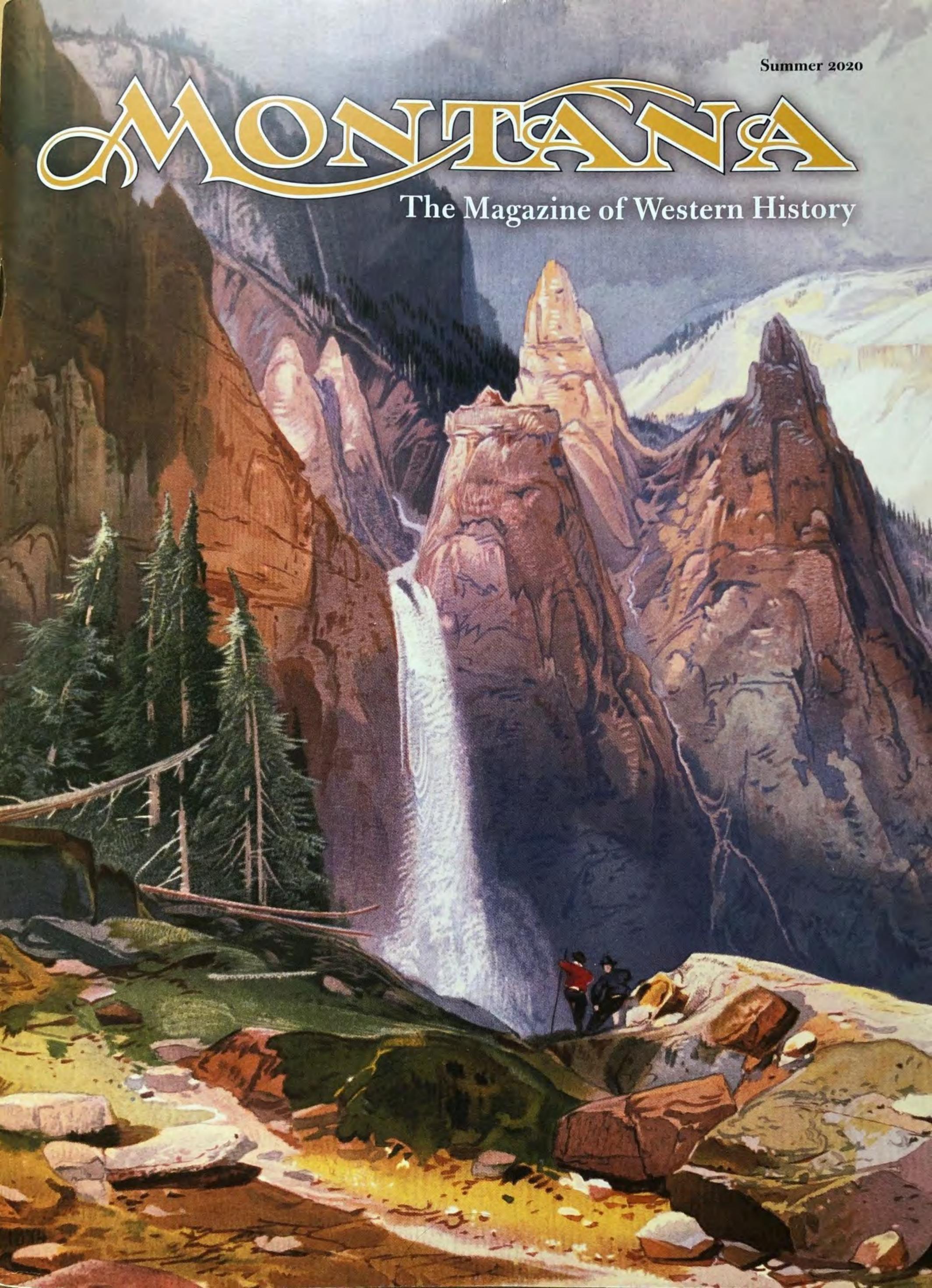


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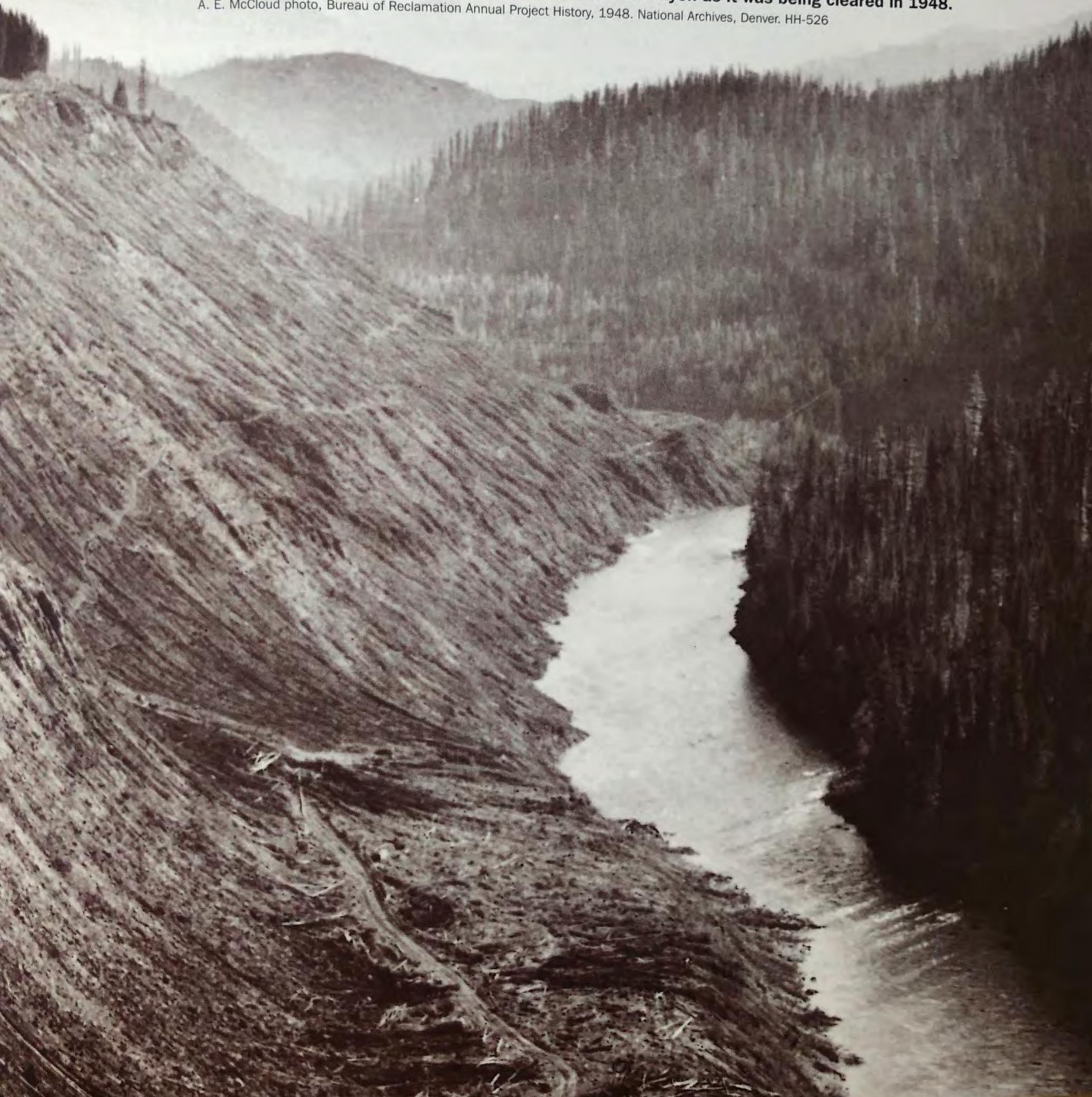
Paul Bunyan Rivalled

LOGGING AND CLEARING MONTANA'S
HUNGRY HORSE RESERVOIR, 1945-1956

by James A. Grant

Creating the Hungry Horse Reservoir necessitated logging and clearing twenty-five thousand acres along the South Fork of the Flathead River. The use of newly invented, mechanized equipment expedited these operations and changed the state's timber industry. This photograph shows the canyon as it was being cleared in 1948.

A. E. McCloud photo, Bureau of Reclamation Annual Project History, 1948. National Archives, Denver. HH-526



IN THE SUMMER of 1950, Paul Bunyan's rivals made their mark on the South Fork of the Flathead River by doing what that mythical lumberjack did best: felling the forests far and wide. Unlike Bunyan, these loggers didn't wield a mighty axe, but their tools could snap a tree trunk in a single blow. Headlines from California to New York recounted the spectacle taking place in the remote mountain valley of northwestern Montana at the future site of the Hungry Horse Reservoir. Tales of cables dragging eight-foot-wide steel balls through the Montana woods and tearing down trees captured the public imagination, as did a giant bulldozer nearly equal in stature to Babe the Blue Ox.¹

Impacts of the Hungry Horse Reservoir logging and clearing operations extend beyond the reclamation project's purposes of regulating Columbia River system water flows and generating power. The rapid and extensive exploitation of the forest in the South Fork drainage and the access provided by Hungry Horse Project developments propelled the valley to become the Flathead region's primary timber-producing area, in part because it coincided with notable changes in the timber industry. Crosscut saws gave way to chainsaws and truck hauls replaced river drives during a time when sawmills increasingly depended on federal lands to furnish their timber. Along with these changes came a new era of road-building that opened previously inaccessible forests to large-scale logging, while the mechanized timber production allowed logging to proceed at unimagi-

nable speed. Celebratory headlines comparing the new industrial giants to their mythic counterpart not only hinted at a bygone era of the American lumberjack, but also shone a light on the technological shift that transformed both the industry and the landscape.

The South Fork is one of three branches of the Flathead River, originating at the southern end of the Swan Range and cutting deep through the Flathead National Forest south of Glacier National Park. Long before trappers, prospectors, and tourists established a presence in the area, the river and its surrounding landscape figured prominently in the lifeways of the region's indigenous people. The Salish, Kalispel, and Kootenai frequented the South Fork Valley from time immemorial and occupied many of the park-like areas along the river. Elders from the Confederated Salish and Kootenai Tribes (CSKT) have described the many open meadows that once existed along the South Fork, a fact that appears in their place names. One South Fork location above Spotted Bear River is known in Salish as *lqwłqwłexw*, which describes an area with "many clearings, a series of prairies in one place." Their practice of igniting low-intensity fires created many of these meadows, diversifying the forest and improving wildlife habitat. The burns also encouraged regrowth of plants prized for food and medicine. In addition to subsisting on the South Fork's abundant fish, wildlife, and plant resources, the tribes utilized forest resources for shelter, fuel, and tools.²

The Hungry Horse Project witnessed the transition from logging with saws felling one tree at a time to the use of massive machinery capable of harvesting huge swaths of forest at an unprecedented rate. Bulldozers, chains, highballs, and Twin D8 Caterpillars all helped clear the way for the Hungry Horse Reservoir.

A. E. McCloud, photographer. Bureau of Reclamation Archives, Boise, Idaho





Until the arrival of the Great Northern Railway into northwestern Montana at the end of the nineteenth century, logging the heavily timbered region was somewhat limited due to the difficulty of transporting the logs.

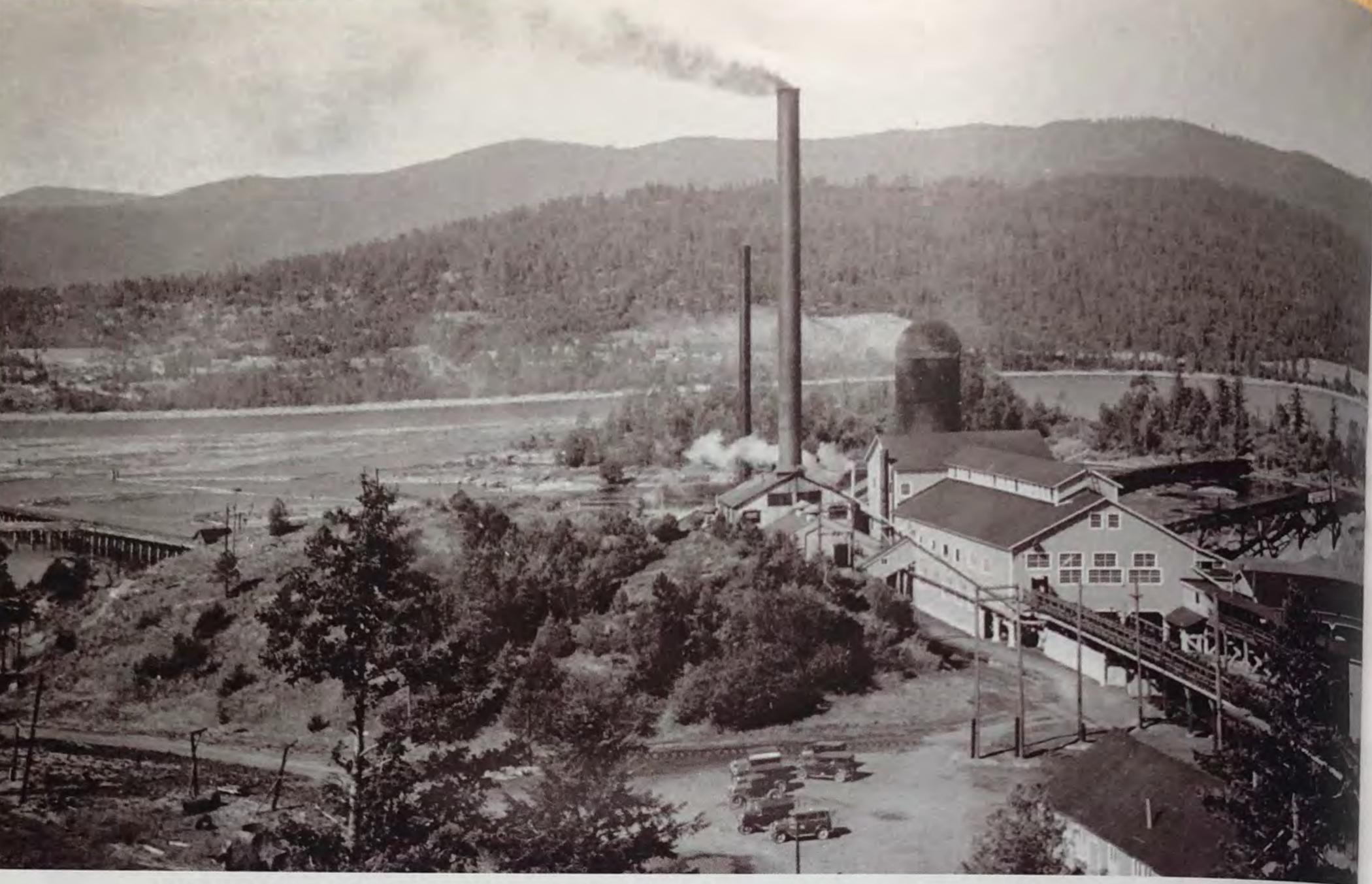
Archives and Special Collections, Mansfield Library, University of Montana, Missoula. umt011848

Settler impacts on the South Fork remained light through the nineteenth century, as the heavily forested, mountainous region remained difficult to reach. Prospectors and homesteaders cut for personal use, leaving their mark on the valley only through the occasional mine adit or place name. Few stayed for any substantial duration.³

The absence of commercial logging activity during much of the South Fork's history is notable. Outside the valley, the Montana timber industry took shape around gold camps and mining boomtowns of the 1860s with entrepreneurs establishing mills in settlements like Virginia City and Helena. Before the availability of railroad transportation to export their products, these early mills mostly served local interests. When the railroads did arrive, they not only provided access to outside markets but also brought

their own demand for ties and timbers to support their expanding lines. Northwestern Montana fell beyond the reach of the large-scale timber operations that came with these first railroads, but in the early 1890s, the Great Northern Railway connected the Flathead region to the world and generated a logging boom there.⁴

Railroads and mines voraciously consumed Montana's timber and fueled industrial production. Demand for forest products became so great that mining and railroad companies invested in some of Montana's biggest lumber mills. The Anaconda Company, for example, used timber both for mine infrastructure and as smelter fuel. By the mid-1890s, the company owned massive mills in Hamilton and Bonner, the latter capable of producing more than 300 million board feet of timber annually. At



Until the 1940s, harvested timber from the Flathead region was floated across Flathead Lake to mills in Somers (above, 1935). During the Hungry Horse Project, some contractors revitalized this method and used tugboats to move timber down the reservoir. Archives and Special Collections, Mansfield Library, University of Montana, Missoula umt011793

the same time, smaller mills popped up throughout western Montana. While just a handful of sawmills operated in the Flathead region around 1890, a decade later that number had increased to nearly forty mills with an annual output of some 70 million board feet.⁵

At the start of the twentieth century, most Flathead Valley lumber mills were concentrated in the Kalispell area, and nearly all of them took advantage of rivers and streams to drive their harvests. Cutting often took place in the winter so the logs could be floated during spring runoff. Workers on the river drives, affectionately known as “river pigs,” ushered the logs downstream. Logs sent down the Flathead River arrived at the head of Flathead Lake, where they were corralled in log booms and towed to the Somers Mill. Over time, railroad spur lines reduced the timber industry’s reliance on waterways to move logs, and mills sprang up elsewhere in the valley.⁶

Western Montana’s burgeoning timber industry depended on private lands, but the federal govern-

ment set the stage for the industry’s future. In 1891, Congress passed the Forest Reserve Act to conserve forest resources and keep certain forest lands under federal control. Irrigation interests figured among the law’s most prominent supporters as agriculturalists looked to the forest reserves to protect watersheds and ensure a reliable water supply for their crops. Much of the land considered as forest reserves encompassed headwaters of major rivers. In 1897, President Grover Cleveland proclaimed the South Fork of the Flathead and surrounding lands a forest reserve. This executive action coincided with the formative days of northwestern Montana’s timber industry. At the time, the South Fork remained remote enough that logging companies found more convenient and cost-effective supplies to fill their millponds.⁷

By 1910, the forest reserve encompassing the South Fork had become the Flathead National Forest, and the U.S. Forest Service had adopted an industry-focused management policy that considered timber a commodity. When put into practice, this meant with-

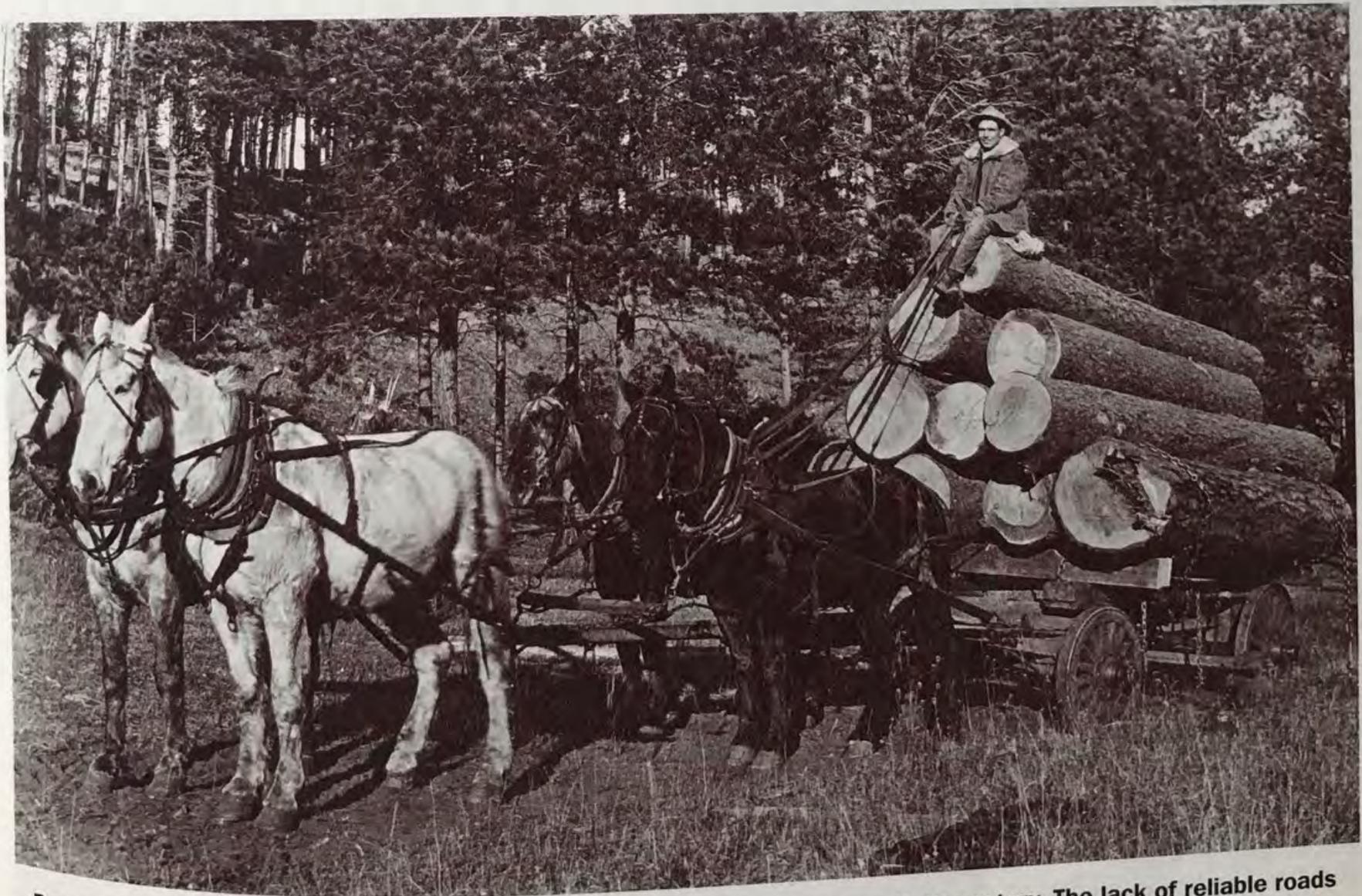
holding stands from harvest so as not to compete with private supplies, selling only to meet shortages, and protecting timber from damage to preserve its commercial value.⁸

Even though South Fork timber received little attention from logging companies during the first decades of the twentieth century, the Forest Service made protecting its timber resources there a priority through the development of an expansive fire detection and suppression program. Indeed, after fires in 1910 scorched around three million acres of forest in Montana and Idaho, the Forest Service left little to chance. Its crews built a network of administrative sites and lookouts throughout the drainage, including three fire lookouts that covered the “[t]he timber belt of the Lower South Fork.” Despite the Forest Service’s best efforts, fires still burned. Major fires consumed thousands of acres within the South Fork drainage in 1919, 1926, and 1929.⁹

By the 1930s, logging companies had begun inquiring about the availability of South Fork timber, but Forest Service officials questioned the feasibility of offering sales in the Flathead National Forest when considerable volumes of private timber remained available. Clearly, the South Fork sup-

ported robust stands, but transportation challenges also stood in the way. In 1931, for example, the J. Neils Lumber Company, which operated a mill in Libby, suggested the idea of “improving” the river to overcome tight canyons that prevented river driving. “If [river] driving is the logical method of transporting the logs to market,” forest supervisor Kenneth Wolfe explained, “the timber could be sold in relatively small chances and the logs manufactured at several of the now existing mills.” The construction of logging railroads, on the other hand, required much larger sales to overcome the capital investment of building a line, and, at the time, only a couple of local mills had the financial means to undertake such a costly operation. Nothing came from the river-driving proposal, but it speaks to the limitations of log transportation in the early twentieth century. Most log hauling continued to be done by horses until the first logging trucks came into use in the Flathead in the 1920s, though truck hauling in the region remained uncommon until after World War II.¹⁰

The war created demand for raw materials, and lumber prices climbed enough to make commercial logging possible in previously unfeasible areas like the South Fork. The depletion of pine forests in the



Teams of horses haul logs from a western Montana forest in the early twentieth century. The lack of reliable roads along the South Fork of the Flathead made transportation by horses—once a common means for getting timber out of forests—impractical given the steep terrain and volume of timber. MHS Photograph Archives, Helena 949-125

upper Midwest contributed to the demand as Montana's timber attracted the attention of Minnesota and Wisconsin lumber companies looking to relocate to places with sufficient timber to support their mills. The war also hastened congressional approval of the Hungry Horse Project as a dam and reservoir site, and, consequently, generated federal support for logging the South Fork. In addition, technological innovations and mechanization of the industry made harvesting the region's timber more feasible and profitable.¹¹

While advocating for the Hungry Horse Project and, simultaneously, considering the impact on the timber resource standing in the reservoir's path, local interests pointed to the need to put people to work as a reason to make beneficial use of trees cut from the future reservoir area. Even before Congress approved the project, the Forest Service offered the first major South Fork timber sale in anticipation of the forest's eventual inundation. That 1942 sale generated little interest, but the Forest Service made smaller sales possible by adding six miles of new timber access road designed to traverse the future reservoir's high-water mark. It sold 10 million board feet from the area in 1945. With that, the era of commercial timber production in the South Fork drainage finally got underway.¹²

The United States planned the Hungry Horse Project primarily for water storage, to generate power,

and to control river flows to benefit downstream hydropower generation on the Columbia River. Its incidental impacts on the forest triggered little opposition. The lack of local debate over flooding the South Fork came in part from it being presented as an alternative to a much more controversial U.S. Army Corps of Engineers plan to further raise the level of Flathead Lake. Ultimately, the Army Corps of Engineers dropped its Flathead Lake proposal and the Hungry Horse Project benefited from widespread support. During congressional hearings on the project, at least one Hungry Horse Project proponent testified on the low value of the timber there, so as not to let the loss of forest resources discourage the project and the associated economic benefits it promised for the local community. "It is a very small amount of timber," contended Donald C. Treloar of the Flathead Valley Citizens Committee, a local organization formed in opposition to the Flathead Lake proposal. "Of the floodage back from the dam site, there is about 3½ miles that is timbered, and the balance of the 29 miles of the storage is burned over," Treloar explained. "You could not have burned it out by hand any better to fit this situation than it has been burned out by God Almighty."¹³

George R. Phillips of the Department of Agriculture offered a more measured assessment of the resource, which also aligned closely with the Forest Service objective to "grow, sell and have harvested

This snapshot of the South Fork Valley was taken in 1944 approximately one and a half miles above the proposed Hungry Horse dam site. It shows the steep, heavily timbered landscape typical of the canyon prior to the logging operations. The Hungry Horse Project yielded over 90 million board feet in mature timber.

Bureau of Reclamation Annual Project History, 1945. National Archives, Denver. USBR J-8-22-44-10



timber crops from national forests in such a way as will make the greatest contributions to public welfare." Phillips reported that of the roughly sixteen thousand acres expected to be inundated, about six thousand acres were "covered only with small trees—what the foresters call reproduction growth." That, he asserted, "is what you gentlemen have been referring to as burned over." The remainder held a considerable volume of merchantable timber, "estimated at 93,000,000 board-feet in total."¹⁴

The standing timber lost to the flowage (area to be inundated by the reservoir) might have been of limited value when viewed in light of the overall project, but Phillips stressed that the project plan should include provision for access roads to be built along the reservoir with the timber resource in mind "in order to protect this upstream area from fire and in order to enable it to continue to grow timber, which is so important to the economic life of the region." In other words, he explained, "you are only going to flood 16,000 acres that would be in the reservoir site, but in doing that you would close about a million acres above there unless new roads and telephone lines are constructed."¹⁵

On the eve of D-Day, June 5, 1944, the government approved construction of the Hungry Horse Dam as a wartime project. With the legislative hurdles cleared, local interests wasted little time in calling for congressional funding to get timber harvesting underway. The Forest Service supported the effort and took a position that the timber cleared from the reservoir area should be fed into the local market. "Clearly," wrote assistant regional forester Axel Lindh, "the timber in this flowage area can add to the security of local mills or prolong the life of other mills." He added that "none of the usable material should be allowed to remain to be cleared and burned in the construction of the dam."¹⁶

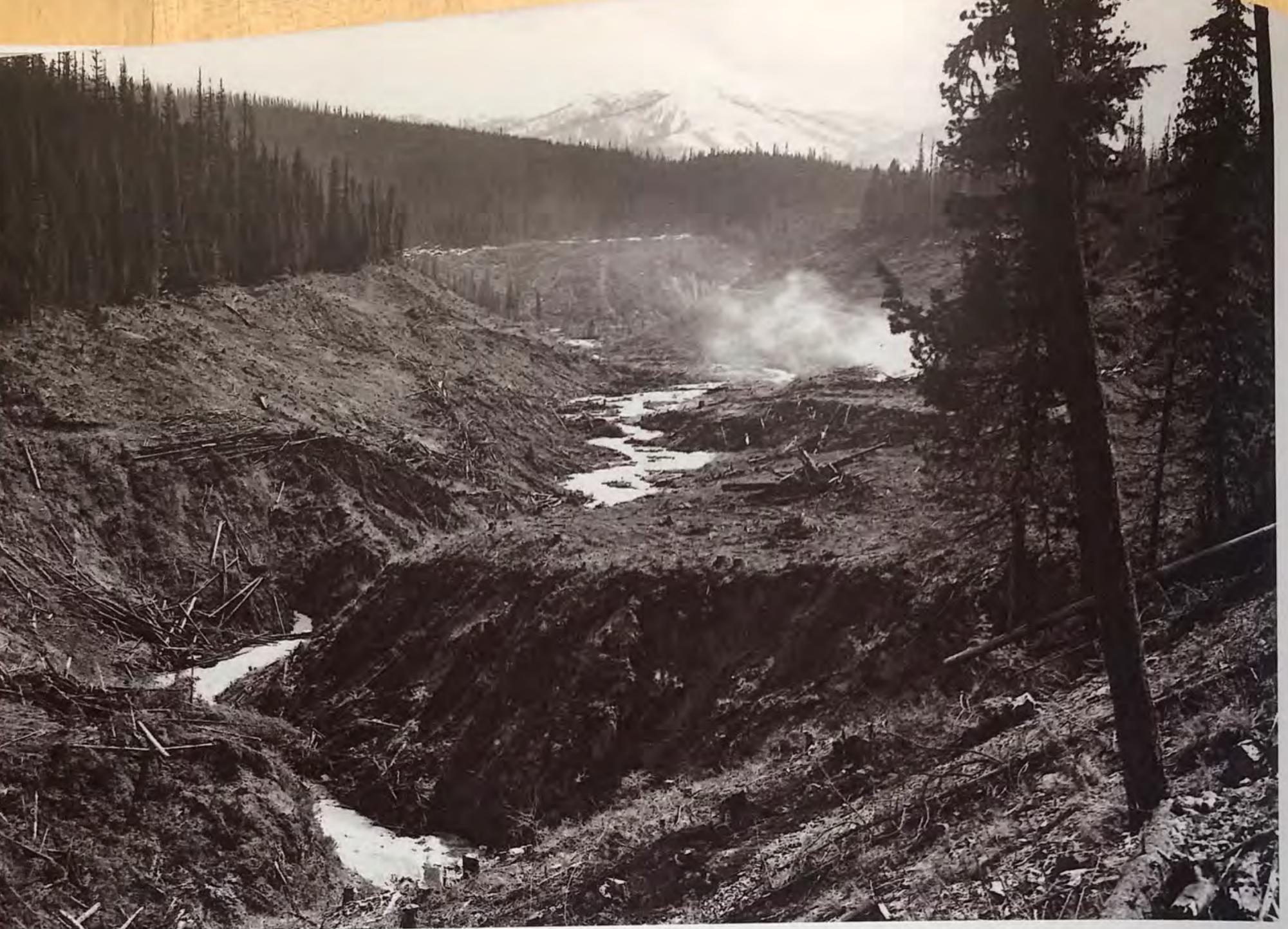
Reclamation land withdrawals in advance of the project meant that the Bureau of Reclamation assumed jurisdiction over the forest in the reservoir's path. Nevertheless, the Forest Service expressed support for harvesting the flowage timber, and assistant chief of the Forest Service Christopher M. Granger outlined the various steps that would need to be taken to get roads surveyed, timber cruised, and more. The Forest Service prepared a memorandum outlining its interests with respect to post-reservoir

jurisdiction, extent of facility replacement, use of the water body for log transportation, and cooperative fire protection. The agency also offered to "supervise the salvage of usable wood in a coordinated program with clearing."¹⁷

While the Bureau of Reclamation served as the lead agency on the reservoir clearing work, including any related timber sales, it found enough common ground with the Forest Service to meet both agencies' objectives: beneficial use of the timber and timely completion of the reservoir. To that end, the two federal agencies executed a memorandum of understanding that clarified their roles on the first phase of forestry activity. That memorandum called for Reclamation to compensate the Forest Service for cruising the timber in the flowage area to provide a volume assessment. Flathead National Forest supervisor Fred Neitzling agreed to adjust the timber sales schedule elsewhere on the Flathead to ensure that loggers could make use of the reservoir timber. The Bureau of Reclamation, for its part, expressed no objections to the Forest Service continuing to offer sales in portions of the reclamation withdrawal area and allowed it to offer "the sale of 15 to 18 million feet if needed by a local operator to sustain operations."¹⁸

In the autumn of 1946, Reclamation advertised its first South Fork timber sale, albeit a modest one that took advantage of seasonal demand for another Flathead timber product: Christmas trees. While relatively small in scale, this initial harvest foreshadowed things to come as Reclamation offered a variety of sales, including saw logs, railroad ties, and pulpwood, to make use of reservoir area forest products.¹⁹

The South Fork timber sales and the increase in harvesting on the rest of the Flathead National Forest coincided with a national upswing in logging the national forests after World War II. With the depletion of private stands, timber companies increasingly looked to the national forests to supply their mills. As historian Paul W. Hirt has noted, World War II "marked a new beginning, a period of expanding use of national forests that accelerated after the war, catapulting the Forest Service out of its previous role as a custodian of the national forests into its new role as a major provider of lumber and pulpwood." Motivated by the high demand for lumber, the timber industry pressed the Forest Service to open up more areas to



Soon after timber companies removed merchantable timber, clearing crews stripped the remaining vegetation. This image shows the initial clearing of the drainage in 1947. Weber, photographer. Bureau of Reclamation Annual Project History, 1947. National Archives, Denver. HH-166

logging. The South Fork became one of the targets for the increased harvest. In 1947, even before harvesting started on the reservoir area timber, the drainage supplied logs to both the F. H. Stoltze Land & Lumber Company's Halfmoon Mill (west of Columbia Falls) and the Plum Creek Mill (in Columbia Falls). By late summer, the Emery Creek area of the South Fork accounted for half of the Flathead National Forest's total annual harvest of 40 million board feet.²⁰

Yet the major news for the local timber industry that year focused on the impending reservoir project. *Hungry Horse News* reported that the industry valued reservoir-area timber as "the answer to a threatened shortage" of available timber on private lands in the region. In May, Reclamation accepted a successful bid on that first clearing contract, which included just over 1,300 acres of forest in its entirety, from J. J. Reese, who ran a sawmill in Essex. The contractor assumed responsibility for removing every tree over one inch in diameter but had the right to dispose of the forest products as he saw fit. The right to the

timber was not a minor incentive, considering that the parcel held an estimated 6,798,660 board feet of sawlogs, as well as 8,900 cords of firewood. *Hungry Horse News* reported that Reese planned "to utilize every possible bit of the up to eight million board feet of timber, and 10,000 cords of pulp wood that will be cleared" on the initial clearing contract and hire local subcontractors to cut "poles, logs and Christmas trees." The contractor reportedly reached an acceptable rate agreement with the Great Northern that enabled it to ship the pulpwood to a mill in Wisconsin, where a market existed for the product.²¹

Pacific Builder and Engineer, a construction industry periodical, called the clearing operation, with "16,000 acres of heavily timbered land to be cleared," the most "unusual feature of the Hungry Horse dam preliminaries." Unlike traditional logging operations that targeted merchantable timber, clearing operators sought to remove all remaining trees and everything else growing on the forest floor so that it was devoid of vegetation.²²

The initial J. J. Reese clearing contract covered only a fraction of the overall reservoir area, and Reclamation provided 840 days for the company to complete the work. The project faced delays from the start when heavy equipment needed for clearing operations failed to arrive on time. Reese's company, doing business as R & S Construction, finally cut its first trees on the project on July 21, 1947. The following season brought little improvement. Despite employing 182 workers on the clearing job, Reese's lack of progress after nearly two seasons turned out to be too much to overcome, and Reclamation terminated the contract. Seaboard Surety, the contractor's bonding company, took over with just 30 percent of the work completed.²³

Despite the setbacks with the clearing contract, Reese's harvests and simultaneous Forest Service sales transformed the South Fork into the Flathead region's primary timber-producing area. Overall, the Flathead National Forest's timber harvest increased substantially from a pre-World War II annual harvest of around 6 million board feet to over 54 million board feet in 1947. By early 1948, the Forest Service had 22 million board feet under contract and another 22 million set to be advertised. Once these

were complete, the agency planned to shift timber harvests to the west side of the South Fork, where more extensive stands existed. Although the Forest Service agreed to halt its own timber sales program to facilitate the reservoir harvest, the *Hungry Horse News* reported that any pause in timber cutting on the national forest would be temporary, and once crews cleared the reservoir, there would be an abundant supply up the South Fork made accessible to timber companies. According to the newspaper, "Eighty percent of the timber reserve up the South Fork is on the west side of the South Fork and will become available as the dam and an access road are completed."²⁴

In late 1948, the Bureau of Reclamation moved forward with plans to clear the rest of the nearly twenty-five thousand acres scheduled for inundation, which included more than 75 million board feet of timber. The *Hungry Horse News*' New Year's Eve edition predicted "one of three big years of Hungry Horse Dam construction." Logging operations scheduled to occur in the South Fork would take center stage, with major harvests commencing in the flowage area. The Forest Service, for its part, also prepared an additional 6 million board-foot harvest in the Canyon Creek area and another million at Emery Creek, which ensured



Logged, cleared, and bulldozed in preparation for the reservoir, once-forested acres in the flowage area resembled a barren plain devoid of all vegetation and wildlife, as this 1949 Bureau of Reclamation photograph shows.

A. E. McCloud, photographer. Bureau of Reclamation Annual Project History, 1949. National Archives, Denver. HH-1603

that logging activity could continue in the national forest once logging contractors completed harvest of the flowage area timber.²⁵

Cutting the vast timber stands within the reservoir over a limited time frame required the mobilization of the majority of the loggers in the Flathead region. Before operations began in earnest, it remained unclear as to the ability of local mills to handle the influx of timber within the project timeline. Yet public opinion favored logging the forest rather than burning it. Reclamation had included the merchantable timber within the initial J. J. Reese clearing contract, but for the remaining timber it took a different approach by offering timber sales separate from clearing, with few contract restrictions. Flathead National Forest supervisor Neitzling predicted that the low-priced contracts would be attractive to local operators and possibly out-of-state entities. He noted that at least one out-of-state operator expressed interest in the chance, but he hoped that it could remain in the Flathead to support the local economy.²⁶

In spring 1949, the Bureau of Reclamation detailed its plans for a flowage timber sale expected to total around 70 million board feet with minimum acceptable bids "considerably below the prevalent forest service minimums of \$7 a thousand board feet." The low price served to "prevent saw log trees from becoming just part of a clearing contract to be burned." Recla-

mation set a goal of having all merchantable timber removed from the flowage area by autumn 1950, meaning the bulk of the harvest would have to take place in just two seasons. To that end, it offered the timber in the spring 1949 in a series of ten schedules, ranging from 2 to 11 million board feet per tract.²⁷

Flathead Timber Products, Inc., a conglomerate of local logging companies formed for the sole purpose of bidding on the Hungry Horse timber, placed the high bid on six of the ten schedules covering an estimated 50 million board feet. F, K & L, another recently formed local company, bid successfully on another portion of the flowage timber at Emery Creek. Such partnerships allowed the local entities to compete for these major timber sales. The companies announced their intention to set up tie mills operated by subcontractors in the flowage, with five to six thousand ties per day to be shipped on the Great Northern out of Coram. According to the *Hungry Horse News*, "There is local pride and satisfaction in Flathead mills bidding on these major timber contracts."²⁸

In May, Reclamation awarded another timber sale schedule containing some 2.25 million board feet in the vicinity of Wounded Buck Creek to Earl Wagner, also a local operator. The various logging companies and subcontractors scattered throughout the valley and established camps and tie mills. By June, more than three hundred workers occupied the flowage



In addition to larger logs, Christmas trees and railroad ties were harvested from the South Fork Valley. Tie mills in the Flathead, such as the Kinshella mill (here), benefited from the influx of timber to their businesses.

A. E. McCloud, photographer.
Bureau of Reclamation Annual
Project History, 1949. National
Archives, Denver. HH-1281

Life on the Hungry Horse Project

FOR THE LOGGERS and clearing workers, the Hungry Horse experience can be viewed as both traditional and transitional. Indeed, the project bridged historical eras of logging in the Mountain West: not only were the tools of the trade changing, but loggers' experiences were evolving in certain ways, too. One tradition of early logging operations that did carry over to the Hungry Horse Project, however, was the use of logging camps to house the workers.

Until World War II, the logging camp represented a fundamental element of the lumberjack lifestyle. The utilitarian boarding facilities with bunkhouse-style accommodations and a mess hall were ubiquitous features of camp life. Lumberjacks often stayed at the camps for an entire season, or at the very least for the duration of the work week due to the travel time to and from their homes. Better transportation by the early 1940s meant that logging camps became obsolete on many jobs, with logging companies busing their crew from town to the job site each day.¹

While some of the loggers and clearing contractors on the Hungry Horse Project took daily trips to the job site, the remote location of much of the Hungry Horse Project work meant many more relied on the convenience of living in a temporary camp.

Flathead area residents accounted for many of the loggers on the project, and they had the luxury of spending their weekends at home after staying the week in camp, "some in portable bunkhouses and others in tents."² Clearing contractors also developed elaborate camps, many at well-established national

forest administrative sites and campgrounds that had been used by Forest Service personnel, the Civilian Conservation Corps (CCC), and then logging companies and tie mills. The clearing crews typically occupied the camps well into the early winter.

While most workers on the flowage timber harvesting and clearing projects were men, women and children also resided in the camps. Although no demographic information on the workers exists, in November 1950, the *Inter Lake* reported that Mrs. Stella Graves and Mrs. Dick Williams returned to their homes in

Kalispell after spending the summer on the kitchen staff at the Wixon & Crowe camp. Betty Anderson worked in the kitchen at Pat Kinshella's tie mill. Six-year-old Stuart Sorenson lived with his parents at the Wixon & Crowe camp. Sorenson's presence there is documented by the *Hungry Horse News*, which reported that he had to undergo a tonsillectomy surgery while living there.³ In fact, enough children lived at the camps to justify a nearby school district hiring a teacher to operate a one-

room school in a Quonset building for at least eighteen students ranging from first through seventh grade.⁴

Although the total number of loggers, road builders, and clearing crewmembers who worked on the Hungry Horse Project is unknown, at peak times around five hundred clearers worked throughout the flowage area. Some may have been migrant labor, but the majority of laborers were local men, many of whom stayed after the project's completion and took jobs in the area's growing timber industry. 🐾



Stuart Sorenson, ca. 1952

Courtesy Stu Sorenson

area. The *Hungry Horse News* captured the scope of the activity there: "Truckloads of railroad ties coming out on the Spotted Bear road tell the story of Flathead Timber Products Inc. operations and their purchase of an estimated 64,600,000 board feet of reservoir timber." Reclamation announced the bid opening in July for the final fourteen thousand acres of reservoir clearing. By that time, nearly five hundred workers were clearing or logging the reservoir flowage.²⁹

With massive harvests in 1949 and 1950, the supply of logs and lumber on hand at Flathead-area mills reached an all-time high. The logging contractors

completed the last of the flowage area timber harvest in 1951, recording a total volume of 87,208,000 board feet on the timber sales. Reclamation estimated that by the end of 1951, clearing contractors had salvaged an additional 6 million board feet of timber, exclusive of the west-side road construction.³⁰

Clearing crews moved in right after loggers harvested merchantable trees. With the bulk of the forest cut over, most of the reservoir clearing effort focused on low-value trees and snags. Wixon & Crowe and J. H. Trisdale, a partnership of experienced clearing contractors from Redding, California, won a contract

to clear a portion of the flowage area. Local newspaper accounts welcomed the partnership, despite it being the first outside entity to win a logging or clearing contract, as it appeared sufficiently capitalized and experienced to take on the massive project within the tight time frame posed by the Bureau of Reclamation. By autumn, over one hundred workers began clearing even as the partnership continued to advertise locally for additional brush clearing crews.³¹

Clearing work paused during the winters, as heavy snowfall on the South Fork prohibited operations. When spring finally allowed the projects to resume, the clearing contractors made steady progress, and in summer 1949, crews encountered few setbacks. The only major exception occurred when fire danger in late August put a temporary stop to clearing, logging, and milling. In the meantime, Reclamation offered other clearing contracts. Coleman H. Dykes of Knoxville, Tennessee, won a contract to clear 10,700 acres. That December, Reclamation re-offered five schedules that had received no bids in an earlier offering. Wixon & Crowe and J. H. Trisdale, operating as separate entities, each made successful bids and effectively split the nearly fifteen thousand acres of remaining clearing work between them.³²

By the close of 1949, Seaboard Surety had completed the original clearing contract once held by J. J. Reese. It sold an additional 1.3 million board feet of timber it cleared to Plum Creek. The contract resulted in a total harvest of 5,666,000 board feet of merchantable timber and 8,899 cords of pulpwood and post wood. Wixon & Crowe and Trisdale reported their original clearing contract to be 95 percent complete before stopping work for the winter.³³

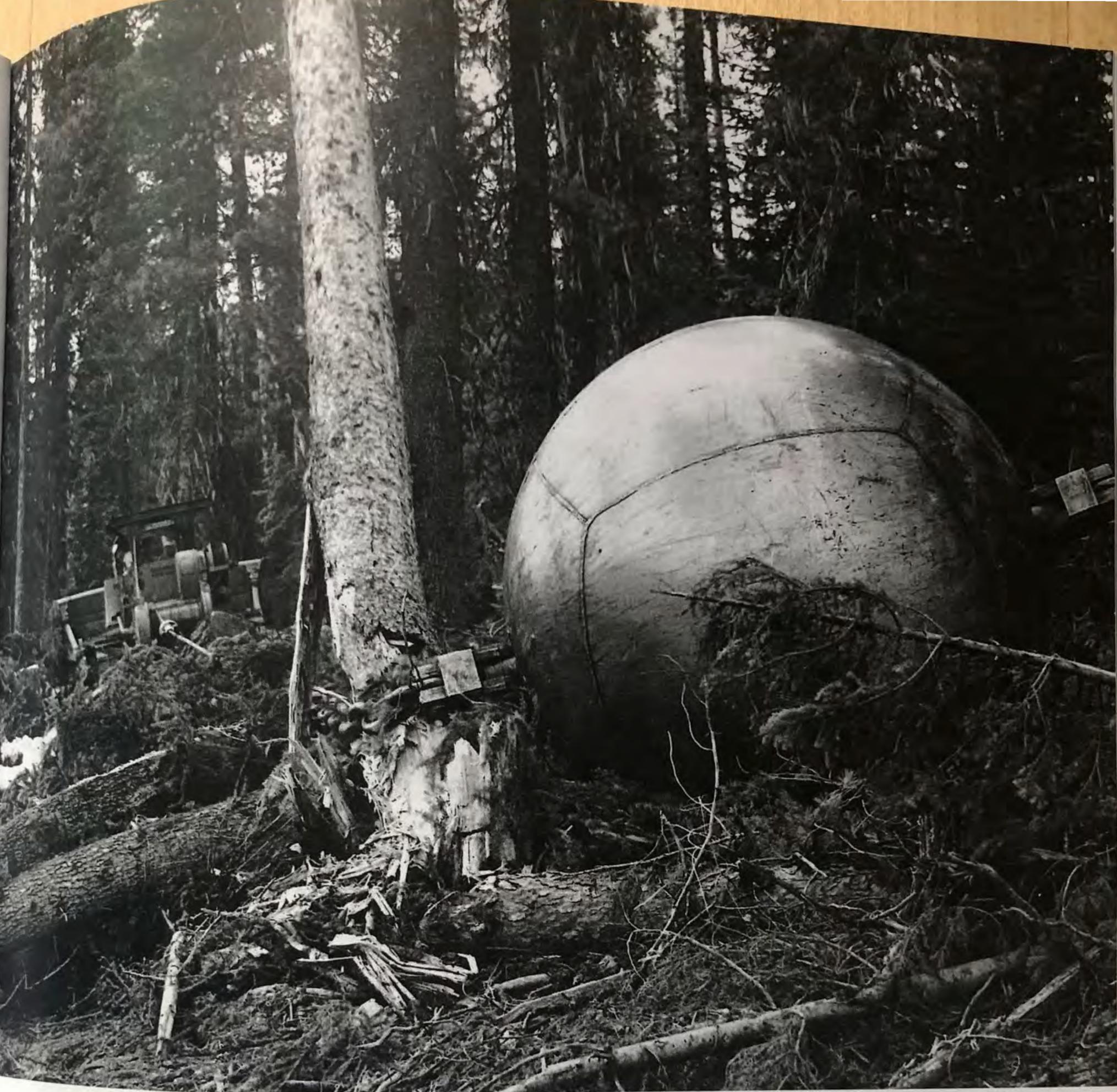
To accomplish these projects in such short time, the Hungry Horse logging and clearing contractors took advantage of technological advancements that revolutionized the timber industry and set a new standard for the volume of timber that could be removed from the forest in a relatively short period. First among these was the widespread use of logging trucks, but other heavy equipment—such as bulldozers and highballs—also changed how loggers and clearing contractors approached their work. In turn, these technologies enabled timber harvests and forest clearing on a massive scale that matched the largest harvests to occur in Montana.

When South Fork timber harvesting first got

underway, crosscut saws remained the preferred method to fell timber. Also known as a “Swede fiddle” or “misery whip,” crosscuts first came into use in Montana in the late 1890s. The saws enabled lumberjacks to down timber at speeds unthinkable by their axe-wielding predecessors. Yet the Hungry Horse Project coincided with a notable transition toward mechanization and new technologies, including the chainsaw. In 1947, a logger’s ingenuity led to an improved saw chain mimicking the cutting action of timber beetle larvae. The new chain revolutionized the device, and by the mid-1950s, chainsaws had nearly replaced the crosscut altogether in Montana.³⁴

The prevalence of innovative tools and heavy machinery among the logging and clearing crews working on the Hungry Horse Project was just one of the many indications that technological advancements in logging operations had brought changes to the industry. Nowhere on the project were these advancements more apparent than in the clearing operation. Innovation born of this necessity brought out iconic features of the Hungry Horse Project that represented its massive scale. Besides manpower, Wixon & Crowe and J. H. Trisdale operated a fleet of heavy machinery that included nine Caterpillar bulldozers running “11 hours a day, seven days a week,” and a twenty-six-ton Allis Chalmers H-D 19 tractor. The contractor also operated its own airplane that allowed staff to travel to and from the remote job site using a runway it cleared between Riverside and Fire Creeks.³⁵

Of course, nothing on the Hungry Horse Project captured headlines like the “highball method.” S. H. “Red” Wixon & John H. Trisdale introduced the custom welded eight-foot steel balls to the project. The innovation consisted of a steel ball bisected by an axle. Anchor chains connected to the ends of the axle provided a point of linkage for a steel cable. The contractors developed the method as an improvement on an earlier technique that involved pulling four hundred feet of heavy cable along the ground between tractors to knock down low-value trees and snags. Attaching the ball raised the cable several feet off the ground and kept it from getting hung up on the stumps of recently harvested trees, while the extra leverage gained from being above the ground helped it fell standing timber. The tractor operators, with highball in tow, bulldozed in a line through the forest until the cable tightened between them. They then



Connected to massive cables and pulled by bulldozers, four-and-a-half-ton highballs (above, 1950) could demolish two hundred acres of undergrowth and mature timber in just four hours.

A. E. McCloud, photographer. Bureau of Reclamation Archives, Boise, Idaho. USBR P447-100-438, cropped.

anchored their machines and winched the cable back, allowing the cable and highball to knock down and uproot everything in their path.³⁶

According to a Reclamation press release, the highball method proved effective at clearing up to two hundred acres in just four hours. The report also claimed that the “relentless assault of the 8-foot diameter steel balls is echoing around the world.” To say, as Reclamation did, that the four-and-a-half-ton balls allowed the contractors to clear “timbered land at a rate rivaling the legendary status of Paul Bunyan” is

a stretch, but the innovation did capture the public’s attention.³⁷

The speed of the highball method allowed Reclamation to maintain its project schedule, permitting the storage of a portion of 1952 spring runoff in the reservoir.³⁸ The highball method also generated publicity for the project. *Popular Mechanics* published an article on the innovation. It even drew the attention of the “Fox Movietone newsreels” crews, who came to Hungry Horse to film it in action.³⁹ As the *Daily Inter Lake* reported, “Probably no other single new



Wixon & Crowe clearing crews used cranes to drag specially designed claws along steep slopes, pulling debris out of the flowage area A. E. McCloud, photographer. Bureau of Reclamation Annual Project History, 1951. National Archives, Denver. HH-3680

development in construction methods attracted more attention during the past year among contractors and construction men, or received greater coverage in the daily press, construction magazines and periodicals” than the highball method.⁴⁰ No workers died on the highball operations, and Reclamation could report on the method’s effectiveness “on all types of terrain, from flat land to hillsides so steep it seemed almost impossible to work equipment on them.”⁴¹

Clearing contractors utilized other new technologies and, when necessary, innovated to create even more powerful machines. Robert E. Lee, subcontractor on the Dykes contract, used an umbrella-shaped four-pointed iron drag that he attached to a cable to clear steep slopes on creek canyons. Two tractors pulled the claw upslope with winches to gather debris that crews then piled and burned. A massive double bulldozer known by such names as a “supercat” and “Trisdale Giant” provided another technological innovation. Although J. H. Trisdale brought the machine to the clearing project to push and pile debris,

R. A. “Buster” Peterson of the Peterson Tractor Company of San Leandro, California, designed the double bulldozer he called the “Twin D8’s” to meet a demand for a more powerful tractor than a single Caterpillar D8. It consisted of two D8s attached together to operate as a single unit, with a single set of tracks, a single driver, and a sixteen-foot bulldozer blade.⁴²

Like highballs, the Twin D8’s bulldozer entered the project amid fanfare but encountered a setback when it proved too powerful for certain applications and bent its blade. In later iterations, improvements allowed it to perform exceptionally on certain types of terrain. Reclamation reported that the double tractor “proved to be very effective where used, doing the work of three conventional tractors with dozers. Peterson eventually mounted the Twin D8’s with a twenty-two-foot bulldozer blade with rooter teeth, and the machine reportedly set clearing records on the project. It could push debris three hundred feet at a time before it would have to take another pass through an area. In 1954, Peterson received a patent

for the Twin D8's as a "Tractor with Twin Power Plants." The machine, which made its field debut on the Hungry Horse Project, had only a short operational lifespan. In 1959, it became largely obsolete when Caterpillar introduced a more powerful stock model known as the D9.⁴³

The clearing contractors found other creative solutions to challenges presented by the Hungry Horse Project. For example, they introduced World War II-surplus pontoons—sturdy enough to support heavy equipment—to serve as a floating bridge spanning the South Fork at Riverside and Elk Park. This bridge enabled Wixon & Crowe equipment to move freely back and forth across the river. In practice, the pontoons reportedly functioned more as a ferry than a bridge. One such ferry overturned during spring runoff, resulting in a worker's death. Temporary timber bridges were much more common along the river, such as one constructed by logger Ed Conrad at Murray Creek.⁴⁴

In conjunction with applying new technologies and innovative methods to clear the land, the clear-

ing crews resorted to the much more traditional practice of prescribed fire as a final step in the clearing process. After a lengthy dry spell in 1950, elevated wildfire danger prevented any burning until August rains brought a respite with welcome moisture. Clearing contractors operating throughout the flowage area took advantage of the burn window to ignite hundreds of acres of debris. The *Daily Inter Lake* reported that the burning produced thick smoke that limited visibility and could be seen drifting out of Bad Rock Canyon into the Flathead Valley.⁴⁵

Initially, transporting cut timber presented one of the biggest challenges for timber companies and, in some cases, this, too, was resolved by relying on tried-and-true methods. For instance, Flathead Timber Products applied an "old Flathead tradition" to the South Fork when it began driving logs down the river. The first drive involved floating 1,400 logs twenty-five miles to a landing near Hungry Horse Creek, where the company loaded the logs on trucks bound for its Columbia Falls and Kalispell mills. The company expected to drive up to 18 million board feet on the

Used on the Hungry Horse Project and patented in 1954, the novel Twin D8 Caterpillar could push woodchips, stumps, and branches three hundred feet, helping clearing crews accomplish their work in record time.

A. E. McCloud, photographer. Bureau of Reclamation Annual Project History, 1950. National Archives, Denver. HH-2658



river in what was likely the last commercial log drive to occur in Montana.⁴⁶

In another application of traditional haul methods, clearing contractors on the west-side road project utilized a tugboat, the *Ida M.*, to tow logs they corralled in a log boom across what was in 1952 a gradually rising reservoir. Doing so marked yet another instance where the Hungry Horse Project harkened back to a bygone era in the timber industry. Log booming and towing had been a common practice on nearby Flathead Lake throughout the early twentieth century, but lumber company tugboats ceased operations there altogether in the 1940s. The contractors added to the reservoir's maritime history in another way by hauling personnel and equipment across the reservoir with military surplus landing crafts, one of which had been used in the Normandy invasion during World War II.⁴⁷

After the completion of the Hungry Horse Project and accompanying haul roads, the Forest Service left it up to the logging companies to decide how to transport their harvests and offered sales along the reservoir's west shore that described both haul methods—road and water. Many loggers chose the latter and continued to use the reservoir to transport logs, and booming remained a common sight on Hungry Horse Reservoir through the early 1970s.



While much of the Hungry Horse Project's timber harvests utilized new machinery and methods, at times a return to once-common practices, such as rafting logs down waterways, was more practical. Here, harvested timber is rafted across the reservoir to a landing near the dam.

Bureau of Reclamation Annual Project History, 1956. National Archives, Denver

Glen Kartheiser and Harry Cheff of Canyon Logging operated a tugboat on the reservoir during the 1960s and 1970s. Kartheiser recalled, "It took about three days to bring a load from Spotted Bear clear to the bottom of the dam. We had three quarters of a million board feet in one tow. So, it saved a lot of trucking on roads that were not very well in those days."⁴⁸

Kartheiser remarked years later that a number of factors ultimately ended the practice, but he claimed it was not due to the superiority of truck transportation on the west-side road. Instead, he pointed to the increasingly limited period of time when the reservoir remained at full pool, which, beginning in 1982, Reclamation reduced from six months to as few as three months to allow consistent runoff for spawning kokanee salmon on the Flathead River. This fluctuation made loading and unloading logs difficult. Floated logs also held more water weight, which meant fewer logs could be hauled per truck due to highway weight restrictions. Finally, in comparison to loads hauled by trucks, the floated logs took longer to reach the mills, potentially disrupting increasingly tight mill schedules.⁴⁹

As the ongoing use of the reservoir to move logs suggests, the completion of the Hungry Horse Project did little to slow timber harvesting in the South Fork. In the fall of 1952, the Bureau of Reclamation accepted the reservoir timber-cutting and clearing contracts as complete. That phase of the Hungry Horse Project had met its objectives: the forests were clear-cut to provide for a more natural appearance of the reservoir, woody debris and forest understory plowed over and removed to reduce clogging of the dam's turbines, and the salvage of roughly 90 million board feet of timber.⁵⁰ The barren landscape stood in stark contrast to the expansive forest that once existed there, and water had already begun backing up behind the rapidly rising dam to cover it. Yet, from a logging standpoint, the impact of the Hungry Horse Project was far from over.

The *Hungry Horse News* had predicted at the start of the project, "One of the major benefits of the Hungry Horse project will be the access roads and new timber areas that will be opened for logging operations." Indeed, the construction of the haul roads opened access to hundreds of millions of board feet of previously inaccessible South Fork timber. The Forest Service offered over 30 million board feet of



This photo was taken looking downstream toward the Hungry Horse Dam on August 7, 1953, as the reservoir water rose to inundate the denuded landscape. Regional timber sales increased after the reservoir's construction.

A. E. McCloud, photographer. Bureau of Reclamation Archives, Boise, Idaho USBR P447-100-571

new timber sales up the South Fork in 1952. This included 11 million board feet at Deep Creek, 6 million board feet between Harris and Canyon Creeks, and 15 million board feet at Trout Lake. Each of these sales depended on the new roads built along the reservoir.⁵¹

The construction of haul roads and to what standards they should be built had been the subject of debate leading up to and during the Hungry Horse Project. Reclamation felt obligated only to construct a "negotiable road" on the west side of the reservoir in addition to the eas-side haul road to "permit access for fire-fighting equipment and personnel."

The Forest Service, on the other hand, considered high-quality roads on both sides of the reservoir "necessary, in order to administer and market the timber resources in the adjacent drainage area," and the agency's advocacy for such roads on both sides of the reservoir continued during and beyond the project. In 1949, regional forester P. D. Hanson had argued that a timber haul road on the west side of the reservoir was critical. "In order to give you a perspective as to the degree of this particular timber problem," Hanson wrote, "I will outline a few facts: There exists sufficient timber in the area concerned to sustain on a perpetual basis a sawmill operation in



Above, workmen load logs on trucks for hauling from the reservoir area, 1951. Roads extending deep into the South Fork Valley facilitated logging operations during the Hungry Horse Project and opened up the region to future timber harvests and recreation.

A. E. McCloud, photographer. Bureau of Reclamation Annual Project History, 1951, National Archives, Denver HH-4789

the neighborhood of 20 million feet annually.” Factoring in the economics behind any harvest, the volume “estimated to be between one billion and one billion, two-hundred million, is located mainly on the west side of the reservoir and dependent on a west-side road for its removal.” Hanson valued the timber at an industrial worth of up to \$100,000,000, “or more.” The loss of such an “industrial base,” he pleaded, would be borne by the local communities.⁵²

In 1951, Reclamation and the Forest Service executed an agreement that provided for the construction of a west-side road capable of being used as a timber haul road. Although not designed to the standards Forest Service personnel had recommended, it exceeded the “pilot road” originally considered by Reclamation in 1948. Completed in 1953, the road offered access to the extensive forest resources along the South Fork’s west side.⁵³

As anticipated, timber production increased with the completion of the Hungry Horse Project. On March 3, 1955, the *Daily Inter Lake* reported that timber harvesting on the Flathead National Forest had again reached a new all-time high. The Flathead National Forest expected a harvest of around 100 million board feet that fiscal year and anticipated as much as 105 million board feet for the 1955–1956 fiscal year. In 1960, timber companies harvested nearly

100 million board feet of timber out of the Flathead National Forest, much of it coming from the South Fork.⁵⁴

The creation of the reservoir and the construction of new roads opened previously inaccessible forest lands to the timber industry, initiating the South Fork’s dramatic transformation from a seemingly pristine, heavily forested drainage to a man-made lake surrounded by public forests that were managed for aggressive timber harvest. These changes sparked mixed responses from the public. The Flathead National Forest and Bureau of Reclamation promoted the new lake as a world-class recreational destination. Fishing, camping, and hunting activity not only continued in the South Fork but expanded. Yet the creation of the reservoir meant the loss of nearly twenty-five thousand acres of forest, including critical fish and wildlife habitat.

In 1957, John J. Craighead, the renowned University of Montana wildlife biologist, pointed to the Hungry Horse Dam when he advocated for preserving wild rivers, particularly in response to a similar proposal to construct the Spruce Park Dam on the Middle Fork of the Flathead River. Around that same time, published studies showed that the Hungry Horse Dam had severely reduced the number of fish in Flathead Lake. A later study of the environmental and economic implications of proposed dams elsewhere



Montana’s renowned wildlife biologists Frank (left) and John J. Craighead were among the scientists who, along with area environmental groups and some residents, opposed additional logging and dams on the Flathead drainage due to the adverse impacts on fish and wildlife habitat. In 1976, the river and its tributaries received protection under the 1968 Wild and Scenic Rivers Act.

Courtesy Craighead Family Archives

A logging truck crosses the Hungry Horse Dam, 1961. Since the project's beginning in the 1940s, logging increased in northwestern Montana, and the forest products industry remained an economic mainstay of the region for much of the twentieth century.

Bud Moore Collection, Archives and Special Collections, Mansfield Library, University of Montana, Missoula Moore 848.1817

on the Flathead River system found that they would spell doom to its fishery and harm the local economy. Craighead's advocacy against the Spruce Park Dam contributed to his work to protect free-flowing rivers nationwide.

"Rivers and their watersheds are inseparable," he wrote, "and to maintain wild areas we must preserve the rivers that drain them." He noted that a dam and its accompanying roads "would largely destroy the natural beauty of the Middle Fork and would have a tremendous effect on the fish and wildlife and future recreational possibilities." From this early advocacy, Craighead and his twin brother, Frank, went on to become chief proponents of the 1968 National Wild and Scenic Rivers Act. Their efforts came full circle in 1976, when the Flathead River system, including the South Fork above the Hungry Horse Reservoir, received congressional designation under the Act.⁵⁵

As evidenced by both the industrial development and conservation efforts, the South Fork is a place of many—often competing—values. From a management standpoint, the Hungry Horse Project coincided with the midcentury emergence of "multiple-use" policies on the national forests, which factored heavily into the Forest Service's management of the South Fork as it attempted to balance the demands of a commercial forest with those of the recreational opportunities offered by the new reservoir. This meant the development of infrastructure like campgrounds and boat ramps, but it also necessitated mitigating the impacts of timber projects on areas used for recreation—a sometimes difficult challenge.⁵⁶

Regional recreational activity increased tremendously with the creation of the Hungry Horse Reservoir, with total number of recreational visits in 1960 expanding by five times what it had been in 1952. To accommodate this increased use, the Forest Service applied logging practices it suggested would "pro-



mote safety and preserve or enhance the recreational values." Since forest aesthetics factored heavily into the recreational experience, foresters prescribed buffer strips along roadways and campgrounds, but some sales required additional restrictions. For example, the Hungry Horse Creek sale—the first major harvest after the completion of the flowage area harvests—triggered discussion of the sometimes-competing needs of logging and recreation. Forester Stanford H. Larson cautioned in his review of the timber sale report of the impacts the logging could have on a proposed summer home site along the reservoir and recommended altering logging plans for aesthetics by leaving a "heavier reserve" of timber between Emery Creek and Lower Hungry Horse Creek and the proposed road. He called for exclusion of certain roadside areas from the harvest altogether and for a "light cut" in other areas with a "feathering out" of the harvest to the reservoir flow line. He also stressed the importance of shielding the harvest area from the road since, he predicted, "this road will undoubtedly become the main route to Spotted Bear."⁵⁷

The Hungry Horse Reservoir's presence in the South Fork also changed and expanded the region's timber industry in myriad ways, with new technologies replacing "traditional" ones in many phases of timber harvesting, clearing, and transporting logs. This transition coincided with a major increase of logging throughout the national forest system and the rapid mechanization of the industry as a whole. Infrastructural improvements associated with the Hungry Horse Project created access to the South Fork forests, enabling the Forest Service to continue



While the Hungry Horse Reservoir hides the evidence of the intensive logging and clearing that transformed the South Fork Valley, one of these eight-foot-wide steel balls is now on display at the Hungry Horse town park as a tribute to the ingenious methods and machinery used on the project.

A. G. Rainwater, photographer. Bureau of Reclamation Project History, 1950. National Archives, Denver. HH-2194

offering timber sales there in the decades following the project and expanding opportunities for outdoor recreation. Seventy-five years after the first timber harvest there, logging trucks remain a familiar sight along the Hungry Horse Reservoir, but they travel the roads with far less frequency than they once did. As has happened elsewhere, recreation activities like camping, hunting, fishing, hiking, and boating gradually eclipsed the timber industry in the South Fork, and effective stewardship is measured less in board feet production than by other indicators.

Yet evidence of the massive harvests that once took place beneath the reservoir's shimmering waters is still easy to find, and none is more prominent than the tools Paul Bunyan's rivals left behind. Sharp-eyed motorists passing through the town of Hungry Horse can catch a glimpse of a highball and a multi-pointed clearing drag that rest conspicuously in the Hungry Horse town park. These gargantuan industrial artifacts might easily be mistaken for abstract public art,

but to the informed eye, they serve as monuments to the Hungry Horse Project and as evidence of a new technological era that transformed both the logging industry and the landscapes of northwestern Montana.

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