

Missoula Project

Thomas A. Latousek
Bureau of Reclamation
1995

Table of Contents

The Missoula Valley Project	2
Project Location	2
Historic Setting	3
Prehistoric Setting	3
Historic Setting	4
Authorization	4
Construction History	6
Post-Construction History	8
Settlement of the Project	9
Uses of Project Water	11
Conclusion	11
Bibliography	12
Manuscripts and Archival Collections	12
Project Reports	12
Straights	12
Government Documents	12
Books	12
Interviews	12
Index	13

The Missoula Valley Project

The Missoula Valley Project was the product of an era in which much of the hopes and dreams of America were pinned on its agricultural future. The vibrant, growing Missoula Valley of Montana, for example, surrounded as it was by a verdant, rolling landscape and snowmelt-swollen rivers, and possessing a beneficent climate (for Montana), saw in such natural gifts an asset of which they could - and should - take advantage. Many envisioned their landscape someday being irrigated in its entirety - a bountiful "hydraulic society" stretching from one end of their valley to the other that would have an intense, diverse, and high-value agriculture as its centerpiece.

It is amidst such context in west-central Montana in the 1930s and 40s that a small, optimistic, and, perhaps, misplaced project such as the Big Flat Unit of the Missoula Valley Project was built. Such a vision of America and its future is largely obsolete these days, having inexorably departed from the beautiful Missoula Valley like the Montana streams that originate high up in the local peaks before inevitably draining off into a faraway ocean.

Project Location

The Missoula Valley Project and its neighboring Reclamation project in west-central Montana, Frenchtown, share locales on opposite banks of the Clark Fork River (also known locally as the Missoula River) just a few miles "as the crow flies" from each other in west-central Montana. Unlike Frenchtown, though, the Missoula Valley Project actually takes its water from the Bitterroot River, a Clark Fork tributary to the south of nearby Missoula, Montana. The Bitterroot is a large river with an average annual flow of 1.794 million cubic feet per second (cfs) and a drainage area of 2,950 square miles. The Clark Fork River is itself a major tributary of the Columbia River. The confluence of the Bitterroot and Clark Fork lies about five miles west of Missoula and about two miles upstream from project lands.¹

The sole feature of the Missoula Valley Project, the Big Flat Canal feeds project lands by

1. Water and Power Resources Service, *Project Data*, (Denver: Government Printing Office, 1981), 661-2; Department of the Interior, Bureau of Reclamation, *Missoula Valley Annual Project History - Big Flat Unit, 1948-62*, 1.

gravity from the Bitterroot at a point about six miles west of the city of Missoula, running parallel to the Bitterroot and past its confluence with the Clark Fork for 9.3 miles to the 780 acres of project lands on the west and south side of the Clark Fork.²

Located in the rain shadow of the Lolo Mountains which rise to the project lands' west, the Missoula area has a mild and dry climate for such a northern setting. Precipitation averages 14.5 inches a year and when combined with the agricultural lands' relatively low average elevation of just over 3,000 feet results in one of Montana's longest growing seasons (142 days) and, at one time, its only commercial fruit crop. The area has become the trading center for the economy of four fertile river valleys - the Clark Fork, Bitterroot, Blackfeet (to the east), and Flathead (to the north).³

Historic Setting

Prehistoric Setting

The Bitterroot Valley to Missoula's south was for centuries home to the Flathead, members of the Salish nation of the Pacific Northwest. Although many Native American tribes such as the Blackfeet and Shoshone migrated into the Montana area from points east and south after roughly 1600, the Flathead had long settled in the region, making intermittent hunting trips to the plains lands to the east to hunt buffalo. The Blackfeet, a fierce and hostile tribe, often laid in wait for the Flathead at nearby Hellgate Canyon just east of present-day Missoula, where the only trail from the Bitterroot Valley to the Great Plains hunting grounds often forced the Flathead into ambush at the hands of the Blackfeet.⁴

When Lewis and Clark's expedition passed through the area in the early 1800's, they met Flathead Indians who were eager to be friends with the white man, for they hoped that forging such alliances might help protect them from the relentless attacks of the Blackfeet. Father Pierre Jean DeSmet, a Jesuit priest soon followed, hoping to convert and domesticize the friendly Indians by establishing the St. Mary's Mission in the Bitterroot Valley at Stevensville in 1840.

2. *Project Data*, 661-2.

3. Reclamation, *Report on Missoula Valley Project - Montana, 1942*, RG 115, Box 532, 2; *Montana: A History of Two Centuries*, 11 (inc.).

4. *Montana: A History of Two Centuries*.

Here, the first attempt at agriculture in Montana also took place.⁵

Historic Setting

The 1850's saw the initial work of the railroads and territorial government to survey and develop the area. The increase in commercial traffic also brought with it skirmishes with the Blackfeet. A reservation treaty was signed with local Indians in 1855 giving the Flathead, Blackfeet, and other tribes their own land upon which to live.⁶

The Missoula County seat was moved to the newly-settled town of Missoula (1860) from neighboring Hellgate in 1861. Soon afterward the first irrigation water appropriation took place on Grant Creek, a tributary of the Bitterroot. While many simple gravity diversions from the numerous nearby streams were constructed by area farmers, most were forced to resort to dry farming techniques to grow low-value grains and wheat. The first large-scale attempt at water development occurred in 1880 when the Missoula Irrigation District was formed to construct the Orchard Homes Canal which diverted Bitterroot River flows onto about 2,000 acres of land south of Missoula. In between the future Missoula Valley Project's Big Flat district to Missoula's west and the city of Missoula itself was the Hellgate Valley Irrigation Company's Flynn Ditch, built in 1902 to serve about 1900 acres with Clark Fork River water. By the World War I era, it was estimated that the Missoula vicinity had at least 13,000 acres of irrigated lands, but there were still additional suitable lands in the valley that residents were interested in irrigating. Since the region had ample water resources from which to draw, locals saw no reason why all viable lands could not be irrigated. Beginning in 1918, Reclamation officials and local consultants investigated the possibility of further irrigation in the Missoula Valley.⁷

Authorization

The majority of investigations in the Missoula Valley focused, at first, not on the Big Flat area, which was considered - ironic in light of its name - too difficult to water because of its slope, but on the fertile Frenchtown-Huson area to the north. There, a vocal and determined

5. *Ibid.* p. 25-32, 48-50.

6. *Ibid.* p. 87-9.

7. Reclamation, *Project Report on Missoula Valley Project - Montana, 1942*, RG115, Box 532, 2-4.

former politician with close political contacts, Edward Donlan, was able to push his water proposed development through to its fruition. Not until after the Frenchtown Project was authorized in 1934, was much notice given to the Missoula Valley farther upstream.

Not until 1938, when the Montana State Water Conservation Board tried to interest the Bureau of Reclamation in developing additional systems in the area nearer Missoula was any substantive headway made with regard to the Big Flat district. Although the State Water Conservation Board envisioned a potentially vast Missoula Valley Project comprehensive plan featuring up to six major features, Reclamation believed only three merited further analysis: the North Side Low Level Pumping Plant, which was to serve 1,700 acres; the South Side Pumping Plant, planned to dispense water to 1,450 acres; and the Big Flat Gravity Canal, which would provide water for 1,000 acres.⁸

The State Water Conservation Board requested that Reclamation study and, if possible, build the two pumping plants and Big Flat Canal as soon as possible. Additional local support for construction of the three features came from local Missoula Valley residents, the Missoula Chamber of Commerce, and the Missoula Mercantile Company. Local lawyer, George Shepard also pointed out that such a federal reclamation project would make irrigated farms more affordable than the current \$250 to \$600 per acre for watered land.⁹

But a few obstacles stood in the way of Federal authorization of the project as it stood. Since construction of the planned South Side Unit entailed the use and enlargement of the Orchard Homes Ditch, approval would be required by the Missoula Valley Irrigation District that owned and operated the ditch. The irrigation district believed that such a project would result in additional costs to them so they refused to grant permission. Reclamation engineer Frank Munro believed the district's refusal rendered the South Side Unit unfeasible since condemnation procedures would make overall projects costs prohibitive.¹⁰

8. Reclamation, *Preliminary Project Report on the Missoula Irrigation Project*, (no date), RG 115, Straights, Box 581, 37-F-15, 1.

9. Reclamation, *Preliminary Report on the Missoula Irrigation Project*, 2-3.

10. Reclamation, *Preliminary Report on the Missoula Project*, 4; Munro to Shepard, Letter, May 6, 1941, RG 115, 37-F-15, Straights, Montana: Investigations, Missoula-Huson Project, Box 571, NARA-Denver.

There was also the question of how the Missoula Valley Project would be paid for. With the onset of World War II, the Farm Security Administration gave some thought to approving the project by including it under the Food for Victory program, but area lands did not qualify for these funds at that point in time.¹¹ Eventually it was the rolling nature of the Big Flat lands that would suggest a method of repayment for the project's construction. Studies indicated lands there were generally of a Category 2 and 3 nature with regards to irrigation potential with extensive leveling necessary on 800 acres in order for it to be effectively irrigated. Project proponents noted that if this was indeed the case, funds for grading and leveling could be provided by the Soil Conservation Service under the Case-Wheeler Bill, a bill passed by Congress early in 1944 that provided for the leveling of land to produce food for the war effort. Still, the Big Flat needed to be watered somehow. The answer lay in the Water Conservation and Utilization Act of 1939 which had been amended in 1943 and for which irrigation projects such as the Big Flat Unit of the Missoula Valley Project might qualify. Since the only feasible unit of the Missoula Valley Project at this point was the Big Flat Canal and it did not qualify for funds under any other Reclamation Acts, Reclamation officials were forced to seek authorization for the Big Flat Canal construction under the Water Conservation Act. President Roosevelt agreed, authorizing the building of solely the Big Flat Unit for \$45,000 on May 10, 1944. The Big Flat Irrigation Unit was formed in July, 1944, in order to provide for the irrigation project's repayment but, due to wartime, did not sign a contract with Reclamation until April, 1945.¹² Construction Engineer, C. R. Whipple was appointed general supervisor of the Missoula Valley Project by Reclamation.

Construction History

Development of the Big Flat Unit of the Missoula Valley Project consisted, first, of the land leveling phase conducted by farmers under the guidance of the Soil Conservation Service. Next, construction crews were to excavate the canal and place project works such as turnouts,

11. Marshall to Looney, Letter, June 16, 1942, RG 115, 37-F-15, Straights, Montana Investigations, Missoula-Huson Project, January, 1936 - , NARA-Denver.

12. Munro to Debler, Letter, July 17, 1942, RG 115, 37-F-15, Straights, Montana Investigations, Missoula-Huson Project, January 1936 - , NARA-Denver; *Project Data*, 661.

laterals, and headgates. A siphon, a small spillway (in case breaks developed water could be diverted back into the river), a bench flume of 5800 feet built along the steep hillsides, and a wasteway were also planned for the Big Flat irrigation system.

In anticipation of the award of the Big Flat Canal excavation contract, Otis Williams and Company of Helena, Montana, had from June to September of 1945 actually commenced digging the ditch without having received either an award letter or notice to proceed. The contractor had completed nearly half of the 9.3 miles of main canal, as well as much of the lateral system by the time it was officially awarded the job in April, 1946. A construction deadline of October 12, 1946, was set. It appeared that this date would easily be met, for by mid-May, 1946, nearly all excavation work had been completed.¹³

Unfortunately, this would not prove to be the case. The delay in awarding the canal contract and a lack of labor prevented the project from being completed in a timely manner. The bench flume needed to deliver water to some project areas required reinforced steel material which, as it turned out, was extremely difficult to acquire in the post-war year of 1946. This fact was even more frustratingly apparent when the delay in awarding the canal contract had resulted in the expiration of the acceptance time for bids for steel which had gone out the past summer, in June, 1945. Since the contractor was incapable of placing the steel and forms for the flume, it shut down operations. It was not until August, 1946, that the first of the necessary steel was delivered, it actually being in the form of 3"x 3" welded wire airplane landing mat which the contractor substituted for the normal steel until it arrived in October.¹⁴

Having shut down operations in May due to the delay, Otis Williams and Company's employees went elsewhere for work in the meantime. Most found it at a large veteran's housing project being built in Missoula. It was difficult to persuade these workers to return to the project when the job resumed so the contractor's crew was short-handed the balance of the year. The only substantial work done was the concrete pouring of the bench flume which Williams

13. Reclamation, *Missoula Valley Annual Project History - Big Flat Unit, 1944-1947*, 12-3.

14. Reclamation, *Missoula Valley Annual Project History - Big Flat Unit, 1944-1947*, 13-5; *Missoula Valley Annual Project History - Big Flat Unit, 1948-1962*, 4.

subcontracted to Askevold Construction Company. They completed the flume in November, 1946.¹⁵

A continued scarcity of laborers, high spring run-off, and a lack of lumber were additional difficulties encountered in 1947. By September, 1947, area farmers grew increasingly anxious. For two years now they had been without crops because of land leveling and interest was due for the money spent thus far on the project. So when it appeared that the canal was finished and that water could be made available - even at the late date in the year - locals were eager for the prospect of it. Unfortunately, much of the canal had been dug for two years at this point and many rodents had taken the opportunity to burrow into banks. Consequently, when Bitterroot River water filled the canal numerous breaks and seepage appeared. Before the year was over, more than 8,000 feet of canal in 28 different places was lined with clay and bentonite to prevent further deterioration of canal banks.¹⁶

Upon its completion, the 9.3 mile Big Flat Canal had a capacity of 25 cu-ft-sec, a bottom width ranging from four to five feet, and a depth of 2.2 feet.¹⁷

Post-Construction History

It was hoped that the mitigating efforts of late 1947 would ready the project for a problem-free 1948 irrigation season, but the weather did not cooperate. A combination of heavy snowmelt and rain in May, 1948, caused the Bitterroot and Clark Fork to swell over their banks. The Clark Fork was recorded running at over 50,000 cu-ft-sec for over one week in late May. The Flood of 1948 caused many problems on the Missoula Valley Project, washing away entire lateral systems and badly damaging the main canal. A temporary spillway was constructed at one juncture to drain the canal quickly in case of additional breaks. Congress allotted \$5,000 of Emergency Flood Damage funds to the Big Flat Unit for repairs. In the fall of 1948 water was again successfully channeled through the canal.¹⁸

Although the Big Flat Unit was turned over to the local operating agency, the Big Flat

-
15. Reclamation, *Missoula Valley Annual Project History - Big Flat Unit, 1944-1947*, 13.
 16. Reclamation, *Missoula Valley Annual Project History - Big Flat Unit, 1948-1962*, 4-5.
 17. *Project Data*, 662; Reclamation, *Missoula Valley Annual Project History, 1946*, 7.
 18. Reclamation, *Missoula Valley Annual Project History - Big Flat Unit, 1948-1962*, 5-6.

Irrigation District (BFID), in 1955, subsequent years did not see an end to setbacks for the project. In fact, in 1960, the BFID met with Reclamation officials with the thought that their financial repayment obligations might be canceled or, at least deferred. The development had been beset by problems, with insufficient amounts of water reaching users in the upper sections. A pumping plant would have benefitted the project but was prohibitively expensive. Extensive leveling on project lands for the purpose of expediting irrigation had scraped soils down to gravel so that additional fertilizer was necessary. Furthermore, less than 400 acres of what was then a 944-acre project were even being watered. Assessments were insufficient to meet construction costs.¹⁹

Reclamation's solution to the BFID's dilemma was to assist in repairing what the BFID stated were problems resulting from faulty construction. Reclamation claimed poor BFID management was the culprit but decided it was in their interests to help area users back onto their feet. Working with the Soil Conservation Service, they got the canal system in working order. No relief in repayments was given. It was hoped that a smoothly operating Big Flat Canal would help pay for itself.²⁰

The problem of there being too few users to both meet construction payments and properly maintain the system continued to plague the Missoula Valley Project. An amendatory contract reducing the project area from 944 to 780 acres and the BFID financial obligation from \$45,000 to \$33,900 was signed in 1963 and helped somewhat but encroaching suburbia from nearby Missoula was coming to threaten the very nature of the project.²¹ Beginning in the 1960's, an increasing amount of project land was being subdivided, often to non-farming residents, reducing further what even in the beginning had been a limited number of water users.

Settlement of the Project

The objective of the Missoula Valley Project was to open up additional areas of the Bitterroot-Clark Fork Valley to irrigation farming. Water development proponents in the

19. Reclamation, *Missoula Valley Annual Project History - Big Flat Unit, 1948-1962*, 25.

20. *Ibid.*

21. Reclamation, *Missoula Valley Annual Project History, 1963*, 17.

Missoula area thought that perhaps someday the entire valley could be watered. The valley had a mild climate and the surrounding mountain's annual snowmelt, after all, provided copious amounts of the liquid resource, filling area rivers sufficiently enough even in dry years to irrigate. It seemed that all of these elements added up to make the Missoula area a future agricultural paradise, with lands such as the Big Flat having the potential to provide a family with a small, irrigated parcel on which it could make a comfortable living growing sugar beets, alfalfa, or even fruit. Such a picture would be a reality, it was believed, if only the means was provided to capture the water and distribute it to those in need.²²

Part of this picture came true for the Missoula Valley Project, for there were five families on project lands upon its inception in the late 1940s, thirteen families in 1965, and thirty families on project lands by 1965.²³ On the surface, this might have looked to be consistent with Reclamation's ideal of breaking up larger farms to provide additional irrigated parcels upon which more families could subsist. Few of these project landowners grew crops, however. In fact, many were intent to grow something else - real estate. Land was becoming more valuable in the area not for its water rights and agricultural possibilities but for the escalating value of its subdivision potential. "The only thing we plan to plant is basements," remarked one local landowner.²⁴ In the process of all the subdividing and land changing hands, water rights were usually ignored since many did not plan to employ their right (drinking water was from wells). Most new residents desired living a suburban lifestyle on two, ten, or perhaps thirty acres while they worked in town and perhaps farmed part-time, growing some hay on a few acres for their horses. Living a hardy, agrarian lifestyle on a well-watered farm that provided a healthy, valuable crop for market was simply not part of a growing number of project landowner's plans by the 1970s and the Big Flat Unit suffered as a result. While the project was originally planned to irrigate at least 944 acres, that never occurred and the project was downsized to 780. Actual irrigated acreage was never more than 500, with a range from 150 to 300 acres being the average

22. Reclamation, *Project Report on Missoula Valley Project - Montana, 1942*, 1

23. Reclamation, *Missoula Valley Project History, 1965-66*, 19.

24. Reclamation, *Missoula Valley Project History, 1967-68*, 3.

through the 1980s and '90's. In 1990, three full-time farms remained on Big Flat.²⁵

Uses of Project Water

Missoula Valley Project water is for agricultural purposes, although early surveys looked at the possibility of supplying Missoula's sugar beet processing plant. The original half-dozen or so farmers in the early years of Big Flat did grow some sugar beets for the Missoula processing plant and some potatoes and seed peas, but over time project water was primarily used to grow forage and grain for the area's cattle industry. Ninety-nine percent of project users sprinkler irrigate.²⁶

Conclusion

The Missoula Valley Project is an example of a small, localized reclamation project that never had the chance to bloom that others did. The project never really got off the ground, having struggled from the start as a result of construction problems. In light of the opportunistic real estate speculation that soon swooped down upon project lands, perhaps it can be said that the locale was inappropriate for Federal water development. It might well have been too near Missoula. As suburbia encroached upon project lands, the land became more valuable for its real estate prospects than its farming potential. Before long the project's lifeblood - its agricultural water supply - was forgotten or rendered obsolete amidst the Missoula area's changing demographic landscape. By the 1990s, it was glaringly apparent that the world of the 1930s and '40s that had clamored so determinedly for irrigation on any and every half-feasible parcel of land was no longer pertinent to the Missoula Valley of Montana.

25. Reclamation, Missoula Valley Annual Project History - Big Flat Unit, 1948-62, 1-15; *Project Data*, 662.

26. Missoula Valley Annual Project History - Big Flat Unit, 1948-62, 1; Telephone Interview with Laurie Paske, Secretary, Big Flat Irrigation District, Missoula, Montana, August 16, 1995.

Bibliography

Manuscripts and Archival Collections

Record Group 115. Department of the Interior. Bureau of Reclamation Records. National Archives and Records Administration, Denver, Colorado.

Annual Project History, Missoula Valley Project - Big Flat Unit: 1944-7, 1946, 1948-62, 1963, 1965-6, 1967-8.

Project Reports:

United States Department of the Interior, Bureau of Reclamation. "Report on Missoula Valley Project - Montana, 1942."

United States Department of the Interior, Bureau of Reclamation. "Preliminary Report on the Missoula Irrigation Project," (no date).

Straights

United States Department of the Interior, Bureau of Reclamation. Office of Chief Engineer, Denver, Colorado, 37-F-15.

Government Documents

Water and Power Resources Service, *Project Data*, Denver: Government Printing Office, 1981.

United States Department of the Interior, Bureau of Reclamation, *Summary Statistics - Land, Water, and Related Data*. Denver, 1990.

Books

Cheney, Roberta C. *Names on the Face of Montana*. Missoula, Montana: University of Montana Press, 1971.

Malone, Michael P. *Montana: A History of Two Centuries*. Seattle: University of Washington Press, 1976.

Interviews

Paske, Laurie. Secretary - Big Flat Irrigation District, Missoula, Montana, August 16, 1995 (by author).

Index

Askevold Construction Company	8
Big Flat Irrigation District (BFID)	6, 8, 9
Bitterroot River	2-4, 8
Bitterroot Valley	3
Case-Wheeler Bill	6
Clark Fork (or Missoula) River	2, 3, 8
Climate	2, 3
Crops	11
DeSmet, Father Pierre Jean	3
Emergency Flood Damage	8
Flood of 1948	8
Hellgate Canyon	3
Hellgate, Montana	4
Irrigation, Early efforts	4
Flynn Ditch	4
Orchard Homes Canal	4
Lewis and Clark Expedition	3
Lolo Mountains	3
Missoula Irrigation District	4
Missoula Valley	2, 4
Missoula Valley Irrigation District	5
Missoula Valley Project, The	2, 5, 6, 9
Bench flume	7
Big Flat Canal	2, 5, 7-9
Big Flat Unit	2, 4, 6, 8, 10
Crops	11
North Side Low Level Pumping Plant	5
South Side Pumping Plant	5
Subdivision of land	9-11
Missoula, Montana	2, 3, 9, 11
Montana, State of	2
Water Conservation Board	5
Munro, Frank	5
Native Americans	
Blackfeet	3
Flathead	3
Reservation treaty	4
Shoshone	3
Orchard Homes Ditch	5
Otis Williams and Company	7
Reclamation, Bureau of	4-6, 9
Frenchtown Project	2, 5
Whipple, C. R.	6
Rodent problem	8
Soil Conservation Service	6, 9
St. Mary's Mission	3
Subdivision of land	9-11
Water Conservation and Utilization Act of 1939	6