoirs and power plants that soon punctuated the river altered the flow of water, nutrients, and biota throughout the watershed, causing farmers and fishermen who relied on the seasonal rhythms of the Deerfield River to reimagine their relationship with the stream. Finally, the New England Power Company's treatment of the Deerfield River in mechanical rather than organic terms during the first four decades of the

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<sup>87</sup> Public Archaeology Laboratory, "History of Hydroelectric Development on the Connecticut and Deerfield Rivers," 1.

<sup>88</sup> Public Archaeology Laboratory, "History of Hydroelectric Development," 2.

twentieth century revealed the negative impact on local economies caused by private utilities monopolizing a public resource with little or no government regulation.

Despite the New England Power Company's virtual monopoly over the flow of the Deerfield River by 1930, the initial attempt to use the river to generate electricity was actually undertaken in 1902 by the Greenfield Electric Light and Power Company, a small organization that was founded by a group of Greenfield residents in 1886 for the purpose of "generating, distributing and selling electricity for public and private lighting and for power in Greenfield and adjoining towns."<sup>89</sup> The six men who made up the company's first Board of Directors, although lacking any knowledge of the electric lighting business, were able to quickly raise the necessary capital for the construction of an electrical generating plant, and by March 1887 the company was already under contract to provide electricity to the train passenger station and railway yards on the south side of downtown Greenfield. Like most electrical companies at the turn of the century, the small Greenfield company initially depended exclusively on coal to generate electricity, yet as the demand for electricity both within Greenfield and neighboring towns ballooned in the 1890s, the company's reliance on coal imported from the eastern part of the state became untenable. As the company's historian, W. Rodman Peabody, noted in his chronicle of the company in 1924, "to depend upon coal for the generation of electricity at Greenfield, when the Deerfield River with its many available dam sites formed the southern boundary of the town, was justified only so long as the demands upon the Company were limited to the capacity of an experimental or temporary generating station."<sup>90</sup>

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<sup>89</sup> W. Rodman Peabody and Greenfield Electric Light and Power Company, *A History of the Greenfield Electric Light and Power Company, Greenfield, Massachusetts* (Pinkham Press, 1924), 13.

<sup>90</sup> Peabody and Company, *A History of the Greenfield Electric Light and Power Company*, 21.

Greenfield's approval of an electric trolley line in 1901 between Greenfield and the main street of Deerfield only increased the urgency of increasing the generating capacity of the Greenfield Electric Light and Power Company's sole coal-powered steam plant that was already "pressed to its limit."<sup>91</sup> Company president F.E. Wells immediately spearheaded the acquisition of a tract of land along the Deerfield River within the lowland area of the watershed, several hundred yards to the west of present-day Old Deerfield, a site that appeared promising for the construction of a dam and power house. The *Worcester Daily Spy* reported the plans as a "gigantic engineering scheme" that would involve the construction of a concrete dam fifty feet high across the river. The "energy stored behind this concrete wall will be used to run the plant of the Light & Power Company in Greenfield which is between three and four miles distant from the plant."<sup>92</sup>

With little understanding of the diverse geomorphology within the length of the entire Deerfield River and lacking the ability to transmit electricity from the steeper sections of the watershed, Wells and his company chose one of the least viable locations on the Deerfield River for generating electricity. After nearly a year of construction and an expenditure of \$20,000, the Company determined that the streambed and surrounding soil they had chosen lacked a sufficient ledge upon which the foundation of a dam could be placed.<sup>93</sup> The soft sedimentary rock of the lower Deerfield River Valley forced the Greenfield Electric Light and Power Company to abandon the project entirely and explore the steeper, more rugged sections of the river as potential sites for hydroelectric development.

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<sup>91</sup> Peabody and Company, *A History of the Greenfield Electric Light and Power Company*, 21.

<sup>92</sup> "Plans for Gigantic Engineering Scheme," *Worcester Daily Spy*, April 5, 1902, Newsbank America's Historical Newspapers.

<sup>93</sup> Peabody and Company, *A History of the Greenfield Electric Light and Power Company*, 21.

The company quickly identified Shelburne Falls as the ideal site for harnessing the power of the Deerfield River, not only because of the steep natural descent of water through the town, but also because the Lamson and Goodnow Cutlery Company had already built a series of dams and canals that used the rapidly flowing water to power the wheels of their successful cutlery plant. Following a brief and ultimately unsuccessful period of negotiations with the cutlery giant, company president Wells and his Greenfield Electric Light and Power Company eventually purchased land on either side of the river just downstream from Shelburne Falls, in a sequence of short rapids known as Gardners Falls.<sup>94</sup>

Construction of a hydroelectric dam at Gardners Falls, the first dam of its kind on the Deerfield River, began in 1902 and immediately met unexpected challenges. Spring floods destroyed the cofferdams on more than one occasion, prompting contractors and workers to walk off the job in the spring of 1903. Encouraged by the promise of bonuses and the adoption of a new design, work eventually resumed at a torrid pace in August 1903, with contractors requiring their men to work around the clock in three eight-hour shifts.<sup>95</sup> It took nearly two years for the twenty-six foot high and 337 feet wide concrete dam and power house to be completed, and on November 4<sup>th</sup>, 1904, the first electricity generated from the Deerfield River traveled down seven miles of power lines to illuminate Greenfield's main thoroughfare.

The Greenfield Electric Light and Power Company's first foray into harnessing the power of the Deerfield River for the purpose of generating electricity revealed both the obstacles and potential gains of repurposing such a historically unwieldy body of water. The watershed's topography, with its steep, hard bedrock in the upper reaches leading to wide alluvial plains as it

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<sup>94</sup> Peabody and Company, *A History of the Greenfield Electric Light and Power Company*, 31.

<sup>95</sup> "Franklin County," *Springfield Republican*, April 15, 1903, Newsbank America's Historical Newspapers.

moves towards the Connecticut River, creates conditions ripe for both sudden floods and sustained droughts. The *Springfield Daily Republican* reported in December of 1901 (just prior to the Greenfield Electric Light and Power Company's decision to build its dam at Gardners Falls), that "heavy rain-fall raised the Deerfield river to an unusual height, and considerable damage has been done to the roads and bridges in the vicinity of Wilmington... estimates of the damage to the Mountain Mills plant and to the Hoosac Tunnel and Wilmington Railroad are at \$5000 or more. Had the water continued to rise, the large dam there would have gone out, and the damage would have been beyond all estimate, as the flood would have swept down the valley, carrying everything before it."<sup>96</sup> Three years later in August, the water level of the Deerfield again caught the attention of the area's biggest newspaper, albeit for an entirely different reason: "The Deerfield River, which furnishes power for the mills at Shelburne Falls, is rather low, but this is a freakish stream at the best, and a heavy shower might fill the river bed to the point of overflowing."<sup>97</sup> The inconsistent flow of the Deerfield River thus limited the dexterity of the Greenfield Electric Light and Power Company in generating and distributing electricity to their growing consumer base in Greenfield and Deerfield. Lacking the means to store a sufficient head of water above the Gardners Falls dam, the company was unable to increase output during periods of peak electrical demand and thus remained at the whim of the river's notoriously "freakish" flow.

Despite the trials and tribulations associated with constructing and operating the first hydroelectric plant on the Deerfield River, the Greenfield Electric Light and Power Company's investment at Gardners Falls proved profitable enough and cemented the economic viability of

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<sup>96</sup> "The Waters Are Receding: Communication Being Restored," *Springfield Republican*, December 17, 1901, 3, Newsbank America's Historical Newspapers.

<sup>97</sup> "State of Local Water Powers," *Springfield Republican*, August 15, 1904, Newsbank America's Historical Newspapers.

generating electricity from the many steep watersheds in western Massachusetts. In the twenty years following its opening in 1904, the Gardners Falls hydroelectric facility generated more than 131,500,000 kilowatt hours of electric power, equivalent to the power generated from burning 200,000 tons of coal in a steam plant over the same time period.<sup>98</sup> In fact, the plant proved so advantageous that by 1907 the amount of electricity generated by the Company exceeded the local demand in Greenfield and Deerfield. With no means of increasing demand for electricity within the two towns, the Greenfield Electric Light and Power Company partnered with nearby Turners Falls Electric Company to broaden the network of lines served by their growing collection of hydroelectric dams on the Connecticut River and the Green River, a major tributary of the Deerfield River. In 1904, the year the Gardners Falls plant began operation, the Greenfield Electric Light and Power Company served approximately 400 customers and grossed nearly \$50,000 in revenue. Twenty years later, 8,500 customers received electricity from the company, and profits swelled to over half a million dollars.<sup>99</sup>

Despite the company's growth and expanding profits, its operation remained a small-scale, local enterprise during the first two decades of the twentieth century. Control of the company remained in the hands of Franklin County residents and any power generated that exceeded local demand was sold to the larger electrical company in nearby Turners Falls where it could be distributed to a much broader network. The Greenfield Electric Light and Power Company's one dam at Gardners Falls sent power to a central distribution plant in Greenfield, from which single lines shot out to Deerfield, Northfield, and to the electrical distribution center in Turners Falls. In the first decade of the twentieth century the Board of Directors seemed

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<sup>98</sup> Peabody and Company, *A History of the Greenfield Electric Light and Power Company*, 25-32.

<sup>99</sup> Peabody and Company, *A History of the Greenfield Electric Light and Power Company*, 27.

content with their current arrangement on the Deerfield River which relied on their tapping the unpredictable yet powerful flow of water for the purpose of generating electricity for households and businesses within the watershed. To keep profits local, efforts to raise capital throughout the Greenfield Electric Light and Power Company's brief history were always handled by offering preferred stock to local residents, "the first special customers' stock which had ever been issued by a Massachusetts public service corporation."<sup>100</sup> Control of the company thus remained firmly in the hands of Greenfield citizens during the first quarter of the twentieth century.

While residents of Greenfield and Deerfield directly benefitted from the steps taken by the Greenfield Electric Light and Power Company to provide electricity and promote industrial growth throughout the more densely populated eastern section of Franklin County, an engineer from Boston named Henry Harriman began eyeing the upper Deerfield River watershed as a potential cornerstone in a much grander scheme for generating and distributing electrical power throughout New England. Between 1910 and 1940, Harriman and his New England Power Company spearheaded the most extensive transformation of the Deerfield River in its long and complicated history, turning the rural river into "one of the most completely developed and thoroughly regulated streams in the field of water power production in the United States."<sup>101</sup> In doing so, they took control of the river away from those living in the watershed, managing the stream in a way that prioritized the company's ability to export electricity to the regional power grid.

Henry Ingraham Harriman had always been fascinated by rivers. He grew up in Brooklyn, New York and was educated at Wesleyan University, a small liberal-arts institution

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<sup>100</sup> Peabody and Company, *A History of the Greenfield Electric Light and Power Company*, 70-76.

<sup>101</sup> A. K. Botts, "Water Power Development on the Deerfield River," *Economic Geography* 11, no. 2 (April 1, 1935): 148.

situated alongside the banks of the Connecticut River just south of Hartford, Connecticut. After graduating from New York University Law School in 1897 Harriman secured a job as manager of the loom manufacturing Stafford Company, located on the Neponset River in Hyde Park, Massachusetts.<sup>102</sup> Unimpressed with the company's reliance on the river's naturally erratic flow, Harriman fled the sluggish New England economy for the larger and less-regulated waterways of the South. Harriman's time spent in the South selling mill equipment on the French Broad River, which flows from North Carolina into East Tennessee and eventually becomes the Tennessee River, left him similarly frustrated by the inadequate usage of water power by companies in the area. Upon inspecting a power site along the French Broad River in 1905, for example, Harriman reportedly asked the owner of the plant, "Why don't you utilize all of the power that is here?" pointing out sections of the falls that were not being captured by company's power plant. The owner replied, "there is more power there than we require: and if we develop all of it, what will we do with it?" The thirty-year-old Harriman shot back, "Sell the surplus to other mills."<sup>103</sup> This conversation in 1905 epitomized Harriman's philosophy about the need to maximize the utility of every river in the country to meet the growing power needs of a rapidly industrializing nation, regardless of the impact that process had on both the biology of the watershed and the ability of locals to continue to prosper from their relationship with the river's natural flow.

Convinced that no other region in the country furnished as much potential for generating hydroelectric power as New England, Harriman returned to Boston in 1906 and teamed up with the textile mogul Malcolm Chace to form a new company whose sole focus was putting New England's many waterways to work. Chace's family was prominent in the textile industries of

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<sup>102</sup> Landry and Cruikshank, *From the Rivers: The Origins and Growth of the New England Electric System*, 45.

<sup>103</sup> Willard de Lue, "SUPER-POWER REACHING FROM BOSTON TO NIAGARA: Under the Guidance of Chace and Harriman a Combination Has Grown That Covers Southern New England and Stretches Across New York State--Some Unanswered Questions," *Boston Daily Globe*, January 17, 1926, Newsbank America's Historical Newspapers.

southern New England, and between his regional business connections and Harriman's knowledge of waterpower and hydroelectric generation, their firm experienced immediate success. At a fundamental level Chace and Harriman were motivated by correcting what they saw as an appalling waste of New England's natural resources. As Harriman later reflected in 1915, "Conservation and efficiency are the passwords of the twentieth century. Conservation deals with the creation of effort; efficiency with its application, and together they symbolize the fundamental philosophy of our time, namely, that all energy and effort should be created in the most economical way, and applied in the most useful manner."<sup>104</sup> Harriman's gospel of efficiency coupled with Chace's abundant capital and connections within the region's burgeoning manufacturing industry would come to dominate New England's riparian landscape for the next fifty years, irrevocably changing the geomorphology of dozens of rivers and altering the lives of those who relied on those rivers for survival and prosperity.

The first step in Harriman's quest to maximize the efficiency of New England's many free-flowing waterways began in 1907 with the creation of the Connecticut River Power Company and the construction of a hydroelectric generating plant in Vernon, Vermont, a project that necessitated a massive dam across the Connecticut River some twenty miles to the north of where the Deerfield River tributary feeds into the much larger Connecticut. Within two years, Harriman had expanded his operations on the Connecticut River with another generating plant in Bellows Falls, Vermont as well as mergers with electricity generating companies in Maine, Massachusetts, and New Hampshire. Harriman and his growing Connecticut River Power Company initially focused their attention on New England's eight largest streams – the Penobscot, Kennebec, Androscoggin, St. Croix, Saco, Merrimac, Connecticut, and Hoosatic,

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<sup>104</sup> Henry Harriman, "Water Powers of New England," *General Electric Review* (May 1915): 358.

which collectively drain 35,000 out of the 60,000 square miles of New England.<sup>105</sup> Despite their considerable length, however, none of these rivers possessed the same rapid drop and unique geological foundations as the Deerfield River, and it did not take long for Harriman to cast his eyes west from his company offices on the Connecticut River towards a watershed whose power and unpredictability were legendary throughout western New England.

In the spring of 1909, lured by stories of “the untold power of the Deerfield River in Massachusetts and southern Vermont,” Harriman decided to see the river for himself. “I fished the Deerfield River from beginning to end; and it was good fishing too,” Harriman remembered twenty years later. “Incidentally I learned something about the power situation, and very soon after that we began acquiring power rights along the stream.”<sup>106</sup> Ironically, securing those water rights and the transformation of the river that followed would devastate the fish populations that he so admired during his first visit to the Deerfield River.

The most valuable (and challenging) water rights to secure along the Deerfield River were found in Shelburne Falls, where the river drops sixty-five feet in less than a quarter of a mile.<sup>107</sup> On May 8, 1909, the *Springfield Republican* reported that the Lamson & Goodnow Company, which had erected a wooden crib dam across the river seventy years earlier to store waterpower for its cutlery factory, had ceded its water rights to the New England Power Company for an undisclosed fee. “With the development of the various water-powers now controlled by the Lamson & Goodnow manufacturing company a great deal of power will become available for use at Shelburne Falls or for transmission elsewhere,” explained the *Springfield Republican*, adding that the “new dam will materially add to the value of the river’s

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<sup>105</sup> Harriman, “Water Powers of New England,” 360.

<sup>106</sup> de Lue, “SUPER-POWER REACHING FROM BOSTON TO NIAGARA.”

<sup>107</sup> “Deerfield River to Be Developed: \$4,000,000 Project Already Well Under Way.”

power.”<sup>108</sup> Within a year of purchasing water rights in Shelburne Falls, Harriman’s New England Power Company replaced the cutlery company’s crude wooden dam with a taller and thicker concrete structure capable of creating a larger head of water and thus more consistent electrical generation.



*Electric Trolley and Bridge over the Deerfield River in Shelburne Falls, 1908. Power for the trolley came from the Greenfield Light & Power Company’s dam at Gardner’s Falls*

Control of water rights in Shelburne Falls provided the rapidly growing New England Power Company with a headquarters within the Deerfield River watershed. From there, Harriman next set about changing what he saw as the Deerfield River’s greatest inefficiency – its inconsistent flow. The watershed’s topography and climate made it one of the most unpredictable rivers in New England, an attribute that had plagued industrial development in the region for much of the nineteenth century. Despite the relative profitability of the Greenfield Light and

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<sup>108</sup> “Shelburne Falls: Power Development Planned,” *Springfield Republican*, May 8, 1909, Newsbank America’s Historical Newspapers.

Power Company's dam at Gardner's Falls, it was clear that significant expansion of electric power development on the Deerfield River would not be feasible "unless practical methods could be devised to store the waters of the floods near the source, and with them eke out the dwindling stream in the days when the rains come not and when the sun is an oppressor."<sup>109</sup> Harriman's initial proposal for storing the headwaters of the Deerfield River was investing \$12,000,000 in the construction of a massive dam in Somerset, Vermont, sparking the largest construction boom in the history of the Deerfield River Valley.

Harriman chose an abandoned sawmill known as Peck's Mill for the site of what would become the largest dam on the Deerfield River at the time (overzealous reporters mistakenly reported that the earthen structure at Peck's Mill was the largest dam in the world). Peck's Mill was the ideal site for a storage dam for a number of reasons, principal among them was the fact that, boasting a population of only twenty-seven residents in 1910, Somerset ranked as the smallest organized town in the state of Vermont. The total real estate and personal property in Somerset was valued at only \$114,310 in 1911, an amount that the *Boston Daily Globe* claimed, "will not figure largely in the itemized account of the cost of turning a mountain valley into a lake."<sup>110</sup> Beyond the economic advantages of flooding a largely unpopulated area, the topography of the region proved advantageous in storing the water of the Upper Deerfield River. Two small bodies of water, upper and lower Chase Ponds, already existed above the proposed dam site, concentrating the water from a number of the Deerfield River's uppermost tributaries. Finally, thanks to the efforts of the logging companies to extract hardwood from the area in the late nineteenth century, the narrow gauge Hoosac Tunnel and Wilmington Railroad already

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<sup>109</sup> "Deerfield River to Be Developed: \$4,000,000 Project Already Well Under Way."

<sup>110</sup> "Smallest Town Has Biggest Project: Somerset, Vt Preparing to Build Big Dam," *Boston Globe*, June 2, 1912, Newsbank America's Historical Newspapers.

existed along the banks of the main stem of the Deerfield River leading up towards Somerset, providing rail lines that could be utilized to make the ambitious dam design a reality.

When construction began in the Fall of 1911 on Somerset Dam, *The Boston Globe* reported that the project was “the biggest single piece of construction work undertaken within the boundaries of the Commonwealth.”<sup>111</sup> To secure a sufficient labor force, the New England Power Company recruited immigrant workers, many of them from the Tyrol region in northern Italy.<sup>112</sup> The influx of people into the previously uninhabited Somerset area in the spring and summer of 1912 necessitated the creation of village equipped with an icehouse, a general store, several dining halls, machine shops, stables, a hospital, and of course, a billiard room.<sup>113</sup> Not surprisingly, all the buildings boasted electric lighting throughout. Between 1910 and 1920 the population of Somerset more than doubled, fueled by the construction of the first large storage dam on the Deerfield River.<sup>114</sup>

Unlike the New England Power Company’s dams designed for electrical generation in Shelburne Falls and Gardners Falls, the dam at Somerset consisted entirely of earth and stretched 2,100 feet in length, rising to a height of over 100 feet with a base 60 feet wide at the bottom tapering to 20 feet wide at the top. The mammoth dam required excavating dirt to a depth of ten feet over an area covering sixty acres, eliciting a mix of skepticism and admiration from local residents. Impressed by the sheer size of the project, *The Springfield Republican* noted that “when this huge lake is created by the completing and filling of this big reservoir, Windham

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<sup>111</sup> “Smallest Town Has Biggest Project: Somerset, Vt Preparing to Build Big Dam.”

<sup>112</sup> Mark Rondeau, “How Railroad Changed Vermont,” *Bennington Banner*, January 8, 2012, <http://www.benningtonbanner.com>.

<sup>113</sup> “Smallest Town Has Biggest Project: Somerset, Vt Preparing to Build Big Dam.”

<sup>114</sup> “U.S. Census Bureau QuickFacts: Windham County, Vermont,” accessed March 1, 2019, <https://www.census.gov/quickfacts/windhamcountyvermont>.

County can truly boast of a lake above the clouds.”<sup>115</sup> Citing the “unrivaled opportunity for industrial development,” the *Hartford Courant* praised the work on Somerset Dam as indicative of the increasing capacity of humans to control nature: “In the accomplishment of this project the river is to be bitted and harnessed, mountains riven, and Nature’s power wrenched away, that she can pull great loads half the state distant. It will make the western part of Franklin County the greatest source of electric power.” The completion of Somerset Dam in 1913 turned Harriman’s ambitious dream of utilizing the unique power of the Deerfield River for hydroelectric development into a reality.<sup>116</sup>



*Somerset Development, built 1911-1913. View of 2,100-foot, 110-foot high modified earth fill dam looking south with spillway in foreground.*

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<sup>115</sup> “Brattleboro’s Boy Problem: Need of Public Playgrounds,” *Springfield Republican*, November 12, 1911, Newsbank America's Historical Newspapers.

<sup>116</sup> “Deerfield River to Be Developed: \$4,000,000 Project Already Well Under Way.”

While many onlookers hailed the project as an immediate boom to the region's stagnant economy, the opinions of the people living in towns along the river just below the new colossal earthen dam were not so favorable. No doubt aware of the 1911 flood in Pennsylvania that completely obliterated a company dam holding back 400 million gallons of water less than two miles from the town of Austin, residents living downriver from the new dam at Somerset adamantly opposed the New England Power Company's ambitious earthen design. Wilmington residents demanded that the dam contain a concrete or masonry core, eventually petitioning Vermont Governor John Mead, who, after "an informal inspection of the work" concluded that no disaster like the one that left more than 200 dead in Austin would be possible with the design and construction of the earthen dam at Somerset. Two days of unusually heavy rain in October of 1912 only added to the anxiety felt in Wilmington, as the construction company, after having multiple steam engines and pump stations completely submerged by the flood, opened the gates of the partially completed dam, releasing a torrent of water that caused more than \$4,000 worth of damage to the HT&W Railroad and destroyed the newly erected sawmill of the New England Hardwood Company in Mountain Mills. The sawmill would never reopen.<sup>117</sup> Local anxiety about creating a "lake above the clouds" in Somerset centered primarily around public safety and flood control, concerns that were quickly dispelled by company and state officials. Interestingly, there is no record of pushback from locals concerned with the impact this reservoir would have on the biological makeup of the river itself, a trend that would continue throughout the hydroelectric boom of the early twentieth century.

Sporadic local outrage in small towns like Readsboro and Mountain Mills did little to dissuade Harriman and his associates from pursuing the economic advantages associated with the

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<sup>117</sup> "Smallest Town Has Biggest Project: Somerset, Vt Preparing to Build Big Dam."

formation of massive storage basins at or near the headwaters of the Deerfield River, and construction progressed rapidly beginning in September 1911. Transporting dirt and rock for the dam at Somerset required the company to build extensions onto existing railroad lines, forming high trestles that jutted out from either side of the valley. Train after train full of earth climbed these trestles and dumped their cargo into the valley, creating two long sloping banks on either side of the proposed dam site. As the hills on either side grew taller, “powerful streams of water, directed through fire hoses, then were brought into play, and the earth washed into its permanent place between the dumping lines.”<sup>118</sup> Using water to force the earth into place brought the finer sediment towards the center, creating a clay-like consistency that would provide the strength necessary to hold back such an impressive body of water.

Climatic conditions further complicated the construction of the New England Power Company’s most ambitious dam to date. Somerset receives an average annual rainfall of 51.2 inches (compared with 39.4 inches in Greenfield at the Deerfield River’s mouth), making it one of the wettest areas in New England.<sup>119</sup> As if nature itself was trying to prevent the New England Power Company from plugging the Deerfield River near its source, Somerset experienced above-average rainfall in both 1912 and 1913, with over 8 inches of rain falling in October of 1912 alone. Despite frequent floods that halted construction and forced the company to open the existing dam gates in order to save the remaining equipment and the dam itself, the railroad trestles were gradually shortened until they joined at the completed crest of the dam. The massive earthen structure of unprecedented scale fit seamlessly into the rugged Vermont terrain. “In another year,” predicted *The Christian Science Monitor* as construction neared completion,

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<sup>118</sup> “How New England Is Making Use of Its Waterfalls,” *The Christian Science Monitor*., January 24, 1914, Newsbank America's Historical Newspapers.

<sup>119</sup> Botts, “Water Power Development on the Deerfield River,” 152.

“the Somerset Dam will probably be overgrown with underbrush and seem almost a natural formation.”<sup>120</sup>

The filling of Somerset Reservoir marked an important and necessary step in the extensive hydroelectric development that took place along the Deerfield River between 1900 and 1930. With 2.5 billion square feet of storage capacity near its source at Somerset, no longer would the Deerfield River dwindle away from its banks in the summer months. No longer would it flood annually during the spring thaw or following a period of heavy rain. As one optimistic visitor to Somerset Dam noted in 1911, “hydro-electric waterpower may not be without its problems, but there is no doubt that when New England once brings its unmatched water possibilities to full head it will have won a point certain to prove of incalculable benefit to New England’s all-around development.”<sup>121</sup> Confident that Somerset Dam had brought the Deerfield River closer to “full head,” the New England Power Company began construction on three separate power plants on either side of the Greenfield Company’s dam at Gardner’s Falls in 1910. These three new power stations along the Deerfield River in Shelburne Falls necessitated the construction of the Number 2, Number 3, and Number 4 dams, concrete structures that augmented the natural fall of the river and more efficiently captured the river’s energy as it moved through Shelburne Falls. The first of these projects, the Number 4 plant, was begun in 1910 just below the main road from Shelburne Falls to Charlemont, Massachusetts. At a cost of \$304,050 the concrete dam and power station included an intricate series of tunnels and air compressors that would channel the water underground directly to the wheels of the powerhouse before being discharged into the stream at right angles with the direction of the current. The

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<sup>120</sup> “How New England Is Making Use of Its Waterfalls.”

<sup>121</sup> “New England Hydro-Electric Plants Vast in Potentiality: Harnessing of Streams Done With a Care to Preserve Natural Scenic Beauties While Getting Results,” *The Christian Science Monitor*, July 13, 1912, Newsbank America’s Historical Newspapers.

river's sixty-five foot drop at the Number 4 dam would be capable of generating 8,000 horsepower of electricity at peak capacity.<sup>122</sup>

Just over a mile below the site of the Number 4 Station, the New England Power Company next expanded the old dam of the Lamson and Goodnow Company, transforming it from a traditional wheel-power dam into an instrument for generating electricity. Costing half as much as their project at the Number 4 site, the new dam in the center of Shelburne Falls raised the river's natural drop in addition to capturing the flow of the existing canal that carried water directly under the cutlery factory to channel water through the newly erected power plant before dumping it just above the backwater created by the Greenfield Company's dam at Gardner's Falls.<sup>123</sup>

Utilizing the rapid flow of water as it exited the Gardner's Falls power house, the final installment of what would become known as the "Shelburne Falls Group" was the Number 2 station. Unlike the other two New England Power Company developments, the Number 2 power plant did not necessitate a canal, as the river's already thoroughly-regulated flow generated a sufficient head above the dam site. Receiving water directly from the dam, the Number 2 power plant was able to generate similar horsepower as its more complicated neighboring plants further up river. Although several proposals were made to erect dams closer to the towns of Deerfield and Greenfield, the New England Power Company was apparently satisfied with its three installations in Shelburne Falls, and no additional dam construction would take place on the thirteen miles of the Deerfield River between the Number 2 dam and the river's confluence with the Connecticut. By 1915, Harriman's gospel of efficiency had utterly and completely altered the

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<sup>122</sup> Public Archaeology Laboratory, "History of Hydroelectric Development on the Connecticut and Deerfield Rivers"; Botts, "Water Power Development on the Deerfield River," 153.

<sup>123</sup> Landry and Cruikshank, *From the Rivers: The Origins and Growth of the New England Electric System*, 38-39.

riparian landscape of the four miles of the Deerfield River as it winds and drops through Shelburne Falls – according to the geologist A.K. Botts, “the four stations at Shelburne Falls use completely the fall of water from the crest of the dam at Number Four Station, elevation 368 feet, to the tail water of Number Two at elevation 125 feet.”<sup>124</sup>

The transformation of the Deerfield River around Shelburne Falls into an ideal element for generating electricity made for an “unusual experience” for the area’s residents and demonstrated the increasing dominance of a single company over the region’s river-based economy. Construction of the three dams that made up the New England Power Company’s “Shelburne Falls Group” brought temporary employment, yet no long-term economic advantage to residents of the town. For an economy that for generations had relied on a mix of agriculture, cutlery manufacturing, and seasonal tourism, the power developments on the Deerfield River built between 1910 and 1915 swept “new life into town with a mighty swirl.” As one reporter put it in 1911, “Shelburne Falls is not a dead town; it is simply a small one, and it seldom happens in New England, where the communities have a definite and cohesive spirit stretching back for generations, that everything is suddenly overturned by the advent of new forces.”<sup>125</sup> The so-called “dam men” that descended in droves beginning in 1910 transformed the economy of the town from one dominated by cutlery manufacturing and agriculture into one obsessed with maximizing the efficiency with which electricity could be generated from the Deerfield River.

By 1911 the Deerfield River Construction Company, charged by Harriman’s power conglomerate to construct three new power dams, had taken over one floor of the Shelburne Falls Club for a suite of offices. Despite the uneasiness caused by such rapid change, the economic

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<sup>124</sup> Botts, “Water Power Development on the Deerfield River,” 158.

<sup>125</sup> “The Village of Shelburne Falls,” *Springfield Republican*, December 10, 1911, 3, Newsbank America's Historical Newspapers.

boom brought by the introduction of hydroelectric power was undeniable, but who that boom directly benefitted remained to be seen. While for some Shelburne Falls residents generating electricity from the “enormous power that Nature had provided” represented an unprecedented opportunity for Shelburne Falls to put its name on the map as the region’s center for industrial prosperity, for others it signaled the end of their relationship with the river that flowed through the center of town.<sup>126</sup> Despite the economic advantages derived from utilizing the river for generating electricity, between the height of the “cutlery boom” in 1870 and the expansion of hydroelectric power in 1920, the town’s population declined from 1,582 to fewer than 1,000.<sup>127</sup>

The next wave of hydroelectric development on the Deerfield River took place in the narrow valley between Monroe and Rowe, just below the Vermont border. To add to their existing network of power dams in Shelburne Falls, the New England Power Company began work on the Number 5 dam in 1913. Utilizing an existing timber crib dam that was erected in 1887 to provide water to the Westfield Paper Company’s glassine paper plant on the eastern banks of the river, they quickly transformed the site into one capable of generating electrical power from the river’s steep fall. Because of the sheer power of the descending water in that area, it was decided to channel the river through a series of canals and tunnels before it reached the powerhouse, thus creating a large impoundment of water followed a three-mile stretch of riverbed left completely dry by the diversion of water through the penstock to the distant power plant where the water was eventually used to generate electricity. When it opened in 1914, the Number 5 plant was capable of generating 67,400 megawatt hours every year, nearly ten times as

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<sup>126</sup> “Deerfield River to Be Developed: \$4,000,000 Project Already Well Under Way.”

<sup>127</sup> Donelson, *The Coming of the Train: The Hoosac Tunnel & Wilmington and Deerfield River Railroads and the Industries They Served*.

much as was being generated by the Greenfield Electric Light and Power Company from its plant at Gardner's Falls.<sup>128</sup>

For those living along the main stem of the Deerfield River at the turn of the century, the transformation of the river by 1915 must have seemed overwhelming. Logging, rail transportation, and local craft industries like cutlery production in Shelburne Falls that had long defined the diverse economy within the watershed were quickly supplanted by the insatiable thirst to utilize the power of the river to generate electricity. In the eleven years after the Greenfield Electric Light and Power Company pioneered electrical generation on the Deerfield River by building a dam and power plant at Gardner's Falls, Henry Harriman and his New England Power Company built four more power plants and a massive reservoir at the headwaters of the watershed. The "freakish" river whose defining characteristic was its unpredictability was increasingly controlled by a single Boston-based company that served the demand for electricity throughout New England. While the intricate network of dams and power plants that were built between 1904 and 1915 did not eliminate the seasonal fluctuations in water flow that had long defined the Deerfield River, the string of impounded water did allow for much greater control over the timing and magnitude of the river's extremes. It also meant that the flow of the river, which historically had been used simultaneously by various stakeholders for a wide array of industries, would now be managed by one company for the sole purpose of generating as much electricity as possible and exporting that power to industrial centers far beyond the confines of the Deerfield River watershed.

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<sup>128</sup> W. David Hall, ed., *Waterpower '93: Proceedings of the International Conference on Hydropower*, vol. II (New York: American Society of Civil Engineers, 1993). See Michael E. Rook and William S. Rothgeb, "Replacement of Deerfield No. 5 Dam," 1269-1279.

Resistance to the rapid transformation in the use of the Deerfield River came primarily through legal challenges against the power company after the initial wave of dams were built. In 1916, a bill of equity was filed by four residents of Shelburne Falls demanding compensation for the overflowing backwater caused by the impoundment of water behind the New England Power Company's most recent dam project. The county judicial court ruled that "no compensation for such overflowing was provided in the mill act, so called, under which the action was brought."<sup>129</sup> Nine years later, eight property owners in East Charlemont filed suit against the New England Power Company, "asking that the defendants be perpetually enjoined from setting back the waters of the Deerfield River in such a manner as to cause an overflow on to their lands at East Charlemont."<sup>130</sup> No restrictions were put on the New England Power Company as to their placement of dams or the degree to which they could impound water and increase the likelihood of localized flooding. Despite isolated resistance against the rapidly expanding presence of the New England Power Company, without legal recourse or regulations imposed by regional or state governments, the company's dominance over the river proceeded unchecked during this early phase of hydroelectric development.

Although the New England Power Company's rapid hydroelectric development along the Deerfield River during the first decade of the twentieth century proved successful, by 1915 it was clear to company leadership that in order to compete with the new crop of power companies emerging in Maine and eastern Massachusetts, the New England Power Company needed to expand.<sup>131</sup> Not only did that mean finding innovative strategies to more efficiently transport electricity from existing power plants to growing industrial centers throughout New England, but

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<sup>129</sup> "Injunction Against Power Company Asked," *Springfield Republican*, February 9, 1925, Newsbank America's Historical Newspapers.

<sup>130</sup> "Injunction Against Power Company Asked."

<sup>131</sup> Landry and Cruikshank, *From the Rivers: The Origins and Growth of the New England Electric System*, 39.

also increasing the generating capacity of those plants already in operation. With the war in Europe causing coal shortages throughout the United States, Harriman's plan to build a second large reservoir on the upper Deerfield River – what he called the “White Coal” project – finally gained approval from the Massachusetts State Gas and Electric Commission in 1918.<sup>132</sup>

Harriman stressed the benefits of creating an additional storage reservoir on the upper Deerfield River as both an opportunity to further manage the unpredictable flow of the stream while adding another much more powerful electrical plant to the New England Power Company's existing chain of hydroelectric facilities already dotting the river. Justifying the expansion of the water storage capabilities on the Deerfield River at the annual meeting of the New England Division of the National Electric Light Association held in Greenfield held in June of 1922, the engineer W.S. Murray claimed “the hydro-electric plants in the country are being constantly improved by intensive development and greater use is being made of the water available in the generation of current. This improvement is necessary owing to the constant increasing cost of coal for power purposes. We cannot afford to let a single drop of water in New England go to waste, as it must be developed into power in order that this section may be able to compete with the more favored sections in the West.”<sup>133</sup> The Deerfield River figured prominently in New England's quest to harness the region's flowing water in an effort to keep pace with the rapid hydroelectric development taking place on major rivers in the South and West.<sup>134</sup>

Harriman's “crowning work in the Deerfield River Valley” took place in a remote area of the watershed known as Davis Bridge, just above the border between Vermont and

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<sup>132</sup> Landry and Cruikshank, *From the Rivers: The Origins and Growth of the New England Electric System*, 56.

<sup>133</sup> “Annual Meeting of the New England Division of the National Electric Light Association,” *Springfield Republican*, June 7, 1922, Newsbank America's Historical Newspapers.

<sup>134</sup> Manganiello, “Hitching the New South to ‘White Coal,’” 255-292.

Massachusetts.<sup>135</sup> The steep mountains on either side of the river formed a natural basin that, once plugged at Davis Bridge, would form the largest body of water within the state of Vermont. The only problem with erecting a dam at Davis Bridge was that it would impound water for nearly ten miles, completely flooding the logging town of Mountain Mills and the surrounding countryside. As they had done further upriver in Somerset in 1910 and further downriver in Shelburne Falls in 1912, the New England Power Company quietly purchased the industrial properties in and around the town of Mountain Mills, many of them held by Martin Brown, president of the Parker-Young Company. For \$875,000, the New England Power Company secured 42,000 acres of land, the rail line that ran along the banks of the river, flowage rights, and several mills that made up the village of Mountain Mills. Between 1912 and 1920, Harriman approved the purchase of 400 farms along the river in the Davis Bridge area, many of which belonged to immigrants who had put down roots following the Hoosac Tunnel project fifty years earlier.<sup>136</sup> All the land purchased by the New England Power Company – including all of Mountain Mills and parts of the revered Hoosac Tunnel & Wilmington Railroad line – would soon exist beneath the placid surface of a man-made lake.

The dam at Davis Bridge, heralded at the time as the highest earthen dam in the world, took three years to build and completed the transformation of the Deerfield River into a private power source for the New England Power Company. Like the dam at Somerset, the Davis Bridge dam project was one of “the earliest structures outside the Panama Canal to employ the hydraulic fill method of construction, which involved dumping material into two dikes, and then washing the dikes with water to filter the fines into the ditch between them.”<sup>137</sup> Unlike previous dam

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<sup>135</sup> de Lue, “SUPER-POWER REACHING FROM BOSTON TO NIAGARA.”

<sup>136</sup> Landry and Cruikshank, *From the Rivers: The Origins and Growth of the New England Electric System*, 56-57.

<sup>137</sup> Public Archaeology Laboratory, “History of Hydroelectric Development on the Connecticut and Deerfield Rivers,” 5.

projects undertaken by the New England Power Company, the scale of development at Davis Bridge necessitated hiring the Rollin Construction Company, a contracting firm in Boston that had recently completed power plants in Rochester, New York and Kansas City, Missouri.<sup>138</sup> Once bypass tunnels had been bored through the mountains on either side of Davis Bridge, construction crews began “moving a small mountain of earth” into the valley. E.M. Kling of the *Springfield Republican* reported that, “calling it a small mountain is not so great an exaggeration when we picture of a pile of earth 200 feet high and almost a quarter mile square. Think of it in other terms; if all the 2,000,000 yards of earth necessary plus the earth and stone taken from the tunnels, making a total weight of over 5,000,000 tons were to be hauled by train it would require approximately 130,000 cars, which if made up into trains would reach 12 times across the state of Massachusetts or would reach from New York into the state of Texas or to the southern extremity of Florida.”<sup>139</sup> At 1,300 feet long and more than 200 feet high, the dam was the highest earthen dam in the world at the time of its construction.

More than 2,000 acres were flooded once the dam was completed in the winter of 1924, creating a reservoir nearly ten miles long. Once again, local opposition did little to stem the regional media’s seemingly endless enthusiasm for bigger and better hydroelectric development on the Deerfield River. The people of Wilmington, Vermont unanimously rejected an offer from the New England Power Company of \$100,000 plus a steamboat line to compensate the town for submerging the lines of the Hoosac Tunnel & Wilmington Railroad, demanding instead that the company relocate the railway to higher ground. In October of 1922 the *Springfield Republican* reported that, although the power company’s dam at Davis bridge would likely not disturb the

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<sup>138</sup> “Big Hydro-Electric Project in Windham County Begun - Great Storage Reservoir Will Equalize Power at Five Stations,” *St. Albans Daily Messenger*, January 24, 1922, Newsbank America's Historical Newspapers.

<sup>139</sup> E.M Kling, “Harnessing the Deerfield River Power: Biggest Dam in New England Just North of Hoosac Tunnel Will Change Scenery,” *Springfield Republican*, June 15, 1922, Newsbank America's Historical Newspapers.

summer tourism industry, the people of Wilmington did “worry lest the impounding of such a body of water infest the village with mosquitos such as are complained of in other sections of the state.”<sup>140</sup>

Despite the concerns of those living in and around Wilmington who would be adversely effected by the impoundment of water caused by the New England Power Company’s dam at Davis Bridge, newspapers throughout the northeast rejoiced at what the *New York Times* described as the creation of the “*new* Deerfield River Valley in Southern Vermont.” Echoing Harriman’s views on efficient usage of waterpower, reporters across New England praised the new development for “capturing the huge amount of water that heretofore has gone to waste.”<sup>141</sup> The *Springfield Republican* noted that “even the Hoosac Tunnel & Wilmington [Railroad] must forsake part of its hard earned right of way to make room for the water that will before long accumulate and stand at great depth ready to serve man who has learned to harness it.”<sup>142</sup> It appeared that even the region’s most celebrated rail line would need to make way for the New England Power Company’s rapid march towards complete control over the waters of the Deerfield River.

The New England Power Company’s creation of Lake Wilmington (often referred to in local guidebooks as Harriman Reservoir or Lake NEPCO) was unique not only for the unprecedented scale of the project, but also in the positioning of the generating plant in relation to the massive dam at Davis Bridge. Unlike other dam projects on the Deerfield River where the power plant was adjacent to or directly below the impoundment of water, the New England

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<sup>140</sup> “Wilmington To Have Town-Meeting Again: Vermont Town Has Still Another Problem to Solve in Connection with Power Development,” *Springfield Republican*, October 8, 1922, Newsbank America's Historical Newspapers.

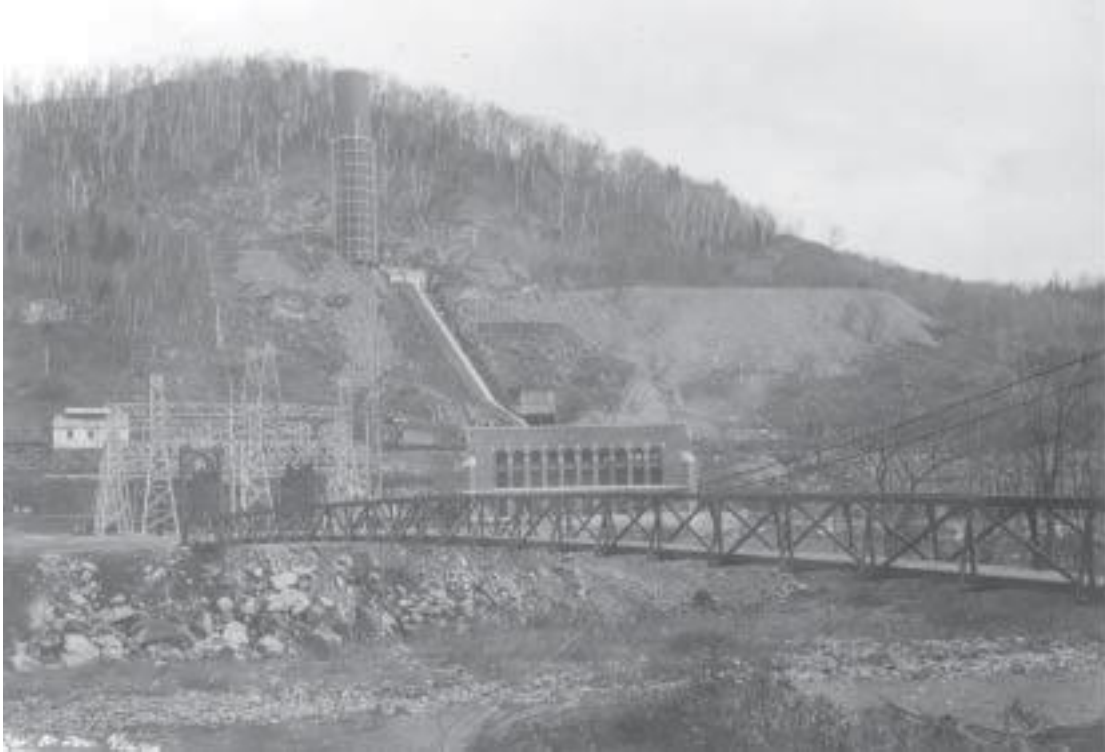
<sup>141</sup> “VERMONT VALLEY BECOMES BIG LAKE: Completion of Water-Power Dam Creates Ten-Mile Reservoir on Deerfield River.,” *New York Times*, March 2, 1924, Newsbank America's Historical Newspapers.

<sup>142</sup> Kling, “Harnessing the Deerfield River Power.”

Power Company placed its newest power station nearly three miles below the dam in order to maximize the fall of water as it entered the plant. A cement tunnel 13 feet in diameter brought water from the reservoir through the hillside to the 45-megawatt powerhouse located several hundred feet below the base of the dam. The generating plant, named Harriman Station, was the largest hydroelectric facility east of Niagara Falls when it opened in 1924 and immediately provided an additional 10,000 horse power capacity to the existing network. The New England Power Company transmitted power over a 110 kilovolt line (the first line to exceed the 66-kilovolt standard) directly from the Harriman Plant to its new distribution facility in Millbury, Massachusetts. Further, by impounding water of both the eastern and western branches of the upper Deerfield River, the New England Power Company was able to provide more consistent and powerful flow to the existing power plants downstream, bringing the total capacity of the New England Power Company system on the Deerfield River to an estimated 140,000,000 kilowatt hours per year. By 1924, with water backing up against the largest earthen dam in the world, the Deerfield River “entered upon the modern phase of its power development.”<sup>143</sup>

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<sup>143</sup> A. K. Botts, “Distribution of Deerfield River Power,” *Economic Geography* 11, no. 3 (July 1, 1935): 303, <https://doi.org/10.2307/140414>.



*Harriman Power Development in Readsboro/Wilmington, Vermont. Water entered this plant through a tunnel three miles long that connected the plant with Harriman Reservoir.*

In addition to generating exportable electric energy, the construction of two major reservoirs and five power dams on the Deerfield River helped mitigate the impact of floods throughout the region. Three years after the New England Power Company put its finishing touches on the aptly named Harriman Dam, the most devastating storm to hit New England in the twentieth century tested the limits of the heavily regulated Deerfield River. Beginning in the evening of November 2<sup>nd</sup>, 1927 more than ten inches of rain fell across western Massachusetts and southern Vermont, causing flash floods throughout the region. The Winooski, Lamoille, and White River Valleys of Vermont were particularly hard hit, with 55 deaths in the Winooski Valley alone. The storm was unique both in terms of the volume of the rainfall as well as the placement of the deluge: more than 75% of the area affected was part of the Connecticut River

watershed.<sup>144</sup> The massive river's many smaller tributaries throughout Vermont, New Hampshire, and western Massachusetts quickly overcame the confines of their banks on their rapid descent towards the already swollen Connecticut River, causing New England's longest river to reach its highest point in recorded history.<sup>145</sup> Two days after the storm began, the "swelling torrent of the Connecticut" quickly overcame the dike in West Springfield, Massachusetts, causing water levels to suddenly rise, closing down the "magnificent" Memorial Bridge in downtown Springfield for the only time in the city's history. As the mighty Connecticut "thrashed restlessly towards the sea" during the first few days of November 1927, nearly every stream in western New England was left in ruin.<sup>146</sup>

In a remarkable change of fortune, the historically flood-prone Deerfield River watershed emerged from the Flood of 1927 relatively unscathed. Despite receiving a record rainfall in just two days (the 14.54 inches of rain recorded in Somerset that fell in the month of November is still the highest monthly total on record) the traditionally "flashy stream" was able to absorb the record rainfall with only minimal flooding in the lowland area of the watershed. During the nineteenth and early twentieth centuries, floods were such a common occurrence throughout the Deerfield River watershed that they rarely garnered the attention of local newspapers. For example, a particularly intense and prolonged period of rain that blanketed New England in 1912 elicited the somber description in the *Boston Globe* that of all the rivers in New England, "the Deerfield Valley so far suffered the most."<sup>147</sup> The New England Power Company's two storage

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<sup>144</sup> "The Flood of 27," Vermont History, accessed August 2, 2018, <http://vermonthistory.org/research/research-resources-online/green-mountain-chronicles/the-flood-of-27-1927>.

<sup>145</sup> "Connecticut River Flood Control," *Springfield Republican*, November 20, 1927, Newsbank America's Historical Newspapers.

<sup>146</sup> "FLOOD TOLL 100 KNOWN DEAD: 61 Lives Lost in Winooski Valley, 26 Bodies at Waterbury, Vt--Bay State Cities in Peril--Montpelier Damage Millions," *Boston Daily Globe*, November 6, 1927, Proquest.

<sup>147</sup> "One Dead in Floods: Loss Will Be in Thousands," *Boston Daily Globe*, October 25, 1912, Proquest.

reservoirs in the upper Deerfield River changed the very contours of the river itself, making it a model stream during the legislative battles over flood control policies in New England between 1927 and 1950.<sup>148</sup>

Much of the deluge and runoff from the surrounding hills during the Flood of 1927 was absorbed by the partially filled storage reservoirs in Somerset and Whitingham. In an interview with the *Boston Globe* after assessing the flood damage, Harriman estimated that the storage dams on the Deerfield River reduced the flood flow by more than sixty percent for the areas below the Vermont border.<sup>149</sup> Using the hard-hit Winooski River in central Vermont for comparison, Harriman observed that “the Winooski and Deerfield Rivers are of about the same size and fall...the same type of development that we made on the Deerfield would have saved the Winooski Valley.”<sup>150</sup> *The Christian Science Monitor* agreed with Harriman’s assessment, citing the Deerfield River as a model for water management to be used as far away as the swollen Mississippi River. “The Deerfield River Valley, which came through the recent New England floods practically unscathed, proves the value of such water-power development as also acts as a control, and may serve as an example for the handling of the Mississippi. A few years ago, a downpour such as the recent one in this Vermont watershed would have caused untold damage in this river valley, but its dams and reservoirs proved equal to the test and turned a liability into an asset.”<sup>151</sup> Both as a source of exportable electricity and flood control, the New

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<sup>148</sup> William Leuchtenburg, *Flood Control Politics: The Connecticut River Valley Program, 1927-1950* (Cambridge: Harvard University Press, 1953), 32-45.

<sup>149</sup> “Connecticut River Flood Control.”

<sup>150</sup> “HARRIMAN DISCUSSES POWER AND TRANSIT: He Asserts Flood Control Possible In Great Degree--Says Court Has Cleared Way For ‘L,’” *Boston Daily Globe*, November 29, 1927, 2, Proquest.

<sup>151</sup> “Power With Flood Control,” *The Christian Science Monitor*, November 16, 1927, sec. Editorials, Newsbank America's Historical Newspapers.

England Power Company's developments on the Deerfield River received overwhelmingly positive praise in news sources throughout the region.

Unlike past floods that had ravaged the narrow valleys of the upper Deerfield River watershed, the majority of damage along the river caused by the Flood of 1927 was limited to the lowland sections around Deerfield and Greenfield, where the river backed up from its confluence with the enlarged Connecticut River. Extending back from where the two rivers meet near Greenfield, the wide alluvial plains on either side of the Deerfield River became a patchwork of lakes, flooding more than 100 tobacco barns and depositing a thick layer of debris throughout the area.<sup>152</sup> Water rose to the base of Cheapside Bridge connecting Greenfield and Deerfield, temporarily closing "the main highway from New York to Montreal." Although the flood caused considerable property damage throughout the lowland areas, including hundreds of drowned cows, no human injuries or fatalities were reported.<sup>153</sup>

According to the historian William Leuchtenburg, "in much of the Connecticut Valley, the floodwaters reached their greatest height in three centuries. The November 1927 flood was incomparably more destructive than any previous flood in the history of New England."<sup>154</sup> The unprecedented flooding in western New England in 1927 sparked a movement for a more comprehensive and coordinated system of storage reservoirs throughout the Northeast. Over the next decade, advocates for state-sponsored flood-control projects repeatedly cited the Deerfield River Valley as the poster child for the benefits of hydroelectric power as it relates to flood control. R.K. Ferguson, the Treasurer of the Northeastern Power Corporation praised the New England Power Company's sequence of reservoirs and power plants along the Deerfield River,

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<sup>152</sup> Special Dispatch to the Globe, "WORK TO SAVE HIGHWAY BRIDGES: Deerfield Families Are Forced to Flee Drowned Cattle Washed Over at Turners Falls," *Boston Daily Globe*, November 5, 1927, Proquest.

<sup>153</sup> Special Dispatch to the Globe, "WORK TO SAVE HIGHWAY BRIDGES."

<sup>154</sup> Leuchtenburg, *Flood Control Politics: The Connecticut River Valley Program, 1927-1950*, 29.

noting “The Deerfield River dam... caught and held enormous quantities of water that would otherwise have served to swell further the already swollen Connecticut River, and yet at last reports is still only two-thirds full.”<sup>155</sup> At a time when many people were questioning the growing influence of private power companies in New England, the Flood of 1927 brought new converts to the idea that the government should assume some responsibility for flood control programs.<sup>156</sup> “Fortunately [the New England floods] bore, amid all the grim tales of destruction, messages of both reassurance and guidance which may be instructive far beyond New England. It dramatically attested the value of modern storage dams” reported the *Boston News Bureau* in its coverage of New England’s most devastating flood, adding that “Some folks who have beheld political bogies in ‘Giant Power,’ might meditate also on the Deerfield Valley lesson.”<sup>157</sup>

Following another period of intense rain nine years later, the work done by the New England Power Company to transform the Deerfield River into an ideal river for hydroelectric development was again celebrated as an invaluable public good. In 1937 engineer Earl Barber described the Deerfield River as New England’s “ideal stream” in that it had been “dammed so as to make it descend in a succession of steps from its source to its mouth; a stream whose freshets can be caught and released in a uniform flow throughout the year – uniform, except as storage ponds behind the dams may restrain the flow to the needs of the working day.”<sup>158</sup> For those living within the Deerfield River watershed, protection against major flooding proved to be the primary benefit from hydroelectric development undertaken by the New England Power

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<sup>155</sup> “SAY FLOODS SHOW NEED OF RESERVOIRS: Public Utility Officials Here State Loss of Life and Property Is Avertible. DAMAGE OVERESTIMATED New York Offices of Affected Companies Report Many Flooded Plants Have Resumed Operations.,” *New York Times*, 1927, Proquest.

<sup>156</sup> Leuchtenburg, *Flood Control Politics: The Connecticut River Valley Program, 1927-1950*, 32.

<sup>157</sup> “Bulwarks,” *Wall Street Journal*, November 15, 1927, 12, Newsbank America’s Historical Newspapers.

<sup>158</sup> Earl Barber, “Power, Flood Control - II,” *Springfield Republican*, December 15, 1937, Newsbank America’s Historical Newspapers.

Company between 1910 and 1925. The direct financial gains from the transformation of the Deerfield River into a source of hydroelectric power, however, were realized by stakeholders well beyond the confines of the Deerfield River Valley.

In terms of scale and productivity, the 1920s witnessed a massive increase in hydroelectric development throughout New England. In 1902, only 4,678 million kilowatt hours of electricity were generated in the United States. By 1929, output had reached 97,352 million kilowatt hours. That same year the value of capital owned by power companies was twice as great as that of iron and steel companies.<sup>159</sup> “Electricity is the siege gun of the New England manufacturer in his aggressive war for markets in the South and West” claimed the *Boston Daily Globe* in the spring of 1927, capturing the spirit of enterprise that resulted in the construction of scores of power plants and storage reservoirs on New England’s many rivers. The 1927 New England Conference, an annual meeting of legislators and businessmen held in Boston, set as one of its top three objectives “maximum utilization of all water powers.”<sup>160</sup> To this end, in 1930 Vermont’s Public Service Board hired an engineering consultant from MIT named H.K. Barrows to conduct a comprehensive study of the hydroelectric and flood control capabilities of dams throughout the Connecticut River Valley, the result of which was a report that recommended the construction of 85 total dams within the state, with a similar number for New Hampshire as well. Unlike western and southern states who lobbied for federal government funds to build massive dam projects during the 1930s, hydroelectric development in New England relied primarily on private power companies building storage dams. The Barrows Plan repeatedly referenced the work done by the New England Power Company on the Deerfield River in the 1910s and 1920s

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<sup>159</sup> Leuchtenburg, *Flood Control Politics: The Connecticut River Valley Program, 1927-1950*, 3.

<sup>160</sup> “SUPERPOWER IN NEW ENGLAND: Power the Basis of an Industrial Program--New England Conference Seeks Regional Power Policy--For Maximum Interconnections--Insull Ties Up Maine, New Hampshire, Vermont--Niagara Joined to Tidewater Plants to Serve Massachusetts,” *Boston Daily Globe*, May 25, 1927, Proquest.

as an example of successful river management by the private sector, and while Barrows's proposal was never fully adopted by the state, it reflected the general distrust of government intervention in the economy throughout New England. When the Connecticut Valley Authority (CVA) bill was introduced in 1935 as a way to provide dam construction and transmission lines similar to the work being done by the Tennessee Valley Authority (TVA) and other extensions of federal action in the South, the New England Regional Planning Commission flatly rejected the idea. Representing all six New England States, the commission claimed that "New England is congenitally averse to the imposition of Federal authority" in managing hydroelectric development on the region's many rivers, choosing instead to rely on private companies to further develop the power capabilities of the region's many rivers.<sup>161</sup> Ultimately, the New England Power Company's manipulation of the Deerfield River provided evidence for how successful the private sector could be in harnessing and managing New England's many waterways as drivers of the regional economy.

The Deerfield River served as an important example during what Eve Vogel and Alexandra Lacey of the University of Massachusetts Amherst describe as the clash between New Deal management and Yankee independence during the 1930s. Thanks almost exclusively to the New England Power Company, by 1930 eight hydroelectric plants, all owned and operated by private companies, combined to use close to 1,200 feet of the Deerfield River's total 2,000-foot fall.<sup>162</sup> Perhaps no river in New England better reflected the capacity of the private sector to efficiently transform a river into an agent for hydroelectric development and flood control than the Deerfield River. The praise heaped on the shoulders of the New England Power Company in

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<sup>161</sup> Eve Vogel and Alexandra Lacey, "New Deal versus Yankee Independence: The Failure of Comprehensive Development on the Connecticut River, and Its Long-Term Consequences," *The Selected Works of Eve Vogel*, 2012, 70-74.

<sup>162</sup> Botts, "Water Power Development on the Deerfield River," 156.

the 1920s obscured three important realities on the Deerfield River. First, by viewing the Deerfield River solely as a source of generating exportable electricity, the New England Power Company created a more hostile environment for riverine organisms throughout the watershed. Secondly, the ability to transmit power over great distances meant that the industrial benefits of damming the Deerfield River were realized elsewhere, mainly in the growth of factories in central and eastern Massachusetts. Finally, a single industry's dominance over the flow of the river curtailed the success of the long-standing pillars of economic success within the watershed - cutlery production, logging, and agriculture.

According to Franklin Ligon, William Dietrich, and William Trush in their 1995 *BioScience* article on the ecological effects of dams, "When a dam is built, altering the flow of sediment and water, the habitat will change – sometimes dramatically, but often subtly – and the ecology of the river can be significantly, and sometimes disastrously, altered."<sup>163</sup> While no comprehensive study of the geomorphology of the Deerfield River took place in the early twentieth century, recent studies indicate that the scale and pace with which the New England Power Company impounded water on the Deerfield River would have trapped large masses of sediment previously transported further downstream while rapidly altering the habitat for riparian vegetation and fish. These changes resulted in the decline of native fish species and the encroachment of vegetation into portions of the Deerfield River streambed left dry by the heavily-regulated water flow.<sup>164</sup>

The most visible manifestation of ecological change on the Deerfield River in the wake of the hydroelectric development between 1900 and 1925 was a dramatic reorientation of water

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<sup>163</sup> Franklin K. Ligon, William E. Dietrich, and William J. Trush, "Downstream Ecological Effects of Dams," *BioScience* 45, no. 3 (1995): 183, <https://doi.org/10.2307/1312557>.

<sup>164</sup> Ligon, Dietrich, and Trush, "Downstream Ecological Effects of Dams," 184.

flows throughout the main stem of the river. One extreme example was the five-mile stretch of river between Harriman Dam and the Harriman Power Plant which ran completely dry throughout year as water was sent from the reservoir through a fourteen-foot tunnel and directly to the turbines of the power plant three miles below. “The diversion of this water dries up the river bed and leaves an unsightly display of boulders in the bed of the stream” wrote Donald Stillman in his 1929 fishing guide to the Deerfield River. He added, “From Searsburg, Vermont to Shelburne Falls, Massachusetts, there are about 40 miles of river. The Power company has taken about half of it and has ruined the scenic beauty as well as the fishing in the sections of the stream having no flow of water.”<sup>165</sup>

In addition to drying up entire sections of the river, the New England Power Company’s ever-expanding enterprise on the Deerfield River resulted in considerable daily fluctuations in flow that were independent of climatic variations. The massive storage reservoirs at Harriman and Somerset allowed the company to release high volumes of water during times of peak power demand, causing the river to rise as much as three feet in a matter of minutes, wreaking havoc on the fish and insect populations.<sup>166</sup> Prior to minimum-flow regulations mandated by the state beginning in the 1980s, water releases by the New England Power Company were unpredictable and depended solely on the company’s calculations for maximizing electrical generation from the river. Various fish species, especially salmon and trout, suffered from the inconsistent flow of water as it altered the natural morphology of their habitat. In the summer months the Deerfield River became a series of deep pools connected together by a small stream that would slow to

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<sup>165</sup> Donald Stillman, “From the Angler’s Angle: The Rape of a Noble Trout Stream,” *Forest and Stream: A Journal of Outdoor Life, Travel, Nature Study, Shooting, Fishing, Yachting*, August 1929, 594.

<sup>166</sup> Robert M. Cushman, “Review of Ecological Effects of Rapidly Varying Flows Downstream from Hydroelectric Facilities,” *North American Journal of Fisheries Management* 5, no. 3A (July 1, 1985): 330–39, [https://doi.org/10.1577/1548-8659\(1985\)5<330:ROEEOR>2.0.CO;2](https://doi.org/10.1577/1548-8659(1985)5<330:ROEEOR>2.0.CO;2); Also see “Fisherman Saved From High Water,” *The Springfield Union*, October 4, 1960, Newsbank America's Historical Newspapers.

little more than a trickle during periods of low electrical demand. As a result, the population of trout behind the dams plummeted, replaced by “common sorts of pond fish such as bass and pickerel.”<sup>167</sup> Faced with the decline of native fish species, local communities began stocking the short, free-flowing sections of the Deerfield River with “sport fish,” significantly limiting the diversity of fish species found within the watershed.<sup>168</sup> In 1946, *The Journal of Wildlife Management* reported that of all the fish species caught in the Deerfield River that year, only 11.8 percent were wild fish.<sup>169</sup>

The unique design of Harriman Dam in Whitingham, Vermont caused thermal pollution in the Deerfield River by preserving an abnormally low water temperature as water flowed from the dam. The underground tunnel that brought water to the power plant several miles below took water from the base of the reservoir, thus preventing the water from being warmed by the sun’s rays that hit the surface. Water leaves the Harriman Power Plant three miles below the dam at a temperature of approximately forty degrees, after which it descended through one of the steepest and most narrow sections in the entire watershed. Even as far down as Shelburne Falls, the eastern-most town within the more rugged terrain of the upper Deerfield River Valley, the water remained notoriously cold, rarely rising above 50 degrees even in the warmest months. Thus, in addition to serving as longitudinal obstacles for migratory fish, the structure of the dams themselves kept the river cold year-round and thus limited the biological diversity on the main stem of the Deerfield River.

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<sup>167</sup> Stillman, “From the Angler’s Angle: The Rape of a Noble Trout Stream,” 594.

<sup>168</sup> Britton C. McCabe, “An Analysis of the Distribution of Fishes in the Streams of Western Massachusetts,” *Copeia* 1943, no. 2 (1943): 85–89, <https://doi.org/10.2307/1437771>.

<sup>169</sup> Albert H. Swartz, “Report on the Results from Trout Stocking in the Deerfield River,” *The Journal of Wildlife Management* 14, no. 2 (1950): 185, <https://doi.org/10.2307/3796330>.

The more uniform riverscape created by the dams of the New England Power Company sparked numerous restocking efforts led by local organizations in Charlemont, Shelburne Falls, and Deerfield. At a 1929 meeting of the Massachusetts Fish and Game Association, the Secretary of the League of Franklin County Sportsmen's Clubs A.D. Pierce reported that thanks to aggressive stocking programs undertaken by various local groups, certain sections of the river had reemerged as destinations for serious anglers. Despite several sections that were left completely dry by the combination of dam and distant turbines, the local sportsman's club reported that "the stretch from the Harriman Station to Shelburne Falls is undoubtedly the best fishing on the river. Here are three varieties of trout, brook, brown, and rainbow, and we hope that after stocking some of the small reservoirs at Shelburne we can add salmon to the list. All of these reservoirs have been stocked with pond shiners to assure ample food for our game fish."<sup>170</sup>

The unusually cold temperature of the main stem of the Deerfield River made trout restocking efforts overwhelmingly successful, policies that turned the remote stretches of the upper Deerfield River into a mecca for enthusiastic anglers. "Enjoy Deerfield River Scenery and Inspect Huge Whitingham Dam" read the headline of the *Springfield Republican* in May of 1937.<sup>171</sup> Visitors flocked to the "new and improved" Deerfield River, many of them stopping in Shelburne Falls on their way to the "fishermen's paradise" and the massive dam sites to the west of the town.<sup>172</sup> Visitors to Harriman Dam reached more than 2,000 per day in the mid-1930's, all

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<sup>170</sup> Stillman, "From the Angler's Angle: The Rape of a Noble Trout Stream."

<sup>171</sup> "More Tourists Seen At Shelburne Falls: Enjoy Deerfield River Scenery and Inspect Huge Whitingham Dam," *Springfield Republican*, May 23, 1937, Newsbank America's Historical Newspapers.

<sup>172</sup> "Shelburne Is Proud of Deerfield River: Town Boasts Mountains, Beautiful Stream, Waterfalls, Rock Formations," *Springfield Republican*, August 12, 1937, Newsbank America's Historical Newspapers.

in an area that had previously been too remote for everyone but loggers and a few hundred ambitious farmers.<sup>173</sup>

Whitingham residents quickly began reforestation projects around the newly formed lake to prevent erosion and make the appearance of the artificial lake more “natural,” further encouraging families to use the newly created Harriman Reservoir as a destination for camping, fishing, and boating excursions. Local agencies planted more than a half million pine trees on the hillsides surrounding the lake, adding spruce and poplar trees to the back side of the earthen dam to help hold the earth in place. Despite efforts to increase tourism by making the reservoir look “natural” the people of Wilmington were not particularly impressed with the appearance of their “new and improved” riverine landscape. Testifying before the Vermont House Committee on Flood Control in 1944, Major General Robins offered a sobering description of the environment created by the New England Power Company’s Harriman Dam: “Each summer, mud, slime, rotting stumps, water weeds are exposed in a continually widening, increasingly unsightly rim. Each summer at the height of recreation season, the water level of the reservoir is at its lowest. Few hardy souls have built pleasure or amusement palaces on the edge of that annually bared quagmire.”<sup>174</sup> Robins’ description speaks to the prioritization of hydroelectric development over recreational interests during the first half of the twentieth century. During periods of peak energy demand, water was drawn down from reservoirs, causing rising water levels downstream and disrupting the recreational opportunities and biological diversity within the watershed.<sup>175</sup>

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<sup>173</sup> “Life Not Monotonous by a Dam Site Says Veteran Attendant in Vermont,” *Springfield Republican*, November 8, 1936, Newsbank America's Historical Newspapers.

<sup>174</sup> *Flood Control Plans and New Projects*, Hearings before the House Committee on Flood Control (78<sup>th</sup> Cong.), II, 722 in Leuchtenburg, *Flood Control Politics: The Connecticut River Valley Program, 1927-1950*.

<sup>175</sup> Brian Yellen and David Boutt, “Hydropeaking Induces Losses from a River Reach: Observations at Multiple Spatial Scales.,” *Hydrological Processes* 29 (January 2015): 3261–75.

While people living in the Deerfield River Valley struggled to find new ways to interact with the changing riverscape around them, outsiders continued to view the New England Power Company's hydroelectric developments as improvements to a riparian environment that previously offered only marginal utility. A 1939 report in the *Springfield Republican* captured the optimism of human ingenuity in controlling nature: "More than twenty five years ago the New England Power Company, seeing the possibilities of the Deerfield River, built several electric plants at intervals along the stream in Massachusetts and Vermont and has controlled the waters of the river since that time. Before that time the natives looked on the Deerfield only as a beautiful body of water but never a stream that could be harnessed."<sup>176</sup>

The New England Power Company's dominance over the flow and biological diversity of the Deerfield River changed local priorities concerning the Deerfield River and contributed to the declining water quality of the river over the next three decades. A survey conducted by the State Fish and Game Association in 1933 discovered that "at Station Five the banks of the river were covered with sludge and rubbish of all kinds...three large trout were placed in cages at different points along the polluted river and within a few days all of them died."<sup>177</sup> Four years later a report undertaken by the Works Progress Administration on the sources of pollution in the Deerfield River Valley claimed that, "While domestic pollution has not reached the disgraceful condition of many of the other streams within the Commonwealth, it may be said that sewage is discharged promiscuously along the banks of the stream in such a manner in some locations that a misstep may take the pleasure away from an otherwise enjoyable fishing trip."<sup>178</sup> In 1940 the

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<sup>176</sup> "Shelburne Is Proud of Deerfield River."

<sup>177</sup> "Antipollution Move May Achieve Success through Federal Funds," *Springfield Republican*, January 21, 1934, Newsbank America's Historical Newspapers.

<sup>178</sup> WPA State Planning Projects and John H. Harding, "Report on Sources of Pollution: Deerfield River Valley, Massachusetts" (Boston, MA: Massachusetts Department of Public Health, October 1937).

Massachusetts Department of Public Health deemed the Connecticut River unsafe for bathing, citing excessive discharge of untreated sewage into the river as a threat to public safety. An estimated 95,000 gallons of industrial waste flowed out of the Deerfield River into the Connecticut River every day, a combination of metal plating, oakite, soda ash, acid, bleach wastes, and spent pickling liquor. According to a study conducted in 1939, water flowing down the Connecticut River from its source near the Canadian border entered Massachusetts with an average dissolved oxygen level of 8.5 parts per million. Sixty-three miles later, after taking on industrial waste from the Deerfield River and other smaller tributaries, the amount of dissolved oxygen in the water fell by more than a quarter.<sup>179</sup>

The New England Power Company harnessed the Deerfield River and put it to work at a time when federal and state agencies held very little regulatory power over how interstate rivers could be controlled by private companies.<sup>180</sup> The federal government's first attempt to address the regulation of rivers for the purpose of generating electricity did not come until 1920 when Congress passed the Federal Water Power Act. The legislation created a commission consisting of the Secretary of War, the Secretary for the Interior, and the Secretary of Agriculture designed to promote the development of the nation's water resources by private companies.<sup>181</sup> The legislation empowered the government with some degree of regulation through the issuing of licenses for constructing dams but continued to give private companies like the New England Power Company the authority to regulate the flow of water for the sole purpose of maximizing the generation of electricity. The Federal Water Power Act, which was replaced by the Federal

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<sup>179</sup> Clarence I. Sterling, "Status of Sewage Treatment in the Connecticut River Valley," *Sewage Works Journal* 11, no. 4 (1939): 627, 631.

<sup>180</sup> Manganiello, "Hitching the New South to 'White Coal.'"

<sup>181</sup> John Franklin Shields, "The Federal Power Act," *University of Pennsylvania Law Review and American Law Register* 73, no. 2 (1925): 143, <https://doi.org/10.2307/3314594>.

Power Act in 1935, allowed for no consideration of a river's unique ecosystem, thus essentially granting private companies like the New England Power Company free rein to promote the development, transmission, and utilization of power across any of the navigable waters of the United States.

With no incentive by the New England Power Company to preserve the quality of water flowing through their turbines on the Deerfield River, locals faced an uphill battle against the powerful economic interests of the power company. As one local reporter described it, "Only fifteen years ago the Deerfield River was a rushing mountain torrent taking its wild way to the sea. Now its waters are subdued to the purposes of its master and directed to the turning of turbines so that more and more electric power can hum over the wires, carrying mysterious energy to home and factory, broad-cast over New England and yet wider territories."<sup>182</sup> The wild river had been changed by the New England Power Company into a series of managed steps through which flowed increasingly polluted water. While the hydroelectric facilities themselves did not contribute to the declining water quality of the river, such poor water quality did not adversely affect the generation of electricity and as a result, local initiatives to stymie the flow of sewage and waste were slow to materialize. In 1941, Greenfield became the first town along the main stem of the Deerfield River to build a sewage treatment plant in hopes of combating the growing pollution problem in the Deerfield River.<sup>183</sup>

Unlike the cutlery, railroad, or logging industries that emerged in the upper Deerfield River Valley in the late nineteenth century, the New England Power Company monopolized control over the flow of the river for a single purpose. The various stakeholders that had

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<sup>182</sup> "Sherman Dam Latest Link in Deerfield River Power System," *Springfield Republican*, August 8, 1928, Newsbank America's Historical Newspapers.

<sup>183</sup> Sterling, "Status of Sewage Treatment in the Connecticut River Valley," 635.

historically relied on the river for a wide array of needs – lowland farmers who relied on the annual spring floods to deposit valuable silt on their farmland, cutlery makers in Shelburne Falls dependent on the flow of water to power their mill, and anglers who patrolled every bend in the wild river – were now subservient to the needs of a regional company whose client base extended well beyond the reaches of the Deerfield River watershed.

Further compounding the negative impact of the hydroelectric development on local residents was the reality that almost all of the electricity produced by the “one of the hardest working streams in the United States” was exported over high tension lines to growing industrial centers in eastern Massachusetts and Rhode Island. Thus, aside from sparking a tourist boom, once the dams and power plants were built they contributed minimally to economic growth within the watershed itself. With no large consuming center for electricity in the area, the New England Power Company exported over 95% of the power generated at its eight hydroelectric plants on the Deerfield River during the 1930s (the 5% of electricity that stayed in the region was used for the electrification of the Hoosac Tunnel to help alleviate the buildup of steam, gas, and smoke generated by each passing train).<sup>184</sup> Only the tiny Greenfield Electric Light and Power Company, which in 1904 had pioneered hydroelectric development with its one dam and power plant at Gardners Falls, provided electricity for local communities, primarily Greenfield and to a lesser extent neighboring Deerfield. Despite the massive amount of electricity generated on the Deerfield River, in 1935 more than one third of people living in the Deerfield River watershed were entirely without electric service. Those who did receive electricity to their homes did so through local companies and municipal distributors, not the lines of the New England Power Company.<sup>185</sup>

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<sup>184</sup> Landry and Cruikshank, *From the Rivers: The Origins and Growth of the New England Electric System*, 63.

<sup>185</sup> Botts, “Distribution of Deerfield River Power,” 293.

Essentially all of the power generated from the New England Power Company's network of dams on the Deerfield River went directly to Millbury, Massachusetts through two separate 100-kilovolt lines extending out from the Harriman Station just below Harriman Reservoir and the Shelburne Falls collection of three plants on either side of the town. Writing in 1935, the engineer A.K. Botts of Worcester claimed that "the major market, both present and future, for Deerfield power lies in central Massachusetts. A minor market exists in Rhode Island and eastern New England, but in these areas competition with steam power is acute."<sup>186</sup> With domestic and municipal usage still relatively low throughout western Massachusetts the 1930's, the industrial sector amounted to two-thirds of the total sales from power generated from the Deerfield River by the New England Power Company. All the industries served lay outside of the Deerfield River, as according to Botts, Franklin County was the only county in Massachusetts without a city that boasted more than 5,000 wage earners in manufacturing.<sup>187</sup> The New England Power Company's ability to efficiently export electricity away from the river which drove the company's turbines limited the industrial growth in towns like Shelburne Falls, Deerfield, and Greenfield. Thus, by 1940 the hard-working Deerfield River had been transformed into an engine for the rapidly expanding industrial sectors of central and eastern Massachusetts.

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<sup>186</sup> Botts, "Distribution of Deerfield River Power," 295.

<sup>187</sup> Botts, "Distribution of Deerfield River Power," 295.

## CHAPTER IV

### RETURN

*“The river is in Monroe but not of Monroe, controlled by the people who use Monroe but don’t know Monroe, and governed for the public good, but somehow not for the good of Monroe.”*

- Jeanne Armstrong and John Mullin, “The Problems of Rural Reindustrialization” (1989)

By 1940 there was little doubt who controlled the Deerfield River. The New England Power Company monopolized authority over the river’s flow and owned considerable land along the stream’s banks from Somerset Reservoir at the watershed’s source all the way down to Shelburne Falls, the easternmost section of the river before it flattens out as it winds towards the Connecticut River. The transformation of the river into a source of exportable electrical energy sounded the death knell for the logging and paper industries that had boomed in the last quarter of the nineteenth century as the chain of hydroelectric dams punctuating the river made transportation of logs to major sawmills all but impossible. Additionally, the New England Power Company’s intricate network of dams and reservoirs built between 1911 and 1940 disrupted the entire riverine ecosystem, causing an unpredictable flow of water not tethered to seasonal fluctuation and thus forcing locals to alter the ways in which they interacted with the river on a daily basis.

The culmination of this single-utility dominance over the hardest-working river in New England was the construction of the nation’s second nuclear power plant in the tiny town of Rowe, Massachusetts just south of the Vermont border. First proposed in 1954, the plant took seven years to complete and would operate for more than three decades before being decommissioned in 1992 over widespread concerns about the safety and economic viability of

the facility.<sup>188</sup> The Atomic Energy Commission's (AEC) decision to locate the nation's second nuclear power plant on the Deerfield River was rooted in Rowe's rugged landscape on either side of the river, the area's relatively sparse population and the region's history of extensive hydroelectric development. Further, it reflected the extent of the New England Power Company's dominance over the river at the time – local interests once again took a back seat to large, regional companies in their quest to maximize the amount of power extracted from the river in order to meet the seemingly insatiable demand for electricity throughout New England.

The site chosen by the AEC for its first nuclear power plant in New England is located in one of the most rugged sections of the Deerfield River watershed. Steep hills ascend from either side of the river, and aside from the narrow-gauge track of the Hoosac Tunnel and Wilmington Railroad, the area remained largely isolated from the growing towns of Shelburne Falls and Readsboro, Vermont throughout the first half of the twentieth century. The 1950 census reported a population of only 199 people living in Rowe, down from nearly 300 twenty years earlier.<sup>189</sup> The bulk of Rowe's residents lived in the more arable undulating hills to the east of the Deerfield River, leaving the area around the river essentially undeveloped save for a few homes clustered around the tracks of the abandoned HT&W railroad.<sup>190</sup> Harriman Dam, which holds back more than 100,000 acre-feet of water loomed just a few miles above the proposed nuclear power site in Rowe, ensuring that there would be an adequate supply of water to cool the nuclear reactors throughout the year.

In addition to Rowe's rugged topography and access to a consistent and readily available supply of water, the history of hydroelectric development in the area made the site even more

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<sup>188</sup> M.I. Wald, "A-Plant to Close over Safety Issue," *New York Times* 141, no. 48741 (October 2, 1991): A1, EBSCO.

<sup>189</sup> "1950 Census of Population: Volume 1. Number of Inhabitants," Rowe Historical Society.

<sup>190</sup> "ROWE HISTORICAL SOCIETY," *Pioneer Valley History Network*, July 14, 2012, <https://pioneervalleyhistorynetwork.org/locations/rowe-historical-society/>.

attractive for the Yankee Atomic Electric Company (YAEC). Transmission lines capable of transporting high volumes of electricity already dotted the landscape on either side of the river, making exporting power generated from the nuclear plant more efficient and less expensive than proposed sites along similar sized rivers that had escaped the hydroelectric boom of the early twentieth century. Lastly, the people of Rowe and neighboring Monroe, as small as their numbers were, generally had experience with the construction of hydroelectric generating facilities and were therefore more open to the economic advantages that the innovative nuclear site promised to deliver.

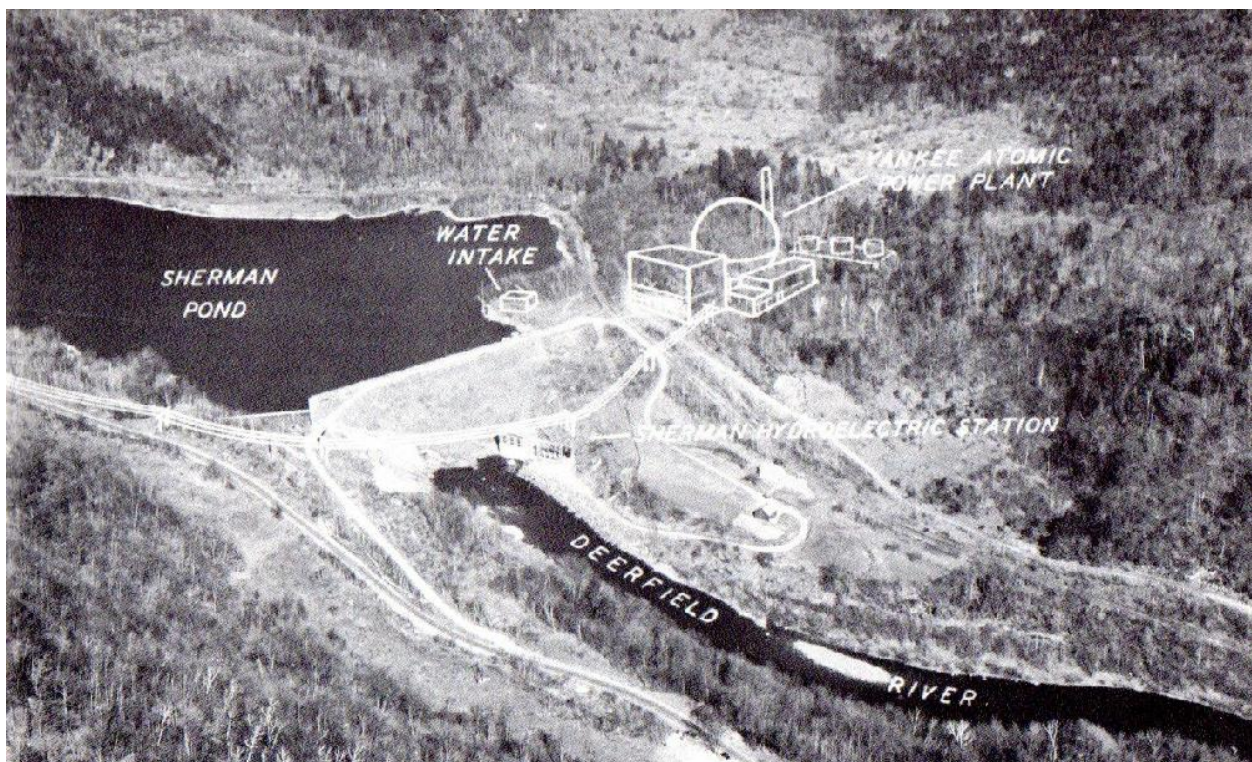
Perhaps most importantly, the comprehensive management of essentially the entire developable area of the Deerfield River by a single power company made the Rowe site a particularly desirable location for what Massachusetts Senator Kennedy claimed “may well prove to be the most important development in our region’s economy in the twentieth century.”<sup>191</sup> The sectioned character of the river meant that water flows could be regulated with an eye towards electrical development – if the Rowe nuclear plant needed more or less water to cool their plant during periods of peak demand, the amount of water flowing past the reactors could be raised or lowered immediately with the push of a button. Rather than coordinate these fluctuations in flow with a number of companies, the nuclear plant at Rowe would need only to negotiate with the New England Power Company, which also happened to be one of the private companies whose financial investment made the nuclear power experiment in western Massachusetts possible.

The final decision to bring nuclear power to the Deerfield River was ultimately made by Lewis Strauss, the chief of the Atomic Energy Commission. A major proponent of the

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<sup>191</sup> “Atomic Energy Seen Powering N.E. Homes, Factories by 1960,” *The Boston Herald*, February 10, 1958, Proquest.

commercialization of atomic energy, Strauss promised “an era of progress for this great natural force.”<sup>192</sup> With the support of Strauss and the AEC, the newly formed Yankee Atomic Electric Company (YAEC) purchased more than a square mile of land along the Deerfield River in Rowe, Massachusetts in 1954. Rumors that the town was slated to be the site of the second nuclear power plant in the United States were proven true when the YAEC broke ground on the \$25,000,000 power project in the spring of 1954.<sup>193</sup>



*Preliminary Sketch of Plans for Yankee Atomic Power Plant, built from 1956-1960 in Rowe, Massachusetts*

Much like Henry Harriman’s ambitious transformation of the Deerfield River over the first quarter of the twentieth century, building a nuclear power plant in Rowe, Massachusetts

<sup>192</sup> William Lanouette, “Atomic Energy, 1945-1985,” *The Wilson Quarterly* (1976-) 9, no. 5 (1985): 108.

<sup>193</sup> “\$25,000,000 Will Be Spent on Atomic Plant,” *Springfield Union*, April 9, 1955, Newsbank America's Historical Newspapers.

rested squarely on faith in man's ability to control nature. Nuclear power for commercial power generation was in its infancy in the 1950s, a reality that was not lost on the citizens of Rowe. In an address to the American Public Power Association in 1955, the head of the AEC's Division of Civilian Application, Charles G. Manly, told the audience: "all atomic power plants are in the research and development stage. You will have to buy your plant largely on faith in the scientists, engineers and manufacturers who will design and make it for you. No one, as of now, can point to any atomic plant operating in the United States which was designed primarily for use in generating electric power."<sup>194</sup> As one executive of the Yankee Atomic Energy Company bluntly put it, "the only way of learning the potential of the atomic power field is to try it."<sup>195</sup>

Due to the relatively low populations of Rowe and nearby Monroe, Massachusetts as well as the long history of electrical company dominance over the flow of the Deerfield River, the interests and concerns of people living in and around Rowe figured minimally in the AEC's decision to locate their experimental plant in western Massachusetts. Elegio Comai, the selectman of the town of Monroe, told reporters in 1955 that "there have been all kinds of rumors about what the land was being bought for and when the story came out this week about the atomic power plant in western Massachusetts, we had a pretty good idea that it was going to be in our town."<sup>196</sup> For the people living in close proximity to the Deerfield River, locating a nuclear power plant along the banks of the river was seen as just another step in the relentless pursuit of maximizing the value of the river's water for the purpose of generating electricity. No coalition was formed to protest the AEC's decision to locate what was essentially a trial run for

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<sup>194</sup> "Pioneer Spirit Is Ascribed to A-Power Plant," *Springfield Union*, October 20, 1955, Newsbank America's Historical Newspapers.

<sup>195</sup> Periscope Film, *YANKEE ROWE NUCLEAR POWER GENERATING STATION 72652*, accessed October 8, 2018, <https://www.youtube.com/watch?v=H--FbZIED98>.

<sup>196</sup> "\$25,000.000 Will Be Spent on Atomic Plant."

the government in assessing the viability of privately-developed nuclear power within the Deerfield River watershed. Although the AEC never consulted the people whose lives would be directly impacted by the nuclear plant, a promotional film put out by the company years later claimed confidently that “the people of Rowe wanted the installation in their town.”<sup>197</sup>

The YAEC met little resistance from residents of Rowe or those living throughout the Deerfield River watershed, many of whom had already experienced significant hydroelectric development in the region during their lifetime. The novelty of nuclear power itself seemed a powerful factor in the widespread interest in locating such a plant along the banks of the Deerfield River. As the *Springfield Union* boldly predicted in the summer of 1960, “Someday soon you’ll flick a switch in your house, office or factory. You will have no way of telling, but the energy you have tapped in that flick may have started with the splitting of some atoms in a little town named Rowe.”<sup>198</sup> Promises of increased land valuations and a decreased tax rate further encouraged many residents of Rowe and Monroe to support the construction of the Yankee Rowe nuclear power plant. Further, the project promised to bring hundreds of jobs to an area that had seen its population decline significantly since the first wave of dams and power plants were built in the 1920s. Frank Sartori, who sold his family’s 135 acres in Rowe to the YAEC, expressed the widely-held optimism for the economic advantages brought by the introduction of atomic energy. “Now I wish I’d bought some more of it when I had the chance,” Sartori lamented, adding that the power company was already at work removing boulders that threatened to roll onto the railway tracks that cut through the property.<sup>199</sup> Dozens of other locals followed Sartori’s lead and quickly sold off land to the power company, further relinquishing

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<sup>197</sup> Periscope Film, *YANKEE ROWE NUCLEAR POWER GENERATING STATION 72652*.

<sup>198</sup> “A-Plant Draws Visitors from All Over the World,” *Springfield Union*, June 20, 1960, Newsbank America's Historical Newspapers.

<sup>199</sup> “Prospect of Nuclear,” *Springfield Republican*, April 10, 1955, Newsbank America's Historical Newspapers.

local control of yet another section of the river that figured so prominently in the region's economy.<sup>200</sup>

Proponents of locating the atomic power plant in Rowe promised that construction would bring hundreds of jobs to a region whose sole industrial employer, the Deerfield Glassine Company, employed fewer than 200 people. In 1955, the *Springfield Republican* estimated that the assessed valuation of land in Rowe would increase from \$800,000 to more than \$2,500,000 with the addition of the nuclear power facility, and predicted the establishment of numerous new businesses in both Rowe and Monroe that would support the expanding population.<sup>201</sup> The *Boston Herald* reported that the townspeople of Rowe and Monroe “eagerly expected an influx of nuclear scientists, engineers, construction crews, and other personnel.”<sup>202</sup> Local tax authorities predicted that the tax rate, which in 1950 was \$52 per thousand, would drop to less than \$5.50 per thousand with the introduction of even a “modest-sized” nuclear power plant. Overwhelmed with the economic gains that would come with locating the pioneering power plant in their rural town, few questions were asked by both locals and developers as to the costs, both financial and ecological, of bringing nuclear power to the Deerfield River watershed. With cheap land readily available and electrical infrastructure already in place, a reporter for the *Springfield Republican* proudly proclaimed in 1955 that “the Deerfield River Valley stands to become the New England frontier in the release for peaceful uses of the greatest physical power yet known to man.”<sup>203</sup>

Locating New England's first nuclear power plant along the banks of the Deerfield River in Rowe was more than just another manifestation of using the river solely for the purpose of

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<sup>200</sup> “Rowe Awaits A-Plant Boom: Town of 208 Eyes \$47 Tax Rate Cut,” *Boston Herald*, April 10, 1955, Newsbank America's Historical Newspapers..

<sup>201</sup> “Prospect of Nuclear.”

<sup>202</sup> “Rowe Awaits A-Plant Boom: Town of 208 Eyes \$47 Tax Rate Cut.”

<sup>203</sup> “Prospect of Nuclear.”

generating electricity. The nuclear power “experiment” in Rowe brought increased regional and local attention to the impact of hydroelectric development on the biological diversity and recreational opportunities throughout the Deerfield River watershed. During construction of the nuclear plant in Rowe, the YAEC sponsored a series of tests to determine how the heated water that would be discharged from the plant would impact the fish and wildlife downstream.

Directed by Dr. R.E. Trippensee of the University of Massachusetts, the company-sponsored study concluded that “the operation of the Yankee Plant may benefit fishing by moderating winter water temperatures although it may cause slightly adverse effects in the warmest days of midsummer.”<sup>204</sup> No change in the oxygen conditions of the water was expected as a result of the nuclear plant operations, and the slight warming in the winter months was predicted to increase the carry over and growth of fish stocked during the previous season.<sup>205</sup>

Despite assurances from the YAEC that the Rowe nuclear plant would have little or no impact on the water quality of the Deerfield River, government studies conducted over the next decade determined that water was discharged from the plant at a temperature as much as fifteen degrees warmer than when it entered.<sup>206</sup> This ecologically disastrous spike in temperature reduced the abundance of temperature-sensitive native fish species such as trout while creating conditions for non-natives species.<sup>207</sup> Further, a temperature increase of this magnitude likely impacted “species phenology in the form of reduced life cycle length and earlier hatching and

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<sup>204</sup> “Rowe Plant May Be Boon For Fishing,” *Springfield Union*, May 1, 1959, Newsbank America's Historical Newspapers.

<sup>205</sup> “Rowe Plant May Be Boon For Fishing.”

<sup>206</sup> Massachusetts Department of Environmental Quality Engineering, “Deerfield River Basin: 1981 Wastewater Discharge Data” (Westborough, Massachusetts, March 1982); Water Quality Section, Division of Water Pollution Control, Massachusetts Water Resources Commission, “Deerfield River, 1973. Water Quality Survey Data (Parts A-D)” (Westborough, 1976 1973).

<sup>207</sup> William K. Stevens, “New Rules for Old Dams Can Revive Rivers: Some New Rules for Older Dams Can Revive Rivers in Northeast,” *New York Times*, November 28, 1995, Proquest.

emergence,” meaning not only the devastation of the trout population, but also the species that trout and other native fish species relied on.<sup>208</sup> Unlike previous dam projects which altered the flow of water but generally left the temperature and quality of that water unchanged, the nuclear power plant at Rowe dramatically increased the water temperature of the Deerfield River. This change ushered in a new wave of restoration efforts sponsored by state and local agencies aimed at enhancing the recreational opportunities of a river that had been so noticeably altered by hydroelectric developments.

If the decision to build New England’s first nuclear power plant represented the pinnacle of the power companies’ control over the Deerfield River, so too did it mark a turning point in the recreation and tourism industry’s push to reclaim some influence over the use of the river’s water. Following the Yankee Atomic Electric Company’s study in 1957, the Massachusetts Division of Fisheries and Game announced that it would “reclaim” a forty mile stretch of the Deerfield River through an “complete chemical treatment program and restocking of trout” at a cost of \$20,000 plus management.<sup>209</sup> William E. Hallahan of the Mohawk Trail Association, one of the most outspoken supporters of the state’s reclamation plan, claimed that “certainly no other stream in the East has the potential to lure the number of fishermen as has the Deerfield. It will take a long-term program of public relations, reclamation, and public support to achieve the desired results. But the result of a well-planned program can be 200,000 more visitors a year to the area.”<sup>210</sup>

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<sup>208</sup> T. Worthington et al., “The Effects of a Thermal Discharge on the Macroinvertebrate Community of a Large British River: Implications for Climate Change,” *Hydrobiologia* 753, no. 1 (July 2015): 81–95, <https://doi.org/10.1007/s10750-015-2197-1>.

<sup>209</sup> “State Plans to Reclaim Deerfield River Stretch,” *Springfield Union*, November 24, 1958, Newsbank America's Historical Newspapers.

<sup>210</sup> “State Plans to Reclaim Deerfield River Stretch.”

Over the next three decades, the contest between the interests of the growing recreation and tourist industries and the well-established needs of the New England Power Company further transformed the Deerfield River. At the urging of the state's chief biologist, in August 1959 the Division of Fisheries and Game applied the chemical Rotenone to the Deerfield River just as it crosses the border into Massachusetts. Cooperating with the New England Power Company to control water volumes downstream of the where the Rotenone was administered and thus insuring that it was sufficiently diluted before reaching the Connecticut River, state officials sought to eliminate all fish species in the river and thus pave the way for the reintroduction of trout fingerlings without the natural predators that had made earlier attempts at stocking largely unsuccessful. Once all the "resident fish" were eradicated and the Rotenone had run its course, the state dumped 100,000 fingerling trout into the now fish-less final forty miles of the Deerfield River, a process that they would repeat every spring and fall for the next decade.<sup>211</sup>

Interestingly, unlike the decision to locate a nuclear power plant in the tiny town of Rowe, the proposal of reclaiming the Deerfield River through the targeted use of Rotenone and subsequent restocking efforts met significant resistance from local residents. Disrupting the "balance of nature" within the watershed was the primary complaint from Franklin County residents who felt that promoting the trout population at the expense of the "trash fish" would have unforeseen negative effects throughout the watershed. William Tompkins, the chief aquatic biologist for the Division of Fisheries and Game responded to the concerns of mismanagement of the river ecosystem by noting that "good fishing just does not happen anymore. It is created through the proper manipulation of nature."<sup>212</sup> Between fluctuating daily water levels, significant

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<sup>211</sup> "Reclamation Plan Outlined to Trail Unit," *Springfield Union*, May 1, 1959, Newsbank America's Historical Newspapers.

<sup>212</sup> "Reclamation Plan Outlined to Trail Unit."

warmer water below the Yankee Rowe nuclear site, and the introduction of Rotenone, the Deerfield River had become ecologically impoverished, a reality that forced locals to challenge the authority of the New England Power Company by expressing the need for greater cooperation over the quality and flow of the river.

The gradual shift towards managing the river with an eye towards balancing the interests of local recreationists (particularly the growing fishing-based tourism industry) with the long-established needs of the New England Power Company was made evident through the design and construction of the Bear Swamp Pumped Storage Development. First proposed in 1965 as the tenth and final power facility built on the Deerfield River, the \$30,000,000 project took five years to build and involved the creation of two reservoirs – the lower formed by water backed up by the Fife Brook Dam on the main stem of the Deerfield River, and the upper reservoir retained by four dikes built around a natural depression 1,600-feet above the riverbed known as Bear Swamp.<sup>213</sup> The project required water to be drawn up to the elevated reservoir during periods of low electricity demand to be available to then drop through a series of turbines back down to the lower reservoir during periods of peak energy demand. The Bear Swamp Development, capable of adding over 600,000 kilowatts of power to the New England Power Company’s expanding grid, marked the final installment in the company’s nearly century-long quest to put every ounce of water in the Deerfield River to work generating electricity.

When the Federal Power Commission approved the Bear Swamp Project in 1970, they did so partly because the chosen site would not “adversely effect the aesthetic, conservationist, or recreational aspects of the area.”<sup>214</sup> Unlike previous hydroelectric projects on the Deerfield River and the Yankee Rowe nuclear plant built only a decade earlier, a portion of the project funds

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<sup>213</sup> “Bear Swamp Power Company, LLC. FERC Project No. 2669,” n.d.

<sup>214</sup> “Rowe Power Plant Okayed,” *Springfield Union*, May 3, 1970, Newsbank America's Historical Newspapers.

were earmarked for the development of recreational opportunities in the area, including a significant investment in creating nearby Monroe State Forest as well as funding for independent studies on the impact of hydroelectric development on the riverine organisms within the watershed. “Power Company to Sponsor Environmental, Fish Studies” ran the headline of the February 2<sup>nd</sup>, 1972 *Springfield Republican*, going on to note that the study would address concerns that silting from the Bear Swamp plant was filling in popular fishing holes just below the proposed dam site.<sup>215</sup> In addition to ameliorating concerns over silting the lower reaches of the Deerfield River, the New England Power Company developed “paper plans right down to the best type of grasses to be planted for wildlife, and the establishment of additional waterholes for wildlife outside the fenced in upper reservoir.”<sup>216</sup> In both the design and approval process for the Bear Swamp power plant, it was clear that both environmental and recreational interests needed to be balanced with generating electricity during periods of peak demand in order for the project to move forward.

Although most Franklin County residents likely failed to recognize the significance of the decision at the time, the final approval for the Bear Swamp project in 1970 also included the first minimum flow agreement struck between local interests and the New England Power Company. A minimum flow of 100 cubic feet of water a second, as measured in Charlemont several miles below the Bear Swamp facility, was guaranteed by the New England Power Company, an agreement pushed for by local fishing groups that threatened the power company’s ability to always meet peak demand for electricity. In addition to establishing a minimum flow requirement for the stretch of river directly below the impounded water at the Bear Swamp

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<sup>215</sup> “Power Company to Sponsor Fish, Environmental Studies,” *Springfield Union*, February 2, 1972, Newsbank America's Historical Newspapers.

<sup>216</sup> “Harnessing Power From A Mountain,” *Springfield Republican*, March 12, 1972, Newsbank America's Historical Newspapers.

facility, the New England Power Company partnered with the Technical Committee of Fisheries Management on the Connecticut River in restoration of anadromous fish species to the Deerfield River, investing close to half a million dollars in efforts to restore native fish species to the watershed.<sup>217</sup>

On August 26, 1973, officials from the New England Power Company and the Massachusetts Department of Natural Resources gathered to dedicate the 4,000-acre Monroe State Forest, a recreation area complete with nine miles of hiking trails, numerous tent sites, and three permanent shelters made possible by funds generated through capitalization of the Bear Swamp Pumped Storage Project. Included in the description of the state's newest recreation area was that the facilities "were proposed and paid for by the New England Power Company," a testament to the more balanced imagining of the Deerfield River that emerged in the 1960's following the construction of the experimental nuclear plant in Rowe. With the vast majority of the economic benefit of these hydroelectric power projects going outside of western Massachusetts, the environmental and recreation priorities included within the Bear Swamp project marked a commitment to satisfying local interests in addition to generating electricity for export throughout New England. No longer was the river an exclusive tool for the New England Power Company, but increasingly the river was seen as economically advantageous for both its ability to generate electricity and the recreational opportunities it provided. As the state's 1973 *Survey of Water Quality in the Deerfield River Watershed* aptly noted, "At the present time the Deerfield is used for two basic purposes. These are recreation and the generation of electricity."<sup>218</sup>

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<sup>217</sup> "\$40 Million Project at Bear Swamp to Have Dual Role," *Springfield Union*, n.d., Newsbank America's Historical Newspapers.

<sup>218</sup> Water Quality Section, Division of Water Pollution Control, Massachusetts Water Resources Commission, "Deerfield River, 1973. Water Quality Survey Data (Parts A-D)."

If the design and implementation of the pumped storage plant at Bear Swamp suggested a more balanced approach between the interests of power company and local recreation groups in terms of managing and capitalizing on the flow of the Deerfield River, the debate over building an additional dam and power facility on the river in 1980 reflected an even deeper erosion of the power company's monopoly on controlling the river's flow. In the spring of 1980, the Massachusetts Municipal Wholesale Electric Corporation (MMWEC), a subsidiary of the New England Power Company, proposed the erection of a dam sixty-five feet high that would cross the river in the lowlands section of the watershed just above Stillwater Bridge in Deerfield. The proposed dam would back up the river for five miles, creating a narrow lake extending all the way from the western edge of Deerfield to the Gardner's Falls dam just below Shelburne Falls.<sup>219</sup> Like the existing nine hydroelectric facilities dotting the Deerfield River, electricity from the proposed Stillwater plant would be sold outside the county.

Local and regional recreation groups quickly organized in opposition to the MMWEC's proposed dam at Stillwater. Led by the newly formed Deerfield River Conservation and Protection Association, local residents claimed that such a dam would "inundate five miles of one of the few remaining remote river sections in the commonwealth and reduce it to just another impoundment site of the kind commonly found throughout the Connecticut River Valley."<sup>220</sup> Additionally, locals stressed that like similar hydroelectric developments built on the Deerfield River in the past, the economic advantages of the project would be felt outside the watershed, while those living near the river would be burdened with the costs. In May of 1980, locals staged a "canoe-in" to draw attention to the ecological costs that the Stillwater Dam project would

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<sup>219</sup> Walentyna Pomaska, "Hydro Dams Focus of Airing," *Springfield Union*, March 29, 1980, Newsbank America's Historical Newspapers.

<sup>220</sup> "Dam Studies Stir Environmentalists," *Springfield Union*, June 2, 1981, Newsbank America's Historical Newspapers.

bring.<sup>221</sup> After investing more than \$100,000 in researching the feasibility of the dam site, the MMWEC abandoned the project on November 16, 1981, citing rising costs and resistance from environmentalists concerned about fish and wildlife along the river banks.<sup>222</sup> The official press release by the company claimed that “spiraling cost estimates, a lack of public support, an anticipated lengthy and costly regulatory process, and the economics unique to hydroelectric projects” all figured in their decision to abruptly abandon the project less than two years after it was first proposed.<sup>223</sup> The strength of opposition against the dam and the short lifespan of the proposed site before it was completely abandoned by the MMWEC suggests that by 1980, nearly a century after the completion of the Hoosac Tunnel opened the door for men like the Newton Brothers and Henry Harriman to capitalize on the transformation of the most remote sections of the Deerfield River, control of the river was moving back into the hands of local residents who sought to reshape the ways in which people perceived and interacted with the region’s hardest working river.

The construction of the Yankee Rowe nuclear power plant in the 1960’s and the Bear Swamp pumped storage facility in the early 1970’s combined with the abandonment of Stillwater dam project in 1980 marked important changes in the dynamics between the various stakeholders interested in controlling the flow of the Deerfield River. The site in Rowe was chosen by the Atomic Energy Commission as an experimental nuclear power plant precisely because of the absolute control over the river wielded by the New England Power Company and the lack of local advocacy for a free-flowing river. This trial run of nuclear power in New England brought

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<sup>221</sup> Pirani, “Ecology as Politics: Hydropower Development and Regulation on the Deerfield River, Massachusetts,” 106.

<sup>222</sup> Stephen Simurda, “Dam Project Abandoned; Costs, Lack of Support Cited,” *Springfield Union*, November 17, 1981, Newsbank America's Historical Newspapers.

<sup>223</sup> Pirani, “Ecology as Politics,” 106.

about a multitude of state and company-sponsored studies of the ecological impact of such a heavily-dammed watershed, causing a marked shift in local interest towards balancing the needs of hydroelectric power with recreational opportunities that relied on a cold, clean river with predictable flow. The New England Power Company's final development on the Deerfield River at Bear Swamp reflected that shift as the company invested heavily in preserving the biological integrity of the region through establishing conservation land along the river and, for the first time, agreeing to minimum flow requirements released from the storage dam just below Bear Swamp. This trend towards a more "mixed-use" approach to managing the powerful waters of the Deerfield River culminated with strong local opposition towards the proposed dam near Stillwater Bridge in 1980, the first time in the twentieth century when local concern over the river's ecological integrity and recreational opportunities trumped the desire of regional power companies to profit from transforming flowing water into exportable electricity.

## EPILOGUE

### THE NEW DEERFIELD

*“How has the Deerfield changed from the lifeless summer frogwaters of old? It was made possible by the new water flows required by the Federal Energy Regulatory Commissions under its relicensing of dams.”*

-Tom Kerr, “The New Deerfield,” (2012)

The Deerfield River’s return as the foundation of the local economy manifested itself in the explosion of the whitewater boating industry beginning in the mid-1980s. Ironically, the sudden rise in whitewater-based tourism on the Deerfield River began with a decision made by the very power company that had actively sought to control and harness the river’s water for much of the previous century. In 1987 the New England Power Company shut down the Number Five Dam in Monroe for ten weeks in order to make repairs prior to the facility’s pending relicensing process. For the first time since the dam was built in 1915, the reservoir behind the Number Five Dam was completely drawn down, releasing a steady torrent of water from the base of the Number Five Dam that transformed one of the steepest, and typically driest sections of the river into what one boater described as “championship-caliber, adrenaline-rush rapids.”<sup>224</sup> Hundreds of kayakers and canoeists descended on the rocky gorge known as the “Dryway” to experience the unprecedented flow of whitewater before repairs on the Number Five Dam were complete and that section of the river was once again reduced to a trickle. Bruce Lessels, a championship paddler who had visited the Deerfield River several times before, was so impressed with what he saw on the “Dryway” in those ten weeks of 1987 that he founded the first rafting company on the Deerfield River two years later. His company, Zoar Outdoor, quickly began lobbying the New England Power Company for more frequent and predictable

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<sup>224</sup> Sigrid Kun, “Top Whitewater Racers to Compete,” *Union-News*, September 16, 1993, Newsbank America's Historical Newspapers.

dam releases, particularly from Harriman Reservoir, the Number Five Dam, and the Fife Brook Dam just below Bear Swamp. Lessels helped form New England FLOW (Friends for the Liberation of Whitewater) to push for greater collaboration between the power company and the burgeoning whitewater industry.<sup>225</sup> As Lessels recalled several years later, “if you called up the Harriman power station they’d often say ‘Sorry, we can’t tell you.’ There were angry words. We were demanding the information. They weren’t helpful and we had a bad attitude.”<sup>226</sup> Despite the lack of initial success, the ten-week run along the “Dryway” in 1987 established a new and vocal perspective in the evolving debate over the management and use of the Deerfield River’s powerful flow.

Those voices came together in 1994, when the various stakeholders interested in the use and management of the Deerfield River coalesced in what became a “landmark settlement agreement” that Secretary of the Interior Bruce Babbitt described as a model for other river basins around the country.<sup>227</sup> Neil Ulman of the *Wall Street Journal* praised the agreement as the culmination of a “decade-long dispute,” yet in many ways the document signed on October 6, 1994 reflected a much longer and more complicated web of competing interests concerning the flow of the Deerfield River. By the end of the twentieth century, local town governments concerned with shrinking tax rolls, newly-formed rafting companies whose economic livelihood depended on predictable dam releases, anglers looking for steady flows to support fish and the insects they live on, conservationists focused on the wildlife populations supported by the river’s two major reservoirs in southern Vermont, and the New England Power Company who hoped to continue to profit from their network of dams capable of generating clean, cheap power during

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<sup>225</sup> Lessels, Sims, and Dowd, *The Deerfield River Guidebook: Whitewater, Fishing, Recreation*, 22.

<sup>226</sup> Lessels, Sims, and Dowd, *The Deerfield River Guidebook*, 22.

<sup>227</sup> David Gram, “Environmental Clash: Endangered Flower Delay’s River’s Return,” *St. Albans Daily Messenger*, July 14, 1997, Newsbank America’s Historical Newspapers.

periods of peak demand all laid claim in one way or another to exerting some level of control over the river's flow. The diversity of interests involved, as well as the long history of dominance by a single utility over the river, made the 1994 Settlement significant not only in the context of the Deerfield River watershed, but also for the hundreds of dams across the country that would come up for relicensing in the following years.

The 1994 Deerfield River Settlement Agreement involved representatives from the New England Power Company, the United States Environmental Protection Agency, the National Parks Service, the United States Fish and Wildlife Service, the Massachusetts Division of Fisheries and Wildlife, American Rivers Inc., American Whitewater Affiliation, the Appalachian Mountain Club, The Conservation Law Foundation, the Deerfield River Compact, the Deerfield River Watershed Association, New England FLOW, and Trout Unlimited agreeing to terms that would guide management of the watershed over the next forty years. These terms included the New England Power Company guaranteeing whitewater releases from two of its dams at designated times throughout the year, installing fish passages at various sites along the river, implementing a program of wildlife enhancement at all reservoirs, and providing minimum flows from all dams throughout the watershed to protect the aquatic habitat.<sup>228</sup> Cleve Kapala, director of relicensing for the New England Power Company, estimated the fulfilling the terms would cost the company approximately \$30 million over the next forty years, more than 10% of the total value of the dams. Despite the loss in profit, the company reached a settlement partly to

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<sup>228</sup> "New England Power Company, Deerfield River Project Relicensing. Docket No. LP 2323-012. Offer of Settlement" (The Federal Energy Regulatory Commission, October 6, 1994), <https://lowimpacthydro.org/assets/files/Deerfield%20documents/Attachment%20A1%20-%20Deerfield%20Settlement%20Agreement.pdf>.

avoid litigation brought by both boaters and fishermen that would have held up the relicensing process indefinitely.<sup>229</sup>

It seems only fitting that the river which during the early twentieth century became the first river in New England to be completely regulated for the purpose of hydroelectric development (before hosting the first nuclear power plant in the region) would then also become the first river in New England (and only second in the nation) on which an agreement between a power company and such a broad coalition of parties had been reached.<sup>230</sup> The impact of the 1994 Deerfield River Settlement Agreement was felt far beyond the 665 square miles of the Deerfield River watershed. In the spring of 1996, a delegation of environmentalists from Tokyo, Japan interested in balancing river restoration with generating hydroelectric power toured the Deerfield River, meeting with many of the local and regional agencies that had brokered the agreement two years earlier.<sup>231</sup> As William Stevens of the *New York Times* reported a year after the Settlement was reached, “with some 800 dams nation-wide up for relicensing in the foreseeable future, what is going on here [in the Deerfield Watershed] is being held up as a model for the nation.”<sup>232</sup> The ten dams built on the Deerfield River in the twentieth century, and more importantly the control over the life of the river that those dams afforded a single power company, would now be managed for purposes beyond simply exporting electricity to the more populous sections of New England. For the nearly 40,000 people living in the Deerfield River watershed, the 1994 Settlement Agreement was more than simply a step towards restoring the ecological vitality of the river – for the first time in nearly a century, locals could claim that the

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<sup>229</sup> Neil Ulman, “Unlikely Allies: Pact for River’s Use Unites Conservationists And a Power Company. Decade-Long Dispute Ends In an Agreement Seen As Example for Industry,” *Wall Street Journal*, May 20, 1996, Proquest.

<sup>230</sup> Tom Christopher, “Deerfield Victory!!!,” *American Whitewater* (April 1995): 12.

<sup>231</sup> Ulman, “Unlikely Allies.”

<sup>232</sup> William K. Stevens, “New Rules for Old Dams Can Revive Rivers: Some New Rules for Older Dams Can Revive Rivers in Northeast,” *New York Times*, November 28, 1995, Proquest.

river truly belonged to them once again.<sup>233</sup>

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<sup>233</sup> Deerfield River Watershed Open Space Planning Committee, "Deerfield River Watershed Open Space and Recreation Plan 2004."

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