Thompson Falls Hydroelectric Project

FERC Project No. 1869

NorthWestern Energy
Initial Study Report
Thompson Falls Hydroelectric Project Historic District
National Register of Historic Places Nomination Amendment

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List of Abbreviations and Acronyms

APE	Area of Potential Effect
FERC	Federal Energy Regulatory Commission
H-A&E	Historic Architectural and Engineering Properties
ILP	FERC's Integrated Licensing Process
National Park Service	NPS
National Register	National Register of Historic Places
NorthWestern	NorthWestern Energy
Project	Thompson Falls Hydroelectric Project
SHPO	Montana State Historic Preservation Office
Historic District	Thompson Falls Hydroelectric Dam Historic District
U.S.	United States

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1.0 Introduction

The Thompson Falls Hydroelectric Project (Project) is located on the Clark Fork River in Sanders County, Montana. Non-federal hydropower projects in the United States (U.S.) are regulated by the Federal Energy Regulatory Commission (FERC) under the authority of the Federal Power Act. The current FERC License expires December 31, 2025. As required by the Federal Power Act and FERC's regulations, on July 1, 2020, NorthWestern Energy (NorthWestern), the current licensee, filed a Notice of Intent to relicense the Thompson Falls Project using FERC's Integrated Licensing Process (ILP). Concurrently, NorthWestern filed a Pre-Application Document.

The ILP is FERC's default licensing process which evaluates Project effects based on a nexus to continuing Project operations. In general, the purpose of the pre-filing stage of the ILP is to inform Relicensing Participants[1] about relicensing, to identify issues and study needs (based on a project nexus and established FERC criteria), to conduct those studies per specific FERC requirements which are defined in the FERC Study Plan Determination, issued May 10, 2021, and to prepare the Final License Application.

This cultural resources Initial Study Report has been prepared to comply with NorthWestern's Revised Study Plan (Study Plan) (NorthWestern 2021), filed April 12, 2021, as approved in FERC's Study Plan Determination.

1.1 Thompson Falls Hydroelectric Dam Historic District National Register of Historic Places Nomination Amendment

This study updated the inventory of the Historic Architectural and Engineering Properties (H-A&E) within the Area of Potential Effect (APE). The original inventory of H-A&E properties at the Project was undertaken in 1982 under the sponsorship of the prior Licensee, Montana Power Company (Bowers and Hanchette 1982). Four years later, in part using data compiled in 1982, a National Register of Historic Places (National Register) nomination was prepared for the Thompson Falls Hydroelectric Dam Historic District (Historic District), which was subsequently listed (Koop 1986). The district encompasses all H-A&E within the APE; no others are known to exist.

Since 1986, there have been several alterations to the Historic District that bear on its established boundary and its list of elements that contribute to the National Register listing. Consequently, NorthWestern has prepared an amendment to the 1986 district nomination and

[1] Relicensing Participants includes local, state, and federal governmental agencies, Native American Tribes, local landowners, non-governmental organizations, and other interested parties.

is in the process of submitting it for Montana State Historic Preservation Office (SHPO) and National Park Service (NPS) review and acceptance.

1.2 Goals and Objectives of Study

The goal of this study is to determine which buildings, structures, and sites currently contribute to the National Register-listed Historic District and might be affected by future Project operations. Because some buildings have been removed since 1986 and other structures integral to the district were not specifically identified and counted at that time, the amended nomination updates the list of contributing elements and document their historic integrity as of 2022.

The amendment will serve as a baseline inventory against which future Project impacts and effect can be judged. It will inform development of a Historic Properties Management Plan under the new License.

2.0 Methods

2.1 Study Area

The study area is the current Historic District plus adjacent intact buildings, structures, or sites that are found to be directly associated with the district's construction and operational history.

2.2 Study Methods

The re-inventory and -evaluation of the Historic District was undertaken by Mitzi Rossillon, who is qualified under the U.S. Secretary of the Interior Standards for Professionals in History with experience in the inventory and evaluation of such properties. This study task critically examined the existing National Register listing and prepared the amendment using NPS's National Register Bulletins 15 and 16a (NPS 1995, 1997). The work included examination of architectural, engineering (including historic equipment systems), and archaeological elements within the Historic District.

To update the Historic District nomination, NorthWestern determined the current National Register status of each resource as currently listed. It also documented the location, age, function, and historic integrity of other structures and sites within or near the 1986 Historic District boundary that are now 50 years or older and not identified in the original listing.

The amended nomination has been submitted to SHPO for its review. SHPO staff revisions and additions have been incorporated in the draft document, which is scheduled to be approved by the State Historic Preservation Review Board on May 17, 2022. The nomination will then be transmitted to the NPS for acceptance. Once accepted, the amendment will become the official National Register listing that will be referenced under the new License. The revised National Register listing will be filed with FERC in fall, 2022.

2.3 Variances from the FERC-approved Study Plan

There have been no variances from the FERC-approved study plan regarding H-A&E properties.

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3.0 Results

The nomination, attached as Appendix A, includes a boundary modification and additional documentation for the Historic District. The new boundary more closely borders the collection of current contributing elements. At its far north end, it now excludes the locations of three buildings that are no longer standing. Elsewhere, it has been expanded slightly to include a structure and a historic archaeological site that were not included in the earlier listing. The need for additional documentation stems from current National Register guidelines that require detailed narrative statements of significance and more extensive photo-documentation. NorthWestern has taken this opportunity to also provide more expansive resource descriptions of current contributing structures, systems, and equipment. Also, five non-contributing structures within the district boundary, modern elements that post-date 1986, have been identified, briefly described, and mapped. Finally, the amendment supports revised statements regarding a period of significance from 1912 to 1972 and local and statewide significance under Criteria A, B, and C.

The 1986 National Register nomination listed a total of 12 resources within the Historic District—six contributing buildings and six contributing structures. The revised nomination recognizes a resource total of 21, with four contributing buildings, 11 contributing structures, and one contributing site. There are five non-contributing structures. Several of the contributing resources continue to stand as key district elements, such as the original Powerhouse, Intake Structure, Main and Dry Channel Dams, and Main and Dry Channel bridges.

Historic contexts written in support of significance statements have been considerably expanded. They now consist of the following topics: Project planning, The Montana Power Company, Project construction, hydroelectric plant technology and architecture, operational support, power customers, and local impact.

The draft nomination amendment has been reviewed and accepted by SHPO. The final nomination awaits review by the State Historic Preservation Review Board on May 17, 2022.

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4.0 Discussion

The amended nomination reaffirms the Historic District's National Register significance and integrity. While there have been a number of alterations since it was first listed, the property continues to stand as a significant and intact historic industrial resource. The form, massing, and the design and materials of the majority of elements remain unchanged. As an example, such alterations as replacement of several sections of flashboard crest gates at the Main Channel Dam with two sets of two radial gates and also repurposing of the log sluice to hold equipment for the modern fish passageway structure have nonetheless left the concrete gravity arch dam with its distinctive form and overall appearance. More than 50 percent of the historic crest control system is intact. Likewise, the 2009 to 2010 rebuilding of the Main Channel Bridge that included a new approach span and pier and new rail did not alter the distinctive 110-year-old deck truss spans. The work overall was recognized at the time as an award-worthy historic preservation project.

With the exception of the new Powerhouse, built in 1993, the five non-contributing structures are of comparatively small size and are located in minimally intrusive settings. Although there is no question that the modern powerhouse is large in scale and clearly visible from the south edge of the district, by virtue of its modern partially-below-grade design, it does not of itself disqualify the district from listing. It occupies only 0.5 acre of the entire 86-acre district.

The amended nomination has accomplished what it set out to do, namely, establish a baseline against which future project impacts within the Historic District can be evaluated. It will support informed determinations of Project effect.

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5.0 Conclusions and Recommendations

Preparation of an amended National Register nomination for the Historic District has been completed to the point of awaiting review by the State Preservation Review Board. NorthWestern has every expectation that the nomination will be accepted by the National Register later in 2022, and the Historic District will continue to be a listed property. The new information about contributing and non-contributing elements, and about the district's historic significance and resource integrity will aid in assessing future Project effects and development of a Historic Preservation Management Plan under the new License.

This report completes the National Register evaluation portion of the Cultural Resource Study, as described in the FERC-approved Revised Study Plan. The only subsequent required action is expected to be in-person presentation and discussion of the nomination to the State Historic Preservation Review Board on May 17, 2022.

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6.0 Literature Cited

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Appendix A – National Register Nomination Form

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form.* If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.

1. Name of Property

Historic name: Thompson Falls Hydroelectric Dam Historic District (Boundary Modification and Additional Documentation)
Other names/site number: 24SA0165
Name of related multiple property listing:
NA
(Enter "N/A" if property is not part of a multiple property listing

2. Location

Street & number: ____
City or town: Thompson Falls State: MT County: Sanders
Not For Publication: [ ] Vicinity: [X]

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this X nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property X meets ___ does not meet __the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

___national **X statewide** **X local**

Applicable National Register Criteria:

X A **X B** **X C** **___D**

MT State Historic Preservation Officer

Signature of certifying official/Title: **Date**

State or Federal agency/bureau or Tribal Government

In my opinion, the property ___ meets ___ does not meet the National Register criteria.

Signature of commenting official: **Date**

Title : **State or Federal agency/bureau or Tribal Government**

4. National Park Service Certification

I hereby certify that this property is:

___ entered in the National Register

___ determined eligible for the National Register

___ determined not eligible for the National Register

___ removed from the National Register

___ other (explain:) ______________________

Signature of the Keeper Date of Action

5. Classification

Ownership of Property

(Check as many boxes as apply.)

Private: [X]

Public – Local [X]

Public – State [ ]

Public – Federal [ ]

Category of Property

(Check only **one** box.)

Building(s) [ ]

District [X]

Site [ ]

Structure [ ]

Object [ ]

Number of Resources within Property
(Do not include previously listed resources in the count)

Contributing	Noncontributing	
4	0	buildings
1	0	sites
11	5	structures
0	0	objects
16	5	Total

Number of contributing resources previously listed in the National Register 11

The Resource Count provided on the nomination form represents the totals for the entire district. It incorporates the previously listed extant contributing resources, resources 1 and 5-12, and adds 11 previously un-noted resources (resources 13-23). The count excludes three non-extant previously contributing resources that have been removed, resources 2-4; in the original nomination, resource 3 consisted of two different houses counted as one contributing resource (for a total of four buildings but counted as three resources). The Boundary Modification involves changes that a) exclude the location of the three previously contributing, but now non-extant, resources (resources 2-4), and b) include one newly-documented contributing structure and one contributing site.

# of buildings still standing = 4
# of structures still standing = 16 (including 5 noncontributing)
# of buildings lost = 4 (resources 2-4, which includes two houses counted as a single resource under resource 3 in the original nomination)
# of structures lost = none

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6. Function or Use
Historic Functions
(Enter categories from instructions.)
INDUSTRY/PROCESSING/EXTRACTION: Energy Facility

Current Functions
(Enter categories from instructions.)
INDUSTRY/PROCESSING/EXTRACTION: Energy Facility

7. Description

Architectural Classification
(Enter categories from instructions.)
OTHER: Early 20th C. Industrial

Materials: (enter categories from instructions.)
Principal exterior materials of the property: _CONCRETE; STONE__

Narrative Description
(Describe the historic and current physical appearance and condition of the property. Describe contributing and noncontributing resources if applicable. Begin with **a summary paragraph** that briefly describes the general characteristics of the property, such as its location, type, style, method of construction, setting, size, and significant features. Indicate whether the property has historic integrity.)

Summary Paragraph
The Thompson Falls Hydroelectric Dam Historic District was listed in the National Register on October 7, 1986. Since then, several contributing elements have been removed and others modified. Also, the original listing failed to acknowledge a few historic structures and a historic archaeological site that contribute to the historic hydroelectric facility. Changes to the district since the original 1986 listing are described in the following section.

The Thompson Falls Hydroelectric Dam Historic District is an 86-acre parcel that occupies a roughly ½ mile long section of the Clark Fork and portions of the river's north and south banks. A 24-acre island in the river hosts several of the historic resources on or adjacent to it. Located in western Montana on the Clark Fork of the Columbia River at its confluence with Prospect Creek, the district is bordered by the Cabinet Mountains to the north and the Coeur d'Alene Mountains to the south. Here, the Thompson Falls, a series of small falls and rapids, drops the river about 20 feet in elevation over a 300-foot distance.

Immediately to the north of the district is the Sanders County seat, Thompson Falls, with a population of about 1500 residents. Early on, this small commercial center served as a railroad town, but soon grew in support of the timber, and, to a lesser extent, agriculture and mining industries. Recreation and tourism now also play important roles in the local economy.

The Thompson Falls Hydroelectric Dam Historic District, primarily owned by NorthWestern Energy, an investor-owned utility, currently serves as a hydroelectric power generation plant. The owner is the successor to the Thompson Falls Power Company that built the hydroelectric development in 1913-1917. The historic district encompasses 21 resources, including two dams, a forebay and intake structure, two powerhouses, three bridges, two dwellings and a garage, several smaller auxiliary structures, and a powerhouse ruin. With one exception, contributing elements were constructed between 1910 and 1926.

Overall integrity remains fair to good, despite alterations to the district over the years. As a hydroelectric plant that continues to produce power, changes are not only expected, but necessary. The greatest loss of integrity of design, workmanship, and materials relates to loss of four buildings documented in the original nomination and the construction of newer facilities within the footprint of the district; however, none of the buildings removed bore directly upon the operation of the hydro plant itself. Changes to the district include (as noted) the sale of no longer needed buildings (and subsequent demolition), removal of obsolete structures and equipment, and the addition of modern facilities and equipment that increase power generation or aid in fisheries conservation. However, key elements of the historic hydroelectric facility continue to exhibit their historic form, massing, and critical design and engineering elements. Consequently, the level of historic integrity the district displays easily continues to convey its historic operation and function. The most striking alteration is the 1995 construction of an additional powerhouse (Unit 7) slightly upstream from the original 1915 powerhouse. The new powerhouse's moderate obtrusiveness is muted due to its semi-outdoor design and the fact that its function serves the same purpose as the original powerhouse. More importantly, although not contributing to the district, it illustrates the continuing evolution of hydroelectric power generation and its auxiliary components that typify operating historic facilities. The district retains strong integrity of location as it continues to operate where built. Setting remains strong despite construction of newer facility buildings and the slow encroachment of private construction along the river. Because the district continues to operate in its historic capacity in its original location with the surroundings imparting much the same historic feeling when constructed, integrity of association also remains strong.

The resource number sequence presented below follows the resource number sequence in the original National Register nomination.

Narrative Description

1. **St. Luke's Hospital** (erected c. 1910; one contributing building)

The 2½-story building is a rectangular, intersecting gable-roofed residence with a full-length narrow wing on one side. The gable roof features returned eaves and their original beadboard soffits. The residence is cladded with drop siding and plain trim boards, including on the rear wall where the hospital addition once stood. A substantial, single story, wrap-around porch fronts the east two-thirds of the south wall and the entire east wall. Its hip roof is supported by round Tuscan columns, between which runs a wood porch railing with turned balusters. Two wide sets of wood steps access the Douglas-fir porch deck from the lawn. The porch and foundation on the front wall are skirted with wood lattice.

Most of the windows are original 1/1 double-hung wood-sash units with wood sills and decorative drip caps. One in the southwest corner of the building's main block and another on the rear wall each appear on a canted wall with a scalloped hood. The first one of these holds a stained-glass panel in its upper sash. Other windows, also original, include fixed cottage and fixed diamond light units. Each of the three cottage windows in the front half of the building display an unleaded, multi-light stained-glass transom. The diamond light windows appear mainly, although not exclusively, in the upper story walls. Aluminum sash storms cover most windows. There are two exterior doors at the front of the residence, both original to the building. They are half-light over two panel wood doors, with a heavy cap and stool at each light.

A small porch is at the north end of the side wing. Once apparently open, it has been enclosed with plywood exterior walls. A total of four 1/1 double-hung windows are set high in the walls. The door in the west wall displays a wood half-light over three flat panels; a modern metal storm door fronts the entry.

A 20 x 25-foot concrete slab marks the footprint of the rear hospital addition removed more than 90 years ago.

2. **Dr. Everett Peek's House** (*non-extant, removed since original nomination*)

3. **Two Chief Operators' Houses** (*non-extant, removed since original nomination*)

4. **Superintendent's House** (*non-extant, removed since original nomination*)

5. **Foreman's Office/Apartment and Garage** (*office/apartment completed 1924; garage erected 1917; two contributing buildings*)[1]

The office/apartment is basically a rectangular, gambrel-roofed building that retains most of its original design elements and materials. The roof displays one long shed-roofed dormer on either side. The west dormer runs the near full length of the roof, while that on the east measures about half that length. A skirt (pent) roof on the north wall aligns between the first and second floors. Main roof soffits are of beadboard (likely original), but the dormer soffits feature plain boards. A shallow-pitch shed-roofed enclosed porch spans the full length of the south wall. A square

[1] In the original nomination, resource 5 was identified as the Superintendent's Office, built in 1913. In fact, the building of that date and name was removed in 1923, and in its place Thompson Falls Power erected the Foreman's Apartment/Office, completing it in 1924.

wing roughly centered in the west wall is the rear building entry. The entire residence, including dormers and wings, sports 4-5-inch exposure lap siding with plain corner boards.

Centered in the east wall and inset under a flare of the gambrel roof is the open front porch. Two plain tapered round columns with plain bases and capitals support the flared section on the outer edges. The exterior wood French door with aluminum storm is left of center in the porch. The exterior entry to the enclosed south porch is also a French door. The rear (west) door is a modern vinyl door with French door-like design. It is fronted by a plastic simulated-wood stoop.

Most windows are 6/1 double-hung units, and those on the second floor have aluminum storms. Other window styles include the 1/1 double-hung units that fill the upper walls of the enclosed rear porch, a large, fixed window on the first floor with 4/4 side lights, a modern replacement multi-light fixed window at the front porch in the original opening, and two modern replacement 6/1 windows in the rear porch. Finally, there is a small bay window on the rear of the building, with a fixed single-pane sash at the center and 4/4 double-hung on either side.

A notable modern addition to the building is an elevated open deck on the west or rear wall that pre-dates 1986. Set on tall 6x6 posts, the deck is accessed from the building interior by a non-original half-light over one panel door. A modern vinyl sash window is to the north, left of the door. This configuration replaces a single 6/1 double-hung window that once was at this position.

The two-car garage on the lot is a hip-roofed building with 2x4 rafter tips exposed at the eaves. It retains its original drop siding. One 6/6 wood-sash double-hung window is centered in the east and south walls. A non-original metal person door is centered in the west wall, while a non-original double garage door fills the north wall. There is a modern, large, open, shed-roofed storage space attached to the south wall.

6. **Dry Channel Bridge** (*erected 1911, one contributing structure*)

In July 1910, Sanders County Commissioners made plans to build a bridge across the Clark Fork at Thompson Falls. In fact, the plans called for two bridges: the Dry Channel Bridge from the north, or town side, of the river to a small island, and the Main Channel Bridge from the island to the south side of the river. The County Commissioners retained William Pierce Cowles, an engineer from Minneapolis, to draw up plans and specifications and to supervise construction for the two bridges. In October 1910, O.E. Peppard of Missoula won the contract for construction and completed the work in the fall of 1911.[2]

[2] "Three Bridge Contracts," *Anaconda Standard*, 4 October 1910, 4; "New Bridge at Thompson Nearly Done," *Missoulian*, 24 September 1911, 9; Michael Koop, "Thompson Falls Hydroelectric Dam Historic District," National Register of Historic Places nomination form (Helena: Montana State Historic Preservation Office, 1986), Sec. 8, p. 6.

Prior to construction of these structures, access to Thompson Falls from the south bank of the Clark Fork River was via a small, cable-drawn ferry. After 1911, traffic could depend on a more reliable route to Thompson Falls from the south (including from the Coeur d'Alene mines).[3]

Although the Dry and Main Channel bridges pre-date the Thompson Falls hydroelectric facility by two years, they quickly became integral to the development's construction and subsequent operation. Today, they continue to be used by plant operators for vehicular access to both dams and the small (main) island.

The Dry Channel Bridge is a 425-foot long by 18-foot wide three span, through truss bridge with four wood stringer approach spans on the north and two on the south. The top chords, inclined end posts, and vertical compression members of each 90-foot, pin-connected Pratt through steel truss three-panel spans are built up from pairs of laced channels. Diagonal tension members, hip verticals, and lower chords are rectilinear eye bars. I-beam floor beams are hung from U-bolts. Solid concrete piers support the main spans and timber bents and concrete abutments support the approach spans.[4]

All known alterations to the bridge since construction involve only the foundation and deck. Just three years after construction, the piles for the north wood stringer spans were modified, during the hydroelectric plant's construction phase. The wood piles at each of the three bents were cut off just above the sill, the sills replaced, and solid concrete footings poured below. In 1988, the north approach span bents and concrete footings were replaced with like materials, although the size of the dimensional lumber is slightly different than the original. Finally, in 2010, the plank deck and wood stringers were replaced with like materials and the top 5 feet of the upstream and downstream ends of three of the four main concrete piers were resurfaced.[5]

7. Main Channel Bridge (*erected 1911, one contributing structure*)

The Main Channel Bridge (also known as the Historic High Bridge) is a six-span bridge standing several hundred yards below or south of the Main Channel Dam. It spans the Clark Fork River channel between the main island and the south road approach. The first span from the island is a 55-foot, three-panel, Parker deck truss with inclined end-posts only at the north end. It is supported at the upper chord on a concrete abutment, with the lower chord resting on a concrete pier at the span's south end. The second span consists of a 160-foot, nine-panel Pratt deck truss;

[3] "New Bridge at Thompson Nearly Done," 24 September 1911.

[4] Kevin Murphy, "Historic American Engineering Record, Dry Channel Bridge," HAER MT-29 (Washington, D.C.: U.S. Dept. of the Interior, Heritage Conservation and Recreation Service, Historic American Engineering Record, 1984).

[5] Thompson Falls Power Company, General Plan of Development, Drawing 40415-D3-237-0, July 9, 1915; Thompson Falls Power Company, Proposed Changes North End Highway Bridge, Drawing 41519-D3-188-0, August 29, 1914; Montana Power Company, Thompson Falls Access Bridge Rehabilitation, Drawing 041519-C33-001-0-0, n.d.; Noel Jacobson, hydro plant foreman, personal communication, October 1, 2021 and January 25, 2022. [Note that all drawing numbers cited in this document are NorthWestern Energy digital file references.]

the third and fourth are 127-foot, seven-panel Pratt deck trusses, and the fifth is a 65-foot, four-panel Pratt deck truss that appears to be a standard Pratt pony modified for use as a deck truss. The last span on the south is a new steel girder span that replaced the original three wood stringer approach spans. All Pratt deck spans are of steel, pin-connected, and supported by concrete piers. The deck rests on wood stringers on the top flange of steel I-beam floor beams, which, in turn, rest on the upper chord. Solid concrete piers with metal-reinforced cutwaters and concrete abutments serve as the bridge foundation.[6]

The bridge exhibits several unusual features. A bend in the deck at the junction of the four-panel and seven-panel deck trusses was accomplished by designing the end panel of the eastern truss to be longer than that of the western truss of the four-panel span. The trusses of this four-panel span are not as deep as those of the other spans. Therefore, the four-panel span is pin-connected to four columns (each is comprised of two laced channels), which extend upward from the concrete piers to the deck. This design prohibits allowance for expansion and contraction of the four-panel span. Another unusual feature of the bridge is the difference between the two seven-panel spans. They are identical except that the lower chord of the southern span consists of eye bars, while the lower chord of the northern span (and the nine-panel span) are two laced channels. Otherwise, they represent typical Pratt steel trusses: verticals are two laced channels, except the hip verticals, which exhibit two angles with battens; diagonals feature eye bars with turnbuckles, and the upper chord is two laced channels.

The structure was closed to motorized traffic in the early 1970s and closed to bicycle and pedestrian access in 1979. In 2009-2010, Sanders County contracted for the bridge's repair that involved replacement of select components, including joists and stringers, one or more rockers, decking, and railings. The replacement joists and stringers are of single steel channel sections, the new rocker(s) is a stainless steel sliding rocker, and the new rail consists of a tall metal rail, built with pedestrian and non-motorized traffic safety in mind. The other major change included the replacement of the three south approach spans with a single steel girder span, whose north end rests on a new rectangular, solid concrete pier.

8. Main Channel Dam (*erected 1914-1915, one contributing structure*)

The Thompson Falls Hydroelectric Project utilizes two dams. The larger of those two structures, the Main Channel Dam, spans the river immediately upstream of the Thompson Falls (natural feature). The second and smaller dam, 770 feet to the west and impounding the reservoir at the location of a former dry channel, is known as the Dry Channel Dam.

The Main Channel Dam is a 913-foot long, 18-foot-high arched concrete gravity structure. As built, its right (west) abutment served as a concrete, non-overflow wall, with a straight upstream face and a slightly battered downstream face. The left abutment, about 50 feet long, was also a

[6] Kevin Murphy, "Historic American Engineering Record, Main Channel Bridge," HAER MT-28 (Washington, D.C.: U.S. Dept. of the Interior, Heritage Conservation and Recreation Service, Historic American Engineering Record, 1984).

non-overflow section. The spillway section between the two consisted of a 24-foot-wide log sluice adjacent to the right abutment and 38 spillway control bays.

The sluice consisted of a concrete-walled chute on the downstream face of the dam, whose inlet was framed by concrete nose piers. The sluice's water channel measured 6 feet wide and about 5 feet deep. While the sluice remains in-place, it is no longer used. The original sliding gate that controlled the flow of logs into the sluice was removed with the construction of a fish passage facility at this location in 2010.[7] Concrete now fills the space between the sluice's outer walls to support the fish ladder's auxiliary water and high velocity jet pipelines (see Resource 23 below).

In 1915, each of the spillway control bays consisted of permanent steel bents set on 24-foot centers. Steel intermediary flashboard supports, or trip stanchions, are removable vertical steel beams on 4-foot centers, between which flashboards are stacked 16 feet high above the spillway crest. This design allowed for contingencies of fast moving water, water that potentially rose too high in the reservoir, or potential plugging from log or other debris, to be mitigated through tripping the intermediary supports, resulting in the loss of their flashboards and the supports themselves.[8]

Atop the permanent bents was a pair of steel channel sections on which rested 8x10 wood tie stringers that in turn supported the wood deck with its rail track roughly centered on the deck. A truck crane rode on the rails, powered by electricity delivered by trolley wires strung between lamp posts on the downstream side of the deck.[9]

The spillway apron was a plain structure without energy dissipators; the bedrock beyond at the end of the spillway acts as a natural stilling basin. The apron was stepped several places across the length of the structure to accommodate the elevation of the bedrock beneath it.[10]

Initially after construction, changes to the spillway section apparently were few. The exception may have been installation of the hoist shed that stood on a platform above the log sluice; this likely dated to replacement of the electric crane with one powered by gasoline. Many years later, at some unknown date before 1980, all but one of the structural steel bents between bays 21 and

[7] Renewable Technologies, Inc., "Historic American Engineering Record, Thompson Falls Hydroelectric Project, Main Channel Dam," HAER No. MT-90-D, (Butte: 2008), 7.

[8] Thompson Falls Power Company, Assembly of Steel Trestle for Main Dam, Drawing 040415-D03-022-0-0, January 19, 1914; see Montana Power Company, Thompson Falls Plant Dry Channel Dam Trip Stanchion, Drawing 016102-C01-001-0-02, May 8, 1963.

[9] Thompson Falls Power Company, Thompson Falls Dam Deck & Track for Crane, Drawing106432-C-001-0-0, October 20, 1915.

[10] Thompson Falls Power Company, General Plan of Development.

36 were faced with concrete.[11] In about 1982, four spillway control bays (16-19) were modified with removal of the intermediary bents and flashboards and installation of two 41 x 18-foot radial gates. The hoists for those gates were mounted on a new deck 5 feet higher than the main deck and to the downstream side. Solid concrete piers support the gates. Also, the upper 8 feet of flashboards at the unaltered control bays were replaced with fixed wheel panels between the intermediary flashboard supports. Each is a rigid wood panel attached to a heavy steel frame with three sets of rollers. Removal and re-insertion can occur individually with a crane that lifts using a heavy loop at the center top of the panel.[12] Near the same time, a series of thick precast concrete slabs set in a steel frame replaced the wood deck; the latter held in position at each intermediary flashboard support by means of a heavy steel "shoe." Finally, in 2019, crews completed installation of two more radial gates at bays 27-30.[13] The spillway apron remains altered.

In 2010, the small building over the log sluice's entry chute that housed the flashboard hoist was removed.[14] A set of iron rails that ran from the structure across the top of the Main Channel Dam remain in-place, though, continuing from the former hoist house location east over the crest of the spillway section of the dam. The rails continue to accommodate a flat-bed metal cart/crane used by plant operators to raise and lower the fixed wheel panels, and presumably for other maintenance activities.

9. **Dry Channel Dam** (*erected 1914-1915, one contributing structure*)

The Dry Channel Dam consists of a 122-foot long, 38-foot high concrete non-overflow wall and a 289-foot long, 17-foot high concrete gravity arch dam overflow (spillway) section. When built, it shared many characteristics with the Main Channel Dam including the ogee-shaped spillway crest, its plain apron without energy dissipators, the design and materials of the structural steel bents and intermediary flashboard supports, and the wood deck with rail track.

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[11] Montana Power Company, Thompson Falls Main Dam Drop Panel Installation, Drawing 041519-C04-001-0-02, April 16, 1982; Federal Energy Regulatory Commission, *Appraisal Report, Clark Fork - Pend Oreille River Basin, Montana, Idaho, Washington* (Washington, DC: 1980), 37.

[12] Montana Power Company, Thompson Falls Main Dam Drop Panel Installation.

[13] Montana Power Company, Thompson Falls – Radial Gates Location Map and Existing Dam, Drawing 041519-C05-001-0-0, October 1980;Thompson Falls – Radial Gates, Spillway General Arrangement, Drawing 041519-C6-1-0-1, October 1980; Thompson Falls Main Dam Drop Panel Installation; 2 Radial Gates-Embeds & Misc, Drawing 040415-D01-020-0-03, revised April 21, 1982; NorthWestern Energy, "Thompson Falls Hydroelectric Project FERC Project No. 1869 Pre-Application Document" (Butte: 2020), 2-16.

[14] Renewable Technologies, Inc., "HAER, Thompson Falls Hydroelectric Project, Main Channel Dam," 8.

As constructed, the non-overflow wall section had 10 sluiceways controlled by slide waste gates. Over time, logs severely damaged these gates, rarely used after 1944. In about 1970, three of the sluiceways were closed by timber bulkheads, and the remainder closed in 1990.[15]

Originally, 12 spillway flashboard bays existed, each 24 feet wide. Each bay had six sets of flashboards separately by trip stanchions, for a total of 72 sets that could be removed individually. The flashboards were stacked 12 feet high. About 1963, the easternmost 25 trip stanchions were replaced, apparently with stanchions similar in form to the original. Around 1982, fixed wheel panels of the same type as those at the Main Channel Dam replaced the upper 6 feet of flashboards in each bay. The precast concrete slab section deck may date to the flashboard replacement.[16]

10. Powerhouse (*erected 1914-1917, one contributing structure*)

The powerhouse is a masonry building exhibiting select Neo-Classical architectural elements. It features coursed argillite ashlar with finely tooled mortar joints, set on a massive concrete foundation. The building measures 292 feet long by 97 feet wide. A broad shed roof covers the north half of the structure while a very shallow gable protects the south half. The original large cylindrical roof vent caps have been replaced. A deep copper-clad cornice hangs at the lower roof line. Large steel trusses support both roof sections.[17]

Tall, arched, multi-light steel industrial type windows fill the entire south wall and most of the remaining three sides, with those on the long sides of the building featuring upper and lower sections hinged to pivot in a horizontal plane for ventilation. The windows on the north and south walls appear in 15 bays, and those on the adjoining walls in four. Concrete segmental arches surmount each bay of windows and the individual groups of windows separated by concrete spandrel panels. The main powerhouse door in the west wall was originally a 22-foot tall multi- panel wood door with two bands of three four-pane windows. The much smaller rear door, only 7½ feet tall, was a six-panel wood door. Modern industrial roller doors replaced both.

The powerhouse stands as a three-floor building that consists of two sections: the generating room on the north (50 feet wide), and on the south the transformer bays and shops, control room,

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[15] Montana Power Company, Bulkhead for Dry-Channel Waste Gates, Thompson Falls Repairs, Drawing 16318-C-001-0-0, October 29, 1969; Federal Energy Regulatory Commission, *Appraisal Report, Clark Fork - Pend Oreille River Basin*, 38; NorthWestern Energy, "Thompson Falls Hydroelectric Project Pre-Application Document," 2-6; Jacobson, personal communication

[16] Montana Power Company, Thompson Falls Plant Dry Channel Dam Trip Stanchion, Drawing 016102-C02-001-0-0, May 8, 1963; Federal Energy Regulatory Commission, *Appraisal Report, Clark Fork - Pend Oreille River Basin*, 38, 41; NorthWestern Energy, "Thompson Falls Hydroelectric Project Pre-Application Document," 2-7.

[17] Thompson Falls Power Company, Power House Copper Cornice, Drawing 40415-D3-63-2, October 2, 1914; Power House Elevations, Drawing 040415-D03-057-0-3, revised, January 20, 1915; Power House Elevation & Floor Plan, Drawing 040415-D03-0-03, revised, February 20, 1915; Cross Section of Power House and Intake, Drawing 040415-D03-077-0-4, revised, August 3, 1915.

office, bus bar compartments, and high-tension floor. The three floors host the: 1) generators, 2) control room, and 3) high tension equipment, plus the basement.

The scroll cases of the 5000 kw single-runner vertical shaft Francis turbines (six main and two exciter) are embedded in concrete at the downstream end of the penstocks below the basement floor. Water from each Allis Chalmers turbine flows into an elbow draft tube fully encased in concrete. Each main riveted steel tube measures 14 feet in diameter, transitioning to a flattened circular shape at its lower end.[18]

Generator-turbine shafts and bearings, generator brakes, and turbine servomotors occupy the basement space. Also in the basement are four 6 x 16-foot transformer and switch oil tanks, a governor oil tank, and two non-original air compressors in the center south side of the basement, and lubricating oil tanks against the north wall behind the exciter generator-turbine shafts.[19] Most of the original equipment in the basement remains. Routine maintenance of the turbines, such as runner repairs, shaft rework, and servomotor and shaft bearing replacement, has involved in-kind design and materials.[20] The transformer oil tanks remain in-use and the original lubricating oil tanks, while not used, stand in their historic positions. Modern equipment replaced the historic governor oil tank. The battery room in the basement is a new cinderblock-walled space, added about 2001-2002. The DC batteries and stands in the room are very recent additions.

The generating room on the first floor is open to the roof. It houses the six main generating units arranged longitudinally, set in two groups of three. As installed, each main unit was a 5000 kw, 6600V AC generator manufactured by General Electric with a rating of 7500 kVA. Five of the six have been rewound to 8750 kVA.[21] At one time a pair of exciters, also General Electric products, stood between the two groups of main generators, but they have been removed. The historic governors have been replaced and the modern equipment now housed in metal cabinets set adjacent to each generator. The original 75-ton overhead crane with 5-ton hook and original cab spans the width of the generating floor.[22]

Originally, the south half of the first floor, directly opposite the generators, displayed 12 brick-lined compartments occupied by General Electric step-up (to 100 kV) transformers. These tall compartments extended up through the second floor to the top of that level. Four modern step-

[18] Thompson Falls Power Company, Draft Tube for Main Unit, Drawing 40415, D3-70-0, June 30, 1914; Cylinders for Draft Tubes, Drawing 040415-D03-213-0-0, April 9, 1915.

[19] Thompson Falls Power Company, General Plans and Sections of Power House, Drawing 040415-D03-248-0-0, September 24, 1915.

[20] See, for example, PPL Montana LLC, L.H. Francis Runner, Drawing 40415-C012-001-0-0, November 22, 1999; Turbine Shaft Rework, Drawing 40415-B08-001-0, May 14, 2001.

[21] NorthWestern Energy, "Thompson Falls Hydroelectric Project Pre-Application Document," 2-12.

[22] Thompson Falls Power Company, General Plans and Sections of Power House.

up transformers replaced the old transformers in 1996-1997. Each new unit fills two compartments, with the historic brick wall between each set removed. The new, larger compartments are closed on the generator side by modern, tall, fire-proof roller doors. The remaining compartments have been converted for use as workshops. At one time, three governor oil pumps stood between the two sets of six transformer compartments, but those have been removed. However, the concrete local service switch bank of compartments nearby still stands with most of its panel doors intact (although not its contents). Along the far south side of the first floor were once two sets of two rows of bus compartments. One row of each set has been removed, and that space is now occupied by a series of shops, including machine, electrical, welding, and carpentry.[23]

On the second floor, the control room is centrally located, as are the original locker room, office, and sleeping rooms to its south. The control room features all new instrumentation and components, housed in 1970s-1980s cabinets. The locker and sleeping rooms now serve different functions, but the grouping retains its original walls, windows, and doors. The walls consist of several panels, the lower two or three rows and single upper row of asbestos (transite panels) and the middle row of either clear or ribbed glass. The walls on either side of the control room that lead to the low-tension switches and buses exhibit similar walls, with the glass windows extending to the ceiling. The doors in these walls are of the same material as the walls (glass over transite panels).[24]

This office grouping is bordered on either side by large, open galleries that once housed the original bus and switching apparatus. Concrete bus compartments, now obsolete, stand in two rows parallel with the long axis of the powerhouse. Each compartment is accessed by a simple panel asbestos door that opens on top hinges. The concrete delta bus compartments, in a single row along the north side of these rows, consist of smaller openings currently used for storage of incidental materials.[25]

The third floor is the high-tension floor. All electrical and control equipment there was replaced in 1996-1997, as has the equipment mounted on the south side of the powerhouse roof.[26] Two sets of transmission wires emanate from the roof of the power plant; both are 115,000 volt lines. One set leads to Kerr Dam (now known as Seli'š Ksanka Qlispe') to the east and the second runs south toward the Montana/Idaho border.

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[23] Thompson Falls Power Company, General Plans and Sections of Power House; Jacobson, personal communication.

[24] Thompson Falls Power Company, General Plans and Sections of Power House; Side Partitions for Switchboard Room, Drawing 40415-D3-250-0, September 27, 1915.

[25] Thompson Falls Power Company, General Plans and Sections of Power House; Property Map, Drawing 16595-E-1A,1915-1917.

[26] Jacobson, personal communication.

11. Transformer House (*erected c. 1914, one contributing structure*)

The transformer house, or local substation, is located midway between the Main and Dry Channel dams, atop a rock outcrop. Readily available records of its use suggest that most recently it was fed by a 2200-volt line from the powerhouse and stepped-down to 220 volts for use at the Main Channel Dam. It seems likely that earlier it distributed power from the Prospect Creek plant to various project locations as the new hydroelectric facility was being constructed. The structure is no longer in use.[27]

This square stone building is very similar to the warming shed (Resource 12). Measuring 12 x 15 feet and standing one story tall, it rests on a concrete slab. The masonry walls are of cut blocks of local gray argillite. Window and door casings are wood, with concrete sills and lintels. A triangular concreted pediment surmounts the west-facing entrance. Heavy mesh, apparently salvaged from the powerhouse where it was used as safety guard material, blocks the window and door openings. High in each wall are recessed concrete panels, from which protrude remnants of porcelain and clay insulators. Corrugated sheet metal covers the pyramidal hip roof, which displays projecting rafter tips. The ridge sports a decorative scroll detail.

12. Warming Hut (*erected c. 1915, one contributing building*)

The warming hut stands slightly downstream of and higher in elevation than the west abutment of the Main Channel Dam. It seems likely the warming hut was added to the stock of support facilities at Thompson Falls not long after the hydroelectric plant first went on-line. The hut served as a shelter where workers who engaged in operational or maintenance activities at the dam sought temporary relief from inclement weather conditions.[28]

The building is stone masonry and measures 12 x 19 feet. The front faces east toward the Main Channel Dam, while the back wall stands directly against a rocky hillside. The hut rests on a concrete foundation and features a hip roof. Its stonework consists of cut blocks of local gray argillite, each 20 inches wide of variable lengths and heights, laid up with a cement mortar.

Fenestration on the front elevation consists of a central entryway flanked on each side by a single long narrow window opening set deep in the wall. A flat concrete lintel tops each of the three openings, and both window openings sport concrete lug sills. A heavy, rustic wood door replaced the original wood door. Made with recycled plant wood, the door features large decorative metal work, including hand-made hinges. Rebuilt four-over-four light, double hung windows with wood sashes remain in their openings. The building's other three walls lack doors or windows.

[27] Montana Power Company, Insurance Map Thompson Falls Plant, revised, Drawing 016620-C-001-0-03, September 12, 1985.

[28] Renewable Technologies, Inc., "Historic American Engineering Record, Thompson Falls Hydroelectric Project, Warming Hut," HAER No. MT-90-E (Butte: 2008), 2, 4.

The warming hut's hip roof is a modern replacement that mimics the original shape. It is covered with modern metal roofing.

13. Forebay and Intake Structure (*erected 1915, one contributing structure*)
Where the dam is not adjacent or integral to the powerhouse, water enters a forebay where its flow decelerates to a virtual standstill allowing the water that is free of logs and other debris to enter into the penstocks. At Thompson Falls, the forebay is a roughly 550-foot-long, 80 to 110-foot-wide channel at the lower end of the reservoir. It was cut into bedrock at the north side of the Clark Fork River to a maximum depth of 60 feet.[29]

Dry-laid stacked rock riprap (see Resource 17 below) that extends underwater to the bottom of the structure reinforces the northwest side of the forebay at its downstream end. The riprap section terminates at its upstream end at a very large boulder. At its opposite end, the riprap section intersects an irregularly shaped concrete wall where the gate to the log sluice is located. Another concrete wall, formerly the upper end of the historic fishway (see Resource 16 below), forms the southeast side of the forebay just upstream of the intake wall.

A 375-foot log boom is anchored to the far end of the forebay, extending upstream past the end of the fishway wall. Although modern, it basically replicates a series of historic-period log booms at this location that were critical to the protection of the penstocks and turbines.[30] Logs and other debris were and continue to be directed to the log sluice at the far end of the intake wall, and passed back into the Clark Fork River downstream of the powerhouse.

The intake structure is solid concrete and houses the 14-foot-diameter main and 6-foot 8-inch-diameter exciter penstocks and their headgates. It measures 258 feet long, 22 feet wide at the top (deck), and 60 feet high, spanning almost the entire length of the powerhouse. The six main and two exciter penstocks are entirely encased in this concrete structure.[31]

Slightly sloping steel trash racks front the intake structure, extending from a point 4 feet below the top of the wall to the wall base for a height of about 40 feet. They consist of 4-inch bars set on 3-inch centers and lay against a steel trestle. Originally, a mobile crane, presumably riding on rail track, served as the trash rake to remove debris. The modern tall trash rake, installed in 2008 that replaced the original, rides on a rail attached to a concrete deck rather than wood ties.[32]

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[29] Thompson Falls Power Company, Cross Sections of Intake Canal Thompson Falls, Drawing 40415-A1-3-0, n.d.

[30] Montana Power Company, Thompson Falls Trash Boom, Drawing 16087-F-1-0-0, August 19, 1958; Typical Trash Boom Float 40′ Float, Drawing 16200-F-1-0-0 December 21, 1971.

[31] Federal Energy Regulatory Commission, *Appraisal Report, Clark Fork - Pend Oreille River Basin*, 39.

[32] Thompson Falls Power Company, General Plans and Sections of Power House; PPL Montana LLC, Thompson Falls Hydro Boom Assembly Drawing, Drawing 40415-C129-001-0-1, October 1, 2007.

A timber slide headgate allows closure of the upper end of each penstock (main and exciter) in the case of an emergency or turbine repair or maintenance. Each is composed of 12 x 16-inch timbers and wood splines, all connected by tie bolts. Gates lift by a rising stem hoists (two stems per gate) operated by a motor drive. The headgates were reconstructed in 1991 but are virtually identical to the original. The small hoist shed, located about midway along the line of hoists, houses a modern motor with a chain drive. Although dating to 1997, it is very similar in size (5 x 8 feet) and shape to the historic shed.[33]

A vertical air and access pipe also embedded in the concrete intake structure is just beyond each headgate. This feature allows air into the penstock during dewatering (otherwise the penstock may collapse) and refills the dewatered penstock prior to lifting the headgate. Each pipe features a cast-iron sluice gate on the reservoir side near the pipe's base that controls the flow of water into the penstock. The hoist for each sluice gate has its own rising stem hoist, once operated by hand.[34]

Between the intake structure deck and the north powerhouse wall are a pair of concrete saddle piers set on brick piers. These once supported two 6-foot diameter oil storage tanks for the plant's general lubrication system. The tanks were housed in a 15 x 15-foot wood-frame oil house.[35] The tanks (and the oil house) have been removed, but the saddle piers remain.

The 8-foot wide, concrete-walled log sluice lies at the far end of the intake and powerhouse. Its east wall remains as built, but the entire west wall and floor were replaced recently, following the same form and material as the original. The steep metal stairway just beyond the west wall of the sluice appears to be of the same recent vintage. The sluice's 12-foot wide by 15-foot tall gate is a 2011 metal replacement of the original timber slide gate; it too lifts with a pair of screw stems attached to either top side of the gate.[36] A gate house on the concrete wall at the far end of the forebay houses the modern hoist.

[33] Thompson Falls Power Company, Head Gates & Frames at Intake Details, Drawing 40145-D03-030-0-0, January 28, 1914; General Arrangement of Operating Gear and Details of Skimming Gate, Drawing 040415-D03-047-0-0, November 10, 1914; Motor Drives for Intake and Skimming Gates, Drawing 040415-D03-230-0-0, June 9, 1915; Montana Power, Insurance Map Thompson Falls Plant; Thompson Falls Hydroelectric Project Intake Gates Reconstruction, Drawing 041519-C42-001-0-01, May 29, 1991; Thompson Falls Plant Intake Bridge Deck, and New Hoist Shed Plan View, Drawing 041519-C49-002-0-0, February 25, 1997.

[34] Thompson Falls Power Company, Sluice Gates for Penstocks at Intake General Arrangement & Details, Drawing 040415-D03-042-0-0, April 6, 1914; General Arrangement of Intake Sections, Drawing 040415-D03-022-0-0, July 18, 1914.

[35] Thompson Falls Power Company, Basement Plan for Bays 7-8&9, Powerhouse, Drawing 040415-D03-214-0-0, April 29, 1915; Montana Power, Insurance Map.

[36] General Arrangement of Operating Gear and Details of Skimming Gate; Jacobson, personal communication.

14. Tailrace Wall (*erected 1914/modified 1917, one contributing structure*)
Located at the far (southwest) edge of the powerhouse tailrace lies a structure identified variously in historic records as a tailrace wall or temporary (construction) cribbing. Crews began to build it in January 1914, in preparation for the start of work on the powerhouse foundation. This wall presumably served as a coffer dam during construction. In early 1917, another crew reportedly raised the wall. Although identified as a tailrace wall, water regularly overtops it during periods of high water.[37]

The concrete wall measures 880 feet long, 10½ feet wide and displays an ell-shape that extends from the island east of the powerhouse downstream. The longest leg of the ell was built on a bedrock ledge and made by pouring concrete over and into a timber crib wall. The ends of the lateral timbers remain exposed in the sides of the concrete wall. By contrast, most of the short leg of the ell is solid concrete with an irregular downstream profile.

15. Sawdust Shed (*erected c. 1950, one contributing structure)*
Standing about 80 feet east of the powerhouse, the sawdust shed is a small, no longer used feature. At one time, it apparently stored sawdust used to minimize leaks in the timber slide headgates when in the closed position.[38] Its dates of construction and last use are unknown.

The 4x6-foot structure is sided and roofed with galvanized corrugated metal. The roof exhibits a metal ridge cap with ball finials. There is no discernible foundation. A single doorway-sized opening appears at the center of one long (east) wall, but it seems doubtful that an actual door existed.

16. Fishway Wall (*erected 1915, one contributing structure)*
The fishway wall represents the sole surviving remnant of the historic fishway that once stood between the forebay and the upper end of the powerhouse tailrace. The wall was the upper end of the fish ladder. Readily available sources indicate that the entire ladder structure rarely, if ever, operated successfully, with complaints about an "improperly constructed" fish ladder at Thompson Falls dating at least as early as 1923.[39] The ladder's ascending pools were removed at an unknown date after the early 1940s.

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[37] ; Thompson Falls Power Company, Plan of Tailrace, Drawing 40415-D3-173-0, January 5, 1914; [Tailrace Wall], in Thompson Falls Power Company, start January 1914, Construction Ledger:400-871, 1913-1917, Folder 5, Box 184, and Contingencies: "Raising TailRace Wall," January-February 1917, Construction Ledger: 901-1201, 1913-1917, Folder 6, Box 184, Montana Power Company Predecessor Companies, MC268, Montana Historical Society Research Center, Helena; Jacobson, personal communication. [Hereinafter, all cited documents housed in MC268 with simply be cited by name, folder number, box number, and collection number only.]

[38.] Jacobson, personal communication.

[39] "Anglers and Nimrods Plan Big Coyote Hunt," *Missoulian*, 9 February1923, 6; Lon Johnson, "Historic American Engineering Record, Thompson Falls Hydroelectric Project, Powerhouse Foreman's Bungalow," HAER No. MT-90-A (Butte: Renewable Technologies, Inc., 1993), photograph MT-90-A-21.

The remaining wall is a concrete structure with a battered upstream profile (forebay side). When built, it consisted of six timber slide gates, each operated by a hand-crank hoist on a cast iron stand. The gates were set at graduated depths between 2 and 14 feet below normal full pool. Each raised gate allowed water to enter a 2-foot steel pipe that carried water to the wood fish ladder.[40] While the gates themselves may still be intact (below water), the hoist frames and cast-iron spur wheels have been removed.

17. Rock Walls and Riprap (*erected c. 1913-1915, counted as one contributing structure*)
In addition to the buildings and structures described above, rock retaining walls and riprap occur at various places around the district. All likely date between 1913 and 1915, during the construction phase of the Thompson Falls development when considerable rock was blasted and moved to make way for such major structures as the two dams, powerhouse, and forebay.

The most impressive of these small features is a 180-foot long, curved rock retaining wall along the east and south edge of what was formerly referred to as Power House Road. It stands up to 8 feet tall at its greatest height. The argillite rock displays dry-laid construction with very narrow joints, and in the main has shifted little since construction. A moderate amount of lichen on the outer face testifies to the wall's historic age.

As noted above, a portion of the north side of the forebay (Resource 13) features rip-rap of argillite rock, less angular but larger than that along the roadside. The riprap extends below the water's surface, presumably to bedrock.

About 65 feet to the west is an argillite rock-wall-lined former driveway that leads from Power-House Road to the west end of the forebay. The north and south curvilinear walls along the driveway measure about 140 feet and 300 feet, respectively, and each measures roughly 15-18 inches thick. They stand between 1 and 4 feet in height, with the tallest section at the west end of the north wall. A row of rounded river rock, with each rock's long axis set vertically, top these dry-laid rock walls. A very short section of the top course of rock exhibits repair at the west end, using like rock although joined with cement mortar.

Beyond (west of) the west end of the Dry Channel Dam lies a short foot path marked on one or both sides by a low wall of dry-laid rock. It measures an estimated 20 feet long.

Another rock wall remnant begins on the lower north side of the warming hut (Resource 12), and extends north about 35 feet. Argillite comprises the rock used in construction; set up includes limited cement mortar. The wall stands about 3½ feet tall. An additional 30 feet of rock wall along a footpath south of the hut was removed during construction of the modern fish passage facility (Resource 23).

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[40] Thompson Falls Power Company, General Arrangement of Gates for Fishway, Drawing 040415-D3-18-0-0, October 31, 1914; Gate & Details for Fishway, Drawing 040415-D3-17-0-1, revised, March 9, 1915.

18. Prospect Creek Powerhouse Ruin (*erected 1912, one contributing site)*
Concrete foundation and scattered machinery remnants mark the location of the former Prospect Creek powerhouse. The 27 x 61-foot foundation stands 46 inches tall. The concrete walls have incised scribes about half-way up their interior faces to accommodate 2x6 stubs that remain from the floor joists. The extant exterior wall faces are incised with five 8-foot wide by 6-inch deep decorative panels.

A nearly 7-foot wide void in the northwest wall appears to have served as the powerhouse's primary entrance. A space in the partially collapsed wall on the opposite side of the building marks a second possible entryway. Portions of the upstream (southeast) and rear (southwest) concrete walls are collapsed. These may reflect deliberate demolition to retrieve machinery and equipment after decommissioning of the plant.

The powerhouse tailrace is a channel made of 12-inch thick concrete walls, with an inside width of 10 feet. Where it passes under the powerhouse's lower wall, the channel measures 5.5 feet deep. The lower half of the channel exhibits a poured concrete floor, while the upper half features an overlay of ¼-inch steel plate flooring.

A 5½ x 10½-foot pit that measures at least 2 feet deep, lined with poured concrete, and centered in the base of the powerhouse appears to mark the former location of the generator. Nearly 2-inch diameter vertical bolts along the pit margin and a 3-inch thick cast iron ring that measures 8 feet in diameter lies within the pit likely represent portions of the generator's mount.

19. Forebay Crane Shed (*erected after 1995, one noncontributing structure)*
This small metal shed stands near the east end of the intake (Resource 13). It formerly housed a crane used as an intake rake. Since the replacement of that rake with the current piece of equipment in 2008, the shed has been used for storage.[41]

20. Concrete Girder Bridge (*erected 1993, one noncontributing structure)*
This 135-foot concrete girder bridge built in about 1993 provides vehicular access to the site of the new powerplant (Resource 21).[42] It replaced an older bridge (not included in the original 1986 nomination) to the main island, possibly the historic suspension bridge that led to the former plant superintendent's house.[43]

The 1993 bridge measures 20 feet wide and consists of four girders. It features a concrete slab deck, on either side of which projects a w-beam guardrail attached to simple steel posts.

[41] Jacobson, personal communication.

[42] "Thompson Falls 50 MW Addition Goes Commercial," *Power Engineering* 100, no. 10 (1996), https://www.power-eng.com/renewables/thompson-falls-50-mw-addition-goes-commercial.

[43] Federal Energy Regulatory Commission, *Appraisal Report, Clark Fork - Pend Oreille River Basin*, 40.

21. Unit 7 Powerhouse (*completed 1995, one noncontributing structure*)

The Unit No. 7 powerhouse ("new powerhouse") is a 50-megawatt plant with a single generating unit. It is a cast-in-place reinforced concrete gravity structure, a substantial portion located below grade. The concrete intake lies at the end of a 72 x 140-foot, 50-foot deep rock-cut intake channel.[44]

> … The generator is located immediately below the roof deck, which is provided with a hatch cover to allow installation and removal of the generator and turbine rotating parts. The hatch and all major equipment within the new powerhouse are serviced by an external 285-ton traveling gantry crane. The primary laydown area for major equipment is on the roof deck slab. A cantilever on the gantry crane allows the auxiliary hook to handle the draft tube stoplogs as necessary for flow management.[45]

The turbine is a vertical shaft Kaplan type. The generator rates a capacity of 57 megawatts and operates at 13.8 kV. The main transformer sits on a concrete foundation adjacent to the new powerhouse.[46]

22. Dry Channel Dam Crane Storage Shed (*erected c. 1999, one noncontributing structure*)

Until probably the 1990s, a hoist house stood over a gate at the upper end of the Dry Channel Dam's log sluice. It sheltered both a hoist for the sluice gate and a flat-bed cart/crane used to raise and lower flashboards and fixed wheel panels on the overflow portion of the dam.[47]

In 1999, the current metal shed with front gable roof sitting on a concrete foundation was erected to replace the historic structure (not included in the original 1986 nomination). It measures about 8 x 10 feet and the interior is accessed by a single garage door that faces toward the dam and a metal person door in the opposite wall. It houses the hydraulic lift mounted on a flat cart used to hoist the fixed wheel panels.

23. Fish Passage Facility (*erected 2010, one noncontributing structure*)

In 2009-2010, COP Construction Company constructed a 48-step pool fish passage facility at the right (west) abutment of the Main Channel Dam. The structure is intended to restore upstream fish passage on this reach of the Clark Fork River by allowing unhindered travel between the tailwater and normal forebay pools.[48]

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[44] NorthWestern Energy, "Thompson Falls Hydroelectric Project Pre-Application Document," 2-8

[45] Ibid, 2-9.

[46] Ibid, 2-9, -12-13.

[47] Thompson Falls Power Company, Motor Drive for Intake and Skimming Gates, Drawing 040415-D02-230-0-0, June 9, 1915.

[48] Mabbott, Brent, Jon Jourdonnais, and Virginia Gillin, "Thompson Falls Fish Ladder 48 Steps to Bull Trout Restoration on the Clark Fork River," (presented paper, 140th Annual Meeting, American Fisheries Society, 2011).

The installation involved boring a 42-inch diameter tunnel through the abutment, building a concrete exit pool structure, an auxiliary water intake structure, and traveling screen.[49] An expanded metal tread staircase accesses the upper facility from the top of an adjacent rocky knob. A small observation deck stands at the top of the stairway.

In addition to the five modern structures briefly described above within the historic district boundary, nine additional modern sheds exist that today serve as a part of the Thompson Falls facility. These stand in two groups beyond the concentration of historic industrial structures, and outside the historic district boundary. They include boathouses, generator sheds, materials storage structures, a crane shed, and a former construction trailer—all of which date to the 1980s or later.

Table of Resources at Thompson Falls Hydroelectric Dam Historic District

Resource Number	Resource Name	Resource Type	Eligibility
1	St. Luke's Hospital	Building	contributing
2	Dr. Everett Peek's House	Building	removed
3	Two Chief Operators' Houses	Buildings	removed
4	Superintendent's House	Building	removed
5	Foreman's Office/Apartment and Garage	2 Buildings	both contributing
6	Dry Channel Bridge	1 Structure	contributing
7	Main Channel Bridge	1 Structure	contributing
8	Main Channel Dam	1 Structure	contributing
9	Dry Channel Dam	1 Structure	contributing
10	Powerhouse	1 Structure	contributing
11	Transformer House	1 Structure	contributing
12	Warming Hut	1 Building	contributing
13	Forebay and Intake Structure	1 Structure	contributing
14	Tailrace Wall	1 Structure	contributing
15	Sawdust Shed	1 Structure	contributing
16	Fishway Wall	1 Structure	contributing

[49] Jourdonnais, Jon, Brent Mabbott, Chad Masching, and Ginger Gillin, "Fish Passage: Re-connecting Fish Passage in the Clark Fork River," *HydroReview* 30, no. 7 (2011), https://www.hydroreview.com/world-regions/fish-passage-re-connecting-fish-passage-in-the-clark-fork-river/.

17	Rock Walls and Riprap	1 Structure	contributing
18	Prospect Creek Powerhouse Ruin	1 Site	contributing
19	Forebay Crane Shed	1 Structure	noncontributing
20	Concrete Girder Bridge	1 Structure	noncontributing
21	Unit 7 Powerhouse	1 Structure	noncontributing
22	Dry Channel Dam Crane Storage Shed	1 Structure	noncontributing
23	Fish Passage Facility	1 Structure	noncontributing

Statement of Significance

Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

[X] A. Property is associated with events that have made a significant contribution to the broad patterns of our history.

[X] B. Property is associated with the lives of persons significant in our past.

[X] C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

[ ] D. Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations

(Mark "x" in all the boxes that apply.)

[ ] A. Owned by a religious institution or used for religious purposes

[ ] B. Removed from its original location

[ ] C. A birthplace or grave

[ ] D. A cemetery

[ ] E. A reconstructed building, object, or structure

[ ] F. A commemorative property

[ ] G. Less than 50 years old or achieving significance within the past 50 years

Areas of Significance
(Enter categories from instructions.)
_ENGINEERING_____
_INDUSTRY________
_ARCHITECTURE__
_COMMERCE______
____

Period of Significance
_1912-1972_________
____
____

Significant Dates
_1912, 1917_________
____
____

Significant Person
(Complete only if Criterion B is marked above.)
_John D. Ryan_______
_Edward Donlan (previously listed as a significant person in the 1986 nomination)___
_Everett Peek (previously listed as a significant person in the 1986 nomination)_____

Cultural Affiliation
____
____
____

Architect/Builder
Max Hebgen ______
_Henry A. Herrick__ _
____
____

Statement of Significance Summary Paragraph (Provide a summary paragraph that includes level of significance, applicable criteria, justification for the period of significance, and any applicable criteria considerations.)

The Thompson Falls Hydroelectric Dam Historic District was listed in the National Register on October 7, 1986 under criteria A, B, and C. The area of Industry has been added to the previous areas called out in the original National Register form: Architecture, Engineering, and Commerce. In addition, this update/addendum raises the level of significance from local to statewide. The end date for the period of significance has also been extended from 1916 in the original nomination to 1972 to encapsulate the property's later period and its continued importance through the decades under Criterion A.

Under Criterion A, the Thompson Falls Hydroelectric Dam Historic District is significant for the central role that it had in the newly incorporated Montana Power Company's drive to dominate the industrial, commercial, and residential electrical supply market in the state. Focusing on hydroelectric development in the western half of Montana, the company and its corporate predecessors developed or redeveloped a total of 17 hydro plants by 1915, cementing its commanding position. The Thompson Falls plant was the third largest of those plants at the time of its construction.

The historic district is also significant under Criterion A as one of two hydroelectric plants that initially supplied power to the electrified Montana and Rocky Mountain Divisions of the Milwaukee Road. Without the contract that guaranteed Montana Power's commitment to provide a minimum amount of electricity at a price set by the quantity purchased, the railway would fail to financially justify the electrification project. One-third of Thompson Falls' output was contracted for delivery on demand to the Milwaukee Road via the latter's East Portal substation.

The original 1986 district nomination previously listed Criterion B significance for an association with Dr. Everett Peek and Senator Edward Donlan. This amendment proffers the inclusion of John D. Ryan, a driven and masterful Montana industrialist, as significant under Criterion B for his association with the Thompson Falls Hydroelectric Dam district. While Ryan was important in the development of other hydroelectric projects in the state, his contributions to this project were very much hands-on and best represents his engagement with hydro projects and railroad interests. His seat on the board of the Milwaukee Road beginning in 1909 positioned him to promote the electrification project directly to railway officials. He personally negotiated acquisition of the land and water rights, and the railroad power contract. With others, he incorporated the Thompson Falls Power Company and acquired half the shares of corporate stock in his name. By the force of his position as the president of Montana Power, he ensured top talent for the project's development, design, and completion.

Under Criterion C, the district is significant as a very good example of a hydroelectric development dating to the 1910s. It continues to stand in a rural, minimally developed setting. Key, large-scale elements such as the dams, forebay and intake, powerhouse, and steel truss bridges retain the majority of their historic design elements and materials. The workmanship and feeling of historic development are reinforced by the locally-sourced argillite rock used to build structural walls at the powerhouse, transformer house, warming hut, and forebay, not to mention a small number of striking landscaping walls. Several alterations date after the period of significance. Replacements or new construction include four modern crest control radial gates and a modern fish passage facility at the Main Channel Dam, a large trash rake and modern headgates and sluice hoists at the intake, equipment changes inside the powerhouse (such as new step-up transformers, exciters and governors, and buses and switches), a modern powerhouse, and modern access bridge. Also, four residences listed in the original 1986 nomination have been lost. Nevertheless, the district continues to retain sufficient historic fabric to stand as a noteworthy example of powerplant engineering and design of its type and age. Although newer improvements exist among the historic resources, these improvements also reflect the evolution and continual change of the technology needed and implemented in power production.

In addition to the engineering, technology, and residential resources, the ruin of the 1912 powerhouse contributes to the district's significance under Criterion C. Although fragmentary, it is nevertheless a rare, surviving remnant of a small early twentieth century hydroelectric plant. It retains its historic footprint and select design elements related to plant floorplan. Its physical relationship to Prospect Creek and the main Thompson Falls facility remains intact. Further, few if any vestiges of other plants of this age are known to survive in any condition in Montana.

Finally, the district is significant under Criterion C because as the work of two masters of hydroelectric development in early twentieth century Montana. Max Hebgen was *THE* Montana developer/engineer of his time, credited with directing the construction or redevelopment of 16 hydro facilities between 1890 and 1915. As Thompson Falls developed, he rose to the position of general manager at Montana Power and also as one of the incorporators of the Thompson Falls Power Company. From that point on, he was intimately involved with the project, ensuring its construction to his standards by making numerous public appearances and announcements and by conducting regular working site visits during construction. Henry A. Herrick, Charles T. Main's chief engineer for project design, was a renowned engineer in his own right, with considerable experience in Montana. He led a team of junior designers stationed in Great Falls for the duration of construction. He personally approved many of the plan sheets and made routine trips to Thompson Falls to review local conditions.

The start of the period of significance begins in 1912, with the construction of the first resource of the project. Although the importance of the hydroelectric facility continues to the present, the end date of the period of significance is 1972, the end of the historic period. While additional hydro plants were added to Montana Power's system over time, Thompson Falls, now owned and operated by NorthWestern Energy, remains in an important position, with superior water flow and its location the farthest west of NorthWestern's plants in the state. Also, although the railway by then was in a serious state of decline, the Milwaukee Road continued to take power from that network, as of course did an ever-growing number of consumers served by the plant's transmission lines. Despite newer additions to the property, the Thompson Falls Hydroelectric Dam Historic District continues to serve as a good example of facility design and technology dating to the early twentieth century.

Narrative Statement of Significance (Provide at least **one** paragraph for each area of significance.)

Thompson Falls Project Planning (1907-1913)

Across the United States, hydroelectric power development began to receive considerable attention in the mid-1890s, with the proven demonstration of long-distance transmission of electricity. Situated on the large Clark Fork of the Columbia River in western Montana, the Thompson Falls was seen as early as 1905 as a favorable site for such a facility.[50] It took 11 years for the Thompson Falls hydroelectric development to be brought on-line, with the path to completion involving a series of corporate entities.

In September 1907, Edward Donlan, Irving E. Keith, and James M. Self, incorporated the Northwestern Development Company in Nevada for the purpose of transacting, promoting, manufacturing, and generating electric power, light, and heat at Thompson Falls. The capital stock was set at $1 million, but initially only $3,000 in capital stock (at $10 per share) was subscribed, that by the incorporators who served as the first corporate directors and officers. Within a short time, the company acquired title to the land and water rights on and adjacent to the river at the site of the Thompson Falls.[51]

Donlan, the company president and influential Western Montana resident, owned large tracts of land in and around Thompson Falls, including a sawmill at Eddy (several miles upstream; opened in 1905). With others, he started the Thompson Falls Mercantile Company in 1904, aggressively advocated for the selection of Thompson Falls as the seat of newly formed Sanders County in 1905; he built one of the "finest" buildings in town, the Ward Hotel, in 1907-1908. His permanent home, though, was in Missoula County, where he resided since at least 1895. His long-term interests were the timber industry and politics—he was also a skilled promoter.[52]

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[50] Koop, "Thompson Falls Hydroelectric Dam Historic District," Sec. 8, p. 9.

[51] Northwestern Development Company, Articles of Incorporation (Nevada), September 11, 1907, Folder F844, Montana Secretary of State Records, RS250, Montana Historical Society Research Center, Helena; Douglas F. Leighton, "The Corporate History of the Montana Power Company 1882-1913" (master's thesis, Montana State University, 1951), 54. [Hereinafter, all cited corporate records originally filed with the Montana Secretary of State are found at the above referenced repository.]

[52] "Mercantile Enterprise for Thompson Falls," *Butte Miner*, 9 January 1904, 16; "New Sanders County Lively and Energetic," *Anaconda Standard*, 21 August 1905, 8; Sherry Hagerman-Benton, "Remember When: Edward

In 1908, the Milwaukee Land Company, effectively a subsidiary of the Chicago, Milwaukee & Puget Sound Railway (later, Chicago, Milwaukee & St. Paul; commonly known as the Milwaukee Road), acquired Northwestern Development by purchasing its stock. Its interest in Northwestern Development stemmed from the Milwaukee Road's contemplation of electrification of its westward extension from South Dakota.[53]

With Northwestern Development stock in the hands of Milwaukee Land, Donlan turned his attention to a new corporation, the Thompson Falls Light and Power Company. Incorporated in Montana in April 1910, it shared with Northwestern Development its stated purpose of electric power development, but in this case identified as its focus Prospect Creek, a south tributary of the Clark Fork, not far downstream from the falls. Donlan, Dr. Everett Peek, and Arthur Preston, the incorporators and first directors, set the capital stock at $30,000 (each valued at $100) and collectively held 100 shares of stock.[54] While this company also had no direct role in the main Thompson Falls hydroelectric development, the Light and Power company formed specifically to protect Northwestern Development's water rights.[55]

Although having effectively acquired the land and water rights at Thompson Falls in 1908, the Milwaukee Road held little appetite for taking on construction of an electric power plant itself. But over time it forged a relationship with Montana industrialist John D. Ryan, who was very interested in railroad electrification as well as several other important Montana industries. Among Ryan's most prominent roles were those at the Amalgamated Copper Company (managing director 1904-1909 and president 1909-1915), its successor Anaconda Copper Mining Company (ACM, president, 1915-1917 and chairman of the board of directors, 1918-1933), Great Falls Power Company (president, 1910-at least 1913), Montana Power Company (president, 1912-1933), and Chicago, Milwaukee & St. Paul Railway (board member, 1909-at least 1918).[56]

Donlan," *Sanders County Ledger*, 13 September 2021; Donlan Family Papers finding guide, 2021, MSS417, University of Montana, Mansfield Library, Archives, and Special Collections, Missoula.

[53] Leighton, "Corporate History of Montana Power Company," 51-54. Leighton reports that between 1907 and 1908, John D. Ryan and John Morony had purchased half interest Northwestern Development which it later sold to Milwaukee Land (pp. 54, 64). The company's 1908 annual report stated that no capital had been paid in, though, and the company had neither assets nor liabilities: Northwest Development Company, Annual Report for 1908, Folder F844.

[54] Thompson Falls Light and Power Company, Articles of Incorporation, April 21, 1910, Folder D6729.

[55] See Leighton, "Corporate History of Montana Power Company," 62-3.

[56] Chicago, Milwaukee & St. Paul Railway Board Proceedings, December 3, 1918, http://www.milwaukeeroadarchives.com/Corporate/1918CM&PBoardofDir..pdf; "John D. Ryan Dies at Home in New York," *Montana Standard*, 12 February 1933, 1; Leighton, "Corporate History of Montana Power Company," 49, 61; Michael P. Malone and Richard B. Roeder, *Montana: A History of Two Centuries* (Seattle: University Press, 1976), 175-6, 247; Renewable Technologies, Inc., "Missouri-Madison Hydroelectric Project FERC Project No. 2188

In 1911 and the first half of 1912, Ryan spearheaded plans for development of the Thompson Falls hydropower site. He methodically began by negotiating for acquisition of the land and water rights, for a long-term contract between the Milwaukee Road and Great Falls Power (a Montana Power predecessor) to purchase power for the railroad's future electrified line in Montana, and for a second contract by which the railroad would also purchase power produced by the Thompson Falls facility.[57] In early 1912, Max Hebgen, then the general manager of Great Falls Power, the Butte Electric and Power Company (another Montana Power predecessor), and Northwestern Development, conducted an on-site investigation of the Thompson Falls site. At about the same time, Con Kelley (ACM chief counsel and vice-president in charge of western operations) scrupulously examined the titles to the land and water rights. Hebgen and Kelley's affirmative recommendations resulted in the start of work by March on the Prospect Creek power plant under the name of Northwestern Development, with the understanding that the power would assist in construction of the larger Thompson Falls development.[58] Two months later, Hebgen announced to the press, "We are ready to go ahead with the construction of the [main Thompson Falls hydroelectric] plant at once."[59]

The methodical background work culminated on November 29, 1912, with the formation of the Thompson Falls Power Company. Its first directors were John D. Ryan, John Morony (future vice-president of Montana Power), William D. Thornton (future director of Montana Power), Max Hebgen, and Con Kelley. The capital stock was set at $5 million.[60] A few months later, on February 11, 1913, the Milwaukee Road transferred to the new corporation titles to the Thompson Falls site's land and water rights in exchange for a signed power contract.[61]

Two days later, on February 13, the total Thompson Falls Power stock issue was exchanged for common shares of Montana Power stock of equal value.[62] Beginning on that date, Montana

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Cultural Resource Management Plant Operating Facilities and a Private Recreation Camp Evaluations of Eligibility for Listing in the National Register of Historic Places," unsubmitted National Register of Historic Places nomination form, prepared for The Montana Power Company (Butte: 1991), Sec. E, p. 2.

57 Leighton "Corporate History of Montana Power Company," 57-58.

58 "Local and Personal," *The Times* [Virginia City], 8 March 1912, 5; "Great Power Plant at Thompson Falls," *Anaconda Standard*, 28 April 1912, 11; "Work to be Rushed," *Missoulian*, 5 July 1912, 2; "Thompson Falls Faces a Bright Future," *Missoulian*, 15 December 1912, 70; Leighton, "Corporate History of Montana Power Company," 61; Thomas Charles Satterthwaite, "Cornelius Francis Kelley: The Rise of an Industrial Statesman" (master's thesis, Montana State University,1971), 66, 71.

59 "Big Power Plant to be Built at Thompson Falls," *Butte Miner*, 1 May 1912, 7.

60 Thompson Falls Power Company, Articles of Incorporation, November 19, 1912, Folder D7941.

61 Leighton, "Corporate History of Montana Power Company," 64-5. Also see E. Donlan, Northwestern Development Company, telegram to C.A. Goodnow, Assistant to the President of Chicago, Milwaukee & P.S. Ry., February 5, 1913, Folder 11, Box 190, MC268.

62 Leighton, "Corporate History of Montana Power Company," 87.

Power effectively became the owner and operator of the Thompson Falls development. Construction could begin.

The Montana Power Company and electrical power generation

Although built, owned, and operated under the name of Thompson Falls Power from 1912 to 1929, the Thompson Falls Hydroelectric Facility was, in reality, a project of the Montana Power Company, Montana's largest electric utility.[63] Montana Power's central role in the project resulted from its president's, John D. Ryan, relentless pursuit of the project (see above).

Montana Power formed in October 1912, two months later consolidating under its umbrella the Butte Electric and Power Company and its subsidiaries, the Madison River Power Company, the Billings and Eastern Montana Power Company, and the Missouri River Power Company. Soon, the Great Falls Water Power and Townsite Company (a holding company of Great Falls Power) and the Thompson Falls Power Company "were taken into the Montana Power Company by means of acquisition of stock control, thus unifying producers of eighty-five per cent of the hydro-electric output in Montana at that time."[64] With the consolidation, Montana Power held significant control over the power supply to the biggest players in the metal mining and electrified railroad industries. The mining industry was by far the largest consumer, with ACM's growing need for electrical hoisting, drilling, ore crushing and beneficiation, and lighting. The railroad industry was the second-best consumer, first with the electrification of the Butte, Anaconda & Pacific Railway in 1912-1913, and that of the Milwaukee Road between Harlowton, Montana and Avery, Idaho in 1915-1916.[65]

Growing demand for electricity spurred Montana Power to develop new sources of hydropower and build an ever-expanding network of transmission lines to connect new and existing plants with consumers.

> Between 1913 and 1918, Montana Power upgraded facilities at Black Eagle to 3000 kilowatts and at Rainbow Falls to 35,000 kilowatts; constructed the 60,000-kilowatt Ryan Development at Great Falls; upgraded the capacity of the Hauser Development to 18,000 kilowatts; finished Hebgen Dam as a storage facility near the headwaters of the

[63] Contract, Sale of Second Half of Great Falls Power & Townsite Company and all of Thompson Falls Power Company, February 11, 1913, in Thompson Falls Power Company, Historic Data 1913-1929, Folder 1, Box 184, MC 268.

[64] Leighton, "Corporate History of Montana Power Company," 1.

[65] Renewable Technologies, Inc., "Missouri-Madison Hydroelectric Project," Sec. E, pp. 4-6; "Milwaukee's Electrification of Lines Means Much to State," *Great Falls Tribune*, 5 November 1916, 13. Although railroads were a major consumer of electricity, by 1940 that accounted for only about 6% of the power Montana Power generated: Dale Martin, railroad historian, personal communication, January 4, 2022.

Madison River, that increased minimum average water flow to the hydroelectric facilities downstream; and completed the 50,000-kilowatt Holter facility.[66]

It completed three more important hydroelectric projects in the state in the late 1920s. Montana Power rebuilt Black Eagle (bringing it to an 8,000 kilowatt plant) and all but completed the 45,000 kw Morony project, both on the Missouri River. It also built the Mystic Lake development at the head of West Rosebud Creek in the Beartooth Mountains, the first facility of its size in eastern Montana.[67] At about that time, it served almost 47,000 customers and just over 100 communities in the state.[68]

The ensuing Great Depression of the 1930s considerably dampened Montana Power's ambitions for growth. The decline in industrial work resulted in "rigid retrenchment in [its] operating expenses."[69] On the other hand, Rural Electrical Cooperatives began organizing in Montana. By 1941, 10 Montana cooperatives existed and all received electricity from Montana Power.[70] Also, in the late 1930s, the company did complete another hydroelectric plant, Kerr Dam (Seli'š Ksanka Qlispe'), a 56,000 kilowatt development on the Flathead River of western Montana.[71]

In the early post-war era, Montana Power and other utilities foresaw strong growth in electrical consumption by industry and residential and farm customers. To meet the challenge of reliable electrical power to its customers, the company initiated and completed a handful of power generation projects during the 1950s. The first was the Frank W. Bird natural gas or oil-fed power plant at Billings, completed in 1951. A third generating unit was installed at Kerr (Seli'š Ksanka Qlispe') in 1954, and Cochrane Dam at Great Falls was completed in 1958. In 1957, residential electrical customers used twice what they did in 1948, demonstrating in part that the growth utilities expected was being realized. As another measure of rapidly growing demand for

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[66] Renewable Technologies, Inc., "Missouri-Madison Hydroelectric Project," Sec. E, 3.

[67] Renewable Technologies, Inc., "Missouri-Madison Hydroelectric Project," Sec. E, p. 30; Mitzi Rossillon, "Cochrane Hydroelectric Facility, Great Falls, Montana: A Cultural Resource Inventory and Evaluation," prepared for NorthWestern Energy (Butte: Mitzi Rossillon, Consulting Archaeologist, LLC, 2021), 3-4.

[68] Gifford Pinchot, *The Power Monopoly, Its Make-Up and Its Menace*, (Milford, Pennsylvania, 1928), 208; Robert H. Fletcher, *Sinews That Serve* (Butte, The Montana Power Company, 1962), 38; Cecil Kirk, *A History of the Montana Power Company* (N.p.: Donn B. Kirk, 2008), 280.

[69] Fletcher, *Sinews That Serve*, 38.

[70] Ross Patrick Keogh, "Market Power and Regulatory Failures in the Montana Wholesale Electricity Market" (master's thesis, University of Montana, 2012), 3.

[71] "John D. Ryan's Memory to be Honored Aug 17," *Montana Standard*, 7 August 1940, 2; "Dedication of Cochrane Dam July 19," *Great Falls Tribune*, 9 July 1958; Fletcher, *Sinews that Serve*, 39-40.

electricity at that time, Montana Power's generating capacity increased from 335,000 kilowatts to 596,000 kilowatts.[72]

Since 1980, Montana Power and its successors routinely invested in the Thompson Falls plant infrastructure. Improvements included four new crest control gates at the Main Channel Dam, construction of modern crane sheds, construction of Unit 7 Powerhouse and a replacement bridge to access it, and addition of a fish passage facility. Although none of these plant improvements contribute to the district's National Register eligibility, they do in fact reflect the types of improvements all such operations require through time to maintain service to a growing consumer base.

NorthWestern Corporation, acquired Montana Power's utility assets in 2002 and the Thompson Falls Hydroelectric Project, among others, in 2014. It remains the largest supplier of electrical power in Montana.

Thompson Falls Project Construction (1912-1917)

As noted above, the first work on the future Thompson Falls facility was construction of the small hydroelectric plant at the mouth of Prospect Creek, 800 feet south of the main project's future powerhouse. Work to erect the flowline and powerhouse was scheduled to begin in late April 1912. From a dam constructed about 1 mile upstream from the creek mouth, water was diverted through 8000 feet of 48-inch wood stave pipe to a penstock on the hillside above the powerhouse. The force of the water falling to the powerhouse spun a Pelton waterwheel, which connected to a generator. Operational by the spring of 1913, the plant produced 750-kilowatts of electricity.[73]

Initially, the little powerhouse energized a transmission line that carried electricity as far east as the town of Paradise. There, the line connected with the Iron Mountain Tunnel Company's line from its mine at Iron Mountain. About 500 kilowatts of electricity were delivered to the mine, while additional power supplied lighting and miscellaneous domestic use in the communities of Thompson Falls, Paradise, and Plains.[74] During the summer of 1913, the Prospect Creek plant began furnishing electricity to the Thompson Falls Hydroelectric Development construction camp. Over the ensuing two years, it supplied power to the camp, as well as to the lights,

[72] "Regional Needs Stressed in Development," *Missoulian*, 23 January 1949, 16; "Treasure State Residents Far Ahead of U.S. Average of Power Consumption," *Great Falls Tribune*, 11 February 1958, 25; Fletcher, *Sinews That Serve*, 41.

[73] "Great Power Plant at Thompson Falls," 28 April 1912; "Thompson Falls Faces a Bright Future," 15 December 1912, "Pumping Plant," *Anaconda Standard*, 13 April 1913, 13; Thompson Falls Power Company, General Plan of Development, Drawing 40415-D3-237-0, July 9, 1915.

[74] "Pumping Plant," 13 April 1913.

compressors, pumps, and other machinery used to construct the much larger hydroelectric facility.[75]

Plans for the main hydro project neared completion in January 1913.[76] The rapidity with which the plans were developed was directly tied to the fact that those for the powerhouse were very similar to those prepared for the Volta (later renamed Ryan) hydroelectric development on the Missouri River. For both projects, Max Hebgen was intimately involved as the manager on behalf of Montana Power, and visited Thompson Falls regularly during construction. Likewise, Henry A. Herrick, under the employ of Boston firm Charles T. Main, served as the chief engineer for both hydroelectric developments. Although stationed in Great Falls, he also made numerous trips to Thompson Falls as construction progressed.[77]

Max Hebgen proved pivotal in the success of numerous early hydroelectric facilities in western Montana. He began his career in the electric power industry in 1888 with the Denver Gas and Light Company, but soon gained employment with utility companies in Butte. Early contributions to Montana's electric industry included construction of Missoula's electrical distribution system in 1895-1896 and the Big Hole hydroelectric plant (near Butte) in 1897-1898. In 1905, as an employee of the Butte Electric and Power Company, he assumed supervision of the construction of the second Madison Development. Hebgen's long involvement with electrical developments on the Missouri River began in 1890 and ended with his death in 1915, during which period he also oversaw the Thompson Falls development. Finally, Hebgen masterminded the integration of Montana Power's electrical distribution system and the transmission infrastructure to support Milwaukee Road electrification.[78]

During his 25-year career as a hydroelectric engineer, Herrick gained recognition as one of the leading authorities in the field, particularly during his association with the well-known firm of Charles T. Main. Earlier a resident engineer for the Washington Water Power Company in Spokane, Herrick began designing hydroelectric projects in Montana in the early 1890s when he supervised design and construction of powerhouse facilities at Black Eagle for both the Boston and Montana Mining Company and a Great Falls utility. After working independently for several years, in 1895, he started working for Charles T. Main. When that firm secured the

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[75] "Power Company at Work," *Anaconda Standard*, 24 July 1913, 9, and "Present Capacity of Power," 17 August 1913, 17; "Headley Sojourns in Old Home En Route," *Missoulian*, 18 February1914, 8.

[76] "Butte Current Notes," *Anaconda Standard*, 20 January 1913, 7.

[77] "Thompson Falls," *Missoulian*, 15 April 1913, 3; "Thompson Folks," *Missoulian*, 24 July 1913, 3; "New Principal Comes for Thompson School," *Missoulian*, 3 August 1913, 4; "In Thompson Falls," *Missoulian*, 12 February 1914, 7; "In Thompson," *Missoulian*, 3 April 1914, 5; "Butte in Brief," *Butte Miner*, 12 July 1914, 6; "Thompson Falls," *Missoulian*, 10 October 1914, 8; "Local Brevities," *Missoulian,* 28 March 1915, 2; "Local Brevities," *Missoulian*, 17 June 1915, 2; Kirk, *History of the Montana Power Company*, 232; Renewable Technologies, Inc., "Missouri-Madison Hydroelectric Project," Sec. E, 12.

[78] "Biographical Notices: Max Hebgen," *Mining and Metallurgy Monthly Bulletin* 107 (November 1915): xviii-xxi; Renewable Technologies, Inc., "Missouri-Madison Hydroelectric Project," Sec. E, 13.

engineering work for Rainbow Dam on the Missouri River at Great Falls, Herrick became the chief designer for that facility as well as for the Volta, Thompson Falls, and Holter hydroelectric developments in succeeding years. He also served as a consulting engineer for the reconstruction of the Hauser dam on the Missouri River by Stone and Webster Company of Boston.[79]

In spring of 1913, men begin erecting the Thompson Falls construction camp, starting with five tent houses and a cookhouse/dining hall for laborers who built railroad spurs to the dam and powerhouse sites and semi-permanent housing for the larger construction crews. An estimated 600 men total would be hired during the summer. A few permanent residences were also erected for select employees.[80] Construction support buildings and structures clustered between the north bank of the Clark Fork and the center of the town's Maiden Lane. They included 10 bunkhouses, large boarding house, bathhouse, heating plant, warehouse, and large office. On either side of Lincoln Street south of Maiden Lane there were repair, blacksmith, machine, and carpenter shops, a pipe and electrical supply storage building, and a cement warehouse.[81]

In March 1914, crews were heavily engaged in excavations for the powerhouse foundation and the coffer dam that would dewater the falls while building up the grades for the lines of railroad spurs that delivered materials and machinery to multiple work sites. Readily available accounts indicate that the two dams on the project worked simultaneously, with crews having different expertise alternating work between the two sites. Substantial work progressed during the summer, during which between 33% and 40% of the Main Channel Dam was completed, but in the fall the crews turned their efforts to finish the smaller Dry Channel Dam. Work temporarily stopped in early 1915, as the owner sought permission to flood some federal government land. Concrete work at the main dam resumed by mid-April and the flashboards were set soon thereafter. By June, both dams were all but completed.[82]

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[79] "Water Power Development," *Spokane Falls Review*, 1 November 1889, 6 and "Electricity," 1 January 1891, 28; "Noted Engineer Dies Suddenly," *Butte Miner*, 15 December 1917, 4; "New Dam is Planned at Black Eagle Falls," *Great Falls Tribune*, 1 June 1926, 5; Renewable Technologies, Inc., "Missouri-Madison Hydroelectric Project," Sec. E, p. 12.

[80] "Construction of the Great Dam Project Near Thompson Falls, Mont., is Now Said to be Approaching Completion," *Butte Miner*, 11 September 1914, 10.

[81] Sanborn Map Company, Thompson Falls, Montana, map, 1914, Sheet 1.

[82] "Power Project is Being Built Rapidly," *Butte Miner*, 3 March 1914, 9-10; "Empty First Load of Concrete at Big Dam," *Missoulian*, 16 March 1914, 6; "Northern Pacific May Electrify," *Helena Independent-Record*, 22 June 1914, 2; "Construction of the Great Dam Project Near Thompson Falls, Mont.," *Butte Miner*; "Big Force Constructing the Thompson Falls Dam," *Butte Miner*, 28 October 1914, 10; "Montana's Great Water Power Development is Told to Senate Public Lands Committee," *Anaconda Standard*, 15 January 1915, 4; "Building of Great Power Plant for Milwaukee Electrification Gives Thompson Falls a Boost on its Way to Permanent Prosperity," *Missoulian*, 18 April 1915, 11; "Power for the Milwaukee Road," *Anaconda Standard*, 20 June 1915, 28; "Thompson Falls Plant is Nearing Completion," *Anaconda Standard*, 11 August 1915, 10; [Main Dam flashboards and operating mechanisms, October 1914-May 1916], in Thompson Falls Power Company, Construction Ledger: dam accts. #200-365, 1914-1917, Folder 4, Box 184, MC 268.

The sizable crew employed to excavate the riverbed down 20 feet to the level where the powerhouse foundation would be built appears to have been busy through the end of 1914. Early the following year, the massive concrete foundation was poured. After that, construction progressed rapidly, such that completion of the powerhouse occurred by the beginning of July. Within a month, two of the six generator/turbine sets were in-place and producing electricity. The last two of the six units was installed in the spring of 1917.[83]

While unconfirmed, it seems likely that many of the smaller permanent industrial structures at the facility were erected at about the same time as the dams and powerhouse. These include the forebay and intake wall, transformer house, the warming hut adjacent to the Main Channel Dam, and hoist houses at the two dams and intake. Also, many rock retaining walls, made of argillite stone likely obtained from the riverbed during excavations, probably date to 1914-1915. Lastly, at some unknown early date soon after 1915, a heavy timber fishway (ladder) was built along the east wall of the powerhouse.[84]

As the hydro plant work progressed, by September 1914, workers surveyed a road up Prospect Creek and Cooper Gulch, along which a transmission line to the Coeur d'Alene mines was to be installed. Nine months later, most of the power generated by the small Prospect Creek hydro plant was sent to mines in that region.[85]

The timing of the construction of the transmission line to East Portal, south of Taft, remains uncertain (the line paralleled the Coeur d'Alene line for about 10 miles before heading south rather than continuing up Prospect Creek). By July 1915, however, the Milwaukee definitively decided on the East Portal substation and reported that transmission lines from Thompson Falls were being "put up." The Milwaukee line east of Missoula was energized to East Portal in November 1916.[86]

[83] "Power Project is Being Built Rapidly," 3 March 1914; "Big Force Constructing the Thompson Falls Dam," 28 October 1914; "Montana Power Company to Construct String of Plants," *Butte Miner*, 12 February1915, 10; "Power for the Milwaukee Road," 20 June 1915; "Thompson Falls Plant is Nearing Completion," 11 August 1915; "Starting New Units at Thompson Falls," *Great Falls Tribune,* 19 March 1917, 3.

[84] Johnson, "HAER, Thompson Falls Hydroelectric Project, Powerhouse Foreman's Bungalow," photograph MT-90-A-21.

[85] "Construction of Dam Approaching Completion," *Butte Miner*, 11 September 1914, 10, 12; "Power for the Milwaukee Road," 20 June 1915; *Anaconda Standard*, "Juice from Montana Brings Down Rates," 5 July 1915, 12.

[86] "Juice from Montana Brings Down Rates," 5 July 1915; *Anaconda Standard*, "Another Section Opened to the Electric Current," 2 November1916, 2.

The Prospect Creek Plant was decommissioned at the end of 1916.[87] Key elements were damaged by high water in the Clark Fork River and its tributaries in 1918, which reportedly washed out the bridge at the mouth of Prospect Creek and the dam upstream.[88] It was not until 1923, though, that the plant (except foundation) was removed as salvage.[89]

Hydroelectric Plant Technology and Architecture (1900-1920)

The Thompson Falls facility dates to what has been identified as the "Innovative and Experimental Period" (1895-1920) of hydropower development in the United States.

> By the mid-1890s, pioneering waterpower work culminated in development of a universal system that allowed for efficient, economical transmission of high-voltage, polyphase AC current over long distances. …[A]vailability of the universal AC system "inspired more than two decades of aggressive and creative attempts to expand both the generation and application of the electricity and the use of waterpower as a prime mover."
>
> This period of technological innovation and experimentation witnessed numerous changes in the design of hydroelectric systems. Several experimental dam designs were developed in attempts to reduce construction costs and to take advantage of sites previously considered unsuitable for hydroelectric development. Industrial design of powerhouses evolved to better accommodate increasing demands for hydroelectric power. Existing hydro equipment, such as turbines, underwent modification to improve efficiency and reliability. Transmission apparatus was refined to allow for transmission of increasingly higher voltages at increasingly longer distances. …[R]elatively few innovations were singularly significant, but rather, their importance lay in their combination with existing technologies. As a result of this "technological ferment," all hydroelectric generating plant facilities built during this era tended to be unique, or one-of-a kind developments in overall design.[90]

Both large- and small-scale elements of the Thompson Falls plant embodied technologies widely employed at large hydroelectric plants built during the 1910s. These include dam type,

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[87] Prospect Creek Plant Monthly Reports, January-December 1916, in Thompson Falls Power Company, Operating Report 1916, Folder 10, Box 189, MC268.

[88] "Floods are Serious at Thompson Falls," *Missoulian*, 2 January 1918, 6

[89] Hydraulic Pwr. Wks. Prospect Cr. Salvage, in Thompson Falls Power Company, Monthly Reports of Expenditures, 1920-1924, Folder 7, Box 189, MC268.

[90] Renewable Technologies, Inc., "Missouri-Madison Hydroelectric Project," Sec. E, p. 8. Most of this section is adapted from pages E8 to E11, F0 to F2 and from Mary McCormick, Mark Hufstetler, and Mitzi Rossillon, and James J. Shive, "Missouri-Madison Hydroelectric Project, Study on Precise and Approximate Replacements-In-Kind for Historic Engineering and Architectural Resources at the Hebgen, Madison, Hauser, Holter, Black Eagle, Rainbow, Ryan, and Morony Developments," revised (Butte: Renewable Technologies, Inc. and Legacy Consulting Services, 2001), 10-53. Additional consulted references are cited where appropriate.

flashboards for crest control, slide gates at the intake, vertical shaft turbine-generator arrangement, elbow-type draft tubes, revolving field generators with increased capacity, interior step-up transformer pockets, and a concrete tailrace wall.

Due to advances in technology and the growth in the concrete industry, concrete gravity arch dams, such as those built at Thompson Falls, were becoming one of the most common dam types used at hydroelectric developments built in the mountain West by 1910. Temporary flashboards on the permanent crest of the dam spillway that were tripped when the reservoir level approached flood-level were widely used during the early twentieth century at dams of all sizes. They continued in-use at least to the mid-1920s, but soon thereafter preferred crest control at large dams shifted to roller, drum, and radial gates.[91]

Sliding gates, which became one of the most widely adopted crest control forms for hydroelectric plants built in the late nineteenth century and first decades of the twentieth century, were chosen as intake headgates at Thompson Falls rather than for crest control. Operated with a pair of screw stems and hoisted vertically, sliding gates fell from favor over time because the movement of the gate on the guides caused considerable friction and therefore could only be effectively operated by a large capacity hoist. In crest control settings, they began to be replaced by the mid-to-late 1920s.[92]

The use of vertical shaft turbine-generator units at Thompson Falls reflects the rapid transition from horizontal to vertical settings attributed to development of the Kingsbury thrust bearing, first installed at a commercial hydroelectric facility in 1912. By the end of the 1910s, the hydroelectric industry witnessed a near complete shift to vertical shaft settings that greatly affected powerhouse design and turbine installations. Turbines moved off the generator floor, becoming an integral part of the powerhouse substructure. The space required for the generating floor was greatly reduced.

Large powerhouses of the late nineteenth and early twentieth centuries became increasingly sturdy steel frame structures, strong enough to support heavy equipment and resist constant vibration. Each included large windows to provide ample daylight and to ventilate heat produced by generators. A relatively "standard" configuration for such buildings was based on the needs of the equipment housed inside. Early twentieth-century hydropower generating systems, including that at Thompson Falls, generally featured multiple installations of relatively small turbine/generator sets, placed in a long, single row in a powerhouse that was long and

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[91] William P. Creager and Joel D. Justin, *Hydroelectric Handbook*, 2nd ed. (New York: John Wiley & Sons, 1950), 505; William Patrick O'Brien, Mary Yeater Rathbun, and Patrick O'Bannon, "Gateways to Commerce: The U.S. Army Corps of Engineers," 9-Foot Project on the Upper Mississippi River (Denver: National Park Service, Rocky Mountain Region, 1992), 65-104. For Montana Power use of steel flashboards into the late 1920s, see Renewable Technologies, Inc., "Missouri-Madison Hydroelectric Project," Sec. 7, 3.

[92] McCormick and others, "Missouri-Madison Hydroelectric Project, Study on Precise and Approximate Replacements-In-Kind," 16.

relatively narrow in plan. The sheer mass of the generating units required an overhead crane to move and service them, in turn necessitating a substantial increase in building height.

Most hydroelectric powerhouses erected after the turn of the twentieth century were organized into functionally distinct units. The structures were divided longitudinally into two bays: a full height, main bay area housing the generators, governance equipment, and a travelling overhead crane; and a two-level bay subdivided into various rooms and compartments to house offices, transformers, electrical switching gears and controls, and other ancillary equipment. High-tension switching equipment occupied a third level in that second bay. Finally, a sub-level accommodated the turbines.

The first two decades of the twentieth century saw construction of perhaps the finest examples of hydroelectric industrial architecture, both nationwide and in Montana, including attention paid to architectural aesthetics. The use of stone and brick was common. Dramatically, there were large vertical fenestration areas with multi-light windows topped by arched lintels that emphasized the verticality of the structure. Roofs were nearly flat, supported by exposed interior roof trusses. As the century progressed, less detailing was employed, although the overall effect continued to be that of a very large, tall, substantial building with some Neoclassical architectural style elements.

By the turn of the twentieth century, revolving-field generators generated most of the nation's hydroelectricity, although revolving-armature generators continued to be produced until about 1910. In the shift from horizontal to vertical turbine-generator units, generators required a few mechanical changes. Besides the bearing system, the most significant alteration was the application of a large metal bracket over the top of the unit that featured one or more drooping arms and helped to support both the rotor and armature frame. Another visible alteration provided by the vertical setting was the addition of a ladder and a platform with handrails. The platform, mounted on the top of the unit and surrounding the shaft, provided operator access to the unit's top bearings and collector ring. The Thompson Falls generators exhibit these elements of generator design and appearance.

Finally, the initial capacity of generators at Thompson Falls (each rated at 7500 kVA) is consistent with that of 1910s hydroelectric AC installations. Generators built before about 1910 operated at 6,000 volts or less. Generator capacity continued to steadily increase thereafter; units operating at 13,200 volts and rated at 32,500 kVa were first put into commercial operation in 1920.

Before the early 1910s, transformers at hydroelectric plants typically were installed inside the powerhouse. Most often, they were either located just off the generating floor or on the floor above, usually in an individual housing, or "pocket," intended to isolate them from each other, as well as the rest of the building and equipment, in case a unit caught fire. Thompson Falls displays brick transformer pockets.

Around the turn of the twentieth century, turbine draft tubes began to be viewed as an important component of hydroelectric power, worthy of more careful design and consideration. Dramatically flared, concrete-embedded draft tubes were introduced, as was the important new design in which an elbow transition directed vertical turbine discharges into horizontal tailrace flow. These elbow-type draft tubes, such as those installed at Thompson Falls, quickly became standard for most low and medium-head plants.

Finally, after the turn-of-the-twentieth-century, changes to tailrace construction occurred. Prior to that time, if solid bedrock lay at the proposed tailrace site, the channel was excavated out of the rock and generally required no further reinforcement. At some facilities, however, the tailrace was partially constructed within the natural river channel and thus required fabrication of a dike or wall to separate it from the river. At early hydroelectric developments, tailrace dikes typically were either formed of timber-cribbing or earth while side walls fabricated of dry or masonry stone. But after 1900, concrete tailrace walls became common. Thompson Falls features such a concrete tailrace wall.

Thompson Falls Operational Support (1916-1930)

In addition to the industrial structures at Thompson Falls, there were several residences and auxiliary buildings standing at or near the hydroelectric facility that served construction crews and/or plant operators. The oldest of these include four that served construction crews but were later converted to support ongoing operations. These are the camp hospital, two relatively small residences, and an office—all of which stood in or immediately adjacent to the larger temporary construction camp.

The camp hospital began as the county physician's private home. Several years previous, in 1905, Dr. Everett Peek, then railroad physician and later the Sanders County physician, built a three-story hospital and drugstore on Main Street, the first in Thompson Falls' history. Peek was one of the few doctors that saw patients not only in Thompson Falls, but also in surrounding communities including Heron, Trout Creek, Plains, and Paradise.[93] His Thompson Falls hospital on Main Street served residents for several years.[94]

[93] "The Week in Missoula Society," *Missoulian*, 23 July 1905, 9;"Heron Notes," *Missoulian*, 20 March 1912, 8; "Paradise Notes," *Missoulian*, 16 June 1912, 19; "Wedding is Quiet of Sanders Pair, *Missoulian* 13 March 1914, 6; "Auto Party Plunged in River, [Spokane] *Spokesman-Review*, 16 December 14, 15; "Breaks Wrist in Fall From a High Scaffold," *Missoulian*, 22 September 1917, 5; "Coroner Helps Soule Defense, Parks Charges," *Missoulian*, 2 February 1918, 1.

[94] "Business Looking Up at Thompson Falls," *Anaconda Standard*, 23 February 1905, 12.; "Attacks Fees Paid M.D.," *Spokane Spokesman-Review*, 16 October 1909, 2; "Early Realization of Thompson's Hopes Promised Through Events Incident to Season's Opening" *Missoulian*, 26 March 1911, 13.

In 1910, the year he married his second wife, Peek built for his family a new home on Maiden Lane.[95] This was a striking residence at the west edge of town that overlooked the Clark Fork River. As Thompson Falls Power was erecting its construction camp on and near Maiden Lane in 1913, it reportedly approached Peek about purchasing the home and converting it to a hospital that would be more convenient to the project than the one on Main Street. Apparently, the physician did just that, and the company erected a large rear addition on the house. While unconfirmed, it seems likely that most, if not all, of the hospital beds were in the rear block, while the dwelling was used by the resident physician and other staff, possibly with some examination rooms there also.

The building served as St. Luke's Hospital at least until 1919 when Peek moved to Missoula and possibly for some years thereafter. In 1927, the rear addition was removed, as was a second story front balcony. The building continued to serve as a residence, though, after Montana Power reportedly sold it to a private party in about 1929.[96] This building survives on the north side of the district and displays similar integrity as when originally listed as a contributing resource to the district.

The two small residences built around 1913 and called out as "Chief Operator's Houses" in the original nomination stood on Pond Street about 200 feet northeast of the hospital. These two houses were constructed to apparently house professional men who worked on the hydropower facility's construction. As the project transitioned to operation, these became known as the Chief Operators' Cottages.[97] Neither of these two houses remain.

The project construction office, a large U-shaped building opposite Maiden Lane from the hospital, was erected in 1913 and continued to stand until 1923.[98] Presumably it served as the office until its demolition, although it was grossly oversized for routine plant operational needs. The building presently standing in this location, the 1924-constructed Foreman's Office/ Apartment was erroneously identified as the Superintendent's Office in the original 1986 nomination.

Montana Power added a small number of buildings and structures exclusively as operator housing and support. The most substantial of those was the Powerhouse Foreman's Bungalow,

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[95] Missoula County, Marriage License, Dr,. E.D. Peek and Mattie Preston, July 27, 1910; "Pettit is Pardoned from Pen," *Missoulian*, 14 January 1912, 3.

[96] "Dr. E.D. Peek is Taken by Death," *Missoulian*, 11 September 1934, 5; Koop "Thompson Falls Hydroelectric Dam Historic District," Sec. 8, pp. 4-5; Linda Rocheleau (volunteer at Sanders County Historical Society Old Jail Museum), personal communication, November 9, 2021.

[97] Koop, "Thompson Falls Hydroelectric Dam Historic District," Sec. 8, 5.

[98] Thompson Falls Power Company, Construction of foreman's combination apartment and office, to be built on site of present temporary office building, in Monthly Reports, October 1923, Folder 7, Box 189, MC268.

built in 1916, that stood on a rocky knob northeast of the powerhouse.[99] Several years later a two-car garage and chicken house were added in the immediate vicinity of the residence.[100] In 1917, a crew erected a two-car garage near the construction office, at the corner of Maiden Lane and Power House Drive. In 1923-1924, the company built the Foreman's Apartment/Office at the site of the old construction office.[101] The Powerhouse Foreman's Bungalow and auxiliary buildings were removed in 1993 and Montana Power sold the Foreman's Apartment/Office to a private party in 2000.[102]

A pedestrian suspension bridge that spanned the forebay and provided direct access between the Foreman's Bungalow and former construction office was built sometime between 1916 and 1921.[103] It was removed in about 1993 (it was not included in the original nomination).

Thompson Falls Power Consumers

Thompson Falls Power's largest customer once the plant went on-line was the Milwaukee Road, but other industrial consumers included several Coeur d'Alene mining district mines, and a relatively small mining property at Iron Mountain between Paradise and Superior. The plant also provided electricity to small area towns, including Thompson Falls, Plains, Paradise, and Superior.

As noted above, by late 1916, the Milwaukee Road electrified 440 miles of its line in Montana. John D. Ryan played an instrumental role in this monumental project due his interests in ACM (the world's leading copper producer at the time), the Great Falls hydroelectric facilities on the Missouri River, the Thompson Falls plant, and of course the Milwaukee Road itself. When viewed collectively, these industries were responsible for the majority of electric power generation and consumption in the state at the time. By encouraging railroad electrification, Ryan increased demand for locally generated electricity and improved the Montana market for

[99] Johnson, "HAER, Thompson Falls Hydroelectric Project, Powerhouse Foreman's Bungalow," 4-5, 8.

[100] Lon Johnson, "Historic American Engineering Record, Thompson Falls Hydroelectric Project, Chicken House," HAER No. MT-90-B and "Historic American Engineering Record, Thompson Falls Hydroelectric Project, Garage," HAER No. MT-90-C (Butte: Renewable Technologies, Inc, 1993).

[101] Sanborn Map Company, Thompson Falls, Montana, map, 1914, Sheet 1, 1927, Sheet 1; Koop, "Thompson Falls Hydroelectric Dam Historic District," Sec. 8, p. 5; Montana Power Company, Insurance Map.

[102] Johnson, "HAER, Thompson Falls Hydroelectric Project, Powerhouse Foreman's Bungalow," 9; Thompson Falls Power Company, Construction of foreman's combination apartment and office; Sanders County Clerk and Recorder, The Montana Power Company to Elvin Fitzhugh, Section 7 of amended Certificate of Survey 2134-RB, warranty deed, July 28, 2000.

[103] Johnson, "HAER, Thompson Falls Hydroelectric Project, Powerhouse Foreman's Bungalow," photograph MT-90-A-21; Thompson Falls Power Co., Reinforcement of Suspension Bridge, Drawing 016051-F-1-0, June 20, 1921.

ACM-produced copper wire. The hope was that electrification would brighten the financial picture for the Milwaukee Road as well.[104]

The Milwaukee Road's officials saw dramatic potential in electrifying its line between Harlowton, Montana and Avery, Idaho. Steep grades and mountain passes were more efficiently handled by electric power than steam, and the danger of noxious gases in railroad tunnels could be eliminated. Although the economics of electrification demanded more railroad traffic than the Milwaukee possessed, the railroad held confidence in the line's future growth. The availability of ample and cheap hydroelectric power in Montana also significantly factored in its decision to electrify.[105]

Ryan first negotiated a contract between Great Falls Power and the Milwaukee Road to supply 54,700 hp of electricity from the Volta hydroelectric plant at Great Falls (about 70% of the total plant output), at a time when the facility was only in the planning stages of development. Two and one-half months later, he signed another contract to supply 13,900 hp of electricity from Thompson Falls (35% of total plant output), at that facility's completion. The advantage of supplying the Milwaukee Road with power from sources near either end of the electrified portion of rail line ensured continuous service in case of a power failure. A few years after both Thompson Falls and Volta were operating, Montana Power used its Holter hydroelectric development on the Missouri River upstream from Great Falls to supplement the Milwaukee Road's power supply, when necessary.[106]

Initially, the Milwaukee Road reportedly witnessed sizable savings due to electrification of part of its line in Montana. Combined with electrification of its line across Washington, the Milwaukee's venture was the longest electrified line in America, an impressive achievement. Its consumption of Montana Power electricity peaked in 1919, though. Due to contracted minimum payments for power, the price per kilowatt hour used increased substantially during the succeeding years so that the cost in 1924 was 70% higher than five years earlier. The company was bankrupt by 1925. Costs of constructing the Pacific Coast Extension and then electrifying so much of the line far exceeded estimates, and relatively little of the line's hoped-for traffic materialized.[107]

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[104] Renewable Technologies, Inc., "Missouri-Madison Hydroelectric Project," Sec. E, 5.

[105] Ibid.

[106] "Montana's Great Water Power Development is Told to Senate Public Lands Committee," *Anaconda Standard*, 5 January 1915, 4; "Ryan Makes Report on Montana Power," *Anaconda Standard*, 23 March 1915, 12; Leighton, "Corporate History of Montana Power Company," 57-8, 94; Renewable Technologies, Inc., "Missouri-Madison Hydroelectric Project," Sec. 8, 2. The Milwaukee never took the percentages of power output from Volta or Thompson Falls that were contracted, though: Leighton, 66-7.

[107] Leighton, "Corporate History of Montana Power Company," 110; Renewable Technologies, Inc., "Missouri-Madison Hydroelectric Project," Sec. E, 5.

Regarding other industrial users of Thompson Falls power, in fall 1914, even as the main hydroelectric plant was by any measure no more than half complete, a Montana Power crew surveyed a 100kV transmission line up Prospect and Cooper creeks with the idea of supplying electricity to Coeur d'Alene mining properties over 60 miles to the west. This action positioned Montana Power in direct competition with the Washington Water Power Company in that district, setting off a complaint brought by the latter company before the Idaho public utilities commission. Although the line had yet to be built, Montana Power already held agreements with several Coeur d'Alene mines to build a distribution line from the Idaho/Montana state line to Mullan, and that the companies would reimburse it for the cost of the work. With the Montana Power transmission line from the Thompson Falls development apparently completed by March 1915, it was only a matter of a few months before the plant would be brought on-line, sending power to the Idaho mining district. Meanwhile, several mining companies signed contracts with Thompson Falls Power to purchase and receive power (4-5,000 hp or about 10% of final total output) from the soon-to-be-completed facility. In June 1916, the public utilities commission ruled in favor of the mining companies and Montana Power, removing any future obstacles to continue the supply of Thompson Falls electricity to the Mullan area.[108]

The amount of power actually supplied to the Coeur d'Alene mines during the early period of Thompson Falls' operation remains unknown. Mining in the district probably waned during the 1920s, though, as it did at many western precious metal mining areas.[109]

The 50kV transmission line from Thompson Falls to the town of Paradise, 30 miles to the southeast, where it connected with a line to the Iron Mountain Mine near Superior, probably experienced a similar drop in the use of electricity during the 1920s. The line, built by March 1913 and first energized with power from the Prospect Creek plant, supplied electricity to both the mine and its concentrating mill. After power delivery started from the main Thompson Falls plant, Montana Power rebuilt the transmission line, signaling a permanency of power delivery not only to the mine but also to the small towns of Plains and Paradise. Although Iron Mountain employed a sizable crew at work and had just rebuilt its concentrator in 1925 (closed for the previous seven years), the entire operation shuttered in 1930, with no significant re-openings

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[108] "Montana Power Company Extending Line to the Couer d'Alene Mines," *Wallace Miner*, 17 September 1914, 1; "Would Prevent Invasion by New Concern," *Idaho Daily Statesman* [Boise], 29 December 1914, 2; "Progress of Mining in the Couer d'Alenes During 1915," *Wallace Miner*, 11 March 1915, 3; "Federal Dividends in 1914 Were $599,305," *Wallace Miner*, 8 April 1915, 5; "Montana Power Case Decided by P.U.C.I.," *Idaho Daily Statesman* [Boise], 11 June 1916, 11; Leighton, "Corporate History of Montana Power Company," 66.

[109] For an example of the downturn in mining in the Pacific Northwest after World War I, see Mitzi Rossillon, "Historic Mining Context Granite Creek Watershed, Grant County, Oregon," prepared for Umatilla National Forest, Pendleton, OR (Butte: Mitzi Rossillon, Consulting Archaeologist, LLC, 2017), 17.

thereafter.[110] The Iron Mountain Mine, one of only a few producing properties in that area, was almost certainly only a minor customer of electricity supplied by the Thompson Falls plant.

In addition to Plains and Paradise, Thompson Falls electricity delivery also occurred to the communities of Thompson Falls, Superior, and presumably other small towns in this part of Montana during the 1920s.

A major extension of the Thompson Falls transmission line system was initiated in 1930 when the Rocky Mountain Power Company, a Montana Power subsidiary, planned to start work on a hydroelectric facility on the Flathead River near Polson, just over 50 miles to the east. To facilitate construction of the plant that would become known as Kerr (Seli'š Ksanka Qlispe'), a 38 mile-long, 22kV transmission line was built from Plains to the proposed dam site, that line being tapped off the Thompson Falls to Paradise transmission line.[111] Construction of the new hydroelectric power plant was suspended not long thereafter due to poor economic conditions, but revived in 1936. At that time, a high voltage transmission line was built directly from Thompson Falls.[112] Even before bringing the new plant on-line in 1938, electricity transmitted by that Thompson Falls transmission line was delivered to the "U.S. Indian irrigation service," whose electrical department at that time served Lake County and part of Sanders County. The service's line voltage doubled due to this improvement.[113]

Also in 1936, Montana Power built another transmission line that extended from the Anaconda substation to the end of the Thompson Falls line at the Montana-Idaho State line in Mineral Country. Completion of that line and the Kerr Dam would "solve the power problem for Western Montana in years to come," according to Montana Power's promotional literature. In fact, the Thompson Falls to Kerr line and the Anaconda to Montana-Idaho state line "connected"

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[110] "Thompson Water Power," *Wallace Miner*, 27 March 1913, 1; "Pumping Plant,"13 April 1913; "Notes of Mining," *Missoulian*, 21 June 1913, 9; "Iron Mountain Busy," *Anaconda Standard*, 25 August 1915, 10; US Geological Survey, *Mineral Resources of the United States, 1918* (Washington, D.C.: Government Printing Office, 1921), 292; US Bureau of Mines, *Mineral Resources of the United States, 1925* (Washington, DC: Government Printing Office, 1928), 651; Montana Power Company, Insurance Map; GCM Services, Inc., Iron Mountain District, Montana Abandoned Mine Lands Hard Rock Mining District Narratives, 2021, Abandoned Mine Lands Program, Montana Department of Environmental Quality, https://gis.mtdeq.us/hosting/rest/services/Hosted/Montana_Abandoned_Mine_Lands_Hard_Rock_Mining_Districts/FeatureServer/0/19/attachments/98.

[111] "Power Line to Be Constructed," Montana Standard [Butte], 27 May 1930, 3; "Officials Plan Power Meeting," Billings Gazette, 10 June 1930, 3; "Work has Started on New Power Line," [Helena] *Independent Record*, 26 June 1930, 6; "Two Transformers Arrive at Polson," *Missoulian*, 2 August 1930, 6; "Polson is Home of Optimism as Cherished Dream of Development Becomes Actuality," [Butte] *Montana Standard*, 18 January 1931, 34.

[112] "350 People at Work Upon Polson Dam Project," *Great Falls Tribune*, 5 September 1936, 5; "Thompson Falls Finds Business Conditions Good," *Missoulian*, 20 September 1936, 5; "Northwestern Tier of Counties Has Big Building Year," *Missoulian*, 1 January 1936, 6.

[113] "Indian Irrigation Service Adds to Voltage of Its Power Lines," *Missoulian*, 21 October 23; "Voltage Boost is Boon to Lower Flathead Valley," [Helena] *Independent Record*, 14 February1937, 15.

the Missouri River system of hydro developments with those of Thompson Falls and Kerr, ensuring that the two facilities thereafter operated as part of the company's integrated system of power supply and redundancy.[114]

Almost two decades later, Montana Power built additional transmission facilities from Thompson Falls. In 1953, it erected a second line to Kerr that roughly paralleled the 1936 line. This 57-mile-long line was "being built to provide ample power to Montana points needing it and to anticipate future demands."[115] The line from the Thompson Falls plant to Burke, Idaho also was being rebuilt,[116] demonstrating the continuing importance of the hydroelectric facility to the entire Montana Power system.

With the completion of Kerr Dam (Seli'š Ksanka Qlispe'), the Thompson Falls development represented 10% of the total 349,750 kilowatt capacity of the Montana Power's hydroelectric plants.[117] Twenty years later, the company's power generating facilities (including hydroelectric and coal-fired) nearly doubled that capacity, but Thompson Falls continued to be critical to the integrated electrical power transmission system because of its position in the Columbia River basin (with Kerr being the only other generating plant on the Clark Fork River at the time). In the late 1950s, Montana Power planned to double Thompson Falls' capacity, but failed to realize a project of that magnitude until the mid-1990s.[118]

Local Impact

Immediately after 1905, with naming Thompson Falls the seat of Sanders County, the town grew slowly. The area relied principally on the timber industry, with some minor involvement in both agriculture and mining. As a result, commercial business was limited. Construction of the permanent county courthouse, high school, and Ward Hotel in 1907-1908 and a handful of modern residences above the commercial district was welcomed, although perhaps seen mostly as a maturation of the small town after a devastating local fire.[119]

Hopes for development of the Falls as a large hydroelectric site never moved beyond that until about 1911, when Ryan and the Milwaukee Road engaged in serious negotiations that eventually

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[114] "Two Line Camps in Deer Lodge Region," [Helena] *Independent Record*, 22 November1936, 3; "The History of Western Montana's Growth is the History of Electrical Development," (promotional advertisement), *Missoulian*, 29 August 1937, 53; "Power Facilities in State Are Adequate for U.S. Defense," [Butte] *Montana Standard*, 31 May 1940, 6.

[115] "Start Second Power Line from Kerr to Thompson Falls," [Helena] *Independent Record*, 11 August 1952, 6.

[116] "Power Official Visiting City," *Billings Gazette*, 18 September 1953, 12.

[117] "What We Operate," (promotional advertisement), *Billings Gazette*, 13 April 1941, 9.

[118] "Montana Power Expanded its Facilities in 1958; Plans Other Work in New Year," [Butte] *Montana Standard*, 1 January 1959, 16; Fletcher, *Sinews That Serve*, 41.

[119] "Early Realization," *Missoulian*; "Sanders County in Springtime Shows Signs of Real Progress," *Missoulian*, 10 March 1909, 4.

ended in construction of the Thompson Falls hydroelectric development (see above). At the end of 1911, a regional newspaper reported several substantive improvements in and near Thompson Falls. Water from the Thompson River not far east of town had been captured to potentially irrigate 4000 acres of orchards. Expectations (although unrealized) were that 300-400 families would locate on small orchard farms as a result. A bridge across the Clarks Fork replaced an "old ferry," promising better access to agricultural property to the south. A large annex was added to the Ward Hotel; the First State Bank built; a new brick building opened with a dining room, kitchen, and barroom on the ground floor, and sleeping rooms on the upper floors; 15 new residences were erected; and infrastructure consisting of sidewalks and a sewer system for the commercial district added.[120]

Townspeople plainly saw by spring 1912 that the large hydro plant for which they wished to be built was nearing realization. In the ensuing three years, the town's population (excluding temporary workers) reportedly grew to over 1000 residents, tripling that of 1910. Three other substantial commercial blocks had been built since 1911, as were new buildings for the Thompson Falls Mercantile Company and another business. An untold number of residences were added. Growth outside the city limits on nearby agricultural land also occurred.[121]

That growth continued briefly after the Thompson Falls hydroelectric development was all but completed. However, by 1920, the reported number of Thompson Falls residents fell to just over 500 and 10 years later dipped to about 465. The economic boost that construction of the power plant gave Thompson Falls could not be sustained and the forest products industry took over the role of major "employer."[122]

Since its halcyon days of dam and powerhouse construction, the population of the town has slowly rebounded and then leveled off. The 1940 census showed a slight increase during the previous decade to 736 people. By 1980, the town boasted almost 1500 individuals, a number that remained fairly stable, but slightly lower, for the next three censuses. Through all these decades, the Thompson Falls Hydroelectric facility has served as an anchor to the community, generating and providing electricity not just locally, but also contributing to the greater network that serves much of the state and the surrounding area. The Thompson Falls facility presently assists in serving over 750,000 customers across Montana and Yellowstone National Park.[123]

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[120] "Thrifty Thompson Falls Surely Forges Ahead," *Missoulian*, 17 December 1911, 8.

[121] "Early Realization," 10 March 1909; "Returns of Census of Montana Cities," *Missoulian*, 25 April 1911, 5, "Building of Great Power Plant for Milwaukee Electrification Gives Thompson Falls a Boost on Its Way to Permanent Prosperity," *Missoulian*, 18 April 1915, 11.

[122] "Two Big Buildings to be Constructed in Thompson Falls," *Missoulian*, 29 March 1916, 5; "Laurel Jumps to Near Top of List in Nearly 10 Years," *Laurel Outlook*, 24 November 1920, 1; "Thompson Falls Has Decreased Since 1920," *Missoulian*, 22 April 1930, 2; Koop, "Thompson Falls Hydroelectric Dam Historic District," Sec. 8, 3.

[123] "Our Company," NorthWestern Energy, https://northwesternenergy.com/about-us/our-company, accessed 8 March 2022.

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Previous documentation on file (NPS):

____ preliminary determination of individual listing (36 CFR 67) has been requested
_X_ previously listed in the National Register
____ previously determined eligible by the National Register
____ designated a National Historic Landmark
____ recorded by Historic American Buildings Survey #____________
_X_ recorded by Historic American Engineering Record # MT-28, 29, 90A-E
____ recorded by Historic American Landscape Survey # ___________

Primary location of additional data:

_X_ State Historic Preservation Office
____ Other State agency
____ Federal agency
____ Local government
____ University
____ Other
Name of repository: _____________________________________

Historic Resources Survey Number (if assigned): ________________

Geographical Data

Acreage of Property __86___________

Use either the UTM system or latitude/longitude coordinates

Latitude/Longitude Coordinates
Datum if other than WGS84:__________
(enter coordinates to 6 decimal places)

1. Latitude: 47.596860 Longitude: -115.357900
2. Latitude: 47.596120 Longitude: -115.358090
3. Latitude: 47.595830 Longitude: -115.357170
4. Latitude: 47.595210 Longitude: -115.357400
5. Latitude: 47.593960 Longitude: -115.353350
6. Latitude: 47.593140 Longitude: -115.353750
7. Latitude: 47.592970 Longitude: -115.353250
8. Latitude: 47.591990 Longitude: -115.352500
9. Latitude: 47.590350 Longitude: -115.350010
10. Latitude: 47.589970 Longitude: -115.351160
11. Latitude: 47.588680 Longitude: -115.352580
12. Latitude: 47.590870 Longitude: -115.359140
13. Latitude: 47.593830 Longitude: -115.362860
14. Latitude: 47.594380 Longitude: -115.362360
15. Latitude: 47.593690 Longitude: -115.360590
16. Latitude: 47.594230 Longitude: -115.360170

Verbal Boundary Description (Describe the boundaries of the property.)
The Thompson Falls Hydroelectric Dam Historic District has an irregular boundary that falls within the east half of Section 7 and the west half of the west half of Section 8, Township 21 North, Range 29 West. The boundary identified here represents a slight expansion and re-drawing of that of the 1986 listing. It encompasses all historic industrial resources in the district between the Clark Fork's north and south shores, including several structures not previously identified as contributing elements. At the district's northwest edge, the boundary extends to narrowly border two residences and a vehicle garage that were originally a part of the historic hydroelectric development. On the south side of the district, the boundary captures the 1912 Prospect Creek powerhouse ruin.

Boundary Justification (Explain why the boundaries were selected.)
Overall, the boundary has been drawn to include all resources that remain from the original National Register listing, exclude locations where outlying buildings have been removed,

include the tailrace wall and the powerhouse ruin not previously identified as contributing elements, and exclude nine storage sheds or other structures that have been erected at the hydroelectric facility's perimeter in the last 25 years. See attached topographic and aerial maps, Continuation Sheets pages 56 and 57; reference to these maps confirms the boundary.

Form Prepared By

name/title: Mitzi Rossillon
organization: Mitzi Rossillon, Consulting Archaeologist, LLC
street & number: 305 W. Mercury, Suite 104
city or town: Butte state: Mt zip code: 59701
e-mail: mitzi.rossillon@gmail.com
telephone: 406-299-3073
date: March 24, 2022

Additional Documentation

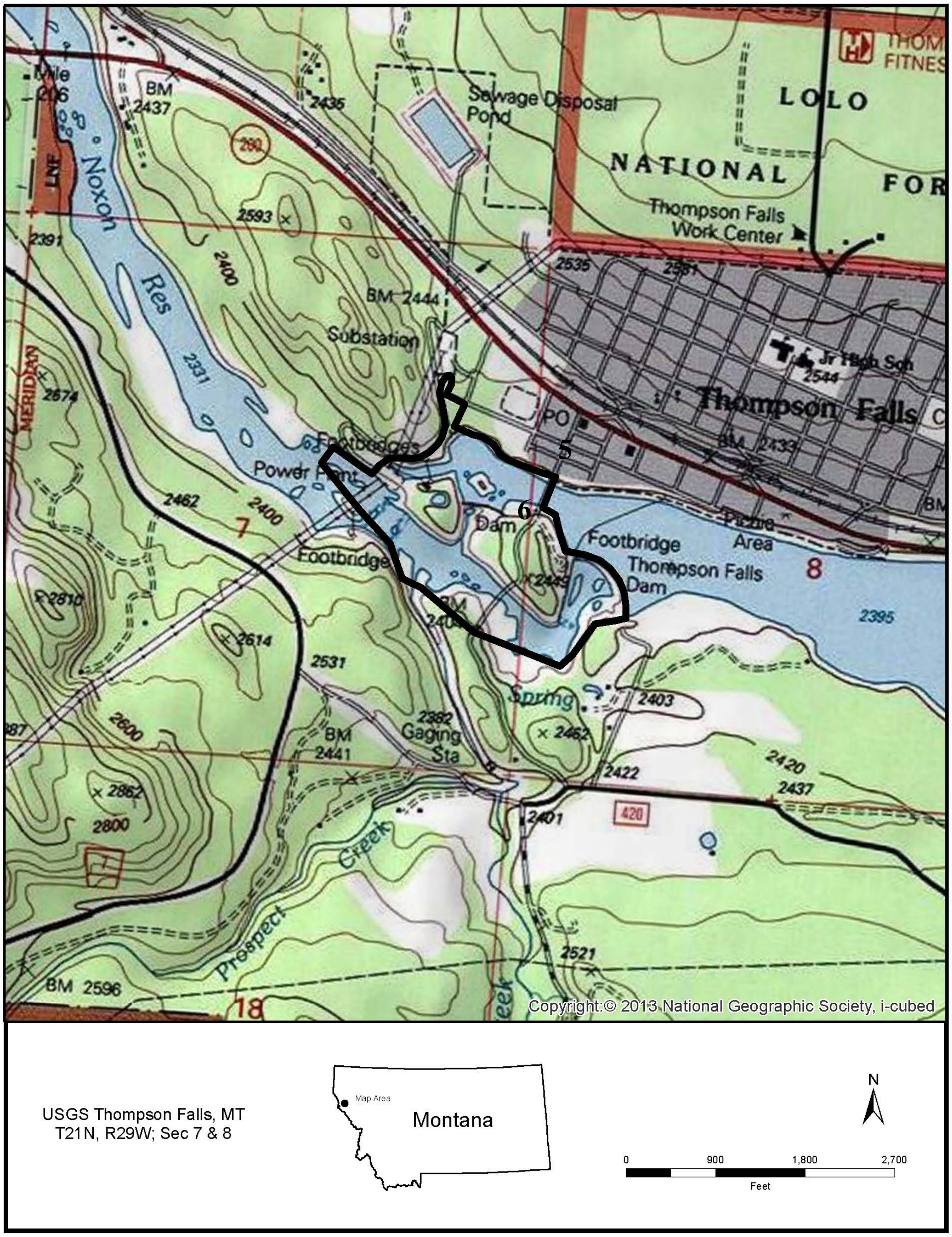
Submit the following items with the completed form:

- **Maps:** A **USGS map** or equivalent (7.5 or 15 minute series) indicating the property's location.
- **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.
- **Additional items:** (Check with the SHPO, TPO, or FPO for any additional items.)

Photographs

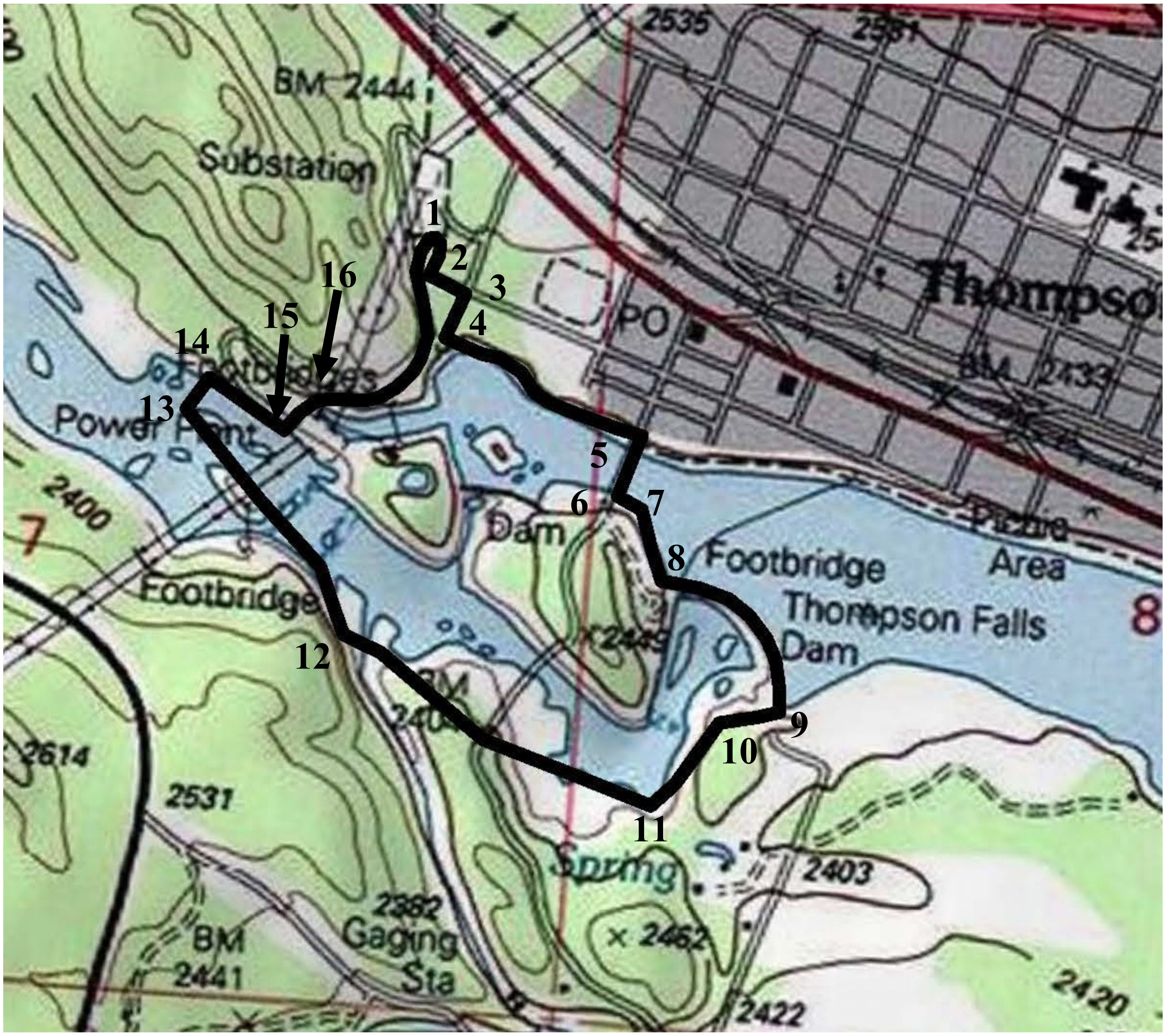
Photo Log

All photographs
Name of Property: Thompson Falls Hydroelectric Dam Historic District
City or Vicinity: Thompson Falls
County: Sanders State: Montana
Photographer: Mitzi Rossillon
Date Photographed: October and December 2021

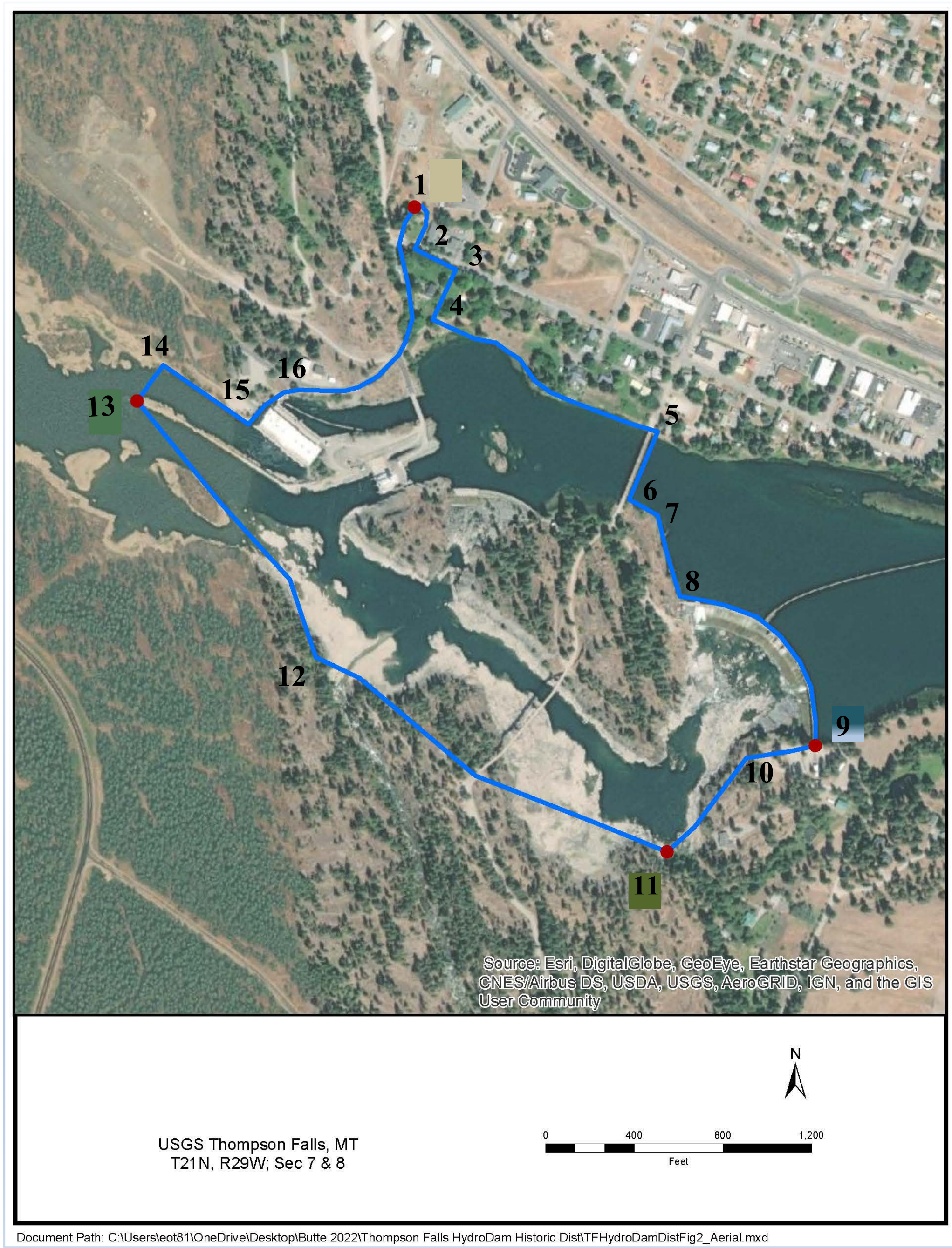


Document Path: C:\Users\eot81\OneDrive\Desktop\Butte 2022\Thompson Falls HydroDam Historic Dist\TFHydroDamDistFig1_Topo.mxd

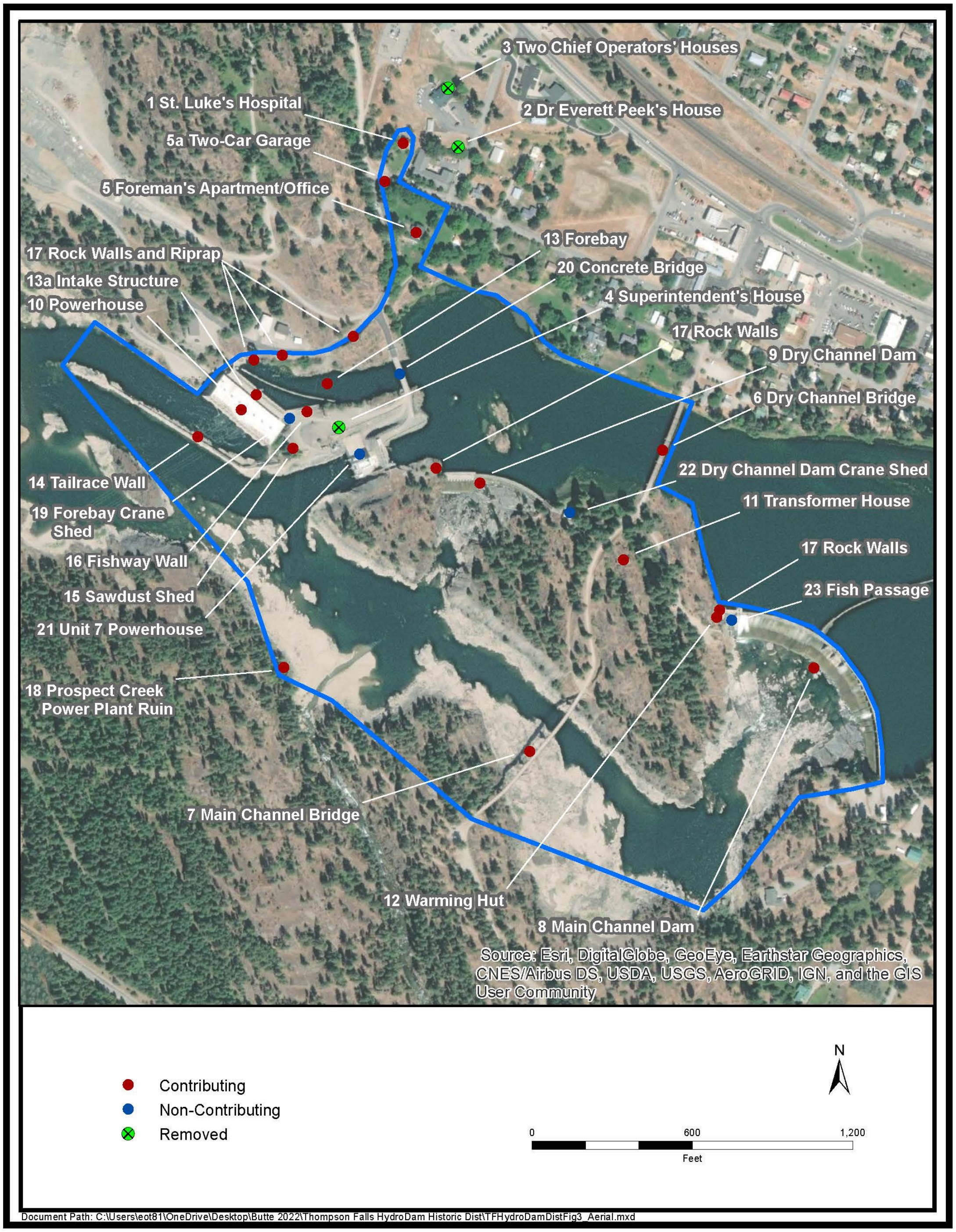
Location of Thompson Falls Hydroelectric Dam Historic District, amended (boundary modification and additional documentation). Found on the Thompson Falls USGS 7.5' topographic map. E½ S. 7 and W½ W½ S. 8, T. 21 N., R. 29 W.



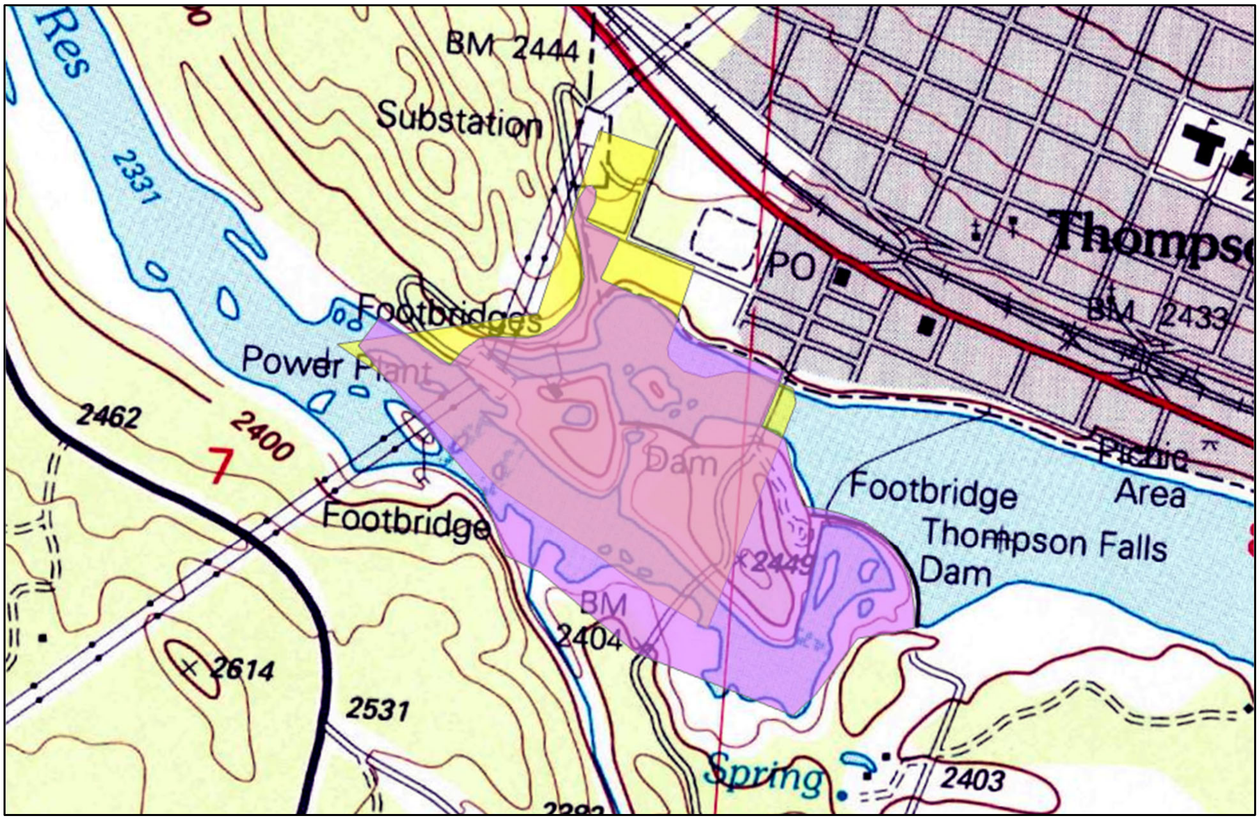
Close-up showing location of Thompson Falls Hydroelectric Dam Historic District, amended (boundary modification and additional documentation) and latitude and longitude boundary points. Found on the Thompson Falls USGS 7.5' topographic map. E½ S. 7 and W½ W½ S. 8, T. 21 N., R. 29 W. 1) Latitude: 47.596860 Longitude: -115.357900, 2) Latitude: 47.596120 Longitude: -115.358090, 3) Latitude: 47.595830 Longitude: -115.357170, 4) Latitude: 47.595210 Longitude: -115.357400, 5) Latitude: 47.593960 Longitude: -115.353350, 6) Latitude: 47.593140 Longitude: -115.353750, 7) Latitude: 47.592970 Longitude: -115.353250, 8) Latitude: 47.591990 Longitude: -115.352500, 9) Latitude: 47.590350 Longitude: -115.350010, 10) Latitude: 47.589970 Longitude: -115.351160, 11) Latitude: 47.588680 Longitude: -115.352580, 12) Latitude: 47.590870 Longitude: -115.359140, 13) Latitude: 47.593830 Longitude: -115.362860, 14) Latitude: 47.594380 Longitude: -115.362360, 15) Latitude: 47.593690 Longitude: -115.360590, 16) Latitude: 47.594230 Longitude: -115.360170



Aerial view of location of Thompson Falls Hydroelectric Dam Historic District amended (boundary modification and additional documentation). See topographic map above for associated latitude and longitude points for boundary numbers.



Aerial of Thompson Falls Hydroelectric Dam Historic District, amended (boundary modification and additional documentation). Location of resources.



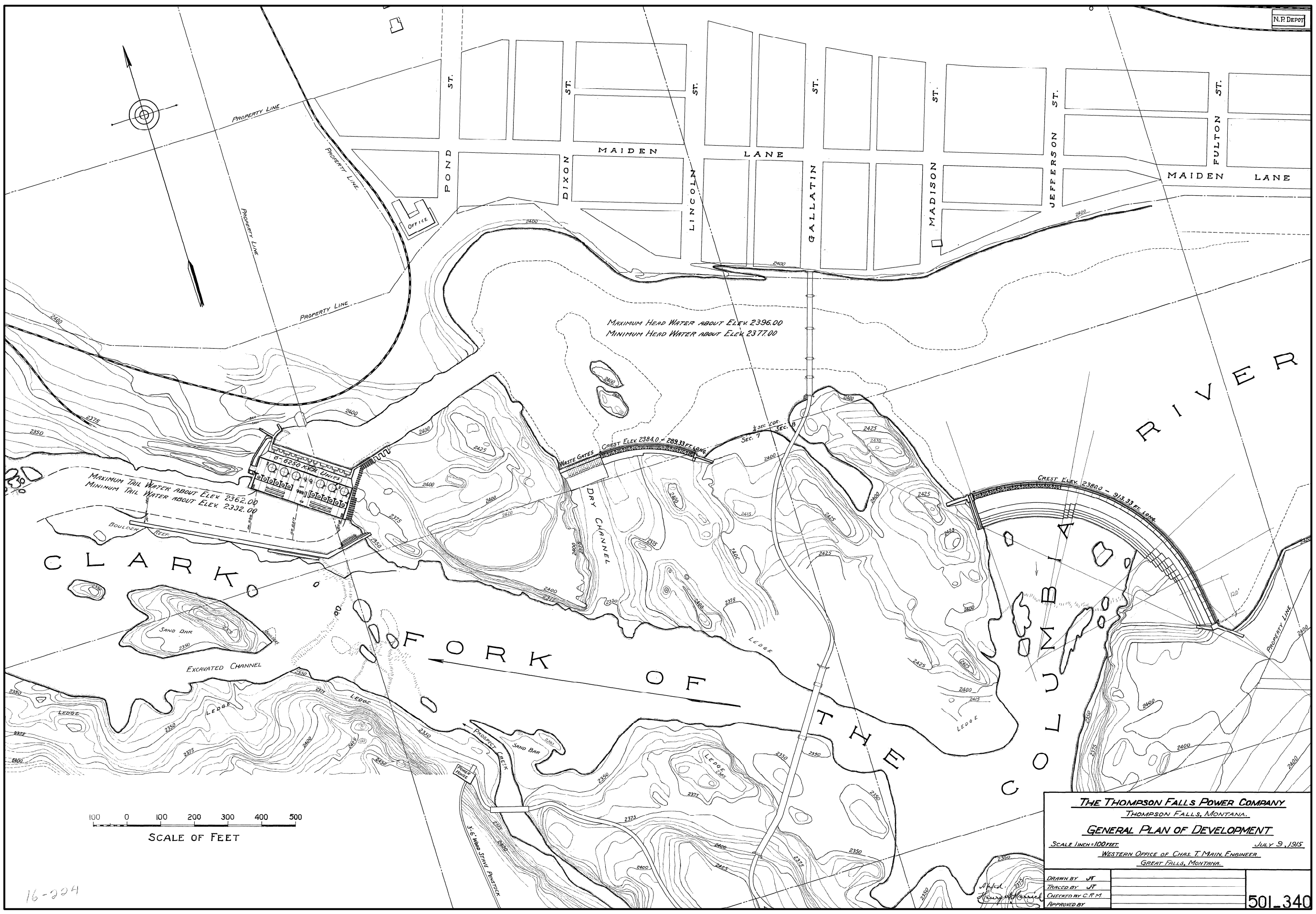
Location of Thompson Falls Hydroelectric Dam Historic District, showing amended (boundary modification and additional documentation) in purple and original 1986 boundary in yellow. Found on the Thompson Falls USGS 7.5' topographic map. E½ Section 7 and W½ W½ Section 8, Township 21 North, Range 29 West.

Portion of Thompson Falls Power Company, Thompson Falls, Montana, Property Map, 1917.
Image from NorthWestern Energy.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Thompson Falls Hydroelectric Dam HD (Boundary Modification and Additional Documentation)
Name of Property
Sanders, MT
County and State
N/A
Name of multiple listing (if applicable)



Thompson Falls Power Company, Thompson Falls, Montana, General Plan of Development, July 9, 1915. Image from NorthWestern Energy

.

Thompson Falls Powerhouse under construction at right, with Prospect Creek Powerhouse at left c. 1914-1915 (PAc 2018-30.A1p75a, Montana Historical Society Research Center Photograph Archives, Helena, MT).

West end of panoramic view of Thompson Falls facility, with powerhouse and tailrace in center background c. 1916. (PAc 2006-3.M1, Montana Historical Society Research Center Photograph Archives, Helena, MT).

East end of panoramic view of Thompson Falls facility, with Dry Channel Dam at center and construction camp buildings in background, c. 1916. (PAc 2006-3.M1, Montana Historical Society Research Center Photograph Archives, Helena, MT).

West end of panoramic view of Thompson Falls facility, with Prospect Creek powerhouse flowline and Thompson Falls powerhouse at left, superintendent house and construction office left of center, and Dry Channel Dam at right, c. 1920. (PAc 2006-3.MM2, Montana Historical Society Research Center Photograph Archives, Helena, MT).

East end of panoramic view of Thompson Falls facility, with Main Channel Bridge at center and Main Channel Dam at right, c. 1920. (PAc 2006-3.MM2, Montana Historical Society Research Center Photograph Archives, Helena, MT).

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0001
St. Luke's Hospital, front elevation, camera facing north.

MT_SandersCounty_ThompsonFallsHydroelectrcDamHistoricDistrict_0002
Foreman's Office/Apartment, front elevation, camera facing west.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0003
Foreman's Office/Apartment, west and south elevations (left to right), camera facing northeast.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0004
Dry Channel Bridge, oblique view, camera facing northwest.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0005
Main Channel Bridge, elevation view, camera facing southeast.

MT_SandersCounty_Thompson Falls Hydroelectrc Dam Historic District_0006
Main Channel Bridge, oblique view of south end, camera facing southwest.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0007
Main Channel Dam, downstream side, camera facing northeast.

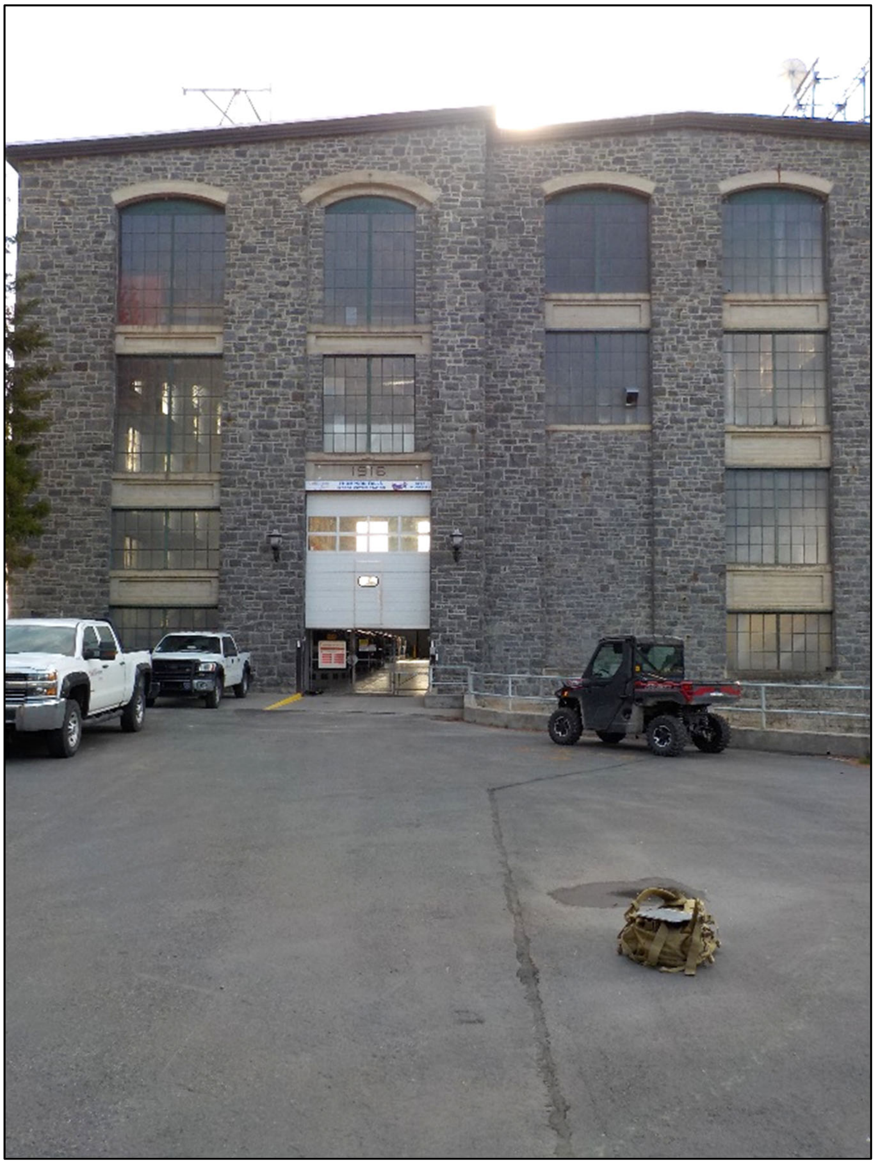
1
MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0008
Main Channel Dam overview, with two sets of radial gates at right center, camera facing north.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0009
Dry Channel Dam, upstream side, camera facing south.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_00010
Dry Channel Dam, downstream side, with non-overflow waste gate structure at left, camera facing north.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0011
Dry Channel Dam overflow section, showing flashboard (bottom) and drop panel (top) gates, camera facing northwest.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0012
Powerhouse, with Tailrace Wall in foreground, camera facing north.



MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0013
Powerhouse, west wall, camera facing southeast.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0014
Powerhouse generating floor, east end, camera facing east.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0015
Powerhouse and Intake Structure, north elevation, camera facing southwest.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0016
Transformer House, south and east elevations (right to left), camera facing north.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0017
Warming Hut, south and east elevations (right to left), camera facing north.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0018
Forebay, with Intake Structure at left, camera facing northwest.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0019
Intake Structure, east half, with Forebay Crane Shed at left, camera facing south.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0020
Tailrace Wall, west end, camera facing west.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0021
Sawdust Shed, camera facing west.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0022
Rock wall along power house road, camera facing northeast.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0023
Rock walls along abandoned driveway to intake, camera facing east-northeast.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0024
Prospect Creek Powerhouse Ruin, with Prospect Creek at left, camera facing southwest.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0025
Concrete Girder Bridge, oblique view, camera facing southeast.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0026
Unit 7 Powerhouse, camera facing west.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0027
Dry Channel Dam Crane Storage Shed, view to northeast.

MT_SandersCounty_ThompsonFallsHydroelectricDamHistoricDistrict_0028
Fish Passage Facility, with Warming Hut at left, camera facing north.

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