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. **Place additional certification comments, entries, and narrative items on continuation sheets if needed (NPS Form 10-900a).**

1. Name of Property

historic name Wasco Warehouse & Milling Company Hydroelectric Project Historic District

other names/site number Tygh Valley Hydroelectric Plant

Name of Multiple Property Listing N/A
(Enter "N/A" if property is not part of a multiple property listing)

2. Location

street & number White River Road and Sherars Bridge Hwy (OR 216) ☐ not for publication

city or town Maupin ☒ vicinity

state Oregon code OR county Wasco code 065 zip code 97037

3. State/Federal Agency Certification

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

I hereby certify that this ___ 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 ___ meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance: ___ **national** ___ **statewide** ___ **local**

Applicable National Register Criteria: ___ **A** ___ **B** ___ **C** ___ **D**

Signature of certifying official/Title: Deputy State Historic Preservation Officer Date

Oregon State Historic Preservation Office
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
- [ ] public - Local
- [X] public - State
- [ ] public - Federal

Category of Property
(Check only **one** box.)

- [ ] building(s)
- [X] district
- [ ] site
- [ ] structure
- [ ] object

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

Contributing	Noncontributing	
1	0	buildings
1	0	site
24	1	structure
0	0	object
26	1	**Total**

Number of contributing resources previously listed in the National Register

N/A

6. Function or Use

Historic Functions
(Enter categories from instructions.)

INDUSTRY/ energy facility

Current Functions
(Enter categories from instructions.)

LANDSCAPE/ park

7. Description

Architectural Classification
(Enter categories from instructions.)

OTHER/ industrial (water control and supply systems)

LATE 19TH AND 20TH CENTURY REVIVALS/ Neo-Classical Revival

Materials
(Enter categories from instructions.)

foundation: STONE, CONCRETE

walls: STONE/basalt; CONCRETE

roof: METAL/steel

other: METAL/steel (penstocks)

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 Wasco Warehouse & Milling Company Hydroelectric Project historic district (also known as the Tygh Valley Hydroelectric Plant) is in Wasco County, Oregon, south of The Dalles between Dufur and Maupin. The 8.79-acre historic district is at the east end of the Tygh Valley along the White River south of State Route 216 (Sherars Bridge Highway), near the river's confluence with the Deschutes River. The unique location provides a concentrated elevation drop within the canyon allowing for hydroelectric power generation. The hydroelectric plant consists of water supply and control systems and a power generating plant. The Portland Bridge Company built the project in 1901 to generate hydroelectric power for the Wasco Warehouse & Milling Company's flour mill in The Dalles and electric lights in Dufur and The Dalles. Pacific Power & Light Company expanded the facility between 1911 and 1913, and upgraded systems in 1947, improving power generation reliability and output. The historic district retains architectural integrity conveying the systems and plant, with most components for each extant in original locations. The design, setting, materials, workmanship, feeling, and association remain evident. The systems, plan, and canyon setting convey the purpose (hydroelectric power generation), method of operation, period of construction for the systems, and system expansions to fulfill a larger regional power generation role.

Narrative Description

Setting

The Wasco Warehouse & Milling Company Hydroelectric Project historic district is within White River State Park along the White River south of State Route 216 (Sherars Bridge Highway). A 600'-long gravel road provides access from the highway to the former residential portion of the hydroelectric project area abutting the north side of the historic district which is now the site of state park facilities (e.g., comfort station, signage, and parking). **See Figs. 1-2**.

The White River eroded a path, generally from west to east, through the ridge bounding the east end of the Tygh Valley. The river flows from the White River glacier on the south slope of Mount Hood, carrying a high level of glacial sediment, and draws from a drainage area upstream from the historic district that encompasses 417 square miles.[1] The remnant ridge wings north and south of the river rise to just over 1,050' in elevation and have a slight downslope at the perimeter edge. The river drops through a narrow canyon with nearly vertical sides and flows east to its confluence with the Deschutes River. Within the historic district, the river flows from west to east, and drops nearly 150' between the west edge of the natural basalt spillway at an elevation of 1,022' and the tailrace just east of the powerhouse at 876' in elevation—this provides the unique high-head conditions along the White River for hydroelectric power generation. **See current photographs 1-4**.

Individual Resources

The Wasco Warehouse & Milling Company Hydroelectric Project historic district consists of multiple built resources. These resources are organized by system and addressed below under individual resources, with all elevation references provided as height above sea level. Diameter measurements are outside diameters unless otherwise noted. Since the White River flows through the system roughly from west to

[1] U.S. Geological Survey, National Water Information System. URL: https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=14101500. Accessed 9/15/2022.

east, the system is described similarly from west to east. The location of individual resources within the system is shown on Figures 4 through 7 in Additional Documentation, with each resource identified by the unique identifier included in the list below in parenthesis after each resource name.

System Overview

The hydroelectric project utilizes water to turn turbines which generates electricity that is carried to consumers. Controlling water flow, storing water, removing debris, transporting water, generating power, returning water to the river, and converting generated electricity from direct to alternating current for transmission are essential to operation. The water control system is the dams, reservoirs, and gates that store and control water flow and remove debris. The water supply system is the penstocks, tunnel, valves, and tail race that transport and return the water to the river. The power generating plant system handles the generation, converting, and transmitting of electricity. **See Figs. 4-7, 16-19**.

Water Control System

The following extant components functioned as part of the water control system, diverting and impounding water for hydroelectric power generation. Concrete elements are board-formed and composed of large, sharp basalt aggregate, unless otherwise noted.

Diversion Dam (WC1), 1901

The diversion dam spans the main width of the White River channel at the head of the canyon, slowing the normally fast and shallow river and diverting water from its natural course north to the diversion intake. The 196' long, 8' tall concrete gravity dam (a dam that relies on its physical mass to hold back the weight of stored water) is not high enough to store water; it is 2'-0" thick at the top and extends down to the basalt riverbed. The spillway (a passage for controlled release of water or for surplus water to escape) section near the south end is 12' long and 2'-6" deep. The north end of the dam connects to the intake dam. Gravel has built up along the west, river, side of the dam, with logs and other flood debris collected along its length. Erosion of the concrete is evident along the west side, with a section of the top edge of the dam missing due to river overflow at the section closest to the intake dam. The spillway channel for water over topping this dam is the natural river course. **See current photographs 5-6**.

Intake Dam (WC2), 1901

The intake dam impounds river water and regulates via gated outlets the flow between the holding basin (originally the headrace canal) and the controlled spillway. The spillway channel is a natural rock channel along the south side of the holding basin returning water to the natural course. The 83'-long concrete gravity dam is sloped down and outward on the downstream slope. Gated outlets (openings that can be opened and closed to allow or shut off water flow) are round, concrete, and 6' in diameter. **See current photographs 6-8 and Fig. 27**.

The south end is 35' long and 4' thick at the top and contains the gated outlet to the spillway and an auxiliary spillway. Added thickness of concrete reinforces this corner. The emergency spillway, located at the top of the dam and just south of the gated spillway outlet, is a square notch flashboard-controlled outlet to the spillway that is 5' wide and tall. Slots on either side of the opening hold the board ends. Flashboards are boards that are inserted into the spillway to increase the depth of impounded water and can be removed to decrease the depth. The north 43' of the dam is 2'-0" thick at the top and contains the two gated outlets into the holding basin. The 20' length of the top of the dam north of the outlets is capped with basalt rock and concrete. The former wood walkway providing operator access to the control wheels for the gates no longer remains.

Vertical rising sluice gate (a solid gate at the upper end of a conduit used to regulate water flow) mechanisms at the outlets are missing two of the hand-operated, steel worm drives and wheels, and two of the wood gates and tracks. A worm drive is a vertical threaded rod with gears at the top that when turned raises or lowers the gate along the rod threading. The gears allow for a hand operator to turn the wheel despite the impounded water pressing against the gate. A wood gate remains at the center outlet and wood frames remain embedded at each outlet; a worm drive is in the riverbed just west of the middle outlet, and attachment bolts for the drives remain at the top of the wall. Erosion of the concrete is evident on the upstream side with cracking at the south end.

Holding Basin Dam and Head Gate (WC3), 1901, 1913

The holding basin dam (also known as the head gate dam) impounds water within a small 137’ long x 32’ wide x over 8’ deep basin (also known as forebay no. 1 and settling basin no. 1) with a 0.8-acre-foot capacity. Gated outlets regulate the flow between the penstock and the controlled spillway channel. The head gate controls water flow to the penstock. The dam is counted as a single resource and includes the south wall (part of the headrace canal), the east wall (part of the head gate), and the north wing wall (part of the former trash rack). The headrace is a channel leading to a penstock. A trash rack is a vertical screen that strains out larger debris such as branches to keep it from entering the system. The 189’ total length, L-plan concrete gravity dam forms the south and east sides of the basin, with the canyon wall at the north side. Gated outlets at the east end are round, concrete, and 6’ in diameter. with a riveted steel conduit (piping used for the transport of water) extending out from the dam at the penstock location. Dam walls slope down and outward on the downstream slope and are 6’ thick at the top. The emergency spillway (also functioning as an ice chute) height sets the maximum water surface elevation of the basin at 1,016’, relative to the discharge elevation of 888’ at the powerhouse. Water expands when it freezes, with the emergency spillway providing a release for this pressure and ice chucks to be directed out of the basin. **See current photographs 9-10 and Figs. 13, 22, 28-29**.

The basin was developed in 1913 from the 1901 headrace canal, which consisted of a rubble basalt wall along the south side of the current basin, with the east end visible just beyond the east dam face having the head gate. This canal ended with a waste gate to the river and a head gate at the penstock with vertical wood screens across the intake.[2]

The south wall’s upper portion consists of two steel and wood sections set between the concrete ends and a 12’ long concrete center portion. The sections consist of gate stems composed of steel T-section posts which are 4’ tall and set on 6’ centers with horizontal boards bolted to their upstream face. The former wood walkway along the top of this wall no longer remains. The southeast wing extension from the corner of this dam consists of a coursed basalt stone structure, the east end of the original headrace canal. An emergency spillway (ice chute), located at the top of the wall and just south of the gated spillway outlet, is a square notch flashboard-controlled outlet to the spillway that is 5’ wide and tall and provided an outlet for ice during the winter. Slots on either side of the opening hold the board ends.

The hand-operated steel worm drive and wheel remains at the gated spillway outlet. Attachment bolts for the former drive remain at the top of the wall at the head gate location. An added pump servicing the state park facilities is located at the north end of the east basin wall with piping extending to the north. Sections of boards are missing from the south wall. Erosion of the concrete occurs along the upstream side of the concrete walls. Silt has accumulated in the east end of the basin.

[2] G. Cloghen, “Report on White River Water Power Development Supplying Power to The Dalles, Oregon,” April 1, 1910, prepared for American Power & Light Company, Portland, OR, pg 1.

A concrete wing wall remains along the shoreline at the west end of the former trash chute that extended out into and across the basin's northeast corner, with a metal grill across the inlet to keep debris out of the penstock. Two former wood frame structures associated with the dam operation no longer remain. A former gable-roofed, board-and-batten-clad structure stood at the shoreline with a former shed-roofed, clapboard-clad gate tenders house on the deck over the trash chute structure near the head gate that replaced a smaller gable roof structure. The trash chute and associated deck and wood frame structures were removed between 1965 and 1972.

Reservoir Dam (WC4), 1911

The reservoir dam impounds water within a large storage reservoir and regulates via gated outlets the flow between the penstock and the controlled spillway. The spillway channel for the controlled and emergency spillways is a natural ravine south of the dam formed by the former creek drainage that empties into a rock plunge pool at the confluence with the White River, just northwest of the powerhouse. The 162' long board-formed, concrete gravity dam is 3'-4" thick at the top and sloped down and outward on the downstream slope to a 20'-wide base. Gated outlets are round, steel, and 6' in diameter. A steel inlet conduit runs through the west portion of the dam near the left embankment. **See current photographs 11-16 and Figs. 12, 23, 38**.

The control house platform is located east of center and rises above the top of the dam. The control house provided a sheltered space for personnel monitoring and managing dam outlets. Metal posts for hand railings extend around the top of the 5' x 20' platform. A 2'-6" x 4'-6" opening in the floor of the platform provides visibility down to the conduit inlet connecting to the penstock. Metal posts for the hand railing remain along the top south portion of dam on 8'-0" spacings along the access route to the control house. Two worm drives remain on the slope immediately east of the dam. The wood-frame, shed roof control house no longer remains. A personnel doorway on the south side of the house provided access to an exterior walkway along the top of the bridge connecting to the valve house. A former wood stairway at the east end of the dam originally provided access from the walkway down to the gravel path then down to the powerhouse.

The emergency spillway is 60' wide, rounded at the top, and located north of the control house platform. Square holes remain along the top edge from the former supports that carried the walkway along the top of the dam. The spillway height sets the maximum water surface elevation of the reservoir at 1,020', relative to the discharge elevation of 888' at the powerhouse.

The flashboard-controlled spillway is located at the top of the dam within the west portion of the control house platform. It is a 3' wide and over 8' tall square notch outlet to the spillway. Slots on either side of the opening hold the board ends, with several boards remaining. A steel pipe projects from the concrete at the base of the opening.

An elliptical arched, board-formed concrete tunnel at the base of the dam functioned to drain the reservoir to clear out accumulated silt. A wood gate originally covered the upstream inlet to the tunnel. Subsequent alterations closed off the tunnel with concrete on the upstream side. The dead-end tunnel is 16' deep, 6' wide, and 12' tall, with three small metal pipes projecting at the base of the inner wall and a concrete floor.

The gated outlet east of the elliptical arched opening consists of a 3' diameter, riveted steel conduit projecting beyond the downstream dam face with a steel cap bolted to the end. The conduit extended through the dam and along the bottom of the reservoir on concrete saddles for over 12'. A hand-operated steel valve remains adjacent the conduit end with the lettering "Knicht & Co. Builders. Suttler Creek Cal. 1901" on the valve face. A wood sluice gate remains at the upstream end of the conduit. The conduit and saddles within the reservoir are covered with silt. This outlet's function based on type and location outside of the main inlet is attributed to use for emptying the reservoir to clear out accumulated silt.

The intake on the upstream side of the dam filters out debris and serves as the main gated outlet to the penstock. On the upstream side, short board-formed concrete wing walls project out 2' from the dam and then flare outward 8' to either side. Trash racks (thin vertical metal bars) screen the wide opening to keep out debris. Track racks span the top of the intake and an opening in the east wing wall. Additional former trash racks extended up from the low concrete walls running north, just west of the intake. The upper ends of the former racks connected to a former wood platform that extended north from the dam above the intake area with a former small gable-roofed, wood-frame, board-and-batten-clad structure at the east side of the platform. The platform and gable roof structure were removed between 1958 and 1965.

The intake directs water to a riveted steel conduit that drops down and through the base of the dam. A wood sluice gate remains across the upstream end of the conduit. The upper worm drive portion of the valve is missing.

Alterations added two steel connections bolted to the downstream face of the dam as part of the supporting structure for the added non-vehicular bridge.

Reservoir (WC9), 1911

The reservoir, also known as settling basin no. 1, receives water from the conveyance tunnel, settles out sand and debris, and holds the water to provide consistent flow for power generation. The water impoundment above the dam extends 300' north of the gravity dam utilizing the natural topography within a gulch at the drainage at the confluence of two creeks and provides approximately 5.3-acre feet of water storage, covering less than a half-acre to an average depth of 12'. Water surface elevation (headwater) rose to an approximate elevation of 1,018' with the base of the reservoir generally lying at an elevation of 1,006'. The reservoir slopes from the sides and north end to the low point at the gravity dam intake at 1000' in elevation. The water supplied via the conveyance tunnel filled the reservoir. **See current photographs 17-18 and Fig. 31**.

Within the reservoir, a low (5' visible above grade), 9"-wide board-formed concrete directional wall (WC6) directs the path of water outflow within the reservoir through a small settling basin (also known as settling basin no. 2) to the intake at the reservoir dam. Along the shoreline at this location extends a similar sized concrete retaining wall (WC5). The bed of the gravel walkway along the east shoreline of the reservoir remains. The two concrete wing walls (WC7) project out from the shoreline to the north end of the directional wall. The lower wing wall is set at an elevation of approximately 1,008' with the upper set at an approximate 1,014' elevation. The gate walls are battered, measuring 1'-0" thick at the top and 2'-0" at the base, 7'-6" tall, and each 9' long. Steel bolts and remnants of wood elements that projected from the ends. The southeast corner of the reservoir above the intake has significant silt accumulation.

The 4' x 3' concrete foundation (WC8) from a former pump facility remains at the former wood-frame, shed roof pump house location. The extant elements were originally located within the pump house but removed between 1965 and 1972. A mortar L-plan basalt wall protects a 5" diameter metal pipe rising from the ground and angled to discharge into the reservoir. The lower portion of the concrete foundation consists of round aggregate with sharp rock aggregate comprising the upper 1' layer. Metal bolts embedded in the concrete remain at the north end.

Water Supply System

The following extant components functioned as part of the water supply system, transporting water from the holding basin and reservoir to the powerhouse. Concrete elements are board-formed and comprised of large, sharp basalt aggregate unless otherwise noted.

Steel Penstocks (WS2, 4, 6, 13, 22), 1901, 1911

Steel penstocks within the water supply system function with the wood penstocks to transport water and occur at locations subject to the highest pressure stresses, such as corners and the portion connecting to the powerhouse and function to keep the overall penstock system in alignment. Penstocks are large piping used to transport water. The 10'-wide bed for the upper three steel penstocks (WS2, 4, 6) was excavated from the canyon wall in 1911 to provide the correct horizontal and vertical alignment along the length of the penstock system. Most of the penstocks date to the 1911 facility expansion. The 1901 penstock alignment (WS21) east of the reservoir dam down to the powerhouse followed a broad arc along the canyon wall, with at least the lower section (WS22) consisting of riveted steel. Based on historic photographs this was buried in 1911, when the more direct alignment from the reservoir dam, directly down to the west side of the powerhouse, was constructed. The length of the penstock connecting to the west side of the powerhouse (WS13) dates to 1911 and the location is adjacent the original buried penstock location that ran parallel to the wooden access stairway for the powerhouse. Saddles, where extant, are included as part of the single resource count for each penstock segment. Saddles are the features that carry and maintain the alignment of the penstocks. **See current photographs 19-24 and Figs. 26, 32**.

The penstocks, except for the 1901 section described above, are exposed rather than buried and consist of riveted steel sections with external flanges at the ends. A straight length of the small head pipe connecting into the powerhouse consists of cast iron. The flanges provided a rim for connecting the wood penstocks. Reinforced board-formed concrete saddles carry the steel penstock sections and provide the correct alignment. Upper outer edges of some saddles are chamfered. Round steel strapping, two bands embedded in the concrete at each saddle, lock the penstock in place. Strapping has a rounded knob at one end locking into the triangular turn buckle, with machine threading at the other end allowing tightening of a nut to bind the straps tight. Penstocks are 5' in diameter, except for the sections connecting to the powerhouse. These have a 3' diameter, with the southernmost penstock having a 1' diameter. Penstocks vary in length: 12' and under at the connections to the holding basin dam and valve house, the two upper corner sections measuring 21' and 34' long, and the lower section dropping down to the powerhouse 80' long.

Wood Penstocks (WS1, 3, 5, 9, 12, 21, 23), 1901, 1911, 1922

Wood penstocks functioned as the principal penstock conduit transporting water. Most of the wood staves are no longer extant, but the alignment beds, metal strapping, and concrete V-saddles remain, conveying the system pathway and role. Wood staves remain at the connection with the steel penstock descending to the powerhouse (WS13, north end). Most of the penstocks date to the 1901 facility development. The 1901 alignment (WS23) west of the reservoir dam originally ran through a tunnel and the penstock was buried in 1911 when the existing alignment and steel penstocks were installed. Work in 1911 exposed the penstock and added the protective corrugated metal-clad gable roof that was carried on wood posts along the length of the penstocks, except directly south of the reservoir dam. The 1901 alignment (WS21) east of the reservoir dam down to the powerhouse followed a broad arc along the canyon wall and, based on historic photographs, was buried in 1911 when the more direct alignment from the reservoir dam directly down to the west side of the powerhouse was constructed. The two buried sections of 1901 penstock (WS21, 23) are counted as a single resource (Wood Penstock No. 5) and attributed as wood stave construction. Construction of a new penstock segment, rather than replacement of the entire existing penstock, reduced the amount of time the powerhouse was shut down.[3] The 1901 penstock alignment that passed along the south side of the reservoir dam location (WC4) was removed ca. 1911 in conjunction with the dam construction. The new alignment consisted of direct connection of wood penstock (WS12) to the steel conduit through the dam. In 1922 the bypass penstock (WS9) and associated penstock wye (WS11) were built. Most of the wood penstocks were replaced with wood penstocks in 1947, work attributed to maintenance.[4] **See current photographs 25-28 and Figs. 14-15, 22-25, 30, 38**.

Penstocks were 5’ in diameter and consisted of 5” x 1” boards wrapped with round 5/8” thick bands. At the connections with the steel penstocks, the wood slats overlapped the steel by 2’-0”, butting up against the face of the exterior metal flange. Board-formed concrete V-saddles on nominally 8’ centers carried the penstocks. Each V-saddle measured 10” thick, just over 5’ long, and 2’ tall.

The 10’-wide bed for the upper three penstocks was excavated from the canyon wall to provide the correct horizontal and vertical alignment along the length of the penstock system. The 132’-long segment between the holding basin dam and first steel penstock (Wood Penstock No. 1, WS1) retains at least six V-saddles and some metal strapping. The west 30’ of the bed, including a former timber crib bulkhead retaining the slope below this section, has been lost due to water erosion from the holding basin dam outlet. The 108’-long segment between the first and second steel penstocks (Wood Penstock No. 2, WS3) retains its alignment bed, at least four V-saddles, and some metal strapping. The 208’ segment between the second and third steel penstocks (Wood Penstock No. 3, WS5) retains its alignment bed at the east and west ends along with at least three V- saddles and some metal strapping. A small landslide in the middle 88’ segment of the alignment resulted in loss of the bed at this location. The wood penstocks in the first through third sections were removed between 1972 and 1985. The 63’-long segment directly south of the reservoir dam (WS9, by-pass penstock) retains the concrete foundations but has lost the wood trestle supports, and as such is not counted as a contributing resource. The penstock was removed from this section between 1949 and 1958. The 277’-long segment from the reservoir dam to the steel penstock (Wood Penstock No. 4, WS12) descending to the powerhouse had a 260 cubic foot per second hydraulic capacity and retains the channel, most of the V-saddles (20), and clusters of metal strapping.[5] The wood penstock was removed between 1972 and 1985.

Penstock Wyes (WS11, 14, 15), 1911, 1922

The concrete penstock wyes, also referred to as anchor blocks, reinforce intersections along the segment of the penstock system having the highest hydraulic pressures. The wyes are not gated. **See current photographs 29-31**.

At the upper wye (WS11) adjacent to the reservoir dam, the 1922 five-sided wye linked the penstocks from the holding basin dam and the reservoir dam into the single penstock descending to the powerhouse. This wye was built as part of the 1922 bypass segment of penstock along the south side of the reservoir dam. The board-formed concrete structure was formed in place around the ends of the wood penstocks, embedding the metal strapping in the concrete. Each side of the wye is 7’ in length.

The lower two wyes (WS14, 15), built in 1911 adjacent to the powerhouse, linked the penstock with the head pipes that entered the powerhouse. These had functioned as part of the penstock realignment and were part of the segment extending directly from the reservoir dam to the powerhouse. The board-formed

[3] Cloghen, “Report on White River Water Power Development Supplying Power to The Dalles, Oregon,” pg 3.
[4] “Memorandum Report on Tygh Valley Renovation Study,” July 9, 1963, pg 2. Oregon Parks and Recreation Department archives.
[5] “Memorandum Report on Tygh Valley Renovation Study,” pg 1.

concrete structures were formed in place around the riveted steel penstocks. Reducers on the south ends step down the conduit diameter. A 4'-diameter header conduit extended between the two wyes. The upper has a rectangular plan with a clipped southeast corner and is 7'-4" x 10'-8" in plan. The lower has a rectangular plan and is 6'-10" x 8'-9". A hand-operated manhole is located at the north inlet to the wye providing penstock access.

Valve House (WS7), ca. 1934

The valve house enabled diversion of water from the penstocks to fill the reservoir and the ability to shut off the water supply if there is a downstream breach in the penstock. The 1910 system design had a direct penstock connection to the conveyance tunnel. Adding the valve house allowed the reservoir to be bypassed. The open, 12'-tall interior volume provided a very short emergency storage volume (.07 foot acre) if the penstock had to be shut down. A former wood skybridge from the reservoir dam provided quick access from the former control house to the exterior wood deck of the valve house. Gated outlets are round, concrete, and 5' in diameter. A small steel pipe at the base of the southeast wall provides a means to drain the interior volume. **See current photographs 32-33**.

Board-formed concrete formed the outer walls of the five-sided structure. The plan is 14'-8" x 13'-0" at the base and tapered inward by over 1' at the top. Wood beams span the top, providing the floor structure with a metal rebar ladder embedded into the concrete wall for interior access. Vertical rising sluice gate mechanisms at the two outlets utilized hand-operated, steel worm drives and wheels. Parts of the worm drives remain, along with at least one of the wood gates and tracks.

Conveyance Tunnel (WS8), 1911, ca. 1934

The conveyance tunnel provides the conduit for filling the reservoir with water and functions in conjunction with the channel within the reservoir. Water flow occurs in one direction only, from the valve house to the reservoir. The inlet originally connected directly to the penstock with the conduit exposed south of the reservoir dam. Construction of the valve house ca. 1934 allowed this inlet to be controlled from the valve house and enclosed the conduit in concrete. The tunnel is 30' long and 5' in diameter. The 14' long wood stave portion extended between the east end of the third section of the penstock and the riveted steel conduit through the dam. When the valve house was built, the wood stave portion was encased in concrete. This embedded the metal strapping and left residual board form marks along the tunnel walls from the wood staves. An added metal screen at the outlet prevents unauthorized access to the tunnel. **See current photographs 34-36**.

The channel (WS21) directs the flow of water from the conveyance tunnel, conducts it to the upper north end of the reservoir to assist in settling out debris as the reservoir fills from the north and to avoid undercutting the reservoir dam. The south 9' of the board-formed concrete wall are 8 inches thick. The north 168' of the wall is rock with a concrete cap and 2'-0" thick.

Tail Race (WS16), 1901

The tail race is the channel excavated to carry away water that has been used to rotate the turbine blades, returning it to the natural river course. Water exits the east sides of the powerhouse at the foundation level and flows south in the 20'-wide channel between the powerhouse and workshop foundation. Board-formed concrete gates with slots for wood boards mark the tail race exit. The channel was excavated following construction of the 1901 powerhouse. The channel is heavily silted in with sand covering the lower portions of the outlets on the powerhouse. The concrete channel walls extending off the southeast corner of the powerhouse are no longer extant. **See current photographs 37-38 and Fig. 35, 38**.

Power Generating Plant System

The following extant components functioned as part of the power generating plant system, utilizing water from the White River to generate and transmit hydroelectric power. Concrete elements are board-formed and comprised of large, sharp basalt aggregate unless otherwise noted.

Powerhouse (PG1, 2), 1901, ca. 1913

The basalt masonry powerhouse contains the power generating equipment and after the ca. 1913 expansion, also provided the connection to the transmission system. The south 54' x 30' portion was built in 1901 and the north 38' x 34' addition was built ca. 1913. The structure is built on the basalt rock for the foundation. Penstock connections occur on the west side providing water for power generation. Tail race outflow is on the east side. The use of stone rather than concrete for the structure reflects the difficulty of site access with the steep canyon walls and the abundance of durable local stone at the construction site. **See current photographs 39-46, and Figs. 10-11, 20, 37-38**.

Exterior building walls are coursed rubble (south portion) and squared rubble (north addition) basalt, 1'-6" thick, comprised of two wythes, with a slight water table projection at the south portion, and carried on a stone foundation. Mortar joints at the south portion are flush with mortar extending across most of the stone face, a finish repeated on the interior. Mortar joints at the north addition are flush and held back off the pitched stone face, a finish repeated on the interior. The stone coursing where the two buildings connect is bonded, showing the transition from coursed to squared rubble. The stone is exposed on the building interior. Triangular upper south wall sections of the north addition at the junction with the south portion roof are steel frame and clad with corrugated metals. Steel trusses, with 2" L-section members and bolted connections at the gusset plates and steel 3" I-beam purlins, support the roofing. The building interior is a single open volume and originally had a whitewash finish. A concrete slab extends throughout the interior with 4'-0" square, scored divisions. A surface-mounted metal conduit extends along the walls for lighting fixtures and outlet receptacles. Added (2020) steel security grilles are present at all window, door, insulator, and tail race openings and keep people out while allowing interior visibility.

A gable roof monitor along the ridgeline contains louvers for ventilation and has corrugated metal roofing. The south 20' of the monitor built in 1901 above the south portion has two bays of paired louvers on each facade, with added shed metal covering the east facade louvers. The north 12' above the south portion and the monitor over north addition were built in 1910 and clad in added sheet metal with only one original louver visible on both sides above the south portion.

The 1901 **south portion** has a moderately pitched corrugated metal clad gable roof with open eaves and gable ends. Pitched, Fink truss (having only inclined members and subdiagonal members to reduce the length of central compression web members) ends are embedded in the masonry. Steel rods support the added central hoist beam within the south portion.

Fenestration consists of three east, two former south, and four west facade openings. Openings are 3' x 6' with the original 4:4 wood windows removed. On the east facade, a stone segmental arched window with an inner timber lintel is at either end of the facade, with a flat wood lintel opening north of center on the face. At the segmental arched openings, cut stones form the voussoirs and are tuck pointed, with beading projecting beyond the flush mortar joints. The linteled opening is missing the wood lintel and the surrounding stonework was rebuilt ca. 1911 when the wall was opened for interior access immediately prior to construction of the north addition. The south facade has the same segmental arched openings as the east facade but infilled with rubble basalt. The west facade has the same segmental arched openings as the east facade. These retain the wood window frames, rounded jamb moldings, and arched panel infilling between the frame and arch soffit.

The east facade doorway has a flat lintel opening with a concrete wash at the threshold. This doorway provided access to a foot bridge (removed post 1972) across the tail race to the workshop. The south facade has a centrally placed masonry flat arched former opening infilled ca. 1910 with rubble basalt. The extant stone voussoirs feature the same beaded pointing as the segmental arched window openings. The added ca. 1911 south doorway is at the west end of the facade and has a flat header with concrete at the threshold. An enclosed, shed roof, toilet room was added after 1934 at the west end of the south facade and later removed. Infill with stone of an original doorway and windows on the south facade occurred ca. 1913 as part of the north addition construction.

The three header pipes connecting the penstock to the powerhouse are on the west facade with the conduit extending through the wall to the interior.

Tail race outlets occur at the foundation level on the south and east facades. The south facade outlet originally extended most of the width of the facade and is located 30” below the floor line of the powerhouse and has been silted in and is no longer visible. The two east facade outlets have segmental stone arches with the same beading as the segmental arched window openings. Coursed rubble stone walls extend under the building to board-formed bracing securing a downward oriented, steel conduit that discharged water from the turbine. Expanded metal lath with a thin board-formed concrete finish coat forms the ceiling. The south outlet is 6’ wide, with only the upper 4’ of height visible above the silt, and at least 10’ deep. The north outlet is 3’-6” wide, and the same depth and height as the south outlet. The south end of the north outlet appears to have been repaired ca. 1934 as part of excavating the tail race, resulting in modification to the arch and an added approximately 10’-long section of board-formed concrete patching reinforcing the stone wall. **See current photograph 57.**

The south portion contains two main hydraulic turbines with Francis-type runners and associated generators for producing hydroelectric power (units 1 and 2, 500kW each), a smaller turbine with a Francis-type runner and exciter (exciter 1), and a small flat-belt driven exciter (exciter 2) operating off the turbine shaft of unit 2. Exciters produced DC voltage to force current to flow in the field windings of the generator and provided a means to regulate the terminal voltage of the generator. The penstock connections for these turbines run above the powerhouse floor level. **See current photographs 46-48, 50, 54-56 and Figs 21, 34**.

At each main unit, a steel inline 30” gate and pressure tank sit between the penstock conduit and the turbine. The exciter 1 unit has a 12” gate. The valve and tank were made by Knicht & Co. Builders of Suttercreek, California, in 1901 according to a stamp on them. The cast iron spiral turbine casing (10’ diameter) is set south of the associated generator with a central connecting turbine shaft and gear box. A cast iron discharge elbow exits the south side of each turbine and connects to the south tailrace outlet. A motor for wicket gate operation in each turbine is located east of each unit, mid-way between the turbine and generator and aligned with the gear box. A smaller discharge exits eastward at the base of each turbine into a cast iron flat, round sided coupling before exiting a vertical steel draft tube discharging to the tail race outlet.

Unit 4 operated off the turbine shaft for unit 2. The generator, made by the General Electric Company, sits on a concrete base with a sliding track to adjust belt tension. Holes were added in the stone wall to fit the generator base. The part of the rotor and the stator (stationary part of the rotary system) are missing from the generator.

Unit 5 is operated by the small southernmost penstock. The draft tube exited off the south side of the turbine down through the floor. Alterations removed a section of the conduit within the powerhouse and capped the penstock end. The draft tube elbow is missing along with the rotor and stator from the generator.

The steel switchboard and pull box structure remain in the southeast corner. Wood ledger boards bolted to the masonry wall support the equipment, which extends across an east facade window and a former infilled south facade window opening. A former wood frame telephone booth was located along the east wall directly east of the unit 1 generator.

The ca. 1913 **north addition** has a low-pitched gable roof with flush eaves. A concrete bond beam wraps the perimeter of the north addition and is comprised of three, stepped horizontal bands. Segments of the original metal gutter remain along bond beam's facia. Low-pitched Pratt truss ends are embedded in the concrete bond beam. The roof is covered in thin gauge, corrugated metal decking with an inner and outer cement finish and an overlay of built up asphalt composition roofing with basalt rock chip. Steel rods attached to the trusses support the added central hoist beam and the hoist beam extending to the east doorway.

Projecting concrete square profile lintels occur at all window and door openings and are comprised of three, stepped horizontal bands. Fenestration consists of one east, one north, and one west facade opening. Each window opening is 7' square with the original wood 4:4 windows and four-lite transoms and transom bar removed from the masonry openings. A doorway is on the each of the east, north, and west facades. The large 12'-wide x 10'-6"-tall east doorway (top-hung sliding doors originally) provided the access route for moving equipment in and out of the building. The tramway was aligned to end at this doorway. The doorway retains its wood frame and jamb molding. A second large (8' wide x 14' tall) doorway on the north facade originally functioned as the main personnel entrance and provided access to area north of the building containing the wood structure supporting the transmission line connection to the building and the lower landing for the wood stairway up to the reservoir dam. This doorway original consisted upper and lower side hinged doors. Interior steel hoist beams align with the center of each doorway.

The header pipe connecting the penstock to the west facade of the north addition extends below the floor level to connect to the turbine. The north addition has a single Pelton turbine with the runner attributed as a Francis type, and associated generator (unit 3, 1250kW) with a direct connected exciter at the north end (exciter 3). A steel inline gate and pressure tank is located between the penstock conduit and the turbine. The 3' gate and tank were made by Knicht & Co. Builders. The cast iron turbine casing (9' diameter) is set south of the associated generator with a central connecting turbine shaft. An elbow type cast iron draft tube exits the south side of the turbine, it is not known how or if this connects to the tailrace as the portions below the concrete floor are not visible. A motor for wicket gate operation is located south of the unit.

There are four, 5' diameter x 8' tall, water-cooled transformers (1000kW each) in the northwest corner of the powerhouse. Within the building water pipes run along the top portion of the west and south walls and connect to the tops of the transformers for cooling. The 3" pipes connect to a manifold and small pump located on the inner face of powerhouse's south facade. The transformers were made by General Electric. **See current photographs 49, 51-53 and Fig. 33**.

Round openings on 4' centers in the upper portion of the north (3) and west (3) walls originally contained ceramic insulators and provided the pathway for wiring exiting the building carrying electricity generated by the powerhouse. One insulator remains at the middle opening on the north wall. Concrete lined the jambs of each opening. The original wood and steel system supporting the exterior insulators and transmission lines at the northwest corner of the powerhouse no longer remain.

A metal enclosure on a concrete base in the southwest corner of the north addition originally contained the lightning arrester equipment.

A battered, coursed basalt rubble retaining wall built as part of the north addition is set back 12' to 15' from the north end of the powerhouse. The wall varies in height from 5' to 12' and provided access space to the transmission line connections at the north end of the building and provided the lower landing area for the trail and wood stairway system providing access down from the reservoir dam to the main powerhouse entrance.

Surge Tanks (PG4, 5), ca. 1901, ca. 1913

Surge tanks balance pressure between the water supply and power generating plan systems. Located as close to the powerhouse as possible, these riveted steel tanks provide water storage capacity to absorb excess pressure and provide extra water during a brief drop in pressure and are characteristic of the long-penstock, high and medium-head plants. They also functioned as part of the cooling system for the transformers within the powerhouse. There is a 4'-4" diameter x 8' long tank (no. 1, ca. 1901) on the canyon wall above the powerhouse, and an approximately 5' diameter x 8' long tank (no 2, ca. 1913) directly south of the powerhouse. Steel 3" pipes connect the tanks to the manifold and small pump located on the inner face of powerhouse's south facade. Within the building the pipes run along the top portion of the west and south walls. The former wood-frame, shed roof enclosure at this tank and the protective and insulating wrap along the piping to the powerhouse no longer remain. Board-formed concrete saddles carry the lower horizontal tank, with metal bands strapping the tank in place. A former protective gable roof structure no longer remains at this tank. **See current photographs 58-59**.

Tramway Winch (PG6), ca. 1913

The tramway winch functioned as part of the former cable railway to move the heavy power generation equipment to and from the powerhouse along the approximately 67-degree slope of the canyon wall. The wood trestle tramway—which consisted of a 340' track of two 45-pound steel rails carried on a wood bent trestle system, a wood 13' x 16' platform at the top of the tramway, and the tramway car—no longer remain (removed between 1972 and 1985). However, the winch remains at the top of the canyon wall overlooking the powerhouse and at the south end of the access road that also formerly serviced the substation. The winch stands on I-beams bolted to a 4'-6"-wide x 8'-long x 1'-tall concrete base with rounded outer corners. Made by the Ersted Iron Works company, the winch has two gears for raising and lowering and a hand lock lever. Some cable remains coiled around the winding drum. The drive shaft has a large wheel for a flat-belt connection to the former power source. **See current photograph 60 and Fig. 36**.

Transformer House Foundation (PG3), 1901

The foundation both supported the former transformer house for the powerhouse and served as the east wall of the tail race. The transformer converted the alternating current (AC) to a higher voltage current for transmission. Subsequent ca. 1913 changes converted the building to a store house and workshop. The board-formed concrete foundation is 19'-6" x 26'-8" in plan with 1'-2" thick walls. A central concrete wall supported the floor structure. The concrete utilizes course basalt aggregate. The use of concrete represents a notable shift in building materials from the powerhouse. The wood frame, clapboard clad workshop structure had a gable roof with windows on the south and west facades and doorways on the north and west facades. Alterations prior to 1910 installed a shed roof addition on the east facade that was removed by 1915. The building structure was lost between 1972 and 1985 based on USGS aerials. **See current photograph 61 and Fig. 35, 38**.

Power Poles, ca. 1901, ca. 1913, ca. 1947, ca. 1962

Power poles and associated wiring transmitted electricity generated by the powerhouse to a substation overlooking the canyon and then beyond to electricity users including the milling company in The Dalles and the city of Dufur. Three of the 1' diameter tapered wood power poles remain along the slope north of the powerhouse up to the substation. The original transmission line continued north along the west side of the reservoir and has been replaced with new power poles. System upgrades were undertaken in 1947; however, it is not known if the specific poles were replaced. **See current photograph 62**.

Foundation (PG7), ca. 1901

The concrete foundation marks the location of a small, former gable-roofed wood-frame structure. The function of this structure is not known. The structure was removed by 1910. This resource is considered a Historic, Non-contributing structure but not included in the resource count as it is no longer able to convey its original role, but it is considered a site feature within the overall site.

<u>State Parks</u>

The main state park facilities, including the comfort station, parking, and park access road, lie outside of the historic district and comprise the former residential (housing) area. The following state park components within the historic district function as part of the site's role as a state park providing access for interpretive and recreation purposes. The pump and associated piping directly north of the holding basin dam and head gate were installed as part of the state park site use and considered Non-historic/Non-contributing, and not included in the resource count as they are considered site features.

Non-vehicular Bridge (SP7), ca. 1990

The non-vehicular bridge functions as part of the trail network providing access down into the canyon for access to the powerhouse and the trail continuing down the canyon. The 12'-wide bridge was added between 1985 and 1995 and consists of two steel flat Warren (with verticals) trusses carried on square steel hollow section bents with 3-1/2" x 11" incised pressure treated decking. The east abutment is comprised of the same material. One side of each bent is bolted to the downstream face of the reservoir dam and the other side consisting of a square steel post carried on a concrete footing. Railings are chain link spanning between round metal posts with a round metal top rail. The bridge, while generally compatible, was installed after the end of the period of significance and is counted as a Non-historic/Non-contributing structure. **See current photograph 63**.

Trails, ca. 1990, 2000s

Trails provide circulation within the park and consist of the main asphalt walkways along the upper portion, the gravel trail down to the powerhouse, and a river trail continuing along the White River. The gravel trails were added between 1985 and 1995 and the paved walkways in the 2000s. These replace the gravel trail and wood stairway systems (removed between 1972 and 1985) that originally provided access from the residential area to the northwest corner of the reservoir dam, and from the reservoir dam down to the powerhouse. An interpretive sign explaining the function of the hydroelectric plant is located along the main asphalt walkway within the historic district. The trails and interpretive sign, while generally compatible, were installed after the end of the period of significance and considered Non-historic/Non-contributing; they are not included in the resource count, as they are considered circulation features within the overall site. **See current photograph 64**.

The asphalt segment within the historic district is part of a 9'-wide and over 530'-long system of walkways along the top edge of the canyon providing vistas of the water control, water supply, and power-generating plant systems and the natural features and scenic qualities of the canyon. The east portion of this walkway follows the general alignment of an original access path to the reservoir dam from the former residential area. The gravel trail is 4' wide and over 500' long and winds down along the wall of the canyon to the powerhouse. The upper portion of this trail is just downslope from the original trail alignment and the wood stairway. The middle portion of the trail above the powerhouse follows the original alignment originally supported on a wood frame trestle. None of the original features remain. The lower portion of the trail passes along the east side of the workshop foundation, while the original stairs descended north of the workshop foundation to the north end of the powerhouse. The river trail is 2' wide and continues from the powerhouse east along the north riverbank.

Resource Count Table

Summary of built resources within the Wasco Warehouse & Milling Company Hydroelectric Project historic district.

ID	*Name*	*Year Built*	*Site, Contributing*	*Building, Contributing*	*Structure, Contributing*	*Structure, Non-contributing*
WS21	Channel	1911			1	
WS8	Conveyance Tunnel	1911, ca. 1934			1	
WC1	Diversion Dam	1901			1	
WS3	Holding Basin Dam and Head Gate	1913			1	
WC2	Intake Dam	1901			1	
SP7	Non-vehicular Bridge	1990				1
WS11	Penstock Wye (no 1)	1922			1	
WS14	Penstock Wye (no 2)	1911			1	
WS15	Penstock Wye (no 3)	1911			1	
PG2	Powerhouse	1901		1		
WC9	Reservoir	1911	1			
WC4	Reservoir Dam	1911			1	
WS2	Steel Penstock (no 1)	1911			1	
WS4	Steel Penstock (no 2)	1911			1	
WS6	Steel Penstock (no 3)	1911			1	
WS13	Steel Penstock (no 4)	1911			1	
PG4	Surge Tank (no 1)	1901			1	
PG5	Surge Tank (no 2)	1913			1	
WS16	Tail Race	1901			1	
PG6	Tramway Winch	1913			1	
PG3	Transformer House Foundation	1901			1	
WS7	Valve House	Ca. 1934			1	
WS1	Wood Penstock (no 1)	1911			1	
WS3	Wood Penstock (no 2)	1911			1	
WS5	Wood Penstock (no 3)	1911			1	
WS12	Wood Penstock (no 4)	1911			1	
WS21	Wood and Steel Penstock (no 5)	1901			1	
	TOTALS:		**1**	**1**	**24**	**1**

Condition

The historic district's resources are overall in fair condition and not operational. Concrete components exhibit some general surface material loss through erosions, but generally remain in fair condition, stable with no substantial settlement or out of plane shifting evident. More pronounced erosion due to river water flow is evident at the diversion dam, intake, and holding basin (particularly at the west end) with a vertical crack at the west end of the diversion intake. Horizontal cracking is evident at a section along the top west end of the gravity dam with some out-of-plane shifting evident. Metal components remain in good condition with mostly surface corrosion, except for the metal roofing at the powerhouse. Sections of corrugated metal roofing and gutters have been lost at the powerhouse with most sheets exhibiting edge deformation attributed to wind. The steel trusses remain in good condition with surface corrosion and no evidence of member failure or loss of bearing at the ends. Operation and power generation equipment remain in stable but not operable condition. Stone components remain in good condition, with no evidence of out-of-plane shifting at dry stacked areas, or wythe separation or substantial settlement at coursed masonry building walls. Cracking is evident at some window and doorway headers in the powerhouse. Wood components are in poor condition, exhibiting significant material loss, notably at original wood penstock locations and powerhouse windows.

Alterations since the facility ceased operation in 1962 include removal of the former wood frame residences, operator buildings, access stairways, transformer house, and tramway structures that were associated with facility operation. Work removed wood windows and doors and installed metal security grilles to openings at the powerhouse while retaining visibility of the interior for interpretive purposes. An added chain link fence along the upper edge of the canyon, along with an added non-vehicular bridge and trail system that replaced the wood stair systems, support safe interpretive and recreational access within the historic district.

8. 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.
- [ ] 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.)

Property is:

- [ ] 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.)

Industry
Engineering

Period of Significance

1901-1962

Significant Dates

1901 (construction)
1962 (power generation terminated)

Significant Person
(Complete only if Criterion B is marked above.)

N/A

Cultural Affiliation (if applicable)

N/A

Architect/Builder

Pacific Bridge Company, Contractor

Period of Significance (justification)

The period of significance begins in 1901, when the first effort to capture the waterpower available at the White River Falls was constructed, continues through the expansion and incorporation of that first system into the system evident today, and ends in 1962 when hydropower production at White River Falls ended. The Period of Significance includes the entire operating life of the hydropower project at this location, including the construction dates of every functional element through to the cessation of hydropower production at the facility.

Criteria Considerations (explanation, if necessary) N/A

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 Wasco Warehouse & Milling Company Hydroelectric Project historic district is significant as the oldest known hydroelectric project in Wasco County and the first hydropower plant to provide electricity to the City of Dufur and The Dalles. The project is locally significant under Criterion A in the area of Industry for its role in hydroelectric power generation and transmission technology in Wasco County. Founded to provide power for the Wasco Warehouse & Milling Company, The Dalles, and Dufur, the project grew Pacific Power & Light's portfolio of hydroelectric plants supporting its regional power system. The Wasco Warehouse & Milling Company Hydroelectric Project reflects efforts in the early 20th century to generate electricity before the rise of municipal power, large-scale power companies, and non-profit cooperatives. Through the project's subsequent sale and operation by Pacific Power & Light, it also conveys the expansion of large-scale power companies as they acquired additional power plants and consolidated their control of the power grid. Additionally, the Wasco Warehouse & Milling Company Hydroelectric Project historic district is locally significant under Criterion C in the area of Engineering as its components collectively convey the hydroelectric power generation system and embody the distinctive characteristics of a high head hydroelectric power plant system. The materials and methods of construction of the project's components are reflective of both the initial construction and subsequent expansion, and the availability of local stone and the constraints of steep terrain characteristic of the site. The powerhouse (south portion and north addition), along with retaining walls and concrete for the dams, all utilize local basalt stone (based on surrounding unworked stone).

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

Overview of Wasco County

The Columbia River and its tributaries are critical to the lifeways of past and present residents of Wasco County—as a habitat for fish, source of fresh water, transportation corridor, and power generator. Wasco County derives its name from the original inhabitants of the land, the Wasco (or Wascopam) people, who have called the area along the southern shore of the Columbia River near The Dalles home since time immemorial. The Wasco people included bands of Ki-gal-twal-la (The Dalles) and Dog River (Hood River Wasco).[6] They were the easternmost group of Chinook-speaking people.[7] The word Wasco or *Wasq'ó* means "cup" and *-pam* means "people of" in Upper Chinook or Kiksht, with Wasco referring to a cup-shaped rock where a spring bubbled up near present-day The Dalles. The Wascos lived off the abundant resources of the region along and between the Deschutes and John Day rivers along the southern shores of the Columbia River, hunting, fishing, and gathering.

In addition to the residency of the Wasco people, the area was a key gathering place for fishing and trade at The Dalles rapids.[8] As a result, trade was an important element of the Wasco peoples' lifeways, with the Wasco people trading root bread, salmon meal, and bear grass for goods they needed, such as roots and beads, from bands like the Clackamas and clothing and horses from Sahaptin bands near Warm Springs or the Nez Perce further east.[9]

The traditional way of life for the Wascos and other Native Americans was profoundly impacted by the steady arrival of white settler-colonists in the 19th century. Protestant missionaries supported by the American Board of Commissioners for Foreign Missions, arrived in the area by the late 1830s, with Henry K. W. Perkins and Daniel Lee establishing a Methodist mission at The Dalles, Wascopam Mission, in 1838. Soon others sought to

[6] Tania Hyatt-Evenson, "Wasco," *Oregon Encyclopedia* (updated March 10, 2022), https://www.oregonencyclopedia.org/articles/wasco/ (accessed September 13, 2022).
[7] Confederated Tribes of Warm Springs, "History," *Confederated Tribes of Warm Springs*, https://warmsprings-nsn.gov/history/ (accessed September 13, 2022).
[8] Robert Boyd, "Wascopam Mission," https://www.oregonencyclopedia.org/articles/wascopam_mission/ (accessed September 13, 2022).
[9] Confederated Tribes of Warm Springs, "History."

follow the westward path traveled by the missionaries to the Oregon Country via a wagon trail coined the Oregon Trail. The Oregon Trail had a key supply point at The Dalles and a flood of immigrants from the east traveled through the Wasco territory in the 1840s and 1850s. Once at The Dalles, immigrants floated the Columbia River west to Fort Vancouver and Oregon City. However, Sam Barlow established a wagon road, Barlow Road, in 1846 which traveled south from The Dalles, around the south side of Mount Hood, and then northwest to Oregon City.

As the number of immigrants increased, many of the missions in the Oregon Country, including the Wascopam Mission, shifted to caring for travelers rather than Christian proselytizing to area tribespeople. Congress passed the Distribution-Preemption Act of 1841, encouraging settlement in the Oregon Country by allowing squatter's rights and individual claims of 160 acres of land; after residing on the claims for 14 months, a claimant could purchase the property for $1.25 an acre from the federal government. Then in 1843, white settlers living in the territory in the Willamette Valley met to draft a constitution and established a provisional government. This provisional government increased the acreage for claims to 640 acres at no charge. After taking and laying claim to Native lands, the U.S. federal government made Oregon an official territory of the United States in 1848. At this point, no treaties had been signed with area tribes. Congress passed the Donation Land Act of 1850, legitimized the claims of the 1843 provisional government with 320 acres to qualifying U.S. citizens and 640 acres offered to married couples, at no charge if they occupied their claim for four consecutive years.[10] For those settlers arriving after 1850, a married couple could receive up to 320 acres.[11] The Donation Land Act of 1850 further spurred westward immigration to the newly established Oregon Territory. By 1852, approximately 12,000 white settler-colonists passed through the Wasco and Warm Springs territories every year.[12] The discovery of gold in the territory the early 1850s brought miners to the region, too, and The Dalles continued as an important waypoint for travelers. The U.S. government established Fort Dalles in 1850 to protect citizens in the area, particularly with escalating tension with tribes as white settler-colonists continued to invade Native lands and a measles epidemic of 1847 had devastated the Cayuse tribe north of the Columbia.

With so many white American settler-colonists traveling to and settling in the Oregon Territory, the federal government pushed Joel Palmer, superintendent of Indian Affairs in Oregon Territory, to remove Native Americans from their ancestral land. Palmer negotiated a series of treaties to convince area tribes to cede their lands to the U.S. government in exchange for a cash payment, a dedicated reservation, a series of infrastructure items (e.g., sawmill and school), and rights to fish, hunt, and gather in their usual and accustomed places. The Treaty of 1855 was signed by representatives of the Warm Springs and Wasco people, ancestors of the present-day Confederated Tribes of Warm Springs. With passage of this treaty, the Wasco and Warm Springs tribes were forced to move onto the new reservation land, approximately 60 miles south of the Columbia River.

In the midst of these negotiations and ensuing conflict, Wasco County was formed by the Oregon Territorial Government in January 1854. The county was created from portions of Clackamas, Marion, Linn, and Lane counties and encompassed all territorial land between the Cascade Range on the west and the Rocky Mountains to the east, the 42nd degree latitude (California border) to the south, and the 46th degree latitude (Washington border) to the north. The county consisted of 130,000 square miles, the largest ever formed in the United States. The Dalles was designated the county seat upon Wasco County's formation.[13]

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[10] Margaret Riddle, "Donation Land Claim Act, spur to American settlement of Oregon Territory, takes effect on September 27, 1850," *HistoryLink.org the Online Encyclopedia of Washington State History* (August 9, 2010), https://www.historylink.org/file/9501 (accessed September 16, 2022).
[11] William G. Robbins, "Oregon Donation Land Law," *Oregon Encyclopedia*, https://www.oregonencyclopedia.org/articles/oregon_donation_land_act/ (accessed September 16, 2022).
[12] Confederated Tribes of Warm Springs, "History."
[13] Oregon Secretary of State, "Wasco County," *Oregon Secretary of State*, https://sos.oregon.gov/archives/records/county/Pages/wasco-history.aspx (accessed September 16, 2022).

Although white American settler-colonists were in The Dalles as early as the 1840s, other communities in Wasco County emerged in later decades, particularly along Barlow Road. These communities included the present-day city of Dufur and the unincorporated community of Tygh Valley. The Wasco Warehouse & Milling Company Hydroelectric Project Historic District is less than five miles east of the community of Tygh Valley.

Farming and ranching were early economic industries established in Wasco County by settler-colonists. Wheat was planted in the region in the 1860s and soon covered the hills.[14] The semi-arid conditions of the county limited the crops that could flourish, but cattle and sheep ranching prospered.[15] The region's rivers and the arrival of the railroad allowed for these agricultural goods to be more easily sent to market. The processing of these goods—particularly wheat into flour and shearing sheep for wool—created demand for electricity. Power generation at this time occurred through private enterprise with power generation from extractive industries and was initiated largely by companies seeking to run mills and production facilities. The nominated district, the Wasco Warehouse & Milling Company Hydroelectric Project, was constructed by the Wasco Warehouse & Milling Company to set themselves apart from their competitors by having their own electrical power supply, particularly against the wool warehouses located in the town of Shaniko once the Columbia Southern Railroad laid tracks through the town.[16]

Hydropower

Ultimately, to generate hydropower, water must be in motion. Humans have harnessed the power generated by falling water for thousands of years, from ancient Greeks and Romans using waterwheels to grind flour and ancient Chinese civilizations using waterwheels to power bellows while casting iron. Hydropower, power generated by water, results when water flows from a higher elevation to a lower elevation and that energy is used to power machinery connected by a drive shaft to a turbine, such as turning mill stones. Hydroelectric facilities utilize turbines and generators to convert hydropower into electricity, which can be transmitted over distances, separating power generation and consumption. As a result, many powerplants are located on rivers, streams, and canals to harness the flowing water. There are two main types of hydropower technology: impoundment and diversion. Impoundment technology uses dams to store water in a reservoir. When the water is released, it flows through and spins a turbine, generating hydropower. Diversion technology channels a portion of a river through a canal or pipe into a turbine. Diversion relies on the natural flow of the river, unlike impoundment, which stores water and releases it as needed.[17] The first hydroelectric plant in the world to sell the electricity it generated was established in Appleton, Wisconsin, on the Fox River in 1882—the Vulcan Street Plant in the Appleton Pulp Mill initially powered two paper mills, a residence, and eventually the town's streetcar system.[18] The first hydroelectric plant in the Western United States opened in San Bernardino, California, five years later in 1887 (High Grove Station).[19]

By the beginning of the 20th century, small hydropower plants were being constructed across the country (and

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[14] Nancy Zopf, "Dufur," *The Oregon Encyclopedia* (updated February 28, 2022), https://www.oregonencyclopedia.org/articles/dufur (accessed November 21, 2022).
[15] Ulrich H. Hardt, "Shaniko," *The Oregon Encyclopedia* (updated March 8, 2022), https://www.oregonencyclopedia.org/articles/shaniko (accessed November 21, 2022).
[16] Ibid.
[17] International Hydropower Association, "A brief history of hydropower," *International Hydropower Association*, https://www.hydropower.org/iha/discover-history-of-hydropower (accessed September 14, 2022); National Hydropower Association, "History," *National Hydropower Association*, https://www.hydro.org/about/history/ (accessed September 12, 2022); Waterpower Technologies Office, "Hydropower Basics," *Office of Energy Efficiency & Renewable Energy*, https://www.energy.gov/eere/water/hydropower-basics (accessed September 12, 2022); Waterpower Technologies Office, "History of Hydropower," *Office of Energy Efficiency & Renewable Energy*, https://www.energy.gov/eere/water/history-hydropower (accessed September 12, 2022).
[18] Cutler J. Cleveland and Christopher Morris, *Handbook of Energy: Volume 11: Chronologies, Top Ten Lists, and Word Clouds* (Amsterdam and Boston: Elsevier, 2014),178; National Hydropower Association, "History," National Hydropower Association, https://www.hydro.org/about/history/ (accessed September 12, 2022); American Society of Civil Engineers, "Vulcan Street Plant," *American Society of Civil Engineers,* https://www.asce.org/about-civil-engineering/history-and-heritage/historic-landmarks/vulcan-street-plant (accessed September 12, 2022).
[19] Cleveland and Morris, *Handbook of Energy*, 178.

around the world) and hydroelectric power accounted for more than 40 percent of the country's electricity supply.[20] The sheer number of rivers in the Pacific Northwest meant hydropower became the early and popular method for power generation in the region as harnessing the power from area rivers was low cost compared to power generation from extractive industries (e.g., coal). Waterfalls along the rivers, which provided the "head" or change in elevation, created the water flow whose energy could be captured. Thus, historically, hydroelectric plants were sited at waterfalls to capture that power. Generally, the greater the waterflow and higher the head, the more electricity the hydropower plant could produce. Although these waterfalls produce a significant amount of energy, it is essential to control the water flow to harness that energy and constructing components (e.g., dams, reservoirs, and penstocks) to divert and store that water allows operators of hydroelectric plants to have more control on the generation of electricity and its output.

Amid this development, the federal government established the Bureau of Reclamation in 1902. While the primary priority of the organization was to deliver water to people in the arid American West, a secondary priority was to deliver hydroelectricity.[21] The federal government's involvement, first with establishment of the Bureau of Reclamation followed by the Rural Electrification Act in 1936, helped expand hydroelectric power throughout the West. By the 1940s, hydropower accounted for about 75 percent of electricity consumed in the Pacific Northwest.[22]

<u>Hydroelectric Power in Oregon</u>

In the summer of 1879, the first electric light arrived in Oregon, aboard the steamer *State of California*. The steamer, upon its maiden voyage to Portland, had been equipped with a six-light dynamo (or electrical generator) and electric arc lamp. At the time, electric streetlights were being introduced in other cities in the United States and by the mid-1870s Thomas Edison's Edison Electric Light Company was on the cusp of developing a mass-marketable electric incandescent lamp. The first public showing of the incandescent lamps in Portland occurred in July 1880 when the steamer *Columbia* arrived in the burgeoning city from New York, via the Strait of Magellan. The *Columbia* had an arc lighting dynamo as well as an incandescent lighting plant, the first installed on a vessel. At the time, small hydropower projects were in use all over the Pacific Northwest as white Euro-American settler-colonists began to establish sawmills and gristmills to process timber and grain. Dr. John McLouglin of the Hudson Bay Company had used the water from the Willamette Falls to power a sawmill (1842) and then a grist mill (1844). These early uses of waterpower were limited in power and required close proximity of machinery to waterfalls for the drive shaft connection. As a result, steam engines gained popularity as they could be used anywhere. Early electricity for commercial sale in Oregon (in Portland) was generated by steam engines.

Rapid changes in electricity generation occurred in the late 19th century, particularly as two inventors—Thomas Edison and Nikola Tesla—battled it out in a debate on power distribution called the War of the Currents. Thomas Edison advocated for the use of direct current (DC) for power distribution, while Tesla promoted alternating current (AC). In the 1880s, DC was the standard in the United States, but it was not easily converted to higher or lower voltages. AC on the other hand can be converted into different voltages easily using a transformer. Different electrical devices require different voltage. For example, lighting operates at a lower voltage than heavy machinery. AC power allowed for the transmission of high voltage power over a single line to a transformer, which would then convert the power to the proper voltage for sending out to different systems.

Once incandescent lighting entered broader production and arrived in Oregon, mills that utilized electricity to

[20] U.S. Department of the Interior, Bureau of Reclamation, Power Resources Office, "Hydroelectric Power," *Reclamation: Managing Water in the West* (July 2005), 18, https://www.usbr.gov/power/edu/pamphlet.pdf (accessed November 21, 2022).
[21] Bureau of Reclamation, "Brief History of the Bureau of Reclamation," *Bureau of Reclamation* (undated), 2, 5, https://www.usbr.gov/history/2011NEWBRIEFHISTORY.pdf (accessed November 21, 2022).
[22] Ibid.

power their equipment began to run circuits out to the neighboring area to light residences and stores.[23] However, the first commercial hydroelectric power plant in the world to supply electricity for transmission over a long distance occurred at the Willamette Falls at Oregon City in 1889. The transmission line ran 13 miles to Portland to power the city's streetlights via DC electricity.[24] The Willamette Falls Electric Company, which originally harnessed the power of the falls, reorganized as the Portland General Electric Company and built a second and larger plant at the falls between 1893 and 1895.[25]

Other hydroelectric plants followed the Willamette Falls plant and were established in the region surrounding Portland to provide power to the growing population center of Oregon. These included the Cazadero power plant (now Faraday Powerhouse) in Estacada on the Clackamas River in Clackamas County. It was constructed between 1904 and 1907 and diverted water from the Clackamas River by way of a log-crib dam (Cazadero Dam) to a mile-long reservoir (Faraday Lake). The water then drops almost 180' from the lake to the powerhouse, through a series of steel penstocks.[26] Another early hydroelectric project in Clackamas County is the River Mill Hydroelectric Project (listed in the National Register in 2001). The project was built in 1911, designed by Nils F. Ambursen, and built by Puget Sound Bridge & Dredging Company.[27]

Electricity in Wasco County

The first electricity arrived in The Dalles in July 1888 with the construction of a wood-burning power-generation plant at Seventh and Union streets by The Dalles Electric Light Company. The company operated the power plant until 1892, when The Dalles Electric, Telephone & Power Company purchased it in 1892. The Dalles Electric, Telephone & Power Company filed articles of incorporation in February 1892 with H. C. Nielsen, George C. Blakeley, George Ruch, and G. V. Bolton as the incorporators.[28] The company upgraded their service, building a new steam power plant on First Street between Laughlin and Federal streets in The Dalles in 1893. This plant was later acquired by the Wasco Warehouse & Milling Company when they purchased The Dalles Electric, Telephone & Power Company by 1902. According to the Northern Wasco County People's Utility District (PUD), a customer-owned utility that provides electricity to nearly 25,000 people and businesses in Wasco County, "The plant provided electricity for customers to operate up to ten 10-watt globes each evening for a month, for $1.60. The electricity was shut off in the daytime."[29]

The new power plant at White River Falls was in operation in early January 1902, powering the Wasco Warehouse & Milling Company's flour mill and providing electricity for lighting in the communities of Dufur and The Dalles. This plant was key in expanding electricity in The Dalles and surrounding communities and reflects private efforts to generate electricity before the rise of municipal power, large-scale power companies, and non-profit cooperatives. The power plant systems were expanded in the early 1910s after their purchase by Pacific Power & Light Company; this company and its power network remained the only provider of power to The Dalles and Dufur through 1939. Development of The Dalles, as one of the oldest permanently occupied communities in Oregon, was only fueled further by readily available electricity. Dufur's location along the transmission line route between The Dalles and the power plant at White River Falls provided the city access to the plant's electricity, which powered the small community's residences and businesses. Much of rural Wasco County remained without electricity until the late 1930s and early 1940s, although some ranchers did band together shortly after the Pacific Power & Light Company's purchase of the White River Falls power plant to raise funds to extend transmission lines to Tygh Valley, and other inland areas. Pacific Power & Light

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[23] O. B. Coldwell, "Beginning of Electric Power in Oregon," *Oregon Historical Quarterly* Vol. 31, No. 1 (March 1930), 29, https://www.jstor.org/stable/20610517 (accessed September 12, 2022).
[24] Coldwell, "Beginning of Electric Power in Oregon," 32.
[25] George Kramer, "River Mill Hydroelectric Project," National Register of Historic Places nomination (2001), Section 8, pages 4-5.
[26] George Kramer, "Faraday Dam and Powerhouse," *Oregon Encyclopedia*, https://www.oregonencyclopedia.org/articles/faraday_dam_and_powerhouse/ (accessed September 29, 2022).
[27] George Kramer, "River Mill Hydroelectric Project," National Register of Historic Places nomination (2001), Section 8, pages 1-5.
[28] Dufur Dispatch, "Local Brevities," *The Dalles Daily Chronicle*, February 6, 1892: page 3, column 2.
[29] Northern Wasco County PUD, "History," *Northern Wasco County People's Utility District*, https://www.nwascopud.org/about/history/ (accessed September 21, 2022).

promoted the use of electric pumps for use in irrigation on arable lands.[30]

In the late 1930s, rural residents began to push for the extension of electricity to their homes and farms, aligning with the efforts of President Franklin Delano Roosevelt's administration through the New Deal Program. Congress passed the Rural Electrification Act in 1936, which allowed the federal government to make low-cost loans to farmers who established non-profit cooperatives to expand transmission and substation systems to bring electricity to their rural area.[31] In tandem with this expansion of the transmission system, federal funding for new dams led to the construction of Bonneville (completed by 1937) and Grand Coulee (completed by 1942) dams on the Columbia River, providing low cost electricity to the Columbia Basin; public, non-profit entities like municipalities, cooperatives, and public utility districts were given preferential rights to the power from these dams.

Hydropower at White River Falls

Wasco Warehouse & Milling Company

White businessmen Joshua Ward (J. W.) French (1830–1907), Samuel Linius (S. L.) Brooks (1830–1912), and Ebenezer Barnes (E. B.) McFarland (1849–1918) established the Wasco Warehouse Company in 1883.[32] The trio had previously partnered in the mercantile business a variety of times in the previous two decades. Their new company, Wasco Warehouse Company, constructed wool and wheat storage warehouses in eastern Oregon, taking advantage of the two major industries operating in Wasco County at the time. Their business faced competition, though, when the Columbia Southern Railroad arrived in the town of Shaniko, establishing this town as a key shipping point in Wasco County. To stabilize its business, the Wasco Warehouse Company branched into milling, constructing a large flouring mill at The Dalles. The 1893 steam plant operating at and providing power for The Dalles lacked the capacity to power the large mill envisioned by the company, and—after plans to obtain power from a hydroelectric plant 28 miles to the west at Hood River (possibly the Electric Light & Power Company's plant established in 1905) failed—the company realized it needed to build its own power plant. The plan was to build the new power plant, upgrade the mill, and decommission the steam plant. The new hydroelectric power plant (the Wasco Warehouse & Milling Company Hydroelectric Project historic district) was intended to power the mill and provide electricity for private or municipal lighting or commercial power.[33] Expanding their operation to mill flour, not just store it, allowed the company to better compete with other warehouses in the county and region.

A new corporation formed in the spring of 1901 to finance the project, with the Wasco Warehouse Company becoming the Wasco Warehouse & Milling Company. Early investors in the new company included the French brothers (Joshua W. French and Daniel Mead French, 1828–1902), early bankers in Oregon; Elihu O. McCoy (1858–1939), Benjamin Franklin Laughlin (1849–1929), and Frank (Francis, 1853–1929) and Theodore Seufert (1859–1944). Wentworth Lord (1832–1917) was also an investor, as well as the leader of the Wasco Warehouse Company since 1894. They were later joined by physician Hugh Logan (1850–1913) and Wentworth Lord's son-in-law, druggist Fred Lord Houghton (1863–1944). For approximately $150,000, the new company purchased The Dalles Electric Light, Telephone and Power Company, including the company's steam power plant at the northwest corner of First and Laughlin streets, and constructed their new hydroelectric power plant at White River Falls. All these men were white and early settler-colonists in the Wasco County area, with some born in Oregon Territory shortly after its formation, like Logan and Laughlin.

[30] Cultural Resource Management, Inc., "A History and Assessment of the Power Generating Facilities at White River Falls," (January 1981), 7.
[31] National Park Service, "Rural Electrification Act," *National Park Service,* https://www.nps.gov/home/learn/historyculture/ruralelect.htm (accessed September 21, 2022).
[32] All birth and death dates, when known, were found through FamilySearch.org, utilizing federal census and death records to confirm dates.
[33] "Power for The Dalles," *The Dalles Daily Chronicle,* July 13, 1901: 3.

Construction of the Power Plant

News of the Wasco Warehouse & Milling Company constructing a high head power plant at White River Falls, 35 miles south of The Dalles, became public in April 1901, when The Dalles' newspaper, the *Chronicle*, reported on the plant's progress. The Pacific Bridge Company of Portland, led by George W. Simons and C. F. Swigert, received the contract to construct the plant and work began in late June 1901.[34] Pacific Bridge Company was founded in California in 1869 and opened its office in Portland in 1880. They primarily constructed bridges, many of them in Portland, including the Morrison, Burnside, Interstate and Ross Island bridges. Simons and Swigert led a crew of between 50 and 60 men to build the penstock (with a fall of approximately 135'), the diversion and intake dams, a headrace canal, transformer house, residential area (housing), and the masonry powerhouse for the two generators. Knight turbines powered the 500-kilowatt generators, which generated electricity at 2,300 volts. Transformers, onsite and at the destination, were utilized to step the voltage up for transmission and down again for use. Construction also included the erection of power poles to carry the copper transmission wire north to The Dalles, passing through the city of Dufur.[35] The no. 6 copper wire arrived in 181 bales, which stretched 90 miles, or three times the distance between the falls and The Dalles.[36]

Trains delivered the supplies needed to build the powerplant to Sherar's Bridge. Sherar's Bridge was a toll bridge on a toll road with a stagecoach station and hotel operated by Joseph Sherar (1833–1908) and his wife, Jane Herbert Sherar (1848–1907). The bridge originally spanned the Deschutes River below Tygh Creek, less than 4 miles northeast of White River Falls.[37] From the bridge, horses and wagons delivered the supplies to the construction site along the Tygh and Grass Valley wagon road (present day Sherar's Bridge Highway, State Route 216).[38] The generators, weighting 9,000 pounds each, were shipped from Portland via large wagons. It is unclear which route from Portland the generators followed to arrive at Sherar's Bridge. A tramway into the canyon was used to lower the machinery into place. One incident during the installation was reported when the wagon carrying the second generator overturned and slid down a 30' embankment.[39]

When completed in late December 1901, the company's hydroelectric plant consisted of concrete diversion and intake dams across the White River, just above the falls, with a 54" penstock to convey water down the canyon to the powerhouse. The masonry powerhouse, with steel roof, contained two impulse-turbine 650-horsepower waterwheels. The waterwheels were connected to two revolving-field generators providing the plant with a capacity of 1,500 horsepower to furnish 2,300 volts to the transformers. The plant was in operation in early January 1902, powering the company's flour mill and providing electricity for lighting in the communities of Dufur and The Dalles. The voltage was increased in the transformer house to 22,500 for transmission to The Dalles; once received at the substation in The Dalles, the voltage was lowered to what was appropriate for illumination at the time.[40]

The Wasco Warehouse & Milling Company operated the power plant until July 1910, when they sold it to Pacific Power & Light Company for approximately $270,000. Although the White River Falls power plant did provide the electricity necessary to power the company's mill, during this period, the plant experienced numerous power outages, typically due to debris and sediment caught in the waterwheels. Wasco Warehouse & Milling Company's sale of the power plant occurred one year after a fire destroyed their original wooden flouring mill in The Dalles. The capital from the sale of the power plant helped finance construction of a new

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[34] "Wayside Gleanings," *The Dalles Daily Chronicle*, June 5, 1901: page 3, column 3.
[35] Cultural Resource Management, Inc., "A History and Assessment of the Power Generating Facilities at White River Falls," (January 1981), 4. Oregon Parks and Recreation Department Archives; "Wayside Gleanings," *The Dalles Daily Chronicle*, June 5, 1901: page 3, column 3.
[36] "Wayside Gleanings," *The Dalles Daily Chronicle*, May 24, 1901: page 3, column 2.
[37] Zeb Larson, "J Jane Sherar (1848-1907) and Joseph Sherar (1833-1908)," *Oregon Encyclopedia*, https://www.oregonencyclopedia.org/articles/sherar_jane_1848_1907_and_joseph_1833_1908_/ (accessed September 14, 2022).
[38] 1880 GLO map.
[39] Cultural Resource Management, Inc., "A History and Assessment of the Power Generating Facilities at White River Falls," 4.
[40] History of Central Oregon, 147. Cited from a January 7, 1902, article from the *Times-Mountaineer*.

concrete mill. Although the Wasco Warehouse & Milling Company's time in the power generation business was less than a decade, the company's construction and operation of the hydroelectric project reflects a period of time in the early 20th century when companies had to generate their own power prior to the power grid's dominance by private power companies, municipal power, or non-profit cooperatives.

After selling their power plant at White River Falls, Wasco Warehouse & Milling Company continued as an independent milling enterprise headquartered in The Dalles for over three more decades. They rebuilt their destroyed flouring mill with a six-story masonry mill in 1913 at 901 East Second Street in The Dalles, what is known as the Sunshine Mill after it was acquired by the Sunshine Biscuit Company. United Mills of Grafton, Ohio—a subsidiary of Loose-Wiles Biscuit Company—purchased Wasco Warehouse & Milling Company in August 1944.[41]

Pacific Power & Light Company

Pacific Power & Light Company was established in 1910, a subdivision of Columbia Power and Light. The company took over the operation of the power plant at White River Falls when they purchased it from Wasco Warehouse & Milling Company in 1910. When Pacific Power & Light acquired the power plant, they spent between $30,000 and $40,000 over the next three years to modernize it. Improvements included construction of a 40' x 100' concrete reservoir dam to form a reservoir for settling sediment and increasing head, a new more direct penstock alignment between the reservoir dam and the powerhouse, a north addition to the powerhouse to increase the number of turbines and generators, a new head gate and building on the headrace canal to create the holding basin dam, and a system of wood stairs and landings providing access down to the powerhouse. In addition to improving the plant's efficiency and reliability, these improvements also increased the plant's power generation capacity. The new dam added 15' of head to the water, increasing power. A third Pelton-waterwheel was added, and the original two waterwheels were replaced with Pelton wheels (Francis type runners manufactured by Pelton).

Although little information is available regarding residential facilities (housing) at the site, it appears there were at least three houses and associated outbuildings at the site by 1915 (according to a historic photograph). It is unclear if those former buildings were constructed before or after Pacific Power & Light Company's ownership of the site.

In 1917, Pacific Power & Light Company constructed a power line across the Columbia River from Hood River to the Washington side of the river. The line connected the company's Oregon plants at Hood and White rivers with its plants at Husum on the White Salmon River and the Northwestern Electric Co.'s plant on a stream of the White Salmon.[42] The power line infrastructure was necessary due to increasing demand at The Dalles and wintertime shortages due to ice on the White River.

In 1922, Pacific Power & Light Company made several improvements to their plant at White River Falls. It is unclear what specific improvements were made, but the additions to the plant increased the workload to four electricians employed at the site rather than the previous three employees. One of the improvements was the addition of a ready-cut 30' by 36' house, which was brought to Sherar by railcar and then brought out to the falls to be constructed on a cement basement. The former house was for the plant's manager, C. F. Coberth.[43]

On November 25, 1926, an explosion occurred at the power plant in turbine No. 3 and was reported in the *Oregonian* in Portland, the *Chronicle* in The Dalles, and in the *Maupin Times*. The explosion was deemed "mysterious" and it plunged The Dalles into darkness. Coberth (named as Thomas Coberth in the reports) was in the building at the time of the explosion and was unsure what happened. One theory was that there was a short circuit between The Dalles and Hood River, putting the system's entire load on the White River plant,

[41] United Press, "Industry Sold at the Dalles," *Capital Journal*, August 24, 1944: 16.
[42] "New Construction Sets Precedent," *Mosier Bulletin,* March 30, 1917: 1.
[43] "Power Co. Improvements," *The Maupin Times*, October 12, 1922: 1.

which was already down a turbine. The explosion blew the roofing off the plant and flooded the building, causing thousands of dollars of damage.[44]

Between 1910 and 1939, Pacific Power & Light was the only provider of power to The Dalles and Dufur. An effort by Wasco County granges to establish a People's Utility District was rejected by voters in 1938, but a group of business owners, The Dalles Public Power & Industrial Club, led another effort.

This second attempt was approved by voters in August 1939, establishing the Northern Wasco County People's Utility District (PUD), which could benefit from the low-cost electricity generated by the federally funded dams. As a private power firm with their own power plant, Pacific Power & Light fought the PUD as it tried to gain necessary permits to operate in The Dalles and Wasco County. After a legal challenge that rose all the way up to the Oregon Supreme Court, the PUD was finally granted a non-exclusive franchise permit and began serving customers in 1949. The non-exclusive franchise of the PUD put it firmly in competition with Pacific Power & Light.[45] Pacific Power & Light responded by artificially lowering their rates to match the low-cost power provided to the PUD by the Bonneville Power Administration (BPA), created by a 1937 act of Congress to bring electricity generated by the Bonneville dam's power plants to market. However, according to the Northern Wasco County PUD's website, "It ultimately proved difficult to maintain the electric system. The Oregon Public Utility Commission also ordered the company [Pacific Power & Light] to set rates higher to cover its actual costs."[46] Another cooperative, Wasco Electric Cooperative, was founded by ranchers and farmers in the Dufur area in 1940. The Wasco Electric Cooperative received a loan from the Federal Rural Electrification Administration (REA) in August 1940 to run power lines to over 300 members. Construction began in March 1941 and co-op members received power by the end of May 1941, making Wasco Electric Cooperative the first utility to purchase power from Bonneville Power Administration in Wasco County.[47]

Pacific Power & Light continued to run the power plant at White River Falls until 1962, when operation of the plant was discontinued. Review of the waterwheels in fall 1962 determined they were completely worn out. The high glacial sediment in the White River had been an ongoing issue and source of wear on equipment. After ceasing operation, Pacific Power & Light Company's engineers undertook multiple studies to determine if the property should be renovated or abandoned. Due to costs to upgrade, operate, and maintain the plant, it was concluded the project was no longer a feasible power resource in early 1968 and permanently shuttered.[48] The operation of the Wasco Warehouse & Milling Company Hydroelectric Project by Pacific Power & Light for over 50 years reflects Pacific Power & Light's early dominance in power generation and distribution in Wasco County (and the Pacific Northwest). The company's purchase of the property represents Pacific Power & Light's pattern of acquiring additional plants to expand their influence in the industry, and the subsequent surplus of the property reflects the plant's aging infrastructure and technology in a dynamic industry.

Pacific Power & Light deeded the White River Falls powerplant and surrounding site, a 260-acre track, to the State Highway Department in 1969 for use as a future state park.[49] Pacific Power & Light eventually sold the remainder of its Wasco County power facilities (except those in the City of Mosier) to Northern Wasco PUD in 1976. However, Pacific Power & Light continues to exist; it was reorganized as PacifiCorp in 1984 with Pacific

[44] "Mysterious Blast at White River Electric Plant," *The Maupin Times*, November 25, 1926: 1. A September 2022 examination of the plant did not reveal evidence of any damage to the metal trusses.
[45] Northern Wasco County PUD, "History," *Northern Wasco County People's Utility District*, https://www.nwascopud.org/about/history/ (accessed September 21, 2022).
[46] Northern Wasco County PUD, "History," *Northern Wasco County People's Utility District*, https://www.nwascopud.org/about/history/ (accessed September 21, 2022).
[47] Wasco Electric Cooperative, "About Wasco Electric," *Wasco Electric Cooperative*, https://www.wascoelectric.com/about/ (accessed September 29, 2022).
[48] Letter from R. A. Mitchell to Ralph Dalleske. April 12, 1979. Pacific Power & Light Records, Oregon Parks and Recreation Department Archives; A. E. Alspaugh to Bruce Pearson, November 25, 1969, Pacific Power & Light Records, Oregon Parks and Recreation Department Archives.
[49] Judson Randall, "State Acquires 260-Acre Track in Central Oregon for Park Use," *Portland Oregonian*, August 17, 1969. Clipping in Oregon Parks and Recreation Department Archives.

Power as a subsidiary. Pacific Power is headquartered in Portland, Oregon, and provides power to communities in Oregon, Washington, and California.

The former Wasco Warehouse & Milling Company Hydroelectric Project site is no longer in operation, as a hydroelectric plant but has been an Oregon State Park since 1969. The state received an additional 40 acres from the Bureau of Land Management (BLM), east of the primary day-use area of the park and north of the river canyon,[50] to increase the park size in 1970, followed by additional land exchanged with a private property owner in 1978.[51] was White River Falls State Park is a day-use park with added restroom facilities and picnic tables; trails are maintained to the falls. Three of the four houses at the site were still occupied in 1969 when Oregon State Parks took over ownership. The houses were vacated and purchased by Norman R. Adams in 1970 on the condition that he remove them and clean up the site. Adams had not yet completed the removal and cleanup by September 1971; it is unclear if Adams completed the removal, but the residences were eventually removed. Construction on trails to improve visitor access began in 1971 and the wood walkway was dismantled due to safety concerns.[52] The restroom facilities (comfort station) occurred in the late 1980s to 1990s and studies for trail development began by 1971.

Comparative Analysis
As hydroelectric power dominates the power generation industry within the Pacific Northwest, there are numerous hydroelectric power plants that exist within Oregon. At least three date from the same era as the Wasco Warehouse & Milling Company Hydroelectric Project:

- Rock Creek Hydroelectric Plant (1904), Haines vicinity, Baker County
- Clackamas River Hydroelectric Project (1902), Estacada vicinity, Clackamas County
- Gold Ray Dam Hydroelectric Project (ca. 1904), Central Point, Jackson County

The Rock Creek Hydroelectric Plant was constructed in 1904 in northeastern Oregon to provide power to mining industries and was the first hydroelectric project to provide power to Baker City, the county seat of Baker County. Like the Wasco Warehouse & Milling Company Hydroelectric Project, the Rock Creek Hydroelectric Plant is a good example of an early 20th century, small-scale, high head hydroelectric project. Both projects used locally sourced materials, including native stone. Both projects were also quickly purchased by power companies and folded into those companies' expanding power grids. The Rock Creek Hydroelectric Plant remained in use over four decades longer than the Wasco Warehouse & Milling Company Hydroelectric Project, shuttered in 1995 compared to 1962. While both projects' powerhouses have stone construction, they are notably different. The Rock Creek powerhouse originally had a hipped roof with a later wood-frame addition; the Wasco Warehouse & Milling Company's powerhouse has a gable roof and its later addition was constructed of stone with a more refined design than the original powerhouse. The Rock Creek Hydroelectric Plant retains the residences which housed the operators of the plant, while the residences at the Wasco Warehouse & Milling Company Hydroelectric Project have been removed. But the Wasco Warehouse & Milling Company Hydroelectric Project retains its diversion dam while the Rock Creek plant's diversion dam has been removed. Both are good examples of their type with high integrity and represent significant development in their respective counties.[53]

The Clackamas River Hydroelectric Project was developed between 1902 and 1958 by Portland General Electric and its predecessors, with the oldest structure built in 1907 (the Faraday Powerhouse). The Faraday

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[50] "Tygh Valley State Wayside: Proposed Development and Management Plan," (undated), Oregon Parks and Recreation Department Archives.
[51] Oregon Parks and Recreation Department, "White River Falls State Park," *Oregon State Parks*, https://stateparks.oregon.gov/index.cfm?do=park.profile&parkId=28 (accessed September 21, 2022).
[52] Letter from Robert True, Recreation Technician, to Larry Jacobson, Parks Planning Supervisor, October 15, 1971. Oregon State Highway Department in Oregon Parks and Recreation Department Archives.
[53] Marcia B. Montgomery, Entrix, Inc., and John Stamets, "Rock Creek Hydroelectric Project, Rock Creek, Baker County, OR," Historic American Engineering Record (2002), https://loc.gov/pictures/item/or0496/ (accessed November 22, 2022).

Powerhouse (originally called Cazadero) was started in 1902 by the Oregon Water Power & Railway company and completed in 1907 when the Oregon Water Power & Railway Company was consolidated with other interests to form the Portland Railway Light and Power Company. As the Faraday Powerhouse was originally built by a power company, it differs from the Wasco Warehouse & Milling Company Hydroelectric Project, which was built by a milling company that then provided additional power to communities along the transmission line. Furthermore, the Faraday Powerhouse was incorporated into a much larger hydropower system—the Clackamas River Hydroelectric Project. Both powerhouses are of masonry construction, but the Faraday Powerhouse is constructed of red brick rather than native stone. The Faraday Powerhouse and associated complex was not built alongside a waterfall but was constructed alongside the Clackamas River with water diverted and held at Faraday Lake. Both are good examples of early hydroelectric projects in Oregon but represent the differences in small- and large-scale power generation projects.[54]

The Gold Ray Dam Hydroelectric Project was developed between 1903 and 1904 by the Condor Water and Power Company, beginning with construction of the Gold Ray Dam followed by a powerhouse. It was the first large-scale hydroelectric project in southern Oregon, redirecting the Rogue River for power via a dam. The Condor Water and Power Company originally constructed it to power its mining operation, but as nearby Medford's municipal steam plant began failing, the company realized they could make more money selling electricity. One the power plant was up and running, the company sold electricity to Medford as well as Grants Pass, Gold Hill, Jacksonville, Central Point, and Ashland. Like the Wasco Warehouse & Milling Company Hydroelectric Project, it was purchased by a larger power company (California-Oregon Power Company, later Pacificorp) and incorporated into that grid. The original timber dam was replaced with a concrete one in 1941. Both the Gold Ray Dam Hydroelectric Project and Wasco Warehouse & Milling Company Hydroelectric Project reflect early 20th century hydroelectric projects in Oregon that were incorporated into larger systems. The powerhouses of the two projects differ slightly in design, but still reflect their period of construction—Gold Ray Powerhouse was constructed of concrete with a hipped roof rather than native stone and a gabled roof.[55]

Evaluation
The Wasco Warehouse & Milling Company Hydroelectric Project historic district is locally significant in the areas of Industry and Engineering under Criteria A and C.

The Wasco Warehouse & Milling Company Hydroelectric Project historic district is significant in the area of Industry under Criterion A for its association with broad patterns of history, for the role it played in hydroelectric power generation and transmission in Wasco County and its representation of hydroelectric power technology and construction techniques during the early 20th century. It also represents early 20th century efforts by private companies to generate their own electricity for production before many power companies existed. The powerhouse, with its 1901 original construction date and ca. 1913 addition, provides a striking contrast between the more rugged design commissioned by the Wasco Warehouse & Milling Company and the neoclassical elements of the addition. The retained elements of the power-generating plant system, including the turbines, generators, exciters, gates, and surge tanks convey the technology involved in early electricity generation. The expansion of the water containment system to provide increased head, capacity, and better sediment management along with adjustments in the water supply system to improve system performance convey the expanding use of electricity within the county. This expansion of electricity was possible as companies like Pacific Power & Light acquired additional facilities to increase electricity production and, thus, widen their market. The Wasco Warehouse & Milling Company Hydroelectric Project historic district is also significant for the role it played in the electrification of nearby communities, notably The Dalles and Dufur, and its early use by Pacific Power & Light Company in the expansion of their power network. The Wasco Warehouse & Milling Company Hydroelectric Project historic district is significant in the area of Engineering under Criterion C as it represents a significant and distinguishable entity whose components may lack

[54] George Kramer, "Faraday Dam and Powerhouse;" George Kramer, "Clackamas River Hydroelectric Project: Request for Determination of Eligibility" (June 2003), prepared for Portland General Electric.
[55] "Gold Ray Dam and Hydroelectric Project," *Oregon SHPO Clearance Form* (2009), No. 09-2603, https://heritagedata.prd.state.or.us/historic/ (accessed November 22, 2022).

individual distinction but collectively convey the hydroelectric power generation systems and embody the distinctive characteristics of a high head hydroelectric power plant system. The materials and methods of construction of the project's components reflect the initial construction and subsequent expansion, the availability of local stone, and the constraints of steep terrain characteristic of the site. Its construction was a significant engineering effort in a still-remote area of Oregon, relying on man- and horsepower. Furthermore, the hydroelectric project is significant as it retains integrity including the complete system, from the power generation machinery and the original buildings housing that machinery to the diversion dam and holding basin. The retention of these components allows the system to fully convey its historic use and significance.

The Wasco Warehouse & Milling Company Hydroelectric Project historic district is significant as a largely intact example of an early hydroelectric plant in rural Oregon. It is one of the oldest hydroelectric plants in the greater Wasco County area and represents a period in hydroelectric generation before consolidation of independent power plants and companies under larger power companies and the mass expansion of electricity to rural areas.

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Previous documentation on file (NPS):

____preliminary determination of individual listing (36 CFR 67 has been requested)
____previously listed in the National Register
____previously determined eligible by the National Register
____designated a National Historic Landmark
____recorded by Historic American Buildings Survey #____________
____recorded by Historic American Engineering Record # __________
____recorded by Historic American Landscape Survey # ___________

Primary location of additional data:

____State Historic Preservation Office
_X_ Other State agency
____Federal agency
____Local government
____University
____Other
Name of repository: ____

Historic Resources Survey Number (if assigned): N/A

10. Geographical Data

Acreage of Property 8.8

(Do not include previously listed resource acreage; enter "Less than one" if the acreage is .99 or less)

Latitude/Longitude Coordinates

Datum if other than WGS84: N/A

(enter coordinates to 6 decimal places)

	Latitude	Longitude
1	45.2427629°	-121.0962879°
2		
3		
4		

Verbal Boundary Description (Describe the boundaries of the property.)

The district boundary is in the NW corner of Township 4 South, Range 14 East in Sections 6 (SE corner), 7 (NE corner), and 8 (NW corner) in Wasco County, Oregon within the White River State Park. The boundary starts at latitude/longitude coordinate No. 1 (45.2441907°, -121.0960331°) at a corner of the State Parks property and fence line. The boundary continues east along the property line to coordinate (45.24418539°, -121.09551875°), then southeast along the east side of the reservoir to coordinate (45.24360357°, -121.09542086°), then south to the northeast corner of the reservoir dam (45.24314087°, -121.09539394°), then southeast to the northeast corner (45.24223585°, -121.09401033°) of the tramway winch concrete base, then south along the east side of the base to the southeast corner (No. 2 , 45.2422230°, -121.0940002°), then southwest to the northeast corner of the transformer house foundation (45.24195478°, -121.09510880°), continuing south along the east side of the foundation to the southeast corner (45.24188940°, -121.09515767°), then southwest to the southeast tailrace corner (-121.09519691°, 45.24184963°), then southwest to the southeast tailrace corner (45.24184042°, -121.09521713°), then southwest to the State Parks property line (No. 3, 45.2417713°, -121.0955181°). Continue northwest and then west along the State Parks property line to a point (45.24235876°, -121.09816964°) before continuing northwest to the outer southwest corner (45.24248190°, -121.09869503°) of the diversion dam, then continuing north along the outer west edge of the diversion dam passing through No. 4 (45.2426499°, -121.0986895°) and along the west edge of the intake dam to the northwest corner (45.24306860°, -121.09827670°) of the intake dam, then to the northeast to the fence corner (45.24316690°, -121.09825885°) and continuing east along the chain link fence to point (45.24308211°, -121.09685065°), then continuing east to the northwest corner of the reservoir dam (45.24319011°, -121.09601854°), continuing northeast to the northwest corner (45.24353358°, -121.09581819°) of the pump foundation at the former pumphouse, and then continuing northwest to the start at coordinate No. 1.

Boundary Justification (Explain why the boundaries were selected.)

The district boundary encompasses the significant concentration of structures and building that have historically been developed and operated as part of the Wasco Warehouse & Milling Company Hydroelectric Project and that maintain historic integrity. The boundary also includes the canyon landscape that provides the setting and high-head hydroelectric power generation capacity.

The boundary does not include the substation built in 2021 by the Bonneville Power Administration, replacing the former 1948 substation that was an addition to the original transmission network, or the former residential (housing) area associated with the hydroelectric plant operation and since converted for state park use as no original or historic features remain.

11. Form Prepared By

name/title Katie Pratt, Spencer Howard, co-founders date 11/22/2022
organization Northwest Vernacular, Inc. telephone 360.813.0772
street & number 3377 Bethel Rd SE Ste 107 #318 email katie@nwvhp.com
city or town Port Orchard state WA zip code 98366

Additional Documentation

Submit the following items with the completed form:

- **Regional Location Map**
- **Local Location Map**
- **Tax Lot Map**
- **Site Plan**
- **Floor Plans (As Applicable)**
- **Photo Location Map** (Include for historic districts and properties having large acreage or numerous resources. Key all photographs to this map and insert immediately after the photo log and before the list of figures).

Photographs:

Submit clear and descriptive photographs. The size of each image must be 3000x2000 pixels, at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map. Each photograph must be numbered and that number must correspond to the photograph number on the photo log. For simplicity, the name of the photographer, photo date, etc. may be listed once on the photograph log and doesn't need to be labeled on every photograph.

Photo Log

Name of Property: Wasco Warehouse & Milling Company Hydroelectric Project Historic District

City or Vicinity: Maupin vicinity

County: Wasco **State:** OR

Photographer: Spencer Howard, Northwest Vernacular, Inc.

Date Photographed: August 23-24, 2022

Description of Photograph(s) and number, include description of view indicating direction of camera:

Photo 1 of 64. OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic Dis- trict_0001. Falls, looking west. 71

Photo 2 of 64. OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic Dis- trict_0002. Canyon looking east. 71

Photo 3 of 64. OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic Dis- trict_0003. Canyon looking west. 72

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Wasco Warehouse & Milling Company Hydroelectric Project Historic District
Name of Property

Wasco Co., OR
County and State

Photo Location Map A

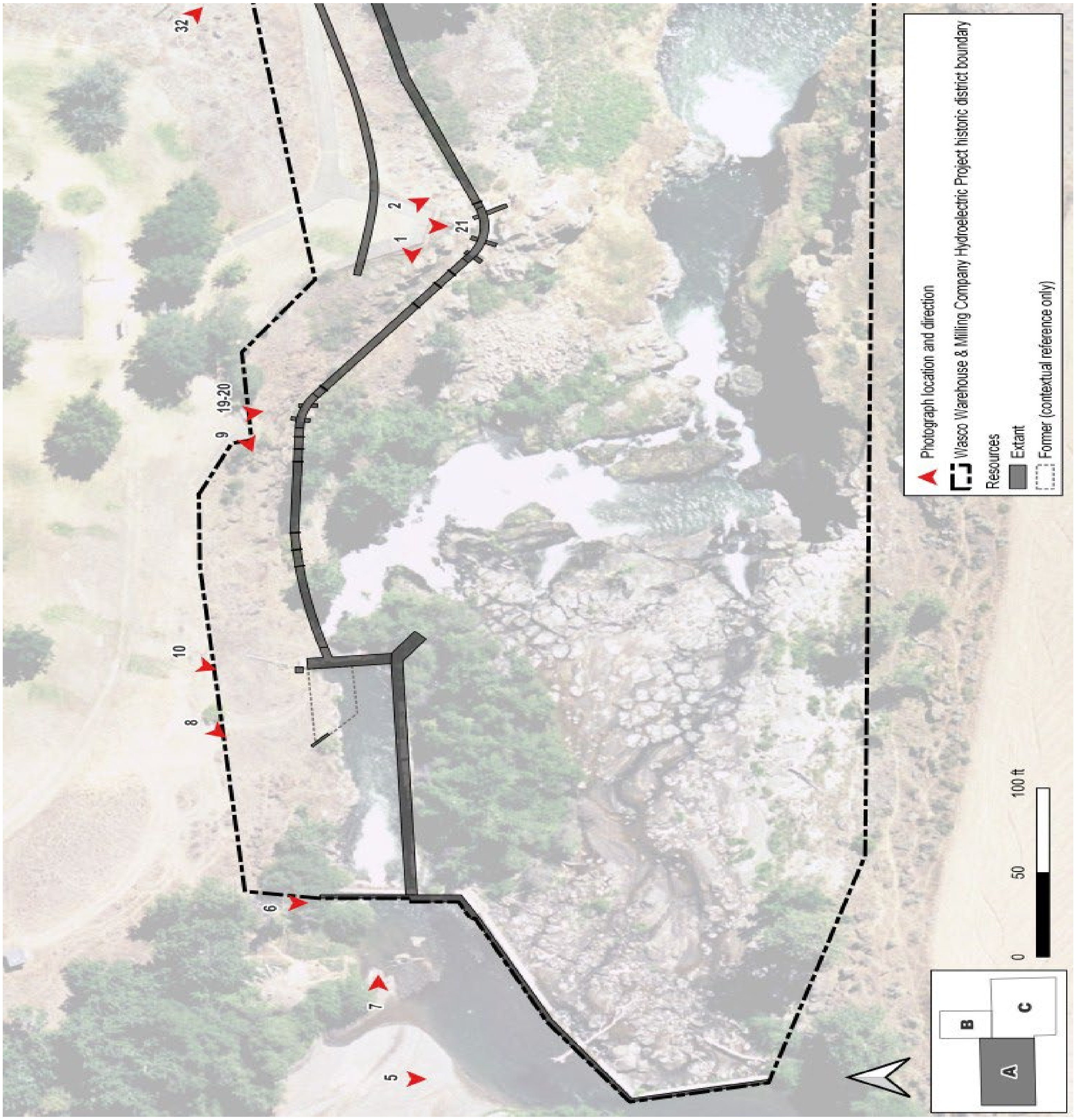


Photo Location Map B

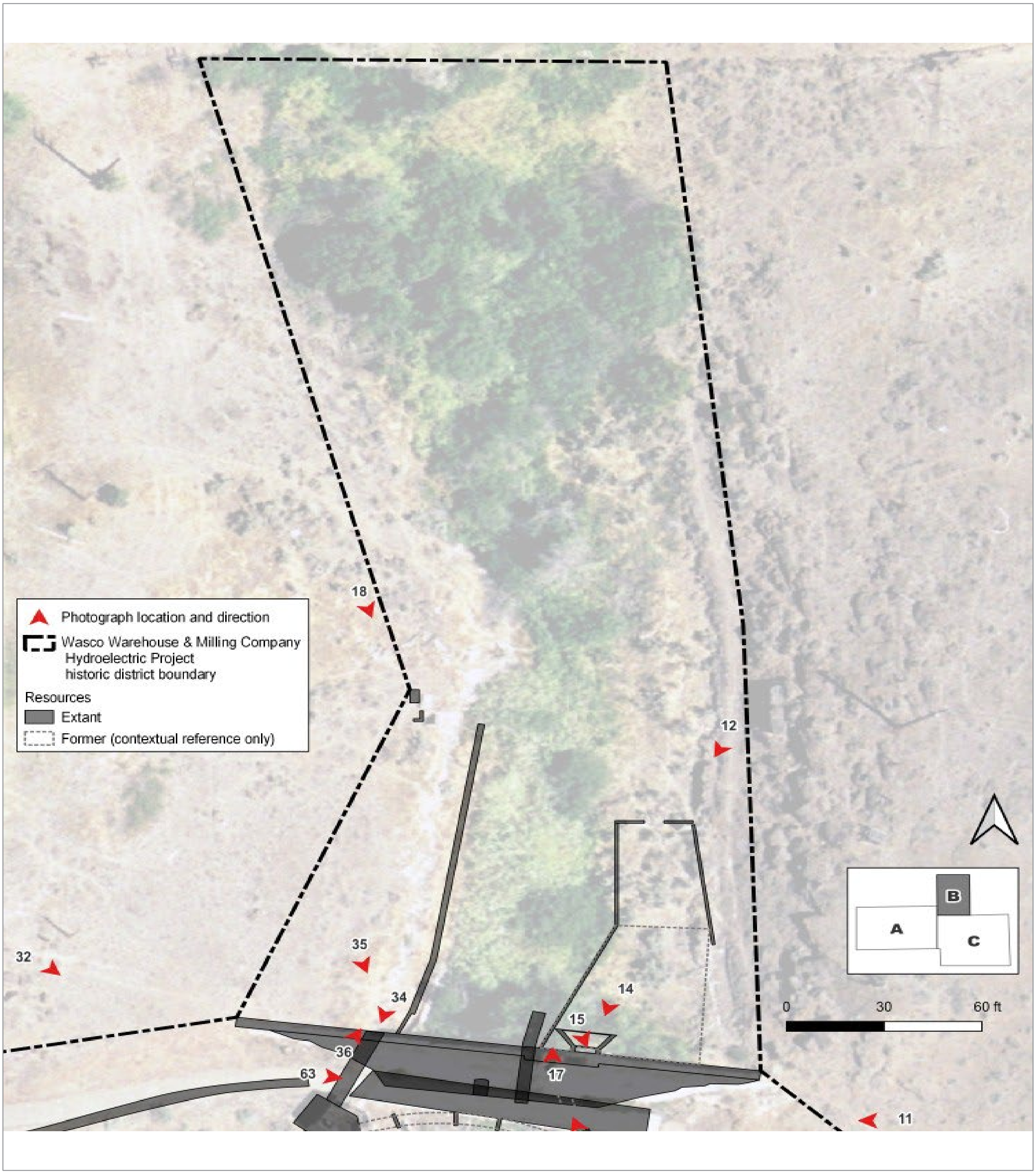
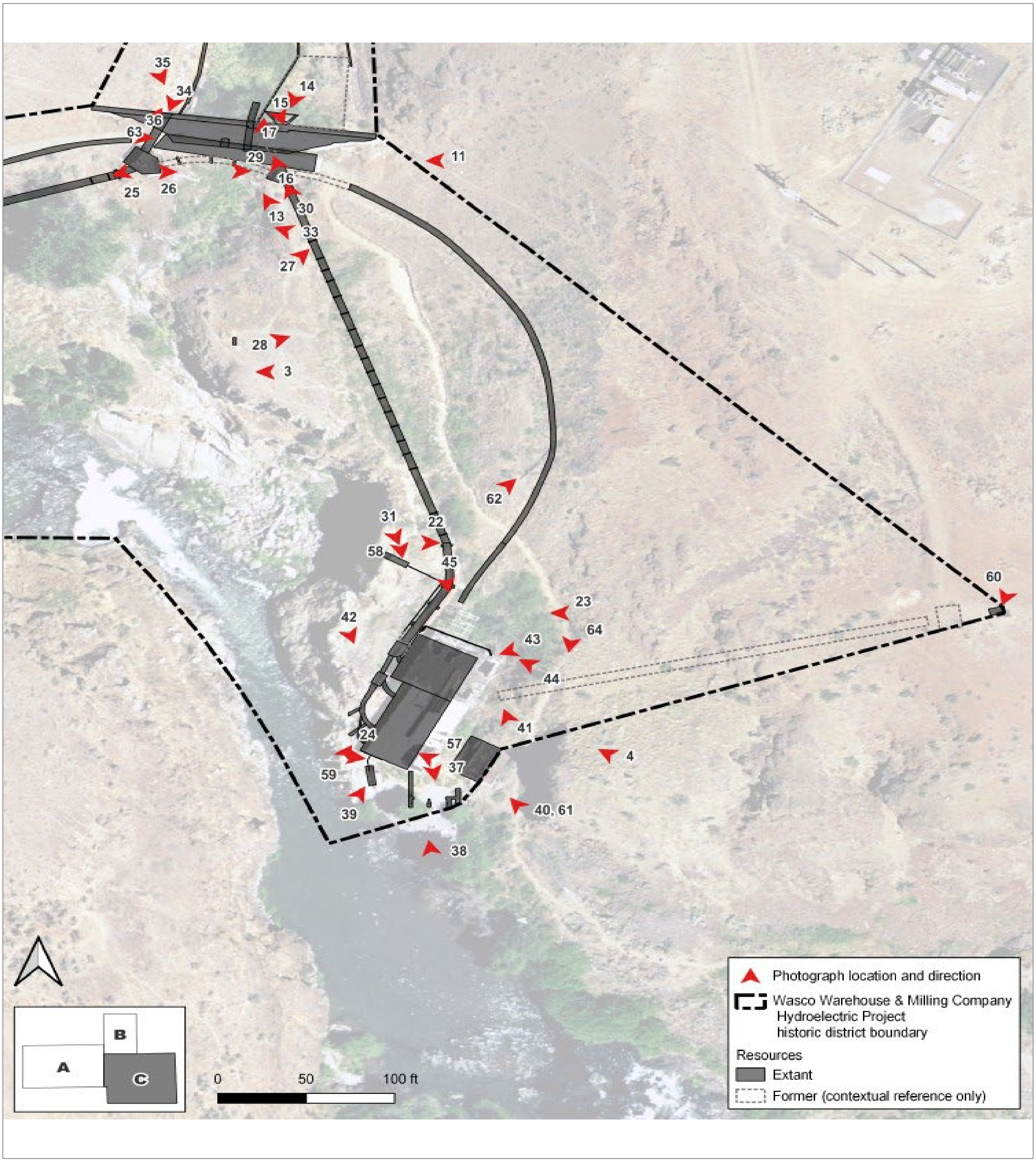


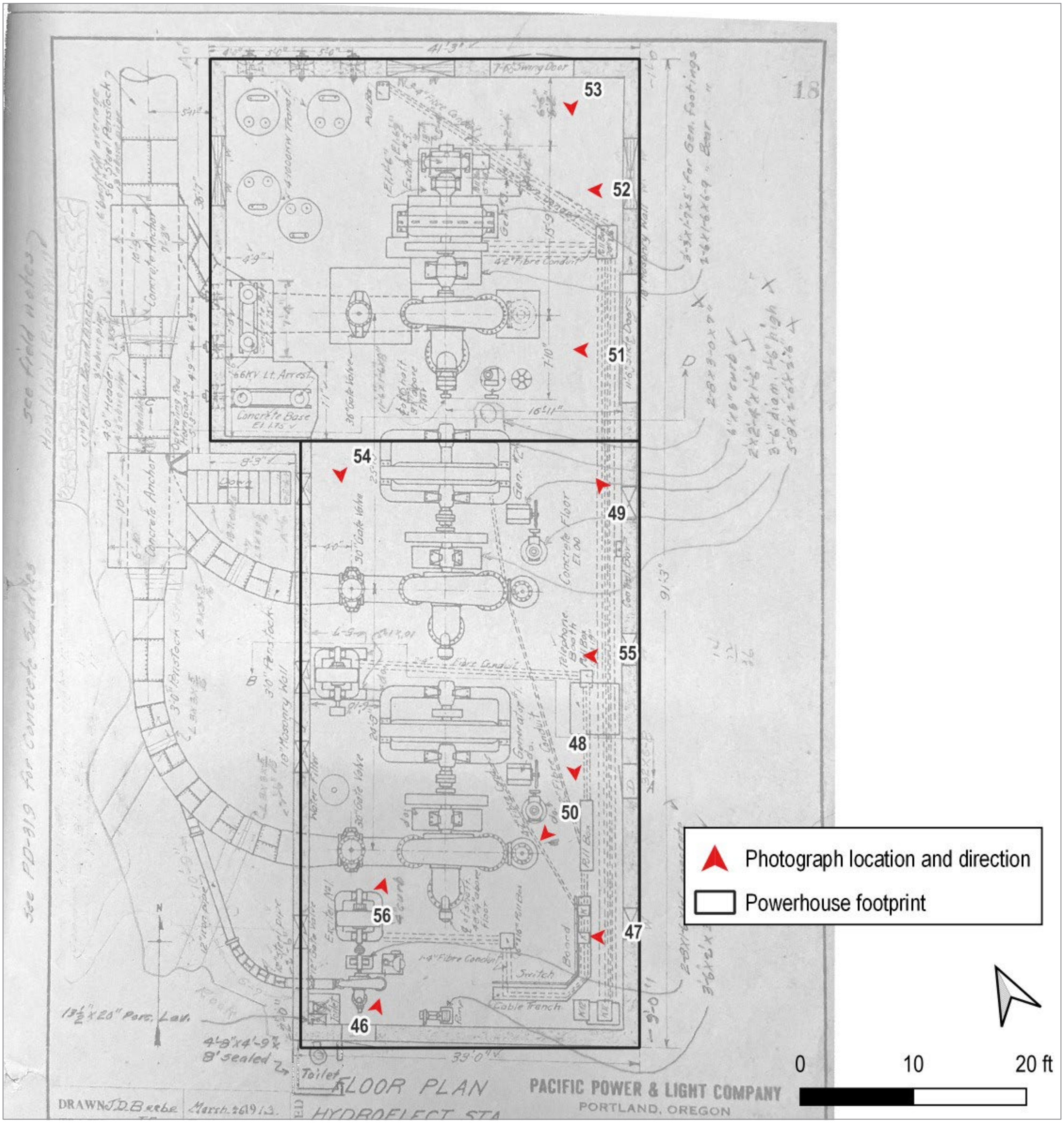
Photo Location Map C



Wasco Warehouse & Milling Company Hydroelectric Project Historic District
Name of Property

Wasco Co., OR
County and State

Photo Location Map Powerhouse Interior



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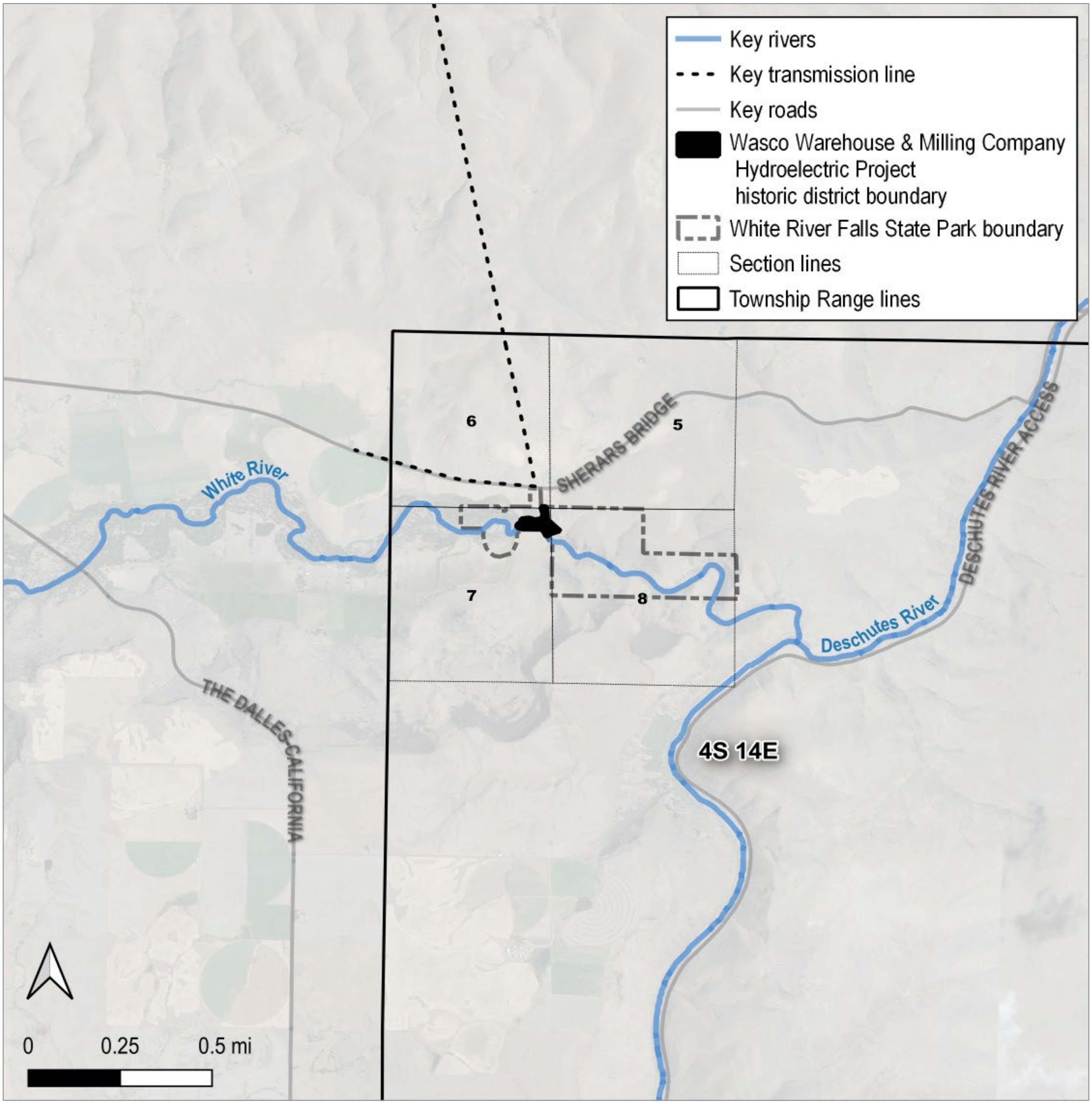

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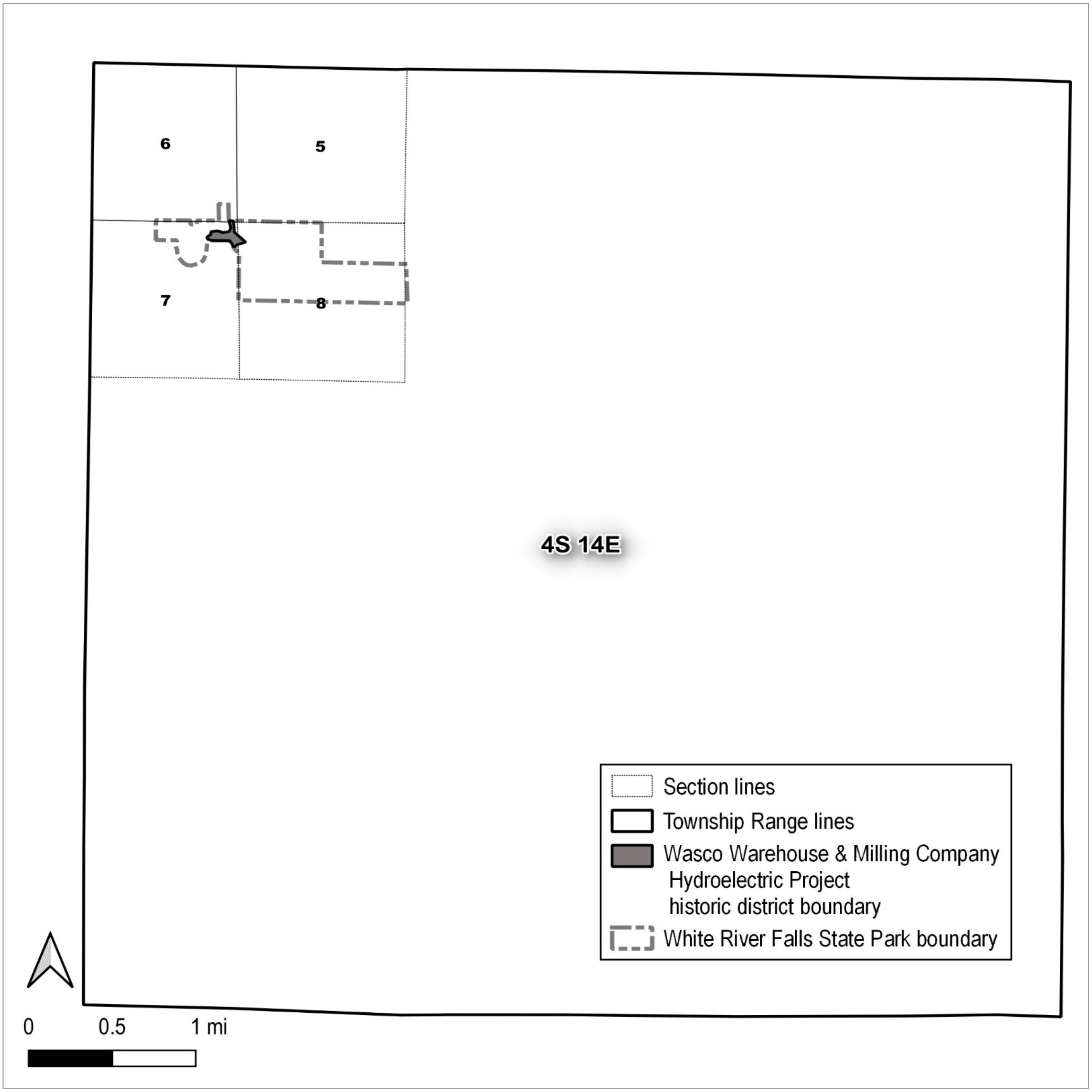

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Fig 4 Site Plan

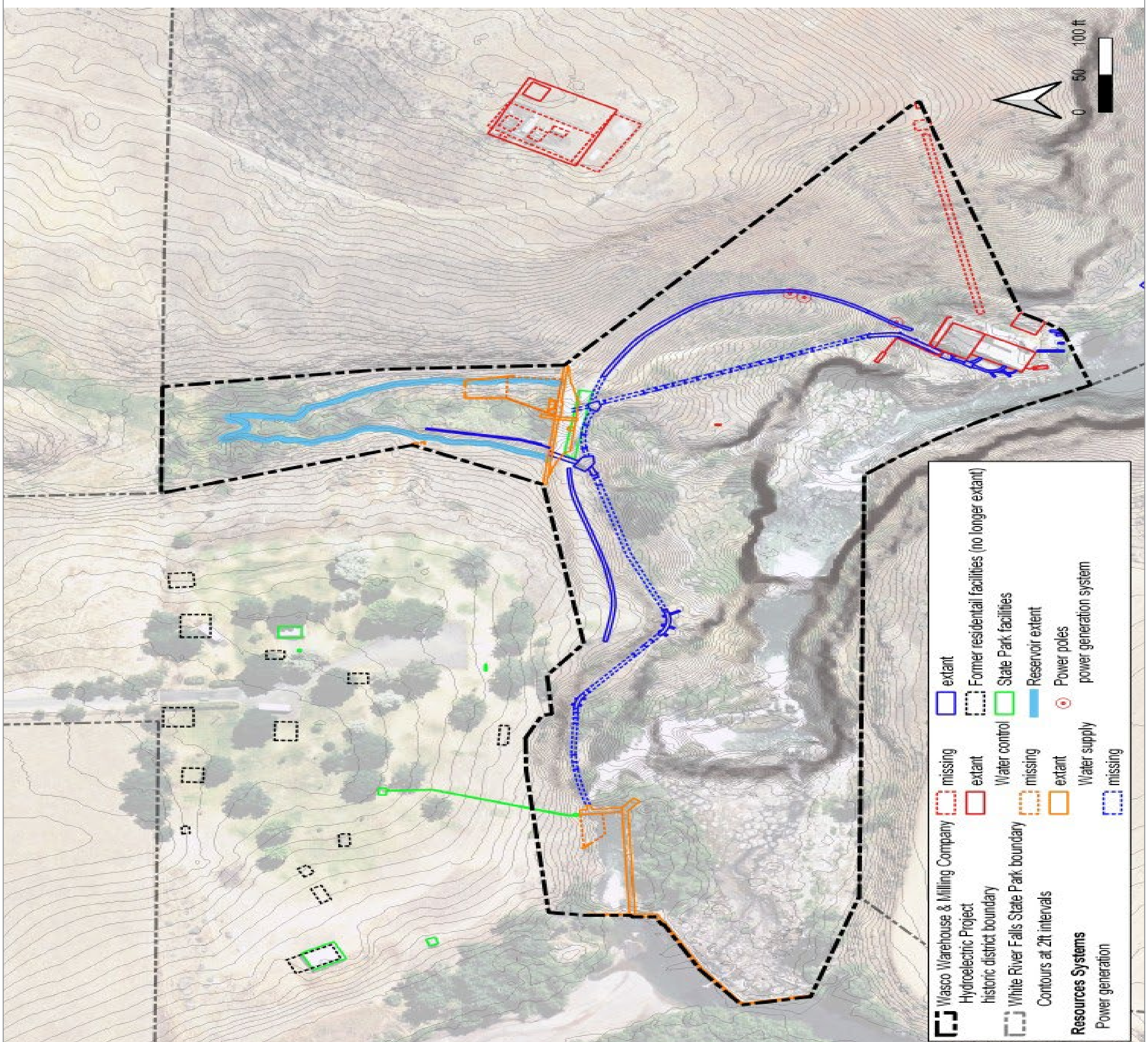
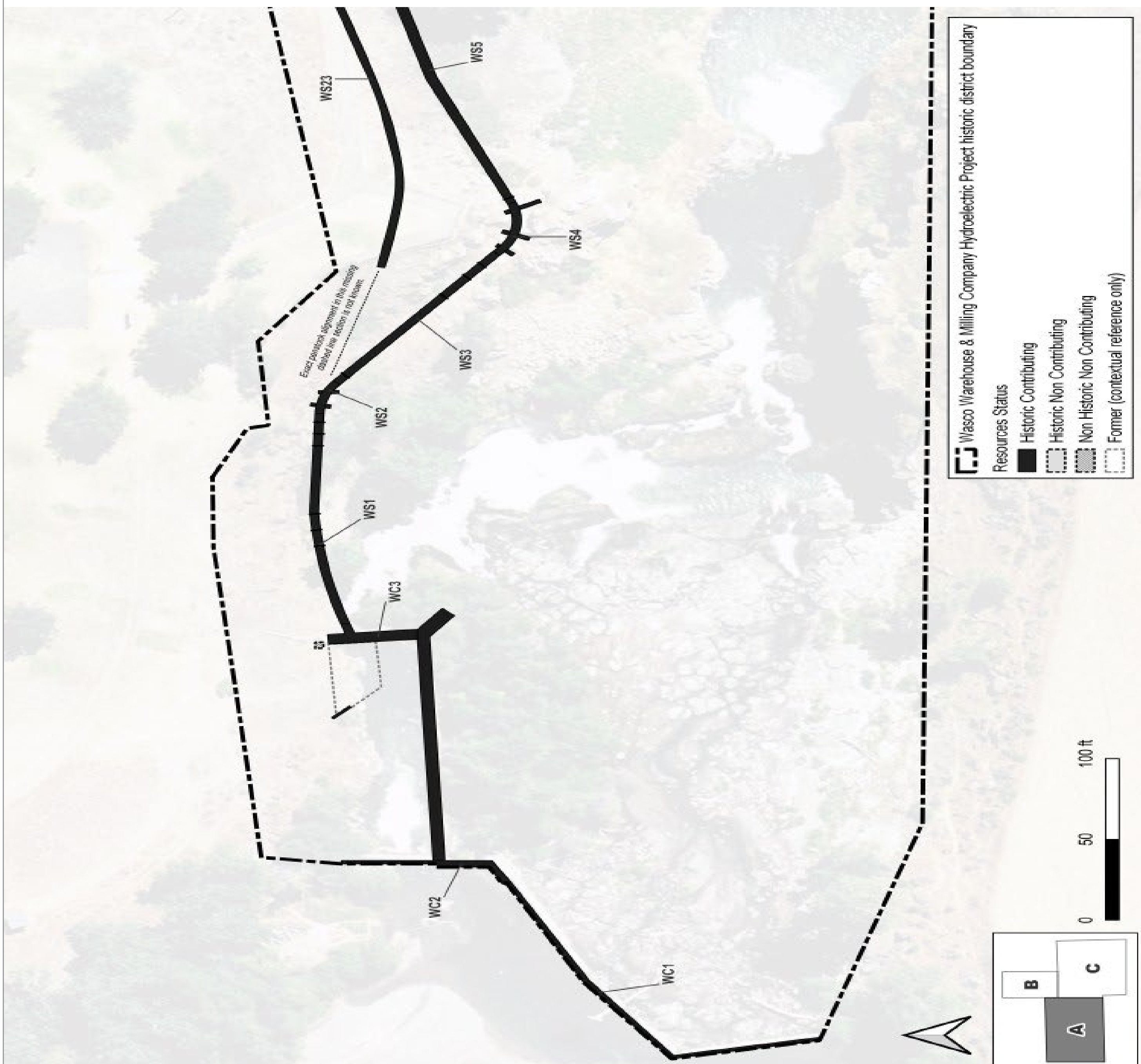


Fig. 5. Resource Status Map (A).



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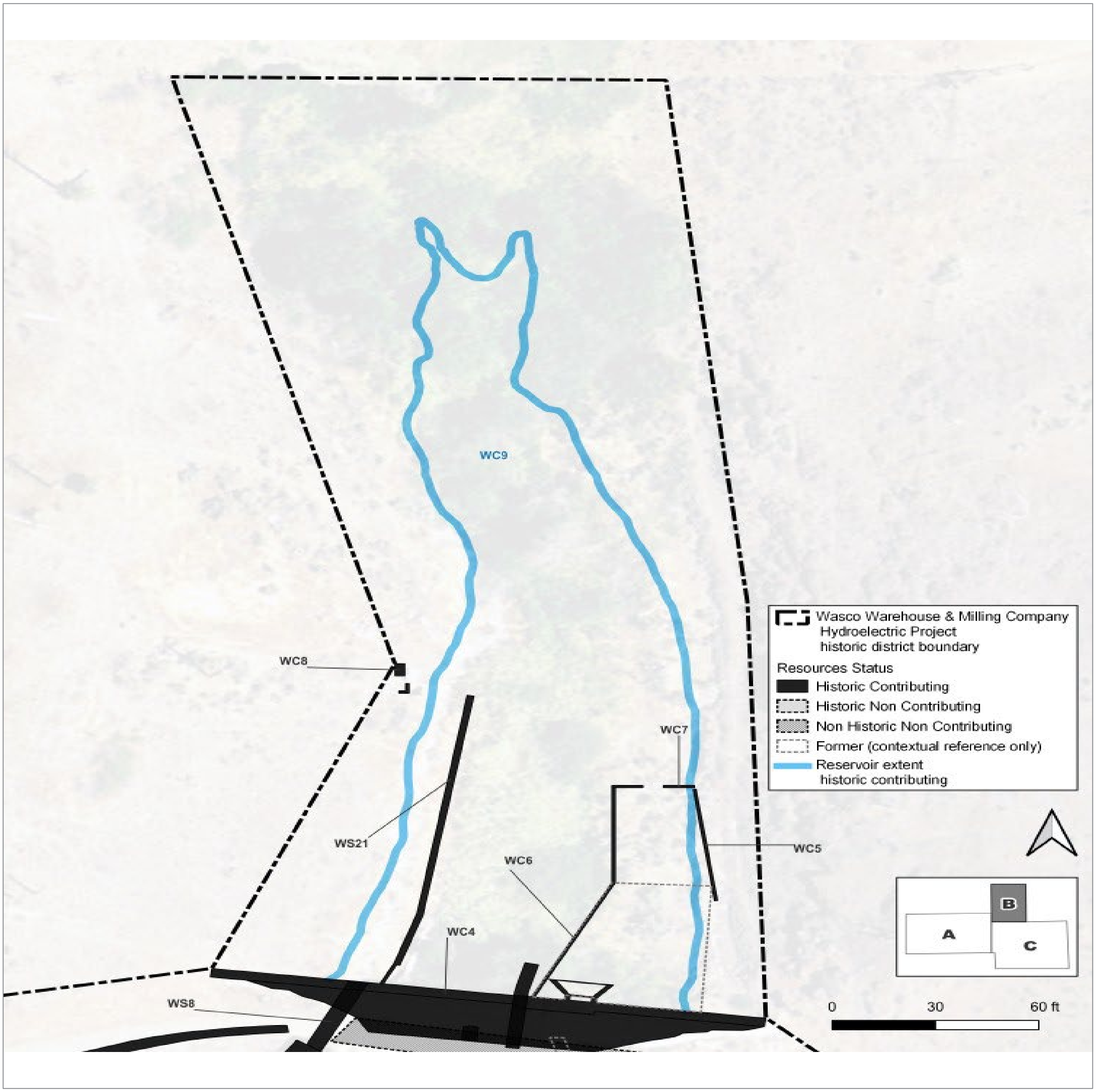

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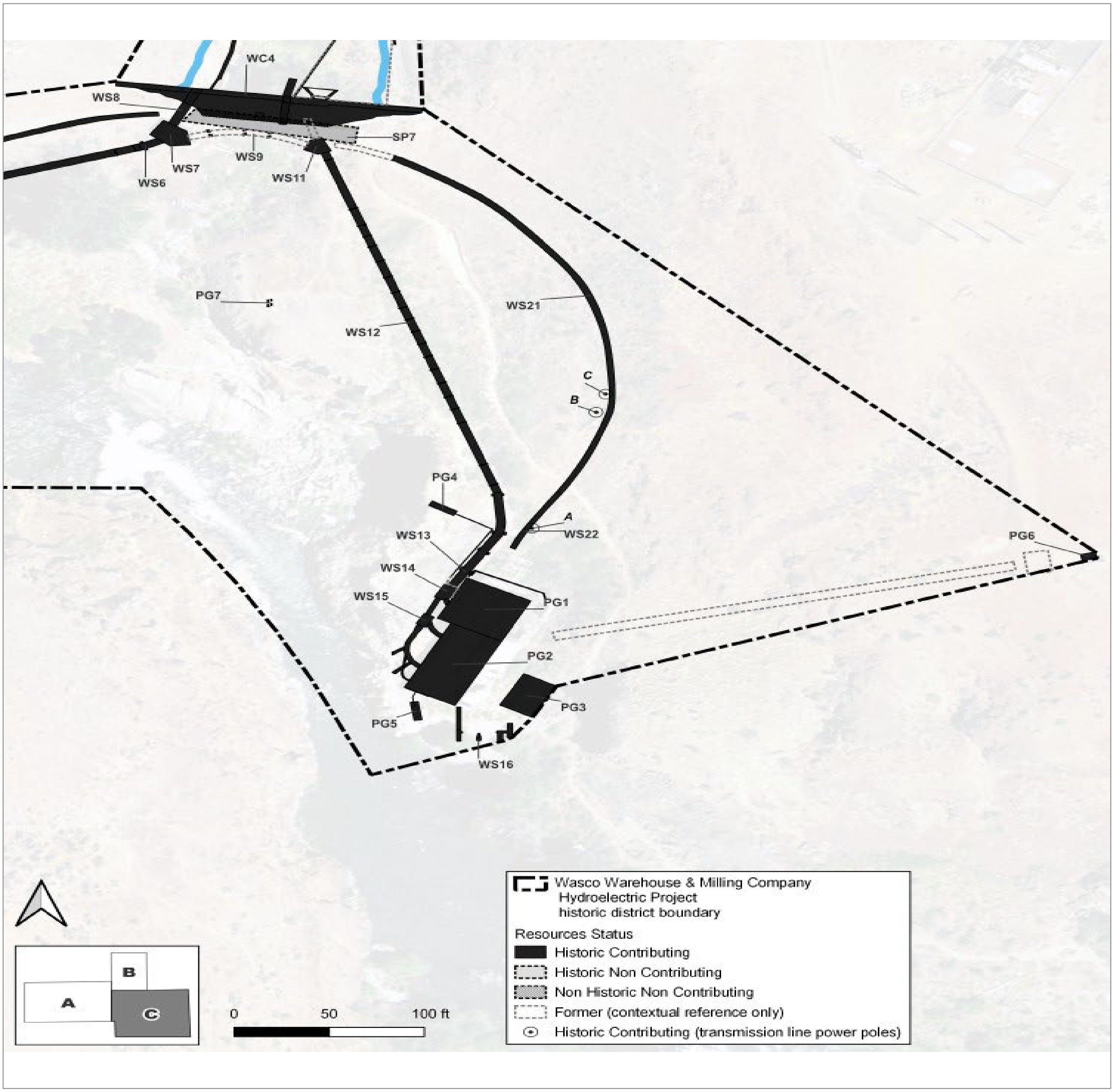

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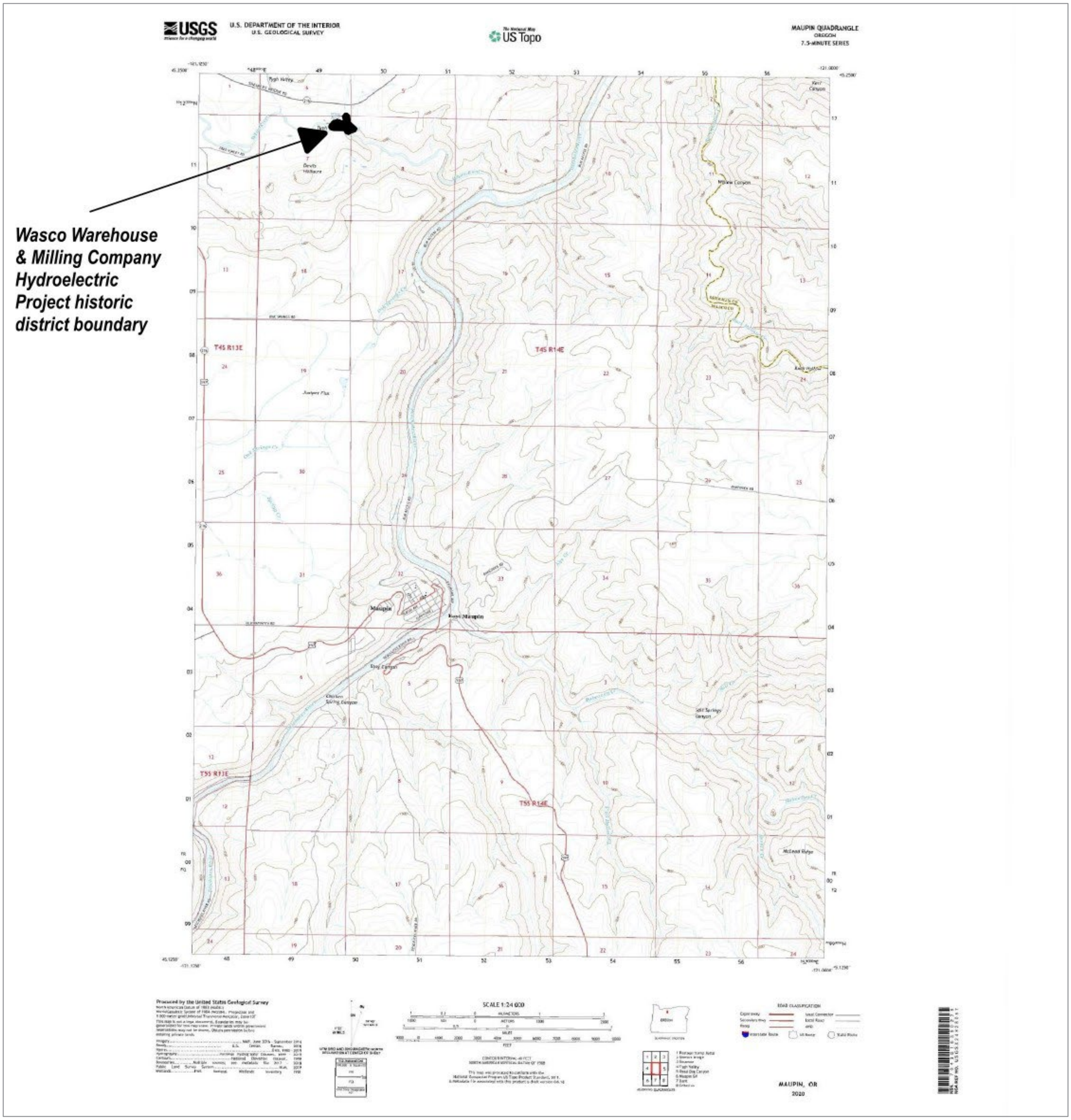

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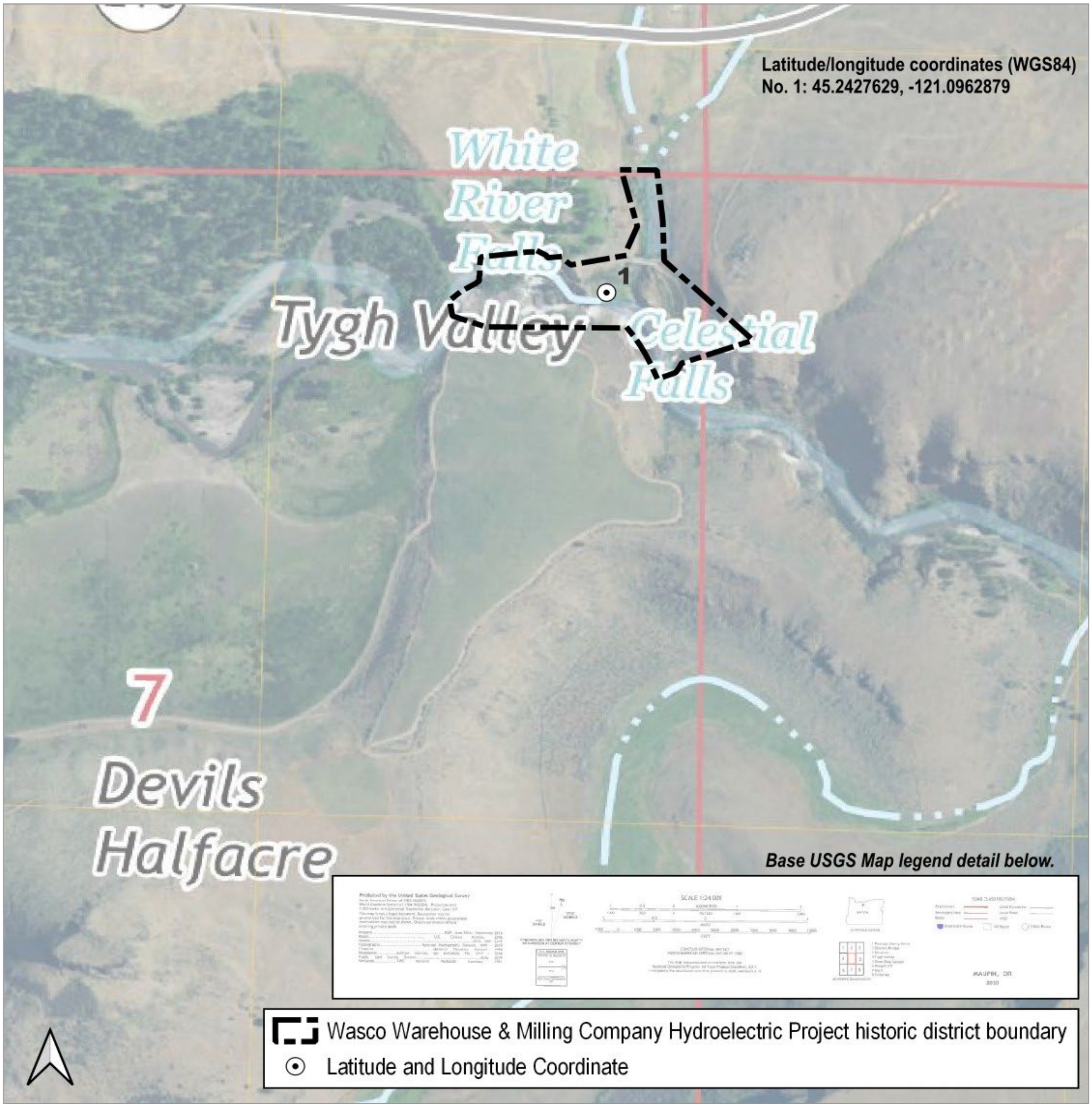

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Fig. 10. 1913 Powerhouse Floor Plan

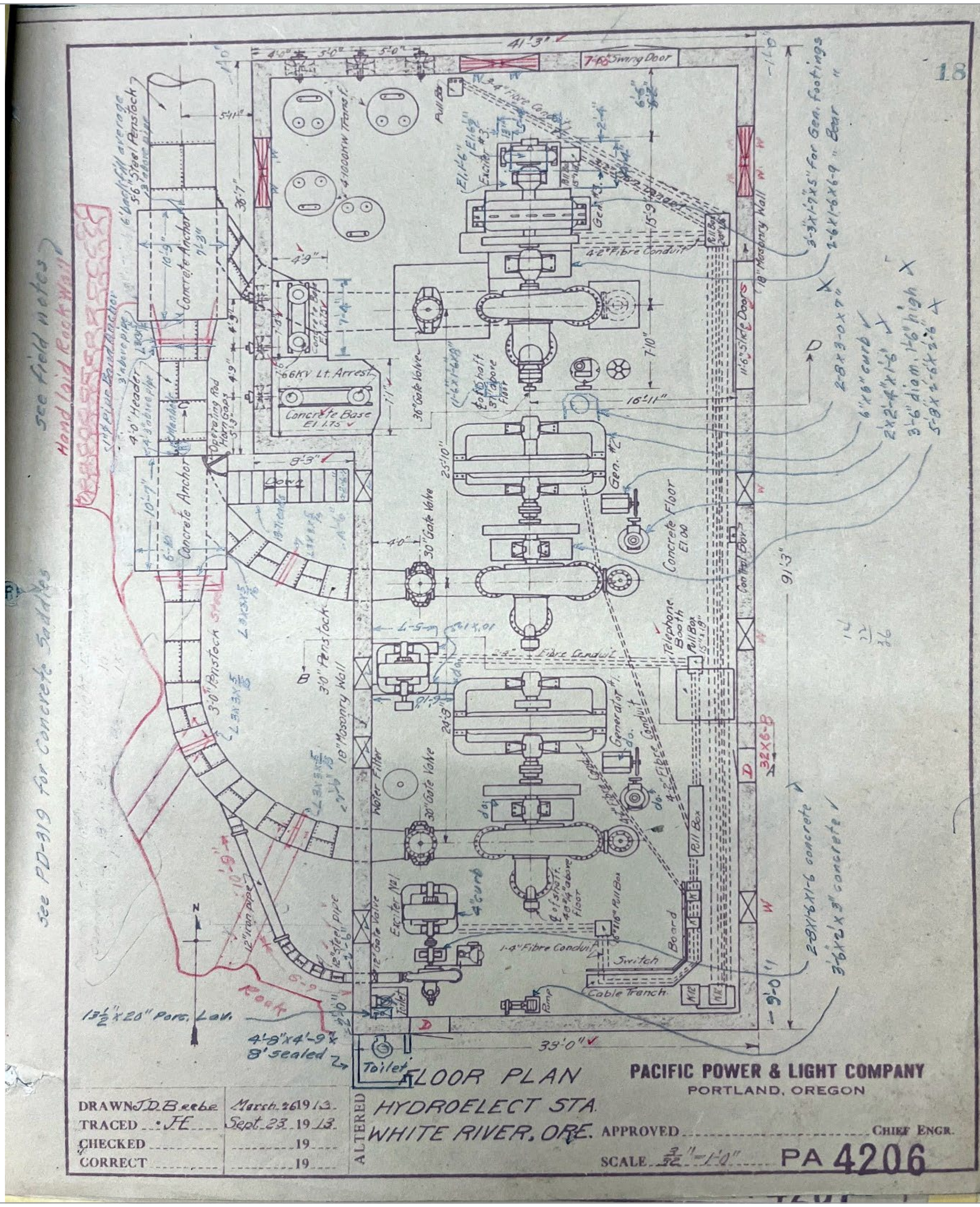

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Fig. 11. 1913 Powerhouse Transverse Section.

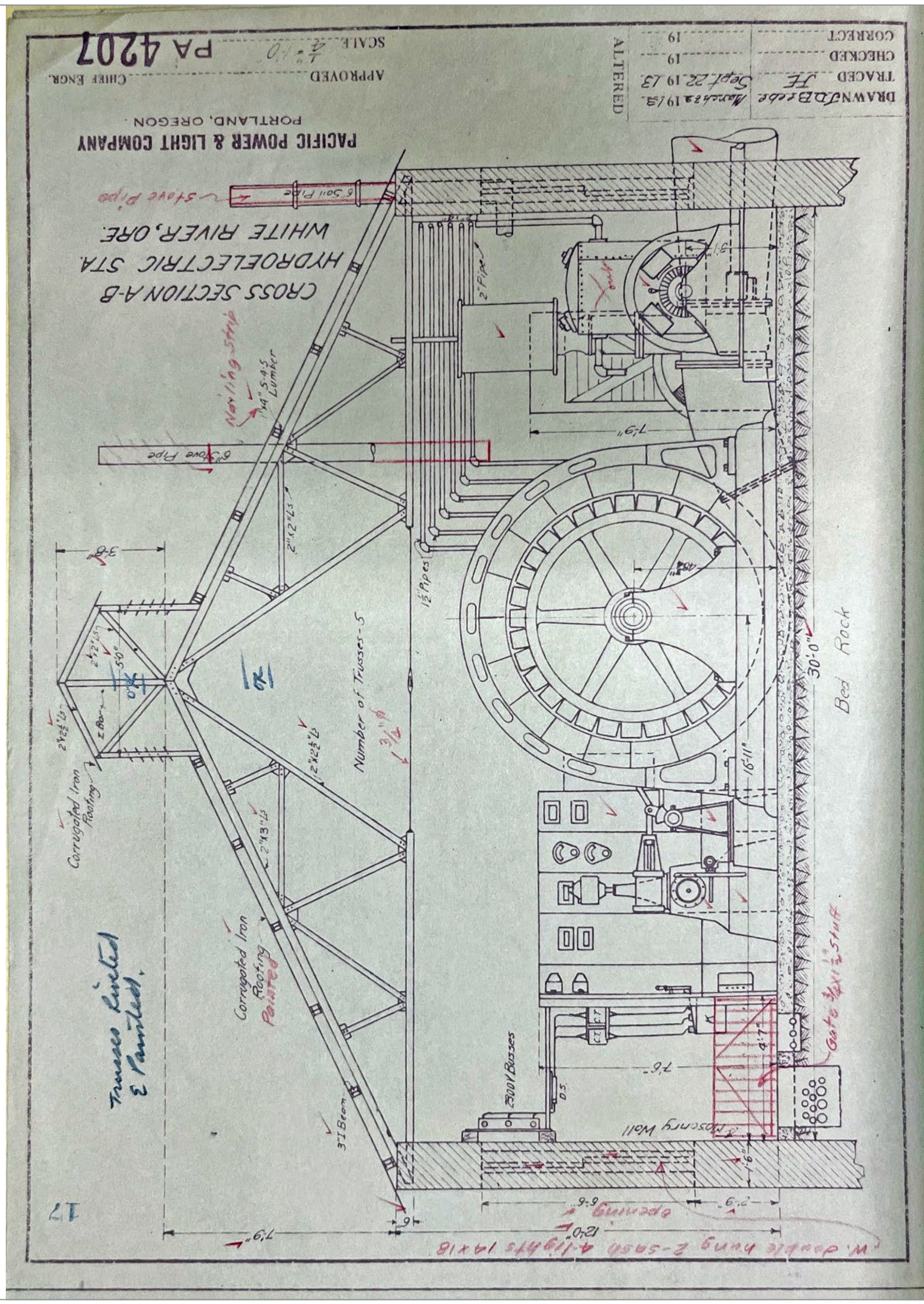

Fig. 12. 1913 Reservoir Dam Plan and Section.

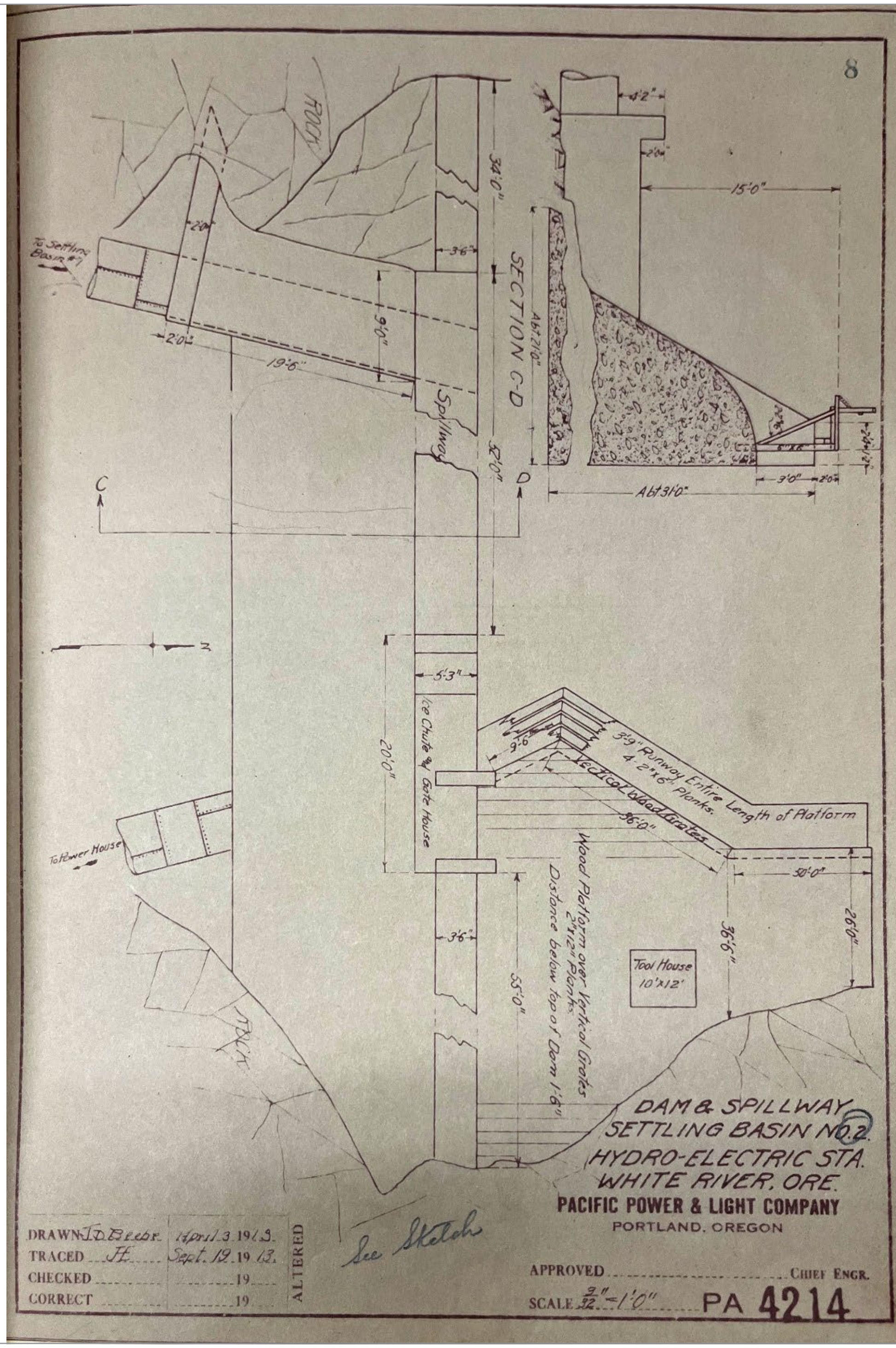

Fig. 13. 1913 Holding Basin Dam and Head Gate Drawing.

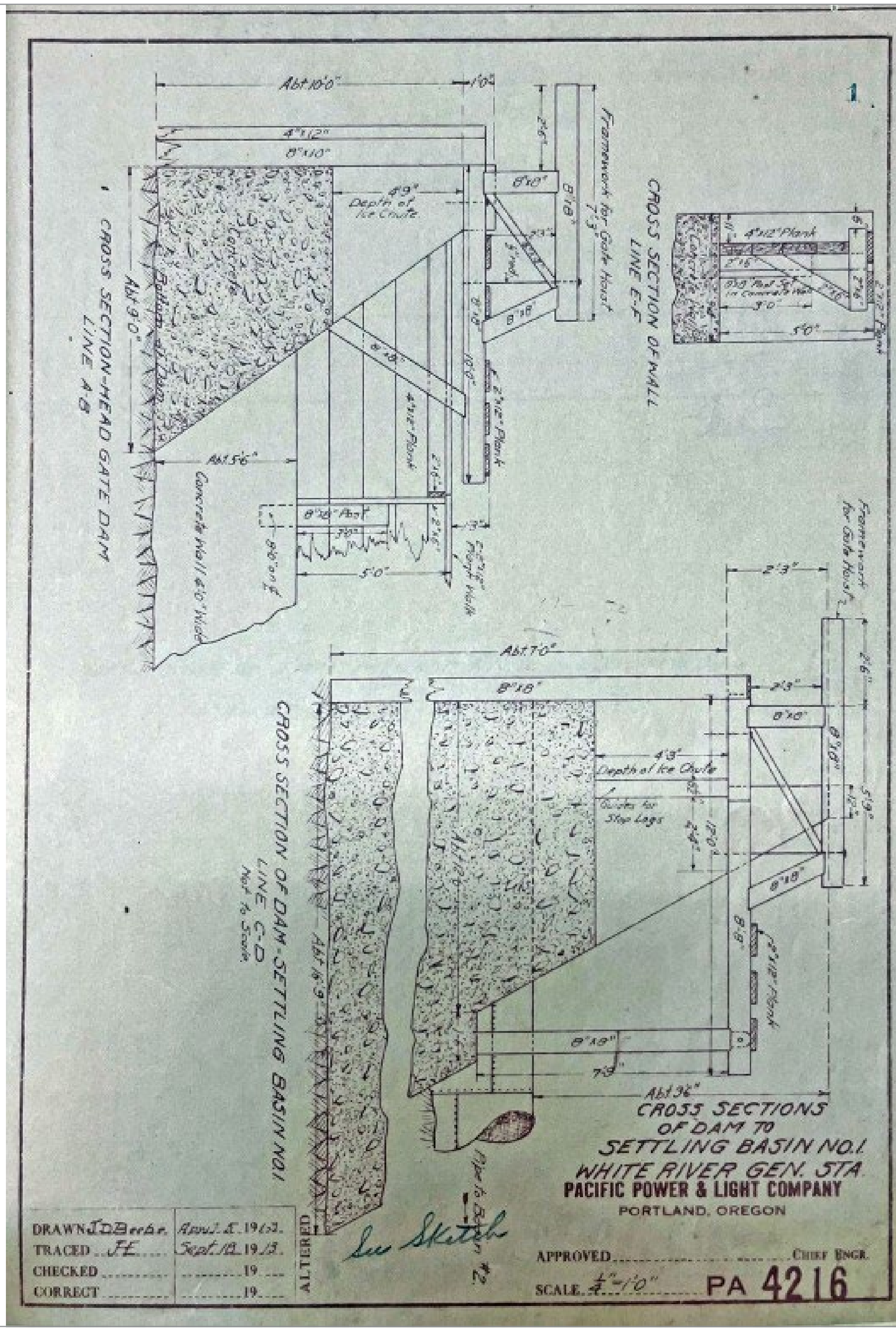

Fig. 14. 1913 Penstock Drawing.

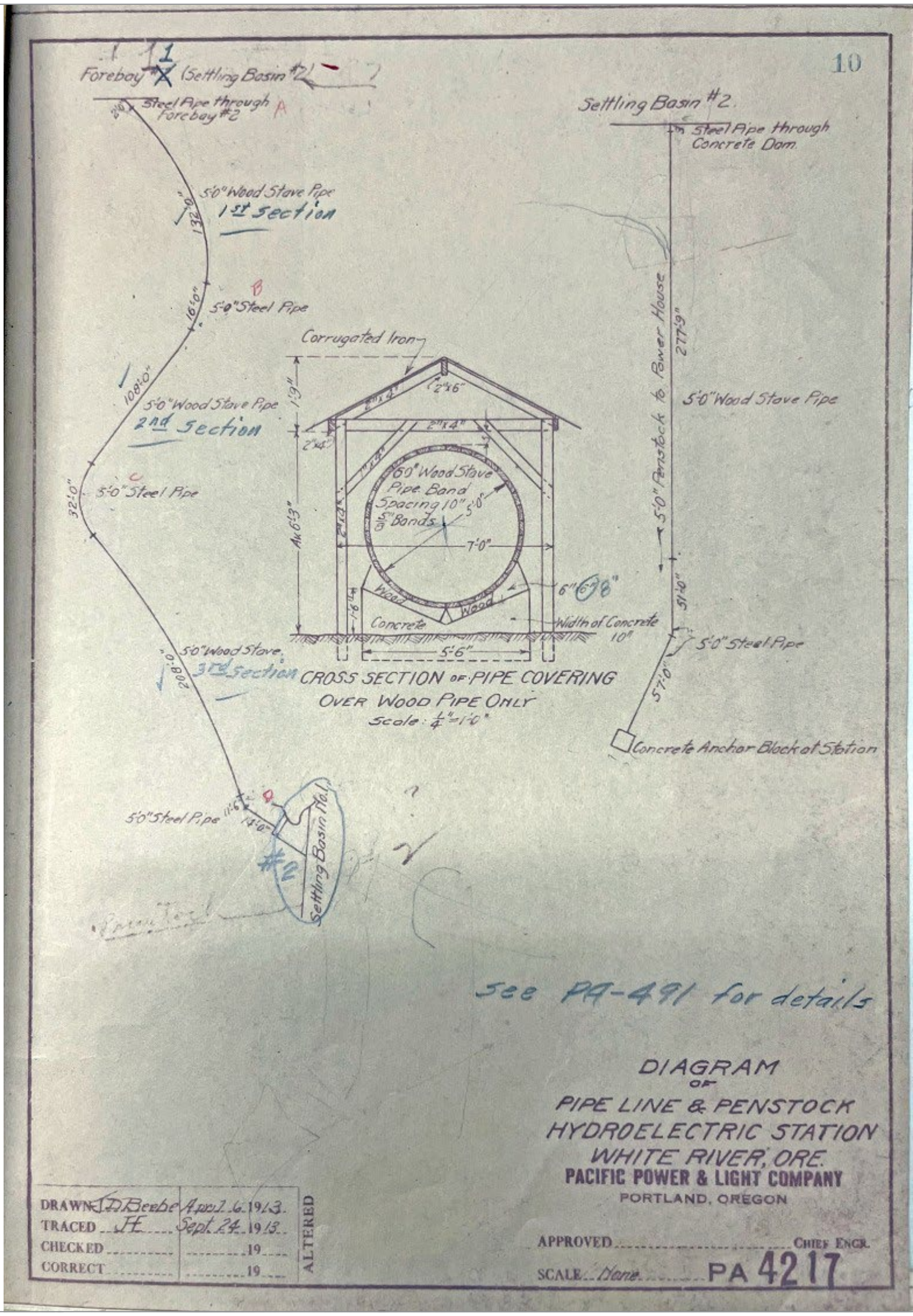

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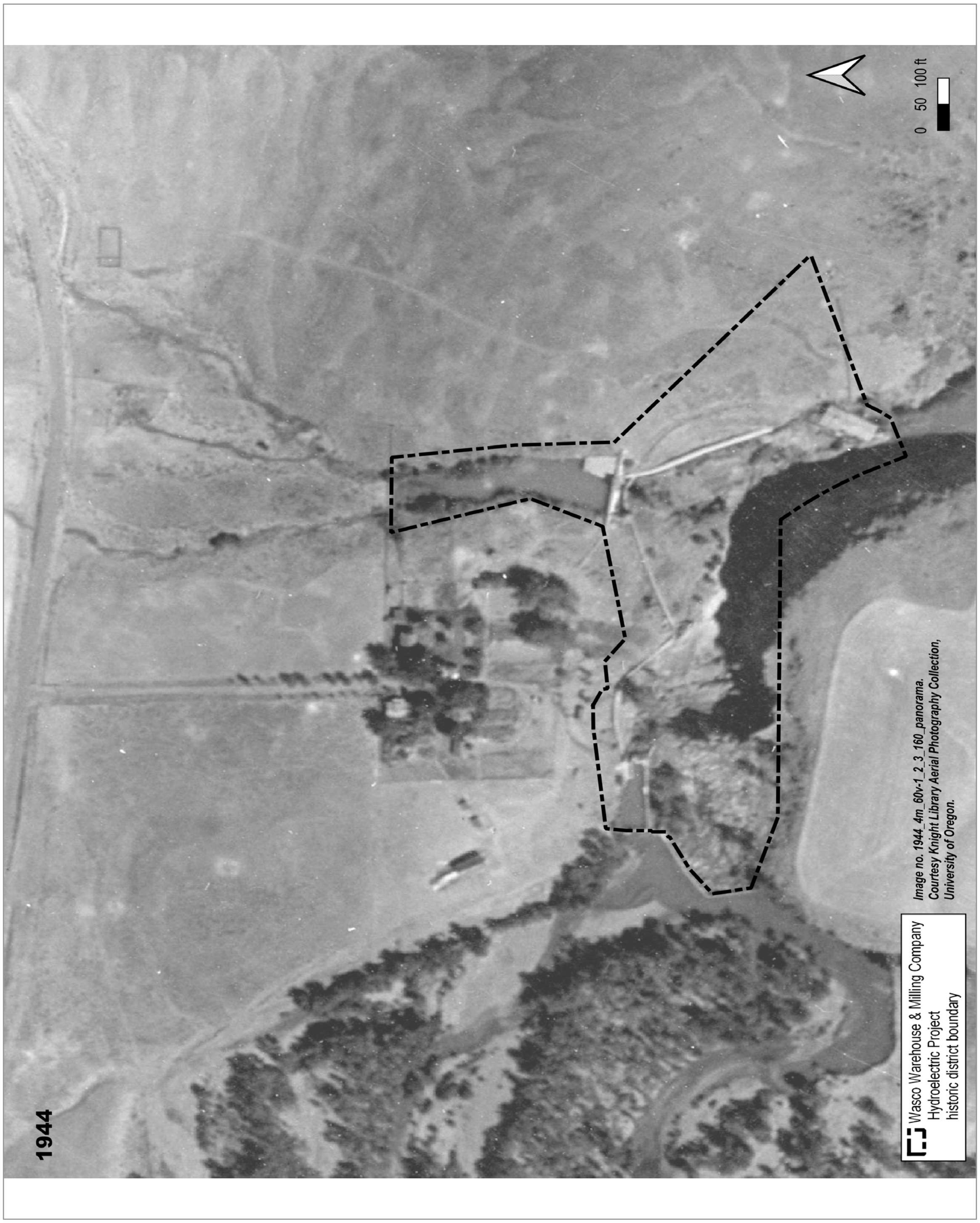
Fig. 16. Historic 1944 Aerial



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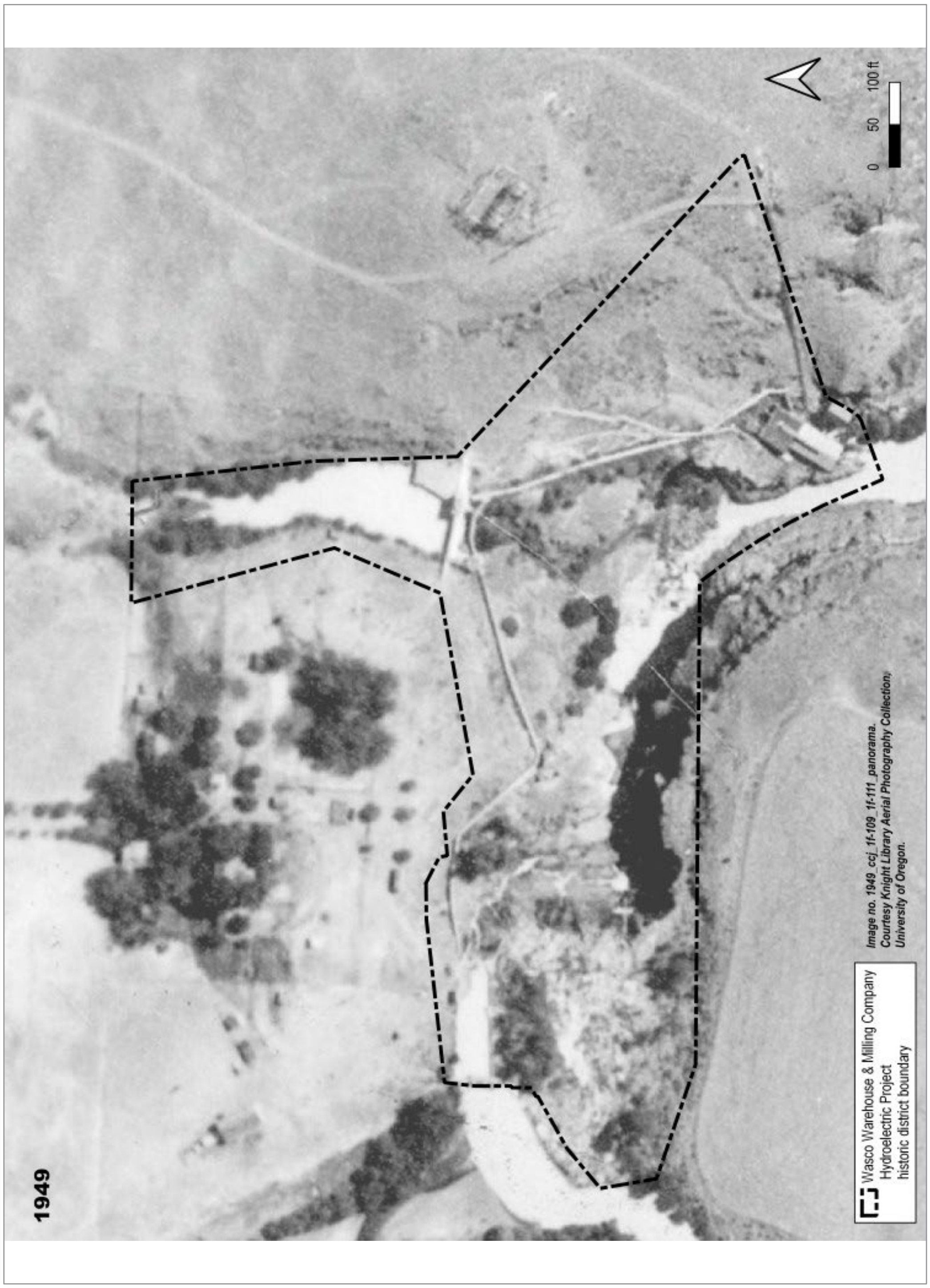

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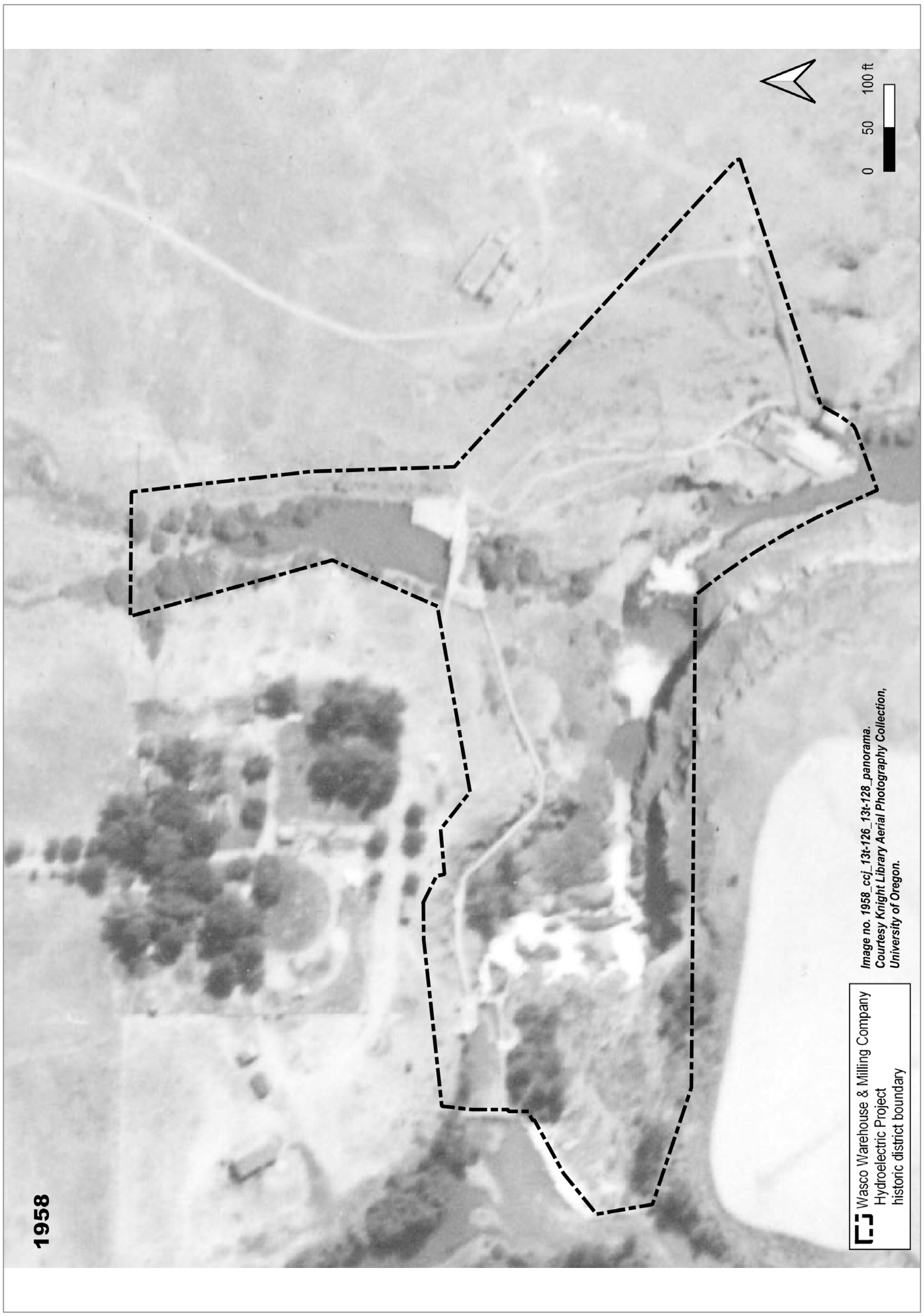

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Fig. 19. Historic 1965 Aerial

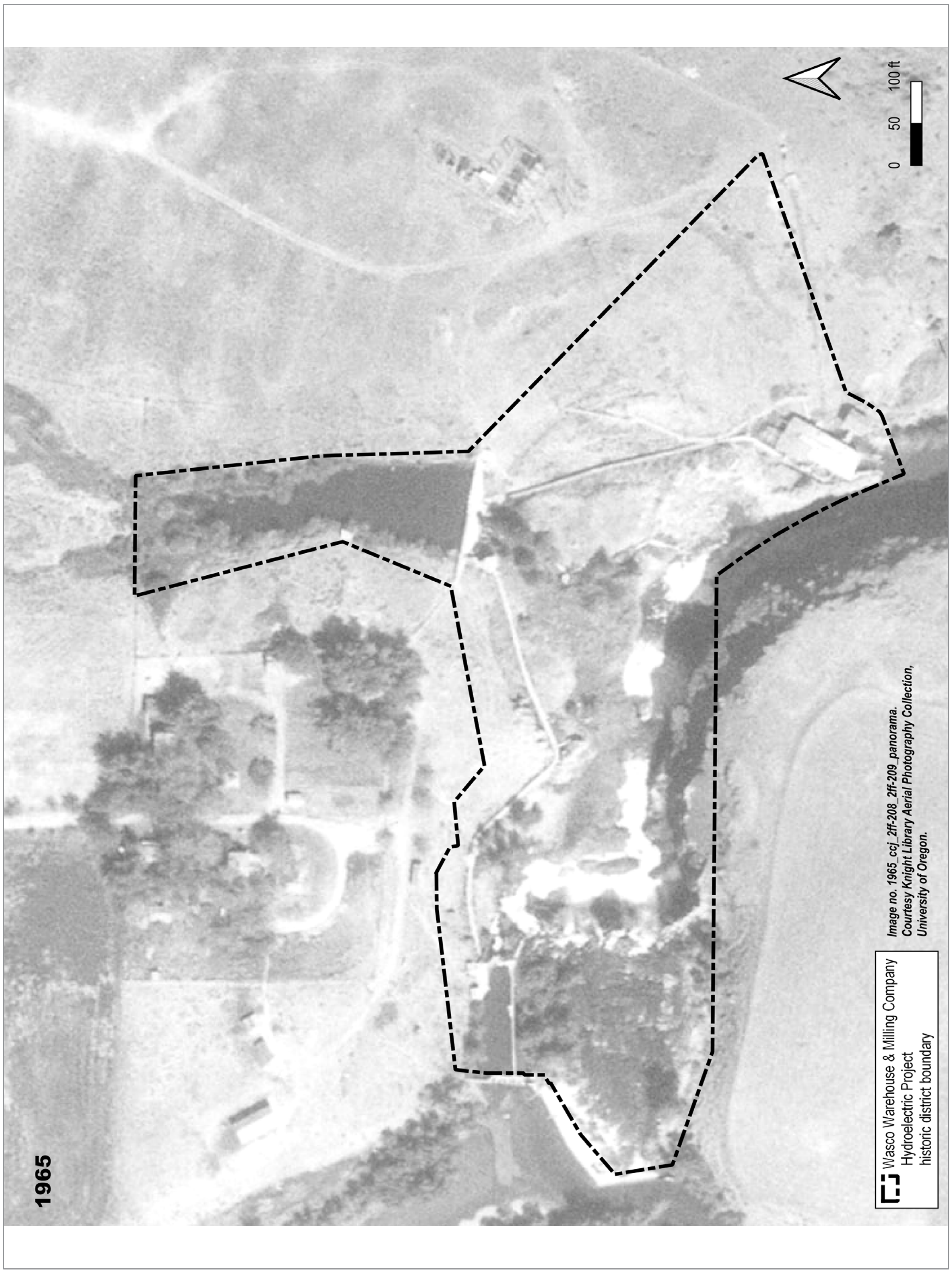


Fig. 20. Ca. 1901 powerhouse photograph.
South facade prior to infill of the windows and doorway. Source: Oregon Parks and Recreation Department (OPRD).

Fig. 21. 1901-1910 powerhouse interior photograph.
Looking north within the powerhouse prior to the 1913 north addition. Source: OPRD.

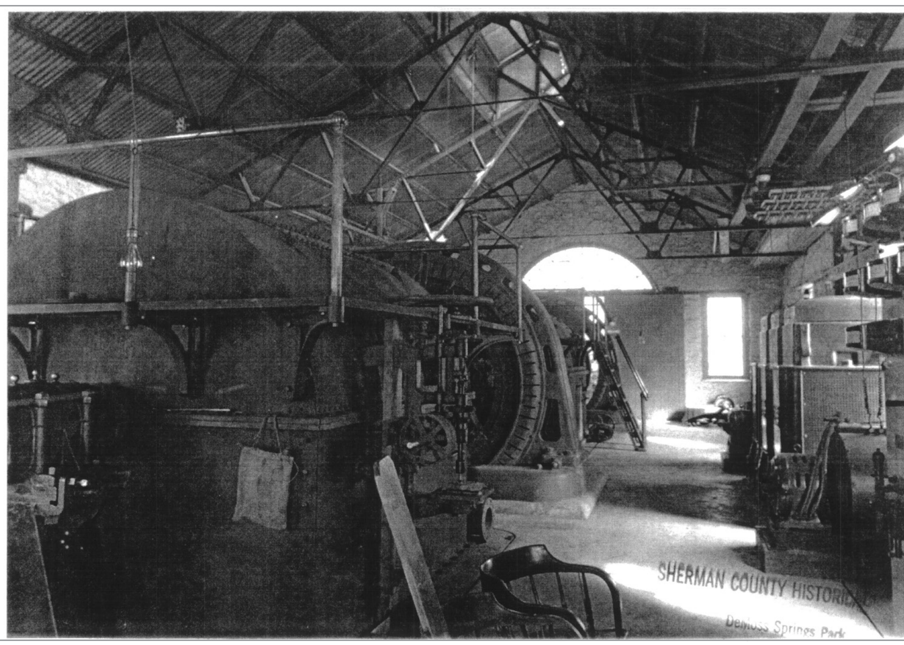


Fig. 22. Ca. 1911 holding basin dam and head gate photograph.
Looking west with the intake dam in the background. Source: OPRD.

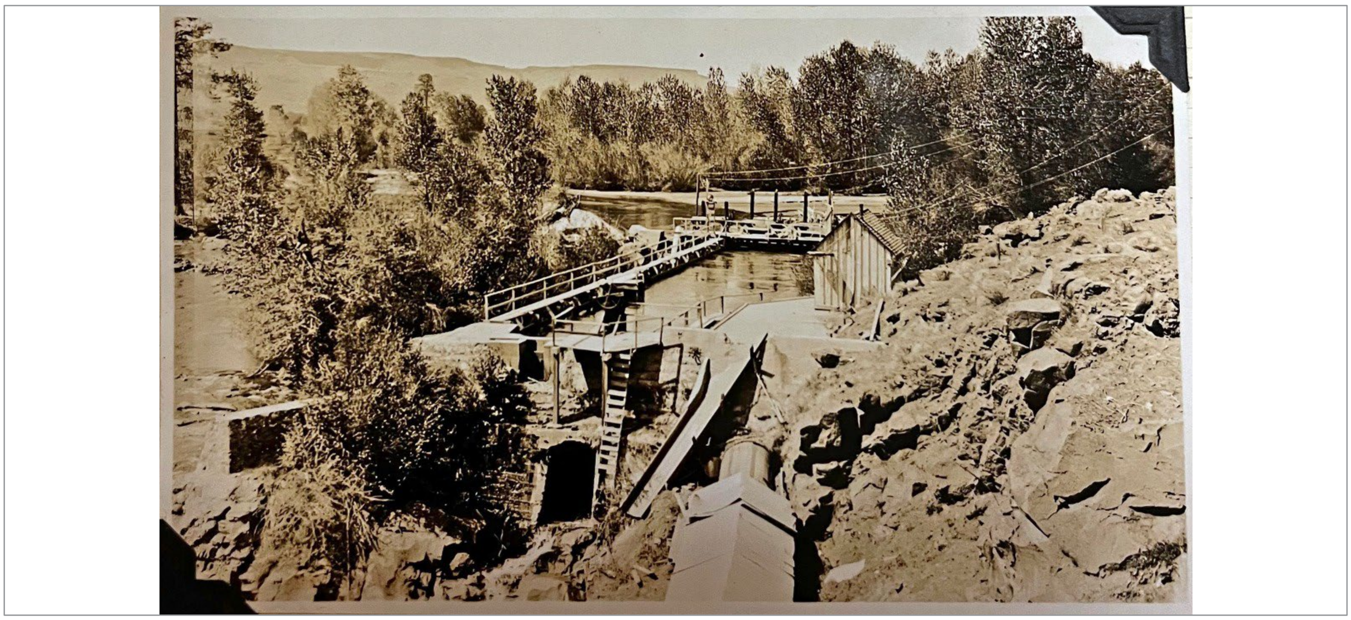
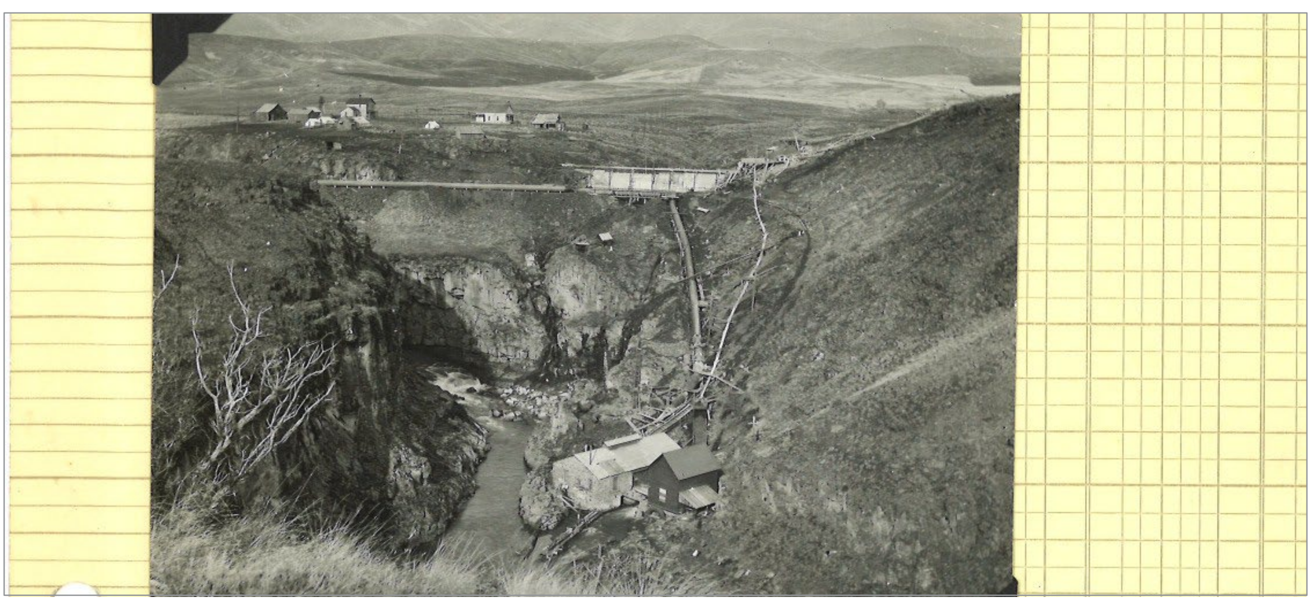


Fig. 23. Ca. 1911 reservoir dam construction photograph.
Looking north showing the new penstock alignment, and the powerhouse prior to the north addition. Source: OPRD.



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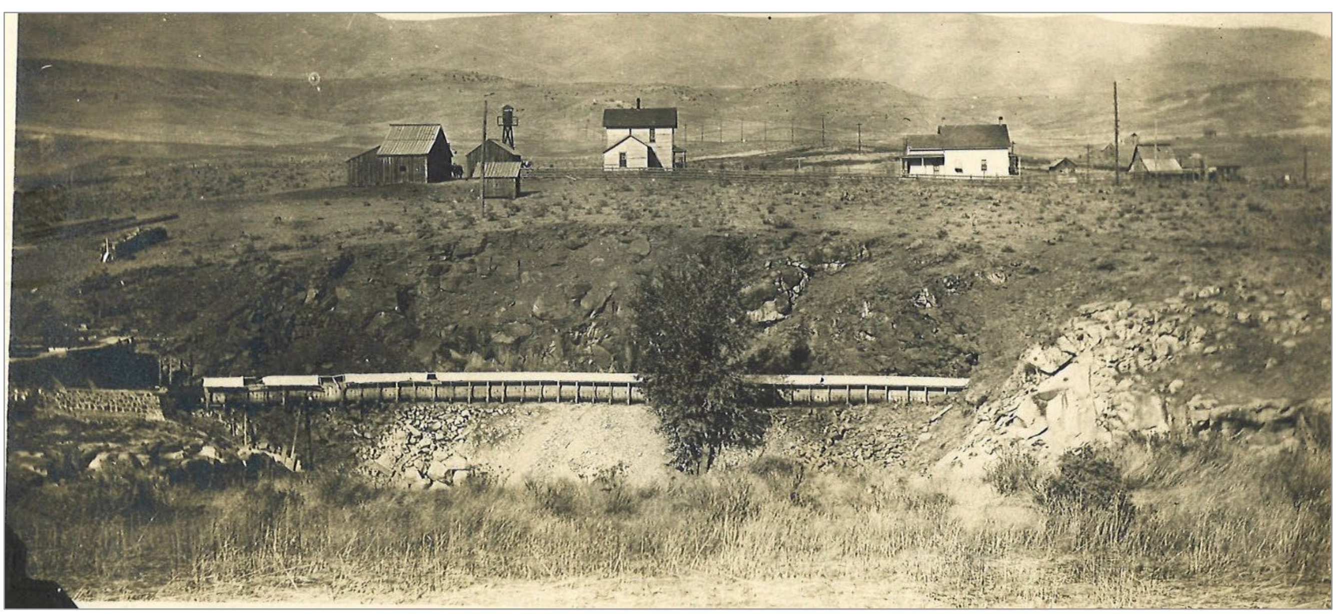

Fig. 26. 1911 penstock photo.
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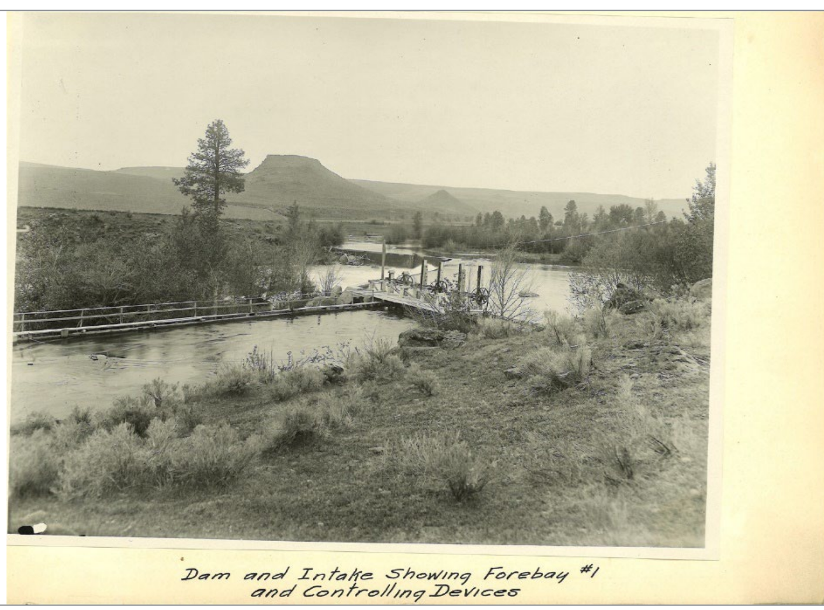

Fig. 28. 1921 holding basin photograph.
Looking east showing the holding basin dam and shed roof structure at the head gate. Source: OPRD.

Fig. 29. 1921 falls photograph.
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Fig. 31. 1921 reservoir photograph.
Looking south showing the reservoir with the former shed roof pump house at right. Source: OPRD.

Fig. 32. 1921 penstock connection photograph.
Looking north showing the 1911 penstock connection to the powerhouse. Source: OPRD.

Fig. 33. 1921 powerhouse interior photograph.
Looking north showing the extant turbines and generators. Source: OPRD.

Fig. 34. 1921 powerhouse interior photograph.
Looking south with the former wood frame telephone booth visible in the background. Source: OPRD.

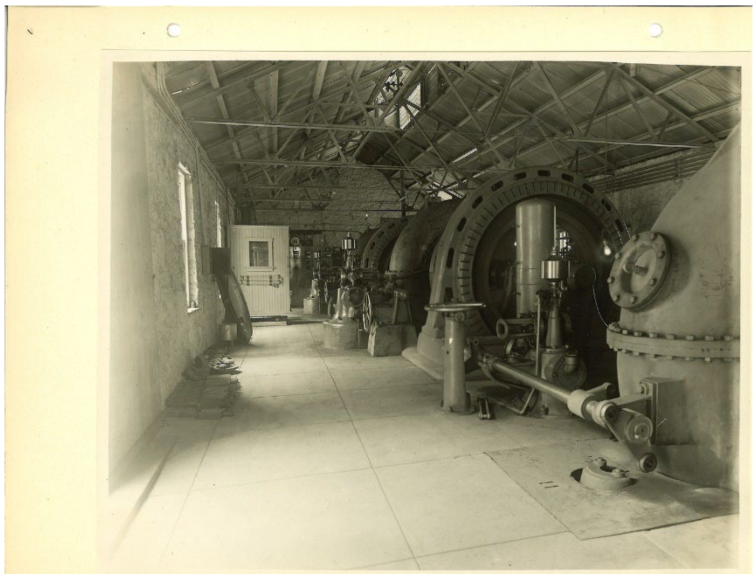

Fig. 35. 1921 transformer house photograph.
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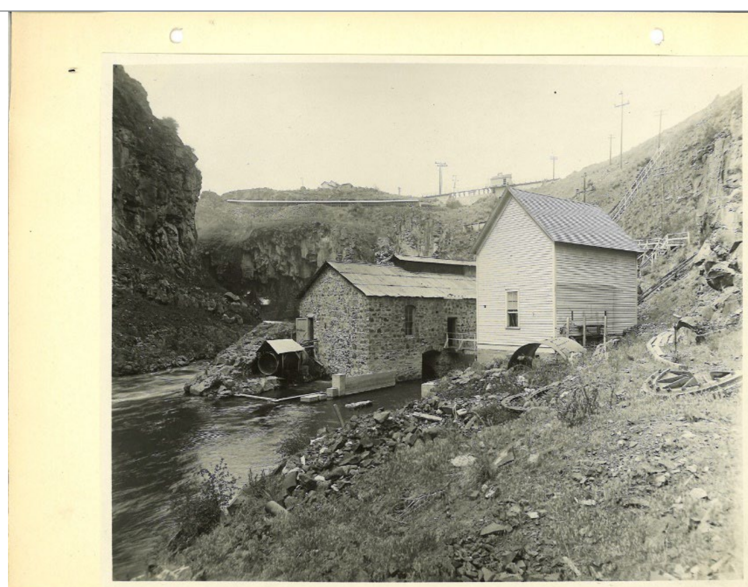

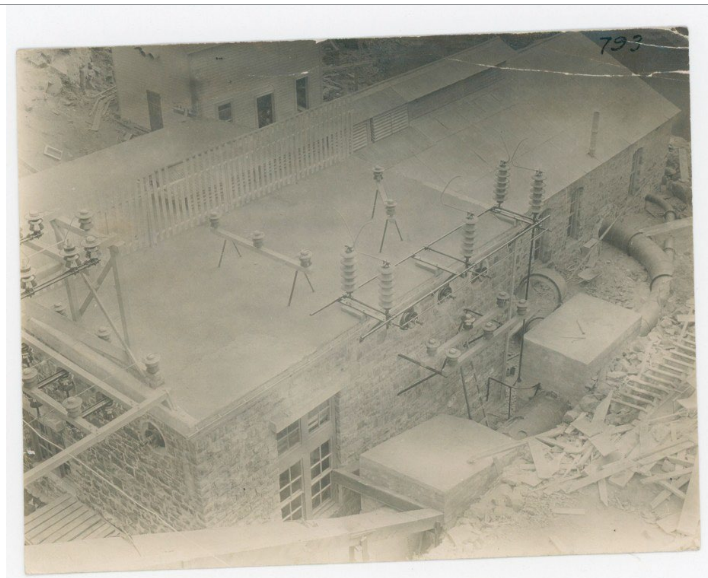

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OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic District_0002. Canyon looking east.

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OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic District_0009. Holding basin dam and head gate, looking southwest.

OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic District_0010. Holding basin dam and head gate, looking southwest.

OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic District_0011. Reservoir dam, non-vehicular bridge, and valved house looking west.

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OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic District_0017.Reservoir, looking north.

OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic District_0018. Reservoir, looking southeast.

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OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic District_0035.
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Powerhouse interior, looking northwest.

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Powerhouse interior, looking northwest.

OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic District_0052.
Powerhouse Pelton turbine and associated generator and exciter, looking west.

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Powerhouse interior, looking south.

OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic District_0054.
Powerhouse interior, looking south.

OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic District_0055.
Powerhouse interior, looking west.

OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic District_0056.
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OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic District_0057. Powerhouse tailrace connection.

OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic District_0058. Surge and cooling tank, looking southeast.

OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic District_0059. Surge and cooling tank, looking east.

OR_Wasco County_Wasco Warehouse & Milling Company Hydroelectric Project Historic District_0060. Tramway winch, looking southwest.

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