



Lower Klamath Project

# **Historic Built Environment Technical Report**

Oregon SHPO Project #: 17-1370;  
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**Prepared for:**

Klamath River Renewal Corporation

**Prepared by:**

Klamath River Renewal Corporation Technical Representatives:

AECOM Technical Services, Inc.  
300 Lakeside Drive, Suite 400  
Oakland, California 94612

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# Acronyms and Abbreviations

ACHP	Advisory Council on Historic Preservation
ADI	Area of Direct Impacts
APE	Area of Potential Effects
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
ca.	circa
Caltrans	California Department of Transportation
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CFGC	California Fish and Game Commission
C.F.R.	Code of Federal Regulations
Copco	California–Oregon Power Company
DPR	Department of Parks and Recreation
EO	Executive Order
FERC	Federal Energy Regulatory Commission
FPC	Federal Power Commission
GIS	geographic information system
HBC	Hudson Bay Company
HPMP	Historic Properties Management Plan
I-5	Interstate 5
KCHS	Klamath County Historical Society
KHP	Klamath Hydroelectric Project, FERC No. 2082
KHSA	Klamath Hydroelectric Settlement Agreement
KLRR	Klamath Lake Railroad
kV	kilovolt
kW	kilowatt
LKP	The Lower Klamath Project, FERC No. 14803
LOW	Limits of Work
NCPC	Northern California Power Company
NHPA	National Historic Preservation Act
NPS	National Park Service
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
O&C	Oregon and California Railroad
ODFW	Oregon Department of Fish and Wildlife
OR 66	Oregon Route 66
ORS	Oregon Revised Statutes

PG&E	Pacific Gas & Electric Company
PRC	Public Resources Code
Project	Removal of the Lower Klamath Project and related deconstruction activities
RM	river mile
SEP&L	Siskiyou Electric Power & Light Company
SHPO	State Historic Preservation Officer
SOWR	Southern Oregon Wagon Road
SPRR	Southern Pacific Railroad
SR	State Route
USBF	United States Bureau of Fisheries
USBR	United States Bureau of Reclamation
U.S.	United States
U.S.C.	United States Code
USFS	United States Forest Service
WHPC	Western Historical Publishing Company

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# **Chapter 1: Overview and Executive Summary**

# 1. OVERVIEW AND EXECUTIVE SUMMARY

## 1.1 Executive Summary

The Klamath River Renewal Corporation (Renewal Corporation) proposes to remove four hydroelectric developments (J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate; Lower Klamath Project (LKP), Federal Energy Regulatory Commission [FERC] Project No. 14803) and appurtenant facilities on the Klamath River in the states of Oregon and California, approximately 200 miles east of where the river flows into the Pacific Ocean. The removal of the four hydroelectric developments and related deconstruction activities (hereafter “Proposed Action”) is to achieve a free-flowing condition and volitional fish passage in river reaches currently occupied by these developments (river mile [RM] 193.1 to 234.1), which are currently owned and operated by PacifiCorp. Under the Klamath Hydroelectric Settlement Agreement (KHSa) as amended in 2016, the Proposed Action consists of measures to remove the four hydroelectric developments; remediate and restore the reservoir sites; avoid or minimize adverse impacts downstream; ensure completion of the Proposed Action with committed funds; and avoid damages and liabilities for PacifiCorp and the states of California and Oregon. Removal of the hydroelectric developments will be achieved through a FERC license transfer and surrender process.

This Historic Built Environment Technical Report (Report) is provided to the State Historic Preservation Officers (SHPOs) as a consultation document to assist the SHPOs in their review of the Historic Properties Management Plan (HPMP) and the ongoing Section 106 consultation with FERC. The Renewal Corporation has prepared this report to identify historic properties in the Area of Potential Effects (APE) that are potentially eligible for the National Register of Historic Places (NRHP) and to assess Proposed Action’s effects to historic properties. As such, information contained in this report is also contained within the Draft HPMP.

The Report, together with any comments offered by the SHPOs, will be used to update the draft HPMP. The Renewal Corporation files the final HPMP with FERC on or before May 2, 2022.

## 1.2 Statutory and Regulatory Context

The Proposed Action is subject to Section 106 of the National Historic Preservation Act (NHPA) and the Federal Power Act, as well as other federal and state statutes and regulations governing human remains and burials, cultural resources, historic properties, and tribal outreach consultation. This section provides an overview of those statutes and regulations.

## 1.2.1 Federal Laws, Regulations, Standards and Guidelines

Federal laws provide protection to cultural resources for projects that are subject to federal jurisdiction, including permitting and land management. The following is a list of statutes and regulations that may apply to the Proposed Action.

### 18 Code of Federal Regulations (C.F.R.) § 4.51(f)(4)—Report on Historical and Archaeological Resources

These are the regulations implementing FERC's responsibilities under the Federal Power Act regarding compliance with federal cultural resource protection laws in the agency's licensing of existing hydroelectric projects.

### National Historic Preservation Act of 1966

The NHPA (Public Law 89-665, 54 United States Code [U.S.C.] 300101 et seq.) establishes the federal government's policy on historic preservation and the programs, including the NRHP, through which that policy is implemented. The NHPA established a federal policy of cooperation with other nations, tribes, states, and local governments to protect historic sites and values. Together with its implementing regulations, the NHPA authorized the NRHP, created the Advisory Council on Historic Preservation (ACHP), provided further considerations for National Historic Landmarks, and created procedures for approved state and local government programs (Carnett 1991). In addition, regulatory provisions accompanying the NHPA required the SHPOs to prepare and implement state historic preservation plans.<sup>1</sup>

Section 106 of the NHPA (54 U.S.C. § 300108) and its implementing regulations, "Protection of Historic Properties," (36 C.F.R. Part 800) require that federal agencies take into account the effects of their undertakings (e.g., issuing a federal approval, permit, or license) on historic properties (cultural resources) listed in or determined eligible for inclusion on the NRHP [36 C.F.R. Part 800.1[a]] and to afford the ACHP and SHPO a reasonable opportunity to comment on any undertaking that would adversely affect historic properties. The NRHP is a list kept by the Secretary of the Interior of "districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering and culture" (36 C.F.R. § 60.1[a]). Criteria applied in the NHPA Section 106 process to determine whether a property is eligible for nomination to the NRHP are in 36 C.F.R. § 60.4.

If significant (i.e., NRHP-eligible) resources are identified, then federal agencies are directed to take measures to avoid, minimize, or resolve adverse impacts.

Section 101(d)(6)(A) of the NHPA allows properties of traditional religious and cultural importance to an Indian tribe (referred to in this document as Historic Properties of Religious and Cultural Significance to Indian Tribes, or HPRCSITs) to be determined eligible for inclusion in the NRHP.

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<sup>1</sup> The State of California historic preservation plan is available here:  
<http://ohp.parks.ca.gov/pages/1069/files/10%20comb.pdf>  
The State of Oregon historic preservation plan is available here:  
[https://www.oregon.gov/oprd/HCD/docs/2018\\_2023\\_shpo\\_plan.pdf](https://www.oregon.gov/oprd/HCD/docs/2018_2023_shpo_plan.pdf)

Cultural institutions, lifeways, culturally valued viewsheds, places of cultural association, and other valued places and social institutions must also be considered under the National Environmental Policy Act, Executive Order (EO) 12898, and sometimes other authorities (EO 13006, EO 13007, Native American Graves Protection and Repatriation Act).

## 1.2.2 State Laws and Regulations

The following state laws and regulations protecting cultural resources are discussed because they will apply to historic properties located in the states of California and Oregon once FERC's jurisdiction over cultural resources in the FERC Project Boundary and the protections offered by Section 106 of the NHPA ends. This list is not comprehensive but is intended to provide readers with an understanding of state-level cultural resource protections on state and privately owned lands. However, the Renewal Corporation's obligations for the Proposed Action will be governed by the PA and HPMP, not by this summary of state laws.

### California

California has several laws and regulations that protect archaeological sites and Native American heritage.

- Public Resources Code (PRC) Section 5024.1 established the California Register of Historical Resources and criteria to determine significance, eligible properties, and nomination procedures.
- PRC Section 5097.9 prohibits the interference with the free expression of Native American religion as provided in the U.S. Constitution and the California Constitution and severe or irreparable damage to any Native American-sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine on public property, except on a clear and convincing showing that the public interest and necessity so require.
- PRC Section 21084.1 provides that a project may have a significant effect on the environment if it causes a substantial adverse change in the significance of a historic resource; the section further defines a "historical resource" and describes what constitutes a "significant" historical resource.
- Title 14 California Code of Regulations Section 4307 states that no person shall remove, injure, deface, or destroy any object of paleontological, archaeological, or historical interest or value.
- California Penal Code Section 622.5 states that anyone who willfully damages an object or thing of archaeological or historic interest can be found guilty of a misdemeanor.
- California Penal Code Section 622.5 establishes as a misdemeanor the willful injury, disfiguration, defacement, or destruction of any object or thing of archaeological or historical interest or value, whether situated on private or public lands.
- California Penal Code Section 623 establishes as a misdemeanor the disturbing or alteration of any archeological evidence in any cave without the written permission of the owner of the cave, punishable by up to 1 year in the county jail or a fine not to exceed \$1,000, or both.

## Oregon

Oregon State laws are applicable to non-federal public and private lands (i.e., Parcel B lands). Oregon Revised Statutes (ORS) that apply to cultural resources include the following:

- ORS 192.501, which protects the confidentiality of information on archaeological sites.
- ORS 358.905–358.995, which provide overall policy guidance on archaeological objects and sites.
- ORS 390.235–390.237, which require a permit from the Oregon State Parks and Recreation Department before archaeological materials can be excavated from public lands or in a known archaeological site, following Oregon Administrative Rules 736-051-0000 to 0090 for the permitting.

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## **Chapter 2: Background and Context**

## 2. BACKGROUND AND CONTEXT

### 2.1 Location of Proposed Action

The project area is on the upper Klamath River in Klamath County, Oregon (south-central Oregon) and Siskiyou County, California (north-central California). The nearest principal cities are Klamath Falls, Oregon, about 15 miles northeast of the upstream end of the project area; Medford, Oregon, 45 miles northwest of the downstream end of the project area; and Yreka, California, 20 miles southwest of the downstream end of the project area. Figure 2-1 depicts the project area.

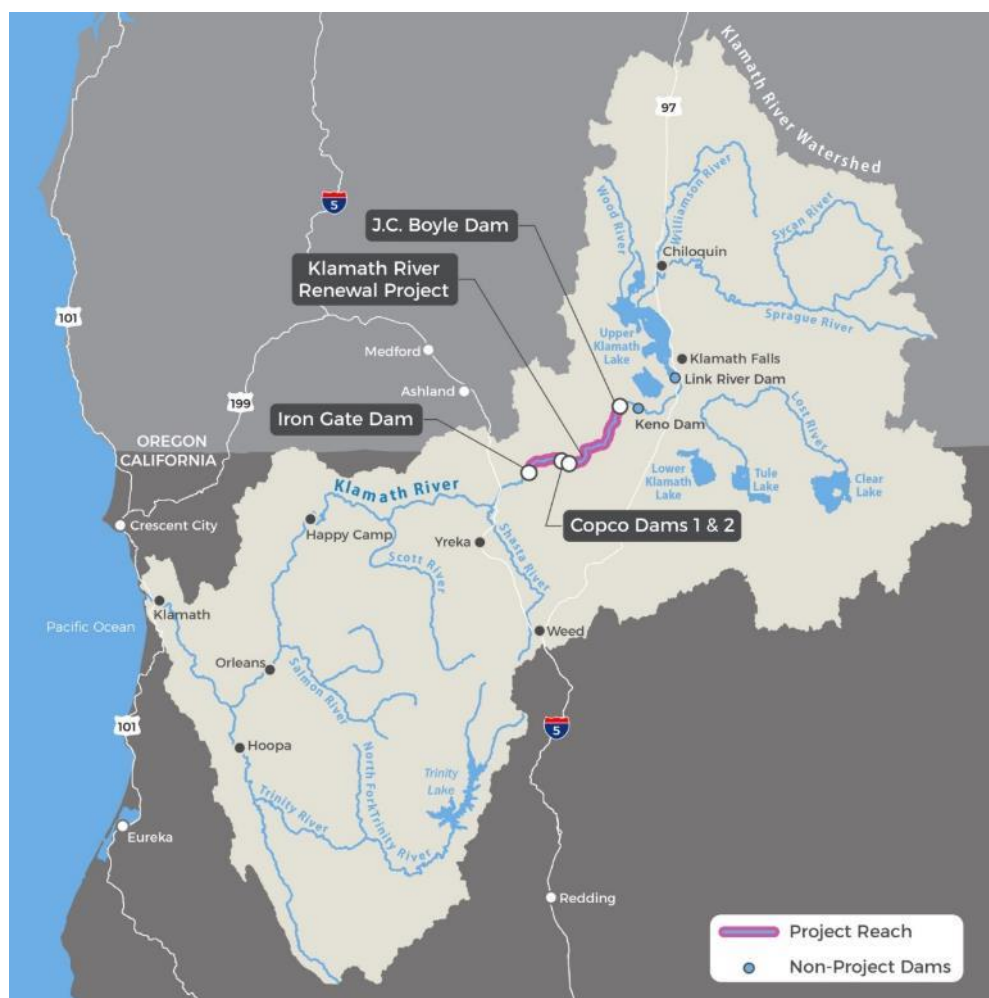
### 2.2 Hydroelectric Project Facilities

The four hydroelectric developments encompassed by the LKP are described below, as presented in the hydroelectric project's *Definite Decommissioning Plan* (Renewal Corporation 2020), as updated in 2021. The purpose of the developments is to generate hydroelectric power.

#### 2.2.1 J.C. Boyle

The J.C. Boyle hydroelectric development (originally known as the Big Bend Development) consists of a reservoir, combination embankment and concrete gravity dam, gated spillway, diversion culvert, water conveyance system, and powerhouse located on the Klamath River between RM 234.1 and RM 226.0, in Klamath County, Oregon. California-Oregon Power Company (Copco) completed J.C. Boyle Dam in 1958 at RM 203.6, downstream of Keno Dam and upstream of Copco No. 1 Dam. The sites include an office building (known as the Red Barn), maintenance shop, fire protection building, communications building, two PacifiCorp-owned residences near the dam, and a large warehouse near the powerhouse.

J.C. Boyle Dam impounds a narrow reservoir (J.C. Boyle Reservoir) of 350 acres. The dam is composed of an earthen embankment section, fish ladder, spillway and diversion culverts, intake to the powerhouse, and concrete gravity section. A water conveyance system connects the dam to the powerhouse and has a total length of 2.56 miles. The conveyance system from upstream to downstream consists of a steel pipeline, a headgate, a flume, a forebay, a tunnel, and two penstocks connecting to the powerhouse.



**Figure 2-1 Klamath Basin watershed and LKP facility locations**

Oregon Route 66 (OR 66; i.e., Green Springs Highway) and Topsy Grade Road provide site access via a network of unpaved LKP access roads. A small timber bridge crosses the Klamath River downstream of the dam. Recreation facilities include Topsy Campground and boat launch (managed by the Bureau of Land Management [BLM]), Pioneer Park east and west units and boat launches (managed by PacifiCorp), Spring Island whitewater boating launch (managed by BLM), and numerous smaller dispersed shoreline recreation sites, including 2 picnic areas, 13 campsites, and 11 shoreline access points.

### 2.2.2 Copco No. 1

The Copco No. 1 hydroelectric development consists of a reservoir, concrete dam, gated spillway, diversion tunnel, intake structure, and powerhouse on the Klamath River between approximately RM 209.0 and RM 202.2, in Siskiyou County, California. Siskiyou Power and Light Company, a Copco predecessor, constructed Copco No. 1 Dam between 1911 and 1922 at RM 202.2, which is downstream of J.C. Boyle Dam and upstream of Copco No. 2 Dam. Copco No. 1 Dam is a concrete gravity-arch type structure that impounds a 972-acre reservoir named Copco Lake. Buildings at the site include two small residences with detached garages and one warehouse.

Copco Road from Interstate 5 (I-5) provides site access, and access continues via a steep and narrow access road to the dam right abutment and powerhouse. Copco Road provides access to the north side of the reservoir. Ager-Beswick Road provides access to the south side of the reservoir and is an extension of the Topsy Grade Road in Oregon. Recreation facilities include Mallard Cove and Copco Cove, each with boat launches (both managed by PacifiCorp) and smaller dispersed shoreline recreation sites.

### 2.2.3 Copco No. 2

The Copco No. 2 hydroelectric development consists of a small reservoir, concrete diversion dam, embankment section, gated spillway, water conveyance system, and powerhouse on the Klamath River between approximately RM 202.2 and RM 200.3, in Siskiyou County, California. Copco completed the dam in 1925 approximately 0.4 mile downstream of Copco No. 1 Dam at RM 201.8, while the powerhouse is located at RM 200.3, just upstream of Iron Gate Reservoir. Near the powerhouse is a control center building, a maintenance building, and an oil and gas storage building. The nearby PacifiCorp-owned Copco Village includes a former cookhouse/bunkhouse, modern bunkhouse, garage/storage building, bungalow with garage, three modular houses, four ranch-style houses, and a schoolhouse/community center, all of which are within the FERC Project Boundary. The reservoir created by Copco No. 2 Dam is approximately 0.3 miles long and is unnamed.

Copco Road from I-5 provides site access. Access to the dam is via a steep and narrow access road—the same access road as for Copco No. 1. Access to the powerhouse is via the Daggett Road crossing of the Klamath River on a single-lane bridge. Two water access points are directly upstream of the Copco No. 2 dam, but they are not publicly accessible.

### 2.2.4 Iron Gate

The Iron Gate hydroelectric development consists of a reservoir, embankment dam, side-channel spillway, diversion tunnel, intake structures, and powerhouse on the Klamath River between RM 200.3 and RM 193.1, about 17 miles northeast of Yreka, California, in Siskiyou County. Copco completed the development in 1962 at RM 193.1. Iron Gate is the LKP's farthest downstream hydroelectric development. The site includes a communications building, a restroom building, a maintenance shop, two residences, and fish capture and spawning facilities. Iron Gate Dam impounds the 942-acre Iron Gate Reservoir.

The Iron Gate fish hatchery was constructed in 1966 and is on the left bank downstream of Iron Gate Dam, adjacent to the Bogus Creek tributary. The hatchery complex includes an office, warehouse, hatchery/incubator building, four fish-rearing ponds, a fish ladder with trap, visitor information center, and four hatchery employee residences.

Site access is from I-5 via Copco Road and then by Lakeview Road to the dam crest and reservoir area or by a LKP access road to the powerhouse. The single-lane Lakeview Road Bridge crosses the Klamath River downstream of the dam. Recreation facilities include Fall Creek day-use area and boat launch, Jenny Creek campground, Wanaka Springs day-use area and campground, Camp Creek campground and boat launch, Juniper Point campground, Mirror Cove campground, Overlook Point

day-use area, and Long Gulch campground and boat launch (each managed by PacifiCorp), and smaller dispersed shoreline recreation sites. Among these facilities is a visitor center at Iron Gate hatchery, two interpretive displays, five boat launches, one fishing platform, two picnic areas, six campgrounds (with 66 campsites), five dispersed camping areas (with 20 campsites), and four other water access points.

## 2.3 Proposed Action Description

The purpose of the License Surrender Application is to cease hydroelectric operations at the four Lower Klamath developments and provide for a free-flowing river with volitional fish passage from Keno Dam to the Pacific Ocean. The physical removal of the four developments (J.C. Boyle, Copco No. 1 and No. 2, and Iron Gate) is proposed. The Proposed Action also includes site remediation and restoration, including areas previously inundated by the reservoirs, measures to avoid or minimize adverse downstream impacts, and all associated permitting for such actions. The Proposed Action is on the Klamath River in the states of Oregon and California, approximately 200 miles upstream from the Pacific Ocean (Figure 2-1). The project area encompasses the lands and waters between the upper reach of J.C. Boyle Reservoir, at RM 234, and the toe of Iron Gate Dam, at RM 193.

The Renewal Corporation proposes to execute the Proposed Action consistent with the terms of the KHSR (2010, as amended 2016). The Definite Decommissioning Plan (Renewal Corporation 2020) and other submittals by the Renewal Corporation to FERC provide information that FERC requires to act on the surrender application for the LKP. The 100 Percent Design Reports and Drawings in the Definite Decommissioning Plan (Renewal Corporation 2020) delineate the methods to be undertaken to effect dam removal and a timetable for dam removal; plans for management, removal, and disposal of sediment, debris, and other materials; plans for site remediation and restoration; and plans for measures to avoid or minimize adverse downstream impacts.

The Proposed Action involves the removal of the four hydroelectric developments from the river channel, including removal of dams, power generation facilities, water intake structures, canals, pipelines, and ancillary buildings.

Prior to removal of the hydropower developments, the Renewal Corporation (through its contractor) will draw down the water surface elevation in each reservoir as low as feasible to help evacuate accumulated sediment and to create a dry work area for development removal activities.

After drawdown is complete, remaining reservoir sediments will be stabilized to the extent practicable, and dam and hydropower development removal will begin. Full reservoir area restoration will begin after drawdown; vegetation establishment could extend for several years.

Other key components include measures to reduce effects to aquatic and terrestrial resources, road and bridge improvements, relocation of the city of Yreka's pipeline across Iron Gate Reservoir and associated diversion facility improvements, demolition of various recreation facilities adjacent to the reservoirs, recreation improvements, downstream flood control improvements, groundwater system improvements, water supply improvements, and fish hatchery modification and improvements.

## 2.4 Proposed Action Activities

To create a free-flowing river to allow volitional fish passage, the Proposed Action includes the deconstruction of the J.C. Boyle Dam and Powerhouse, Copco No. 1 Dam and Powerhouse, Copco No. 2 Dam and Powerhouse, and Iron Gate Dam and Powerhouse, as well as associated features. Associated features vary by development, but generally include powerhouse intake structures, embankments, and sidewalls, penstocks and supports, decks, piers, gatehouses, fish ladders and holding facilities, pipes and pipe cradles, spillway gates and structures, diversion control structures, aprons, sills, tailrace channels, footbridges, powerhouse equipment, distribution lines, transmission lines, switchyards, original cofferdam, portions of the Iron Gate Fish Hatchery, residential facilities, and warehouses.

To access the dams for deconstruction, the Renewal Corporation will perform a controlled reservoir drawdown using both existing and modified infrastructure. Dam demolition will occur over approximately 6 to 8 months using multiple techniques, including contained blasting and hydraulic excavators.

Road maintenance, improvements, and rehabilitation; culvert replacements; and bridge protection, strengthening, or replacement will occur at numerous locations within the LKP Limits of Work (LOW) to support construction activities.<sup>2</sup> The Proposed Action involves the relocation of the Yreka water conveyance pipeline, Fall Creek Hatchery improvements, as well as the removal of recreation facilities adjacent to the reservoirs.

To meet the Proposed Action's objective for volitional fish passage, a restoration program will be implemented in the previously inundated areas in the former reservoir footprints, on the mainstem of the Klamath River, and on high-priority tributaries within the original LKP reservoirs. Such restoration will involve assisted sediment evacuation and residual sediment stabilization; tributary reconnection, selective post-drawdown grading to provide volitional fish passage, revegetating through native plantings; and enhancing aquatic habitat. These activities are discussed in more detail in the Reservoir Area Management Plan (2021).

The Definite Decommissioning Plan (Renewal Corporation 2020) describes the decommissioning activities in three phases: Phase 1 Pre-Drawdown; Phase 2 Drawdown; and Phase 3 Post-Drawdown (Table 2-1). Phase 1 and Phase 2 involve activities up to the final reservoir drawdown, including those activities that occur during the final reservoir drawdown immediately prior to the physical removal of the facilities. Phase 3A includes the physical removal of the facilities from the river and in-channel grading. Phase 3B includes site restoration and other ancillary work (e.g., recreation sites, Yreka water line, and fish hatchery activities). The Definite Decommissioning Plan provides the proposed schedule for the decommissioning of the LKP (Renewal Corporation 2020).

During the Phase 2 Drawdown, the Renewal Corporation (through its contractor) will draw down the water surface elevation in each reservoir as low as possible to help accumulated sediment evacuation and to create a dry work area for development removal activities. Based on the stability

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<sup>2</sup> The LOW is a geographic area that encompasses the pre-drawdown, drawdown, and post-drawdown activities and may or may not expand beyond the FERC boundary associated with the LKP.

analyses and assessments, the maximum recommended drawdown rate is 5 feet per day (Renewal Corporation 2020:29, 35).

After the Phase 2 Drawdown is accomplished, remaining reservoir sediments will be stabilized to the extent feasible, and dam and hydropower development removal will begin under Phase 3A. Full reservoir restoration and other ancillary work will begin during Phase 3B.

### 2.4.1 Phase 1: Pre-Drawdown and Phase 2: Drawdown

The Definite Decommissioning Plan describes the Phase 1 Pre-Drawdown and Phase 2 Drawdown activities related to Construction and Site Access, Powerhouse and Water Conveyance Modifications, and Reservoir Drawdown Stages for each hydroelectric facility. Table 2-1 summarizes the activities by facility (Renewal Corporation 2020).

**Table 2-1 Summary of Phase 1: Pre-Drawdown and Phase 2: Drawdown Activities by Facility**

Facility	Construction & Site Access Improvements	Powerhouse and Water Conveyance Modifications	Reservoir Drawdown
J.C. Boyle	None	None	Four stages
Copco No. 1	Construct and improve roads, temporary bridge, work platform at base of spillway	Construct one outlet on dam, dredge upstream, modify reservoir operations	Three stages
Copco No. 2	Develop temporary access roads/track	Remove downstream historic cofferdam, excavate material in the downstream channel at Spillway Bay No. 1, dispose of materials at approved on-site disposal location.	Three stages
Iron Gate	Construct access to tunnel across base of dam and work platform, access road	Partially line diversion tunnel and remove weir at outlet	Two stages

Note: Compiled from Definite Decommissioning Plan (Renewal Corporation 2020).

#### Ancillary Pre-Drawdown Site Improvements

As part of the larger dam decommissioning effort, the Renewal Corporation will install the Yreka water supply line and move fish hatchery operation to Falls Creek Fish Hatchery.

#### Yreka Water Supply Line

The Yreka water supply line traverses the upper end of Iron Gate Reservoir. The Renewal Corporation has reached agreement with the City of Yreka to construct a new segment of buried pipeline in the immediate vicinity of the existing waterline crossing. The new section of the pipeline will tie into the existing buried pipeline at either end. The pipeline will be temporarily routed across the Daggett Road Bridge until the new pipeline is constructed following drawdown. Following drawdown, a trench will be dug across the Klamath River for the construction of the new pipeline. The trench will be dug

behind a cofferdam and will be constructed in two stages to allow the river to be routed around the work zone.

## Fall Creek Hatchery Improvements

The existing Iron Gate Hatchery facilities are part of the LKP, and they are operated by the California Department of Fish and Wildlife (CDFW). Pursuant to KHSA, the Renewal Corporation has consulted with the CDFW regarding hatchery facilities. With the removal of Iron Gate Dam, the Renewal Corporation will remove the water intake and fish capture, holding, and spawning facilities of the Iron Gate Hatchery. The functions and goals of the existing Iron Gate Hatchery will be replaced by the reopening and operation of the Fall Creek Hatchery by the CDFW until the license surrender is effective. The Renewal Corporation will demolish the existing fish collection facility located at the toe of the Iron Gate Dam. The Renewal Corporation proposes to upgrade the plumbing and reconstruct the Fall Creek Hatchery to be operated by the CDFW. The Fall Creek Hatchery will be located on PacifiCorp lands outside of the boundaries respectively of the LKP or the Klamath Project, P-2082. The Renewal Corporation, PacifiCorp, and the CDFW will enter into a lease or similar legal arrangement for this purpose, to ensure that the Renewal Corporation (as future licensee) has adequate control over the lands and waters associated with this facility for compliance with the applicable condition of the License Surrender Order.

## 2.4.2 Phase 3A: Post-Drawdown Facility Removal

Phase 3A Post-Drawdown Facility Removal includes the physical removal of the facilities from the river and in-channel grading. Each of the developments are described for activities related to (1) Dam Removal and Volitional Fish Passage Channel Construction; (2) Water Conveyance Decommissioning; and (3) Powerhouse, Substation, and Ancillary Facilities Removal. For Iron Gate, a fourth category is included to describe Fish Hatchery Decommissioning Activities (Renewal Corporation 2020) (Table 2-2).

**Table 2-2 Summary of Phase 3A Post-Drawdown Facility Removal Activities by Facility**

Facility	Dam Removal and Volitional Fish Passage Channel Construction	Water Conveyance Decommissioning	Powerhouse, Substation, and Ancillary Facilities Removal	Fish Hatchery Decommissioning Activities
J.C. Boyle	Construct and improve roads; remove dam concrete and fish ladder; remove earthfill embankment; remove cofferdam and accumulated sediment	Remove 14-foot-diameter pipeline; close the power canal and remove buildings and equipment; bury tunnel portal inlet; leave Power Canal Access Road in place; fill scour hole; dispose of steel penstocks	Remove powerhouse and all associated structures; remove J.C. Boyle village (demolish all buildings)	N/A

Facility	Dam Removal and Volitional Fish Passage Channel Construction	Water Conveyance Decommissioning	Powerhouse, Substation, and Ancillary Facilities Removal	Fish Hatchery Decommissioning Activities
Copco No. 1	Complete diversion tunnel; remove concrete dam; excavate material upstream or downstream of the dam; remove the diversion tunnel cofferdam	Remove penstocks	Remove powerhouse switchyard, transmission lines, and ancillary structures	N/A
Copco No. 2	Remove dam and embankment; construct fish passage channel and install riprap for erosion on stream banks near dam	Demolish intake structure, wood-stave penstock, and steel penstocks; backfill with local materials	Remove powerhouse and ancillary structures; remove Copco Village (demolish all buildings)	N/A
Iron Gate	Remove embankment; install riprap/erosion protection; construct fish passage channel	Remove concrete from spillway; remove penstock; fill intake and outlet of diversion tunnel opening	Remove powerhouse and ancillary structures; decommission Iron Gate substation	Remove fish facilities and piping

Notes: Condensed from the Definite Decommissioning Plan (Renewal Corporation 2020).

### 2.4.3 Phase 3B: Post-Drawdown Site Restoration and Ancillary Site Improvement Activities

After the physical dam removal and the majority of in-water work occurs (Phases 1, 2, and 3A), the Renewal Corporation will implement site restoration activities, including planting, evaluating volitional fish passage barriers that may develop, and managing invasive exotic vegetation, to stabilize and restore the river.

#### Site Restoration

Site restoration is the primary activity to support the overall habitat restoration goal for coho salmon, fall-run and spring-run Chinook salmon, winter-run and summer-run steelhead, redband trout, and Pacific lamprey. Therefore, site restoration will be an active part of all phases of the decommissioning. The restoration is primarily tied to the removal of the four dams and associated

infrastructure, but there will be additional restoration of the former reservoirs as well. To be sensitive to cultural resources and minimize costly restorations in difficult access areas, the restoration will focus on the mainstem of the Klamath River, high priority tributaries, and natural springs and will include the primary restoration areas identified in the following sections. Restoration details are outlined in detail in the Reservoir Area Management Plan (Renewal Corporation 2021) developed in consultation with governmental agencies and tribes.

The site restoration effort will include streams and floodplain restoration, upland restoration, revegetation, and invasive exotic vegetation management. On floodplains, the Renewal Corporation will remove un-natural sediment stored on historic floodplains, protect streambanks from erosion, and improve hydrologic connectivity to off-channel areas and the floodplain. Upland restoration will focus on re-grading former dam sites with natural materials and using soil erosion control. Revegetation will occur in wetland, riparian, and upland planting zones. Invasive exotic vegetation management will commence during pre-removal activities and continue for 2 years after removal.

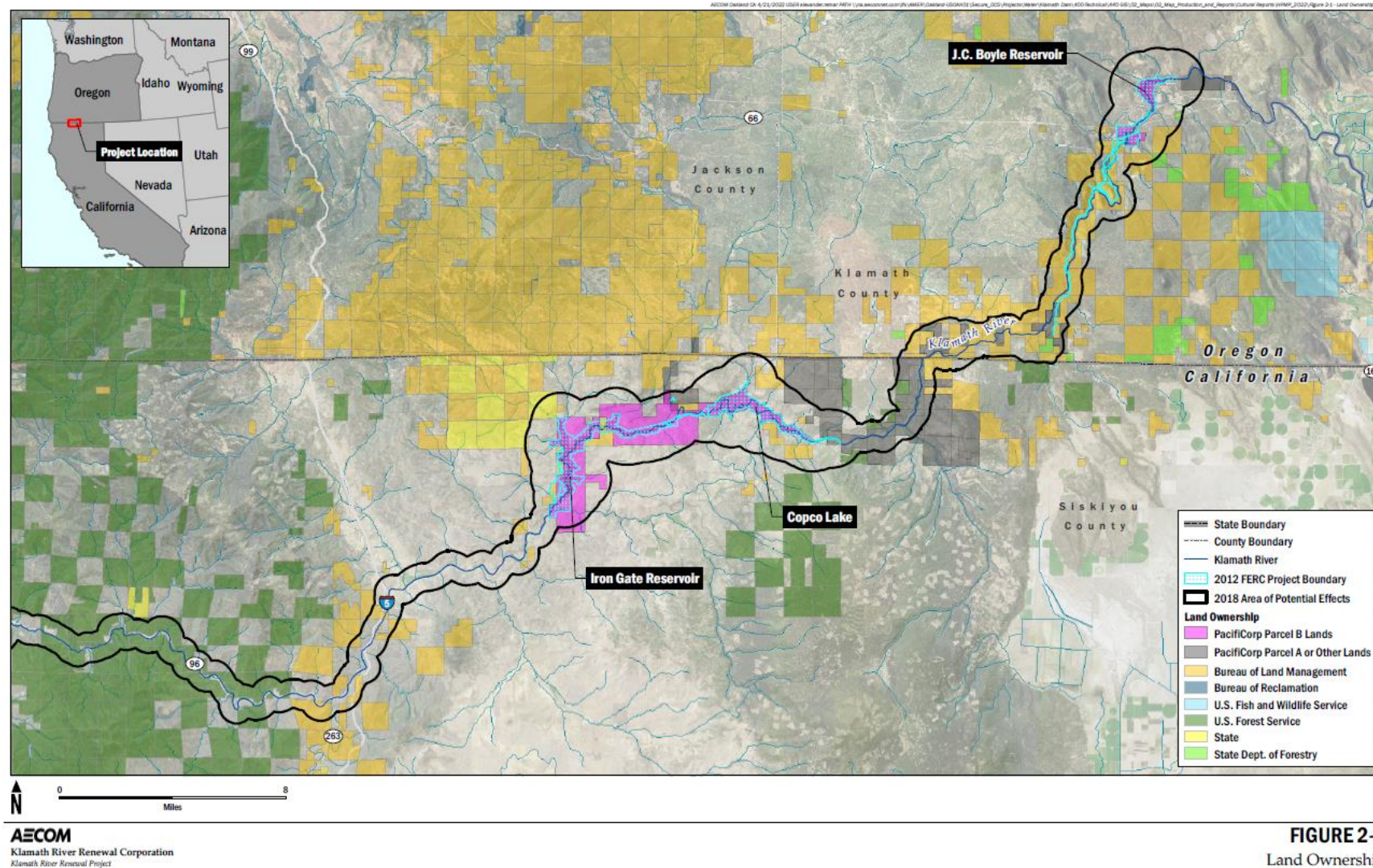
### **Ancillary Post-Drawdown Site Improvements**

Ancillary post-removal site improvements include recreation improvements. The Renewal Corporation is drafting a Recreation Facilities Plan, in coordination with stakeholders including commercial and private boaters, anglers, and tribes. The Renewal Corporation proposes changes to existing recreation sites included in the current license. These sites are listed on Table 4-1 in the Definite Decommissioning Plan (Renewal Corporation 2020:56). Following the effective date of license surrender, the Renewal Corporation will transfer LKP lands to the States of California and Oregon (Parcel B lands) or a designee. The Renewal Corporation has consulted with the States to confirm that, after the effective date for license surrender, they will assume responsibility for operation and maintenance of the sites.

### **2.4.4 Transfer of Parcel B Lands**

LKP lands subject to transfer by the Renewal Corporation to the States or to a designated third-party designee once the Renewal Corporation has met all license surrender conditions are referred to as “Parcel B lands.” The process by which private Parcel B lands will be transferred is outlined in KHSA Section 7.6.4. First, PacifiCorp will transfer Parcel B lands associated with the LKP to the Renewal Corporation before decommissioning begins. PacifiCorp will continue to operate and maintain the proposed LKP and will assume the financial and legal liabilities for the developments pending surrender of the transferred license. However, the Renewal Corporation alone will remove the dams. Once the Renewal Corporation has completed facilities removal and all surrender conditions have been satisfied, the Renewal Corporation will transfer ownership of these lands to the respective States.

The general LKP location and locations of Parcel B lands subject to transfer from the Renewal Corporation to the States are provided in Figure 2-2.



Source: 2012 EIS/R (United States Bureau of Reclamation and California Department of Fish and Game [USBR and CDFG] 2012)

**Figure 2-2** Land depicting land ownership, including Parcel B lands as well as the APE Boundary.

## 2.5 Area of Potential Effects and Area of Direct Impacts

Given the various components of the Proposed Action, the Renewal Corporation has developed an APE in consultation with BLM (Klamath Falls and Redding Field Offices), the United States Forest Service (USFS; Klamath National Forest and Redding District), Oregon and California SHPOs, tribes, and other consulting parties. This section describes the APE as required by 36 C.F.R. Part 800. It then describes the Area of Direct Impacts (ADI), which is a subset of lands in the APE subject to physical effects by the Proposed Action. The California SHPO agreed with the APE on December 21, 2018; the Oregon SHPO agreed to the APE for above-ground architectural resources on December 13, 2018 and following the provision of additional information agreed to the APE for archaeological resources.

### 2.5.1 Area of Potential Effects

The Renewal Corporation, in consultation with federal agencies, Oregon and California SHPOs, tribes, and other consulting parties, has developed an APE. This section describes the APE as required by 36 C.F.R. Part 800. It then describes the ADI, a non-regulatory term used for this Proposed Action to describe a subset of lands within the APE subject primarily to direct construction-related effects associated with the Proposed Action. The APE and ADI are depicted in Figures 2-3 and 2-4.

The Area of Potential Effects (APE) is the geographic area within which the undertaking may directly or indirectly cause alterations in the character or use of historic properties. Defining an APE provides FERC and consulting parties with a basis for understanding the geographic extent of effects to historic properties from an undertaking, which is necessary to properly plan the level of effort for historic properties identification, evaluation, and effects assessments. To confirm the consideration of possible downstream effects below Iron Gate Dam, as well as within the river reaches between J.C. Boyle Dam and Iron Gate Reservoirs, a geographically broad APE has been defined. This APE allows for the examination of potential effects on the surrounding cultural landscape, a potentially NRHP-eligible riverscape, and other identified TCPs, Sacred Sites/HPRCSITs, and/or archaeological or historic districts located within Klamath River Canyon between J.C. Boyle and Iron Gate Reservoirs. The geography of the APE represents a complex array of natural and cultural features that collectively represent a Cultural Riverscape associated with significant patterns of events in the traditional histories of the Yurok, Karuk, Hupa, Shasta, and Klamath Tribes.

The APE is primarily a 0.5-mile-wide area on each side of the Klamath River from the upper reach of the J.C. Boyle Reservoir to the river mouth at the Pacific Ocean. However, around the reservoirs where topography is more open and rolling, the APE extends at least an additional 0.5 mile to create a minimum 1-mile-wide area on each side of the reservoirs to address the potential for visual effects primarily related to viewshed alterations resultant from reservoir removal. Due to the potential for landscape-level visual changes, the APE around each reservoir occasionally extends beyond the 1-mile-wide area to include areas that are within sight lines of the reservoirs and ADI. This was determined through use of a viewshed analysis based on bare earth (e.g., no trees, vegetation, or other obstructions) inter-visibility, where geographic information system (GIS) application determines direct sight lines from one position to another considering intervening topography using a digital

elevation model. Based on these results, the maximum extent of the APE has been set at 2 miles from the ADI around the reservoirs. This distance incorporates most areas with direct sight lines to each reservoir and ADI component yet excludes areas where adverse visual impacts are less likely based on distance, probability of vegetation screening, or other screening landforms.

The riverscape concept used to define the APE also acknowledges the crucial and significant role that the river and its environs play in the lifeway practices of multiple tribes along the length of the Klamath River. The Klamath Riverscape has been recommended as retaining sufficient historical integrity and meeting the NRHP Criteria for Evaluation (King 2004). Although the Oregon and California SHPOs have not concurred with this NRHP eligibility recommendation, the riverscape concept is a useful construct in ensuring that the current APE considers the possibility of other types of effects besides physical effects that could still occur outside of the ADI.

Within the APE, potential effects include construction impacts to archaeological sites and TCPs/HPRCSITs, removal of historic hydroelectric buildings and structures, viewshed alterations, erosion, restoration activities, construction-related noise and vibration, atmospheric impacts from construction-related dust, withdrawal of lands within the FERC Project Boundary out of FERC jurisdiction, adjustments to floodplain configurations downriver from Iron Gate Dam, as well as increased recreational uses and/or public access that increases the possibility for looting and vandalism.

## 2.5.2 Area of Direct Impacts

The Area of Direct Impacts (ADI) is a smaller footprint within the APE. This is not a regulatory term but is useful for describing impacts from the Proposed Action. The Renewal Corporation has defined an ADI within the APE that delineates where there are anticipated direct physical impacts, particularly those areas that will be subject to ground disturbance, such as dam facility removal, reservoir restoration activities, and recreation site development. The ADI generally corresponds with the LOW, which refers to the physical extent of on-the-ground construction activities (i.e., demolition and removal) and restoration activities per the DDP (Renewal Corporation 2020).

The ADI does not directly correspond to the FERC Project Boundary. The FERC Project Boundary is the geographic extent a licensee must own or control as a part of its licensed hydropower projects which is distinct from the APE. Due to FERC's regulatory jurisdiction, the FERC Project Boundary for the LKP (FERC Project No. 14803) is wholly included within the APE.

Physical effects will only occur in the ADI, but other types of effects (visual, auditory, or atmospheric) could occur throughout the entire APE as well as the ADI. For built environment resources, inventory methods specifically targeted resources that would be affected by decommissioning activities, construction, and/or demolition, roadway, culvert, and/or bridge adjustments, visual changes of historic settings, and changes in the downriver floodplain configurations.

The APE extends to the Pacific Ocean primarily to account for potential downstream effects to archaeological sites and TCPs, as well as to incorporate consideration of potential effects to the Klamath Cultural Riverscape. The Renewal Corporation initially considered effects in areas outside of

the ADI within the APE. Further refinement of Proposed Action studies (i.e., sediment modeling) indicated there would be no potential downstream effects to archaeological sites beyond Humbug Creek in the ADI. Aside from resources erected during the period of hydroelectric development, such as the houses erected along the outskirts of Copco Lake, visual changes associated with the Proposed Action would not adversely affect resources that predate hydroelectric development and would be beneficial in the long-term due to restoration activities related to fish habitat and revegetation. The Renewal Corporation has therefore determined that historic properties and potential historic properties that date from this earlier period would not be adversely affected by changes to setting.

### 2.5.3 Land Ownership and Management

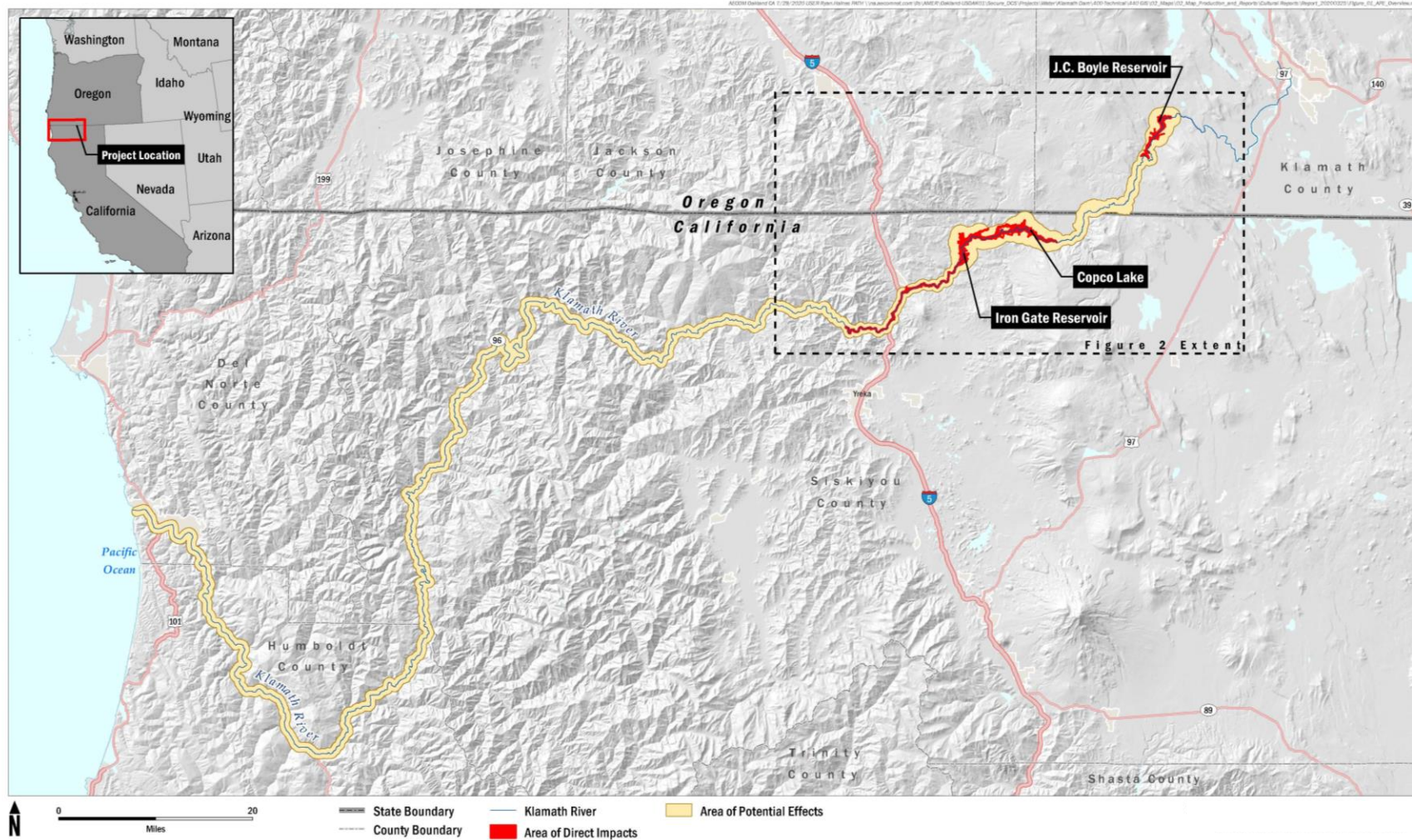
For land and resource management purposes, this section provides a breakdown of acres by landowner.

The ADI boundary includes 4,755.16 acres (as of January 2020). The Renewal Corporation will temporarily own and manage 2,870.74 acres of Parcel B lands, which account for approximately 60.4 percent of the proposed ADI, including the land containing most of the LKP powerhouses; portions of the transmission lines, conduits, canals, and dam facilities; and land underlying the LKP reservoirs, Klamath River, and tributary streams. PacifiCorp will retain ownership of Fall Creek lands and other lands, totaling approximately 106 acres (2.2 percent). Approximately 304.79 acres (6.4 percent) are federally owned: portions of the J.C. Boyle canal and the entire powerhouse as well as portions of Iron Gate Reservoir are on BLM land (253.8 acres; 5.3 percent), while the USFS administers lands (50.99 acres, 1.1 percent) that are in the revised 100-year floodplain below Iron Gate Dam (exclusive of Parcel B lands). Private ownership accounts for 1473.5 acres (31 percent). No State lands are included in the ADI.

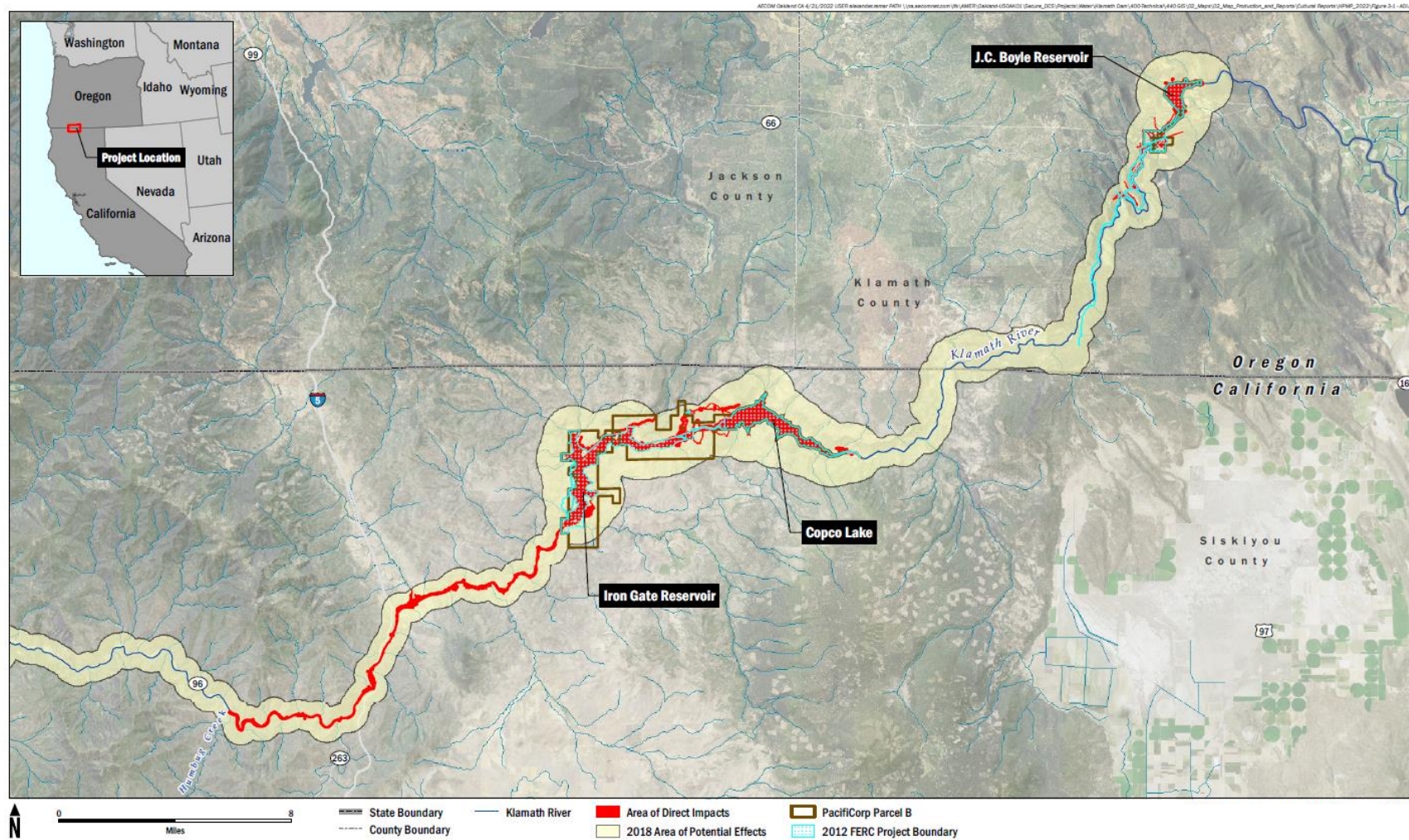
Lands in the APE situated below the Iron Gate Dam are generally privately owned, but also include parcels managed by the U.S. Bureau of Indian Affairs (BIA) and included in the reservation boundaries of the Yurok Tribe of the Yurok Reservation, Hoopa Valley Tribe, Quartz Valley Indian Tribe, and Resighini Rancheria. The APE also includes lands held by the BIA in Trust for the Karuk Tribe in addition to lands held in fee-simple status by the Karuk Tribe.

Contemporary land use in the project area and adjacent properties includes hydroelectric generation, fish management, livestock grazing, recreation, and timberlands.

Land acreages were calculated using GIS; the acreages are current to the date presented on the cover of the report. The acreages of lands within the ADI lands are listed in Table 2-3.



**Figure 2-3 Overview of the Proposed Action APE and ADI**



**Figure 2-4 Proposed Action ADI and APE**

**Table 2-3 Lands of the United States in the ADI**

Feature	Ownership Type	Acres	Percent of ADI
ADI Boundary	N/A	4,755.16	N/A
Parcel B Lands	PacifiCorp	2,870.74	60.37
Fall Creek Lands	PacifiCorp	48.73	1.02
Other PacifiCorp Lands	PacifiCorp	57.40	1.21
BLM Lands	Federal	253.80	5.34
USFS Lands	Federal	50.99	1.07
All other lands	Private	1,473.50	30.99

• Note that there are no State or tribal lands in the ADI boundary.

## 2.5.4 Proposed Changes to the APE

Consistent with the consultation requirements of the HPMP and/or the PA, federal agencies, SHPOs, tribes, and other consulting parties will be consulted if changes to the APE are proposed by the Renewal Corporation.

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## **Chapter 3: Cultural Context**

## 3. CULTURAL CONTEXT

### 3.1 Environmental Setting

This section provides an overview of the environmental setting of the Klamath River watershed, beginning with a description of current environmental conditions. The environmental context is important for understanding human use of the landscape. The primary sources for this information are the 2004 PacifiCorp Klamath Hydroelectric Project (KHP) license application (PacifiCorp 2004), the United States Bureau of Reclamation (USBR) and California Department of Fish and Game (CDFG) Final Environmental Impact Statement (USBR and CDFG 2012), the Definite Decommissioning Plan (Renewal Corporation 2020), and the Lower Klamath Amended License Surrender Application (Renewal Corporation 2021), as supplemented by other references.

#### 3.1.1 Klamath River Basin Overview

The Klamath River Basin or watershed is a large north-south oriented lake and wetland complex in south-central Oregon and northwestern California that drains nearly 16,000 square miles, with approximately 35 percent of the drainage in Oregon and 65 percent in California (Natural Resources Conservation Service [NRCS] 2018). The Klamath River headwaters begin in Upper Klamath Lake, Oregon's largest natural freshwater lake, and the river flows for approximately 250 miles until it reaches the Pacific Ocean at Requa, California. The Klamath River Basin geography, topography, hydrology, and biology are distinct from other watersheds in the Pacific Northwest because water in the Klamath River originates in relatively flat open valleys before crossing the Trinity and Coast ranges in a steep river canyon and intercepting cold water inputs from the Scott, Salmon, and Trinity rivers (USBR and CDFG 2012). The flat topography, along with lower average precipitation in the Upper Klamath Basin versus the Lower Klamath Basin, influences water flow and temperature in the river. The river is also one of only three waterways that pass through the Cascade Mountains to the Pacific Ocean. The river basin is rural, with a total population of approximately 120,000. Its largest communities are Klamath Falls, Oregon and Yreka, California.

The Klamath River Basin is often divided into the Upper and Lower Klamath basins, with Iron Gate Dam used as the dividing feature (NRCS 2018). The Upper Klamath Basin includes the headwaters and is defined by the Sprague River, Williamson River, Upper Klamath Lake, Lost River, Upper Klamath East, and Butte Creek Sub-basins that flow through Jackson, Lake, and Klamath counties in Oregon, and Siskiyou and Modoc counties in California. There are five main lakes in the Upper Klamath Basin: Crater Lake, Upper Klamath Lake, Lower Klamath Lake, Clear Lake, and Tule Lake.

The Lower Klamath River Basin includes 200 miles of river corridor downstream from Iron Gate Dam to the Pacific Ocean. This area is influenced by seven hydrologic sub-basins: Upper Klamath West, Shasta, Scott, Salmon, Lower Klamath, Trinity, and South Fork Trinity, in Trinity, Humboldt, and Del Norte counties, California (NRCS 2018; USBR and CDFG 2012:3.6-1 to 3.6-12). The Lower Klamath Basin is most heavily influenced by the Shasta, Scott, Salmon, and Trinity rivers, which supply 44 percent of the average annual runoff. Downstream from Iron Gate Dam and for most of the river's

length to the Pacific Ocean, the river maintains a relatively steep, high-energy channel; here the Klamath River forms a deep canyon surrounded by mountains of the Trinity and Coast ranges (USBR and CDFG 2012). The Klamath Estuary on the Northern California coast near the town of Klamath completes the system (Figure 3-1).

## 3.2 Historical Context

The arrival of European Americans to the Klamath River region brought about rapid changes in traditional Native American cultures. The earliest non-native individuals to arrive were nineteenth-century European fur trappers and expeditioners, followed by gold prospectors, many of whom eventually settled in the area. Completion of emigrant trails and routes, such as the Applegate Trail, helped establish small communities in the Klamath Lakes area and along the Klamath River corridor. Settlement was promoted by federal land and water legislation that greatly increased the acreage available for agriculture and ranching. Logging, one of the region's primary industries, substantially expanded as railroads carrying lumber and passengers supplanted the stage lines. Hydroelectric development in the Upper Klamath River canyon area began around the turn of the twentieth century; by 1912, competing regional electricity producers merged into Copco. Hydroelectric development during the twentieth century created fish management and conservation issues and provided recreation opportunities. The following historical overview summarizes the major historical themes relevant to evaluation of built environment resources in the project area. A historic context statement for the KHP (Kramer 2003a) and a historical landscape overview of the Upper Klamath River Canyon (Beckham 2006) provide additional detail.

Figure 3-2 and Figure 3-3 illustrate place names important to the summary discussion presented below.

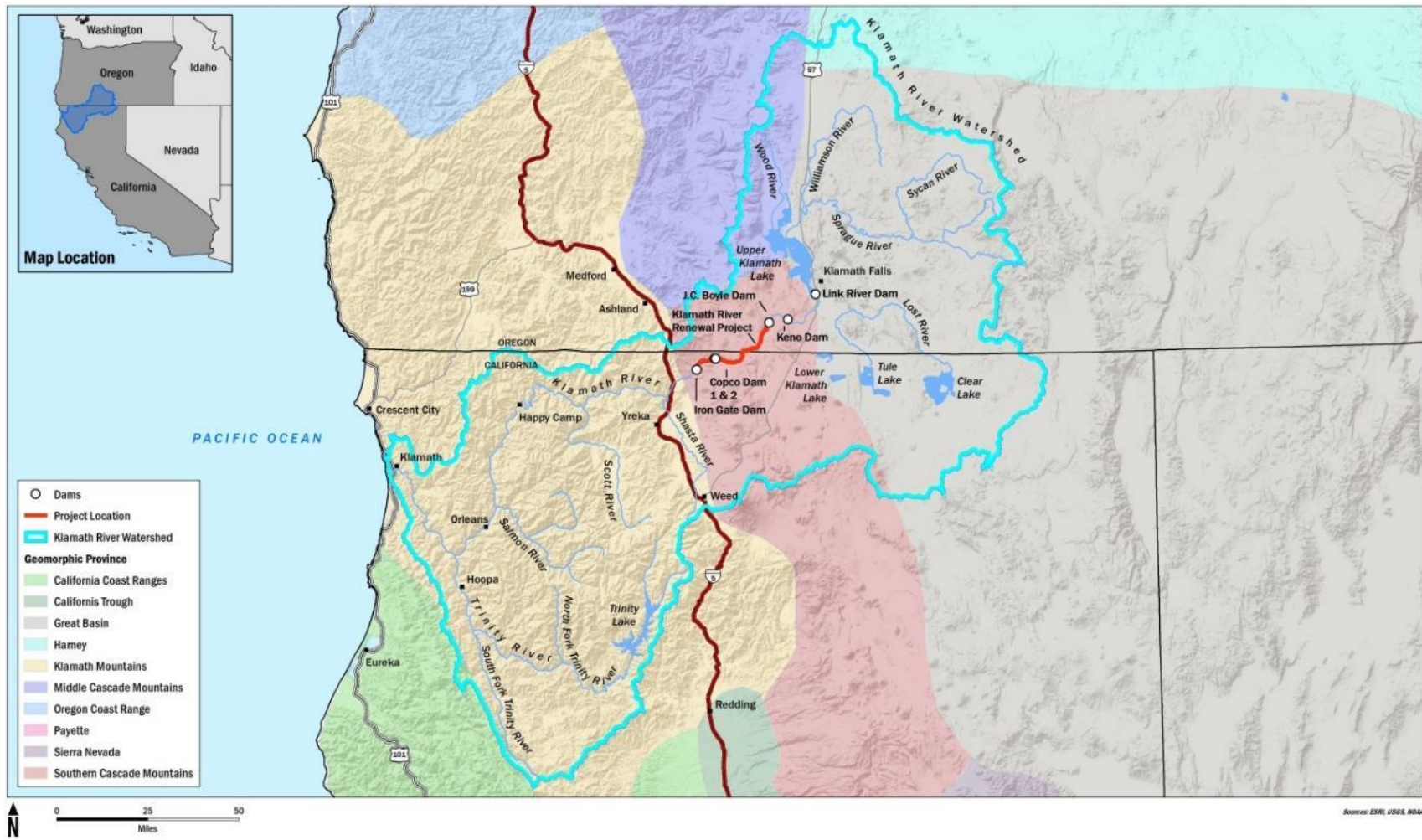
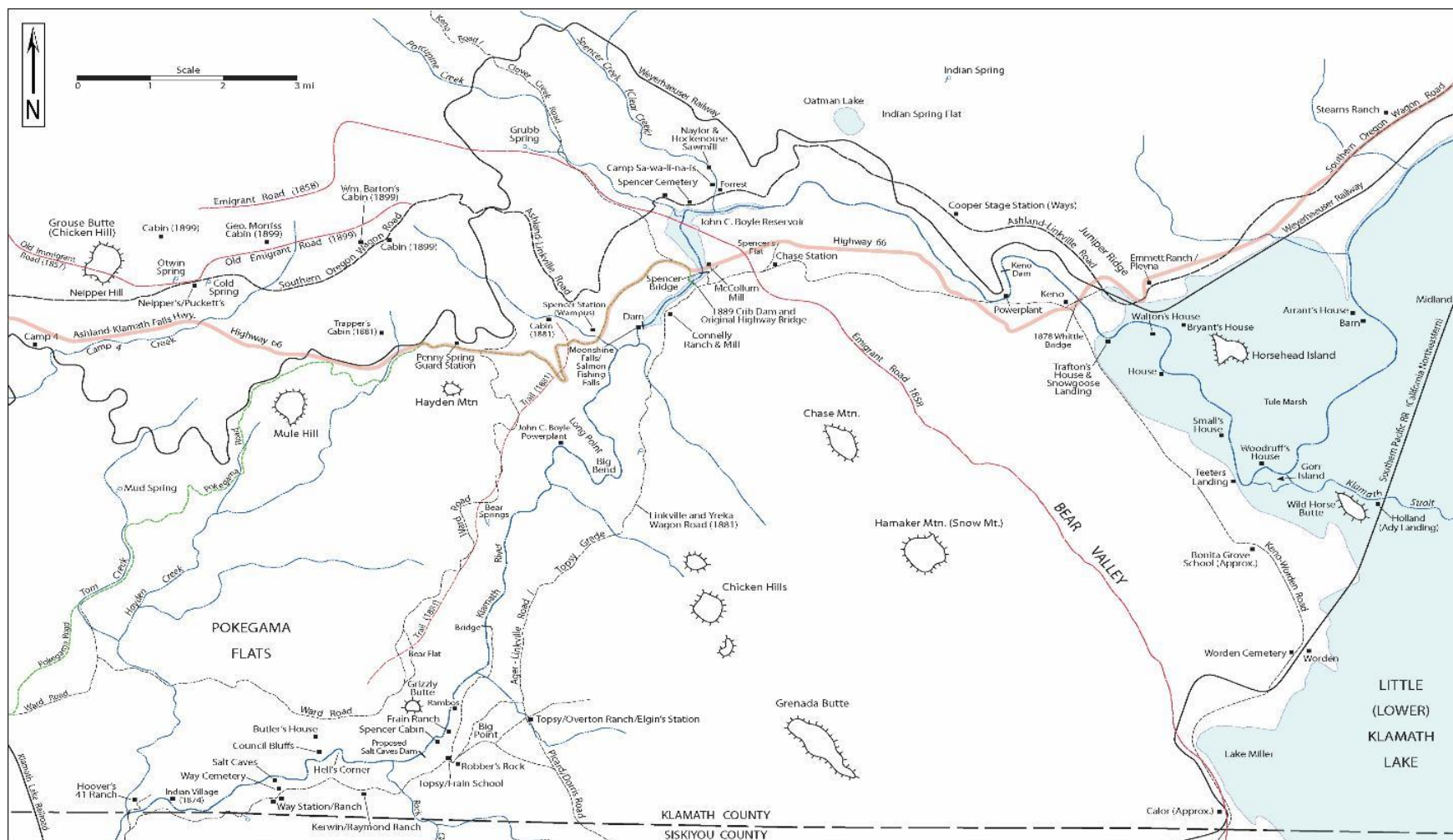
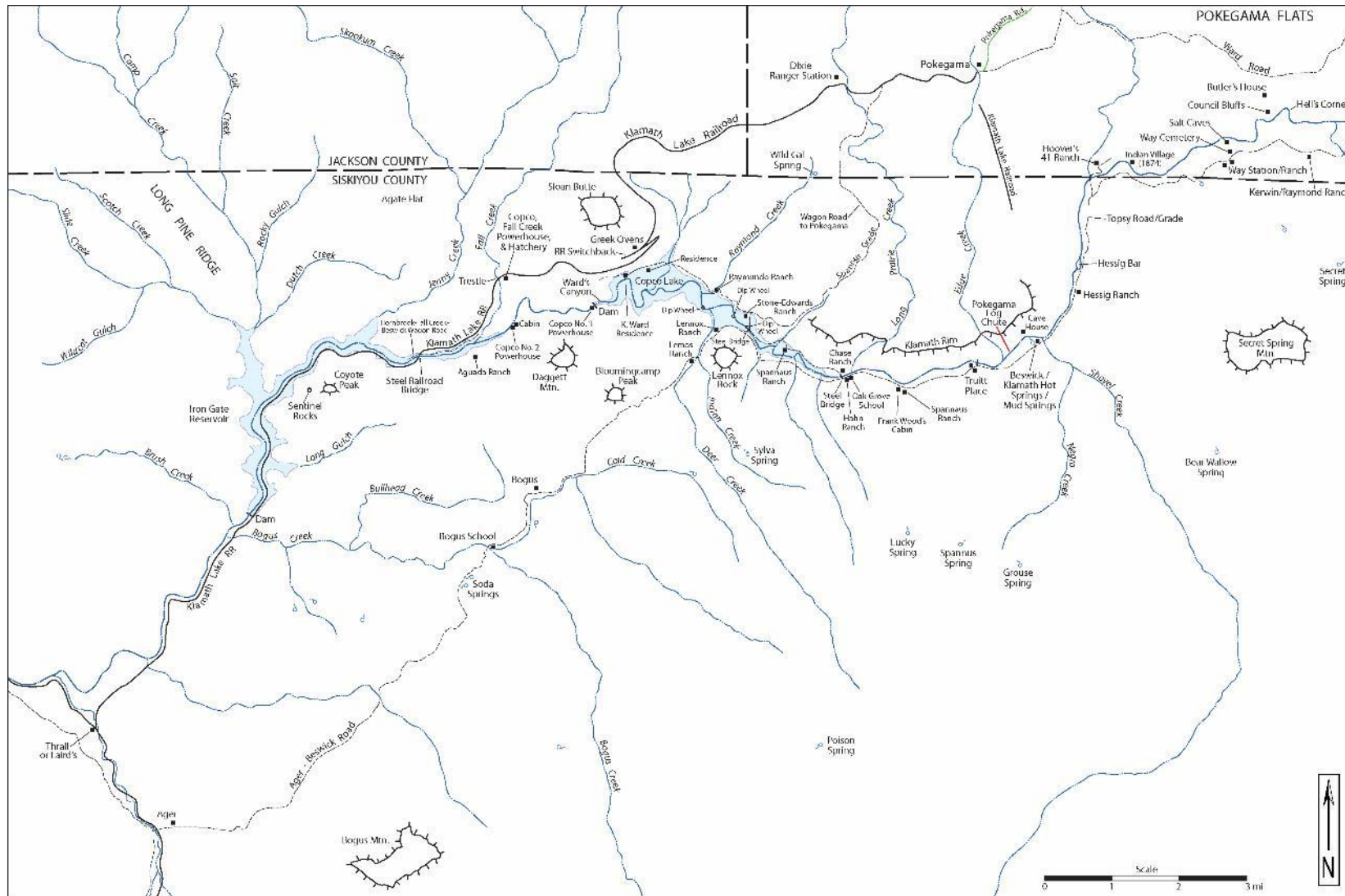


Figure 3-1 Klamath River watershed with geomorphic province



**Figure 3-2 Historic place names in the Oregon portion of the project area**



**Figure 3-3** Historic place names in the California portion of the project area

### 3.2.1 Early Exploration and Settlement

A network of Native American trails used by early European explorers and later settlers originally traversed the project area. One of the first Europeans to enter the Klamath River region using these trails was Jean Baptiste McKay, a fur trapper for the Hudson's Bay Company (HBC). McKay came west as a member of the Astor Expedition's 1810 to 1812 overland voyage to Astoria, Oregon, sponsored by the Pacific Fur Company (Barry 1933:288). He may have established a fur-trading camp on the Umpqua River in Oregon known as the Old Establishment or McKay's Old Fort, which was used seasonally into the 1830s (LaLande 2018). His forays into the fur-bearing Klamath River region took place as early as 1825, when he reportedly camped near Sheep Rock, in Shasta Valley (Jones 1953:2), but the route of his entry into Siskiyou County is not known.

During the 1820s and 1830s, HBC trappers were intensely involved in the early exploration and development of what would become Southern Oregon and Northern California. HBC trapping brigades were sent south from company headquarters in Fort Vancouver, Washington, along what became known as the Siskiyou Trail, into Northern California as far south as the San Francisco Bay Area, where the company operated a trading post at Yerba Buena (San Francisco). In 1826 to 1827, Jedediah Strong Smith and Peter Skene Ogden explored what are now Siskiyou and Klamath counties in search of beaver for fur trading. Ogden's expedition journal indicates that this HBC brigade first encountered and crossed the Klamath River in mid-January 1827, immediately below Lake Ewauna, Oregon (LaLande 1987:25-29). In what is now the project area, the group continued south along the river to a point west of Big Bend, eventually making camp on Long Prairie Creek. On January 31, 1827, after remaining there for several days, the brigade proceeded south to the Klamath River, where they established camp in an area now inundated by Copco Lake. The Ogden party then traveled down the Klamath River to a point at or near Brush Creek and made camp in the present-day Iron Gate Reservoir (LaLande 1987:44). The brigade moved to Cottonwood Creek on February 6, 1827, heading up the creek some distance before making camp. Two days later, the group crossed the Siskiyou Mountains divide and entered the Rogue River drainage basin, in present-day Oregon.

In 1829, Alexander Roderick McLeod led a party of HBC trappers and explorers through the area. During this expedition, McLeod established a number of trails in Northern California; within a few years, HBC trappers were passing regularly through Siskiyou County. Over time, the various travel routes between Oregon and Northern California became collectively known as the "California-Oregon Trail." This included the coastal route used by Jedediah Smith and Alexander McLeod, the HBC trail over the Siskiyou Mountains, and the Peter Skene Ogden route by way of Klamath Lake (Rensch et al. 1933:415). These various routes have been described as strands of the Siskiyou Trail (Dillon 1975). The central portion of these trails traversed Shasta Valley, an area crossed by many emigrants in the 1830s and 1840s.

The fur trade declined in the mid-1840s, leaving the area sparsely occupied until the advent of regional mining and logging. Following the discovery of gold at Sutter's Mill in Coloma in 1848, and the confirmed presence of large gold deposits, a mass migration to California caused the European American population to jump from an estimated 4,000 in 1848 to 500,000 in 1850 (Bancroft

1888). In the Klamath River region, gold was discovered just north of present-day Yreka in 1851 (Hoover et al. 2002).

The Applegate Trail, a branch of the California Trail, was an important early travel route across southern Oregon, used by gold seekers and other emigrants. The Applegate Trail was an alternate southern route of the Oregon Trail that was blazed from west to east, intersecting the California Trail at the Humboldt River in Nevada. After its opening, Oregonians used part of the Applegate Trail to travel back and forth to California's gold fields. A group of Oregon settlers from the Willamette Valley, led by Jesse and Lindsay Applegate, established this wagon road in 1846. Trail use continued in the 1850s, but slowly declined as new routes were established.

Increased emigrant traffic led to conflicts with Native American groups, and attacks on travelers by Modoc Indians beginning in the early 1850s diminished use of the Applegate Trail. In the summer and fall of 1860, a military camp named Camp Day, shown in Figure 3-4, was established along Spencer Creek (previously known as Clear Creek), just north of present-day J.C. Boyle Reservoir, to protect emigrant traffic. Camp Day was about 1 mile east of the Applegate Trail's Klamath River crossing. Subsequently, Fort Klamath, near present-day Chiloquin, Oregon, was established in 1863, also for the protection of travelers on the Applegate Trail and other emigrant routes. Use of the Applegate Trail continued through 1867, at which time the town of Linkville, Oregon (present-day Klamath Falls) was established on the Klamath River, with the Applegate Trail used to bring in freight from the west (Helfrich 1971:13-16).



Source: Epley 1964:11

**Figure 3-4** Camp Day, summer 1860

In the 1860s, with the rush to active gold mines in eastern Oregon and Idaho, additional roads were constructed that supplanted the Applegate route. In addition, settlements were established in Modoc County, California, and roads were built from these locations to Linkville, further reducing the use of the Applegate Trail. Travelers used certain portions of the Applegate Trail during the Modoc War in the early 1870s, while other portions were largely abandoned. The establishment of the Ashland-Linkville Road, also known as the Southern Oregon Wagon Road, in 1869 eventually replaced the older Applegate Trail through the area west of Klamath River (Helfrich 1971:97).

### 3.2.2 Mining

Permanent settlement of the Upper Klamath River area by European Americans largely followed the gold rush of the early 1850s. The discovery of placer gold attracted the pioneers of what became Siskiyou County. The influx of miners also provided a market for early agriculture, including livestock ranching. In Upper Klamath River area where gold was not mined, settlers exploited the natural resources to earn a living. Trapping and hunting provided valuable furs and deer hides, while local streams yielded abundant fish for market. By early 1852, the mining population in the Yreka area and on the neighboring Scott River had exploded, leading to the formation of Siskiyou County, which was carved out of Shasta County. Before the end of that year, justices of the peace were presiding in four townships, including Yreka, Humbug, Scott River, and Cottonwood (Jones 1953:22).

Gold was first discovered in the Northern California and Southern Oregon region in 1842 by members of the Wilkes Exploring Party (Wells 1881:25). After the 1848 discovery of gold at Sutter's Mill, prospectors in Oregon began to work their way south into what later became Siskiyou County (Stumpf 1979:4; Wells 1881:53). In 1849, Lindsey Applegate and others crossed the Siskiyou Mountains and searched for gold in the headwaters of Scott River for several days (Stumpf 1979:4; Wells 1881:53). At the same time, settler Pearson B. Reading left his ranch in the upper Sacramento Valley to prospect the Trinity River. Upon finding river bars rich in gold, he brought a large contingent of laborers to mine the river. By the fall of 1849, word was sent out of the riches that were being found (Wells 1881:55).

In early 1850, parties searching for the mouth of the Trinity River identified the Klamath River as a convenient travel route. They explored downstream and founded the settlement of Klamath City (Wells 1881:59). Groups explored the Klamath River upstream as far as the Happy Camp area, as well as portions of its tributary, the Salmon River, where they discovered gold in the gravel bars. Other mining parties traveled farther up the Klamath River during the summer of 1850. Miners went as far as 1 mile above the mouth of the Shasta River and crossed over the hills into Shasta Valley. By the first week of August 1850, miners reached the mouth of Yreka Creek, traveled up the stream, and made camp at the present-day city of Yreka. After some prospecting, miners continued south along the "Oregon Trail" to the Sacramento River and on to the city of Shasta, just west of Redding (Wells 1881:59-60).

By fall 1849, many miners were working the Trinity River; and by late 1850, considerable gold mining had begun near the confluence of Klamath and Scott rivers, particularly at Scott Bar on the Scott River. In early 1851, thousands of prospectors poured into the area of the upper Klamath and Shasta rivers, Yreka Flats, Greenhorn Creek, and Scott Valley (Wells 1881:62). The portion of the Klamath River between Cottonwood and Humbug creeks, in the ADI, is in what became known as the Klamath River mining district's Hornbrook section. The original economy of the Cottonwood Creek area was entirely mining, and gold production at Cottonwood Basin was considered second only to Yreka Flats (Jones 1953, 1971).

A number of other claims were filed in the Klamath River mining district on several Klamath River tributaries, near French Gulch (Jones 1971:285), Dutch Gulch and Printer Gulch (French 1990:25), Sharp's Gulch (Jones 1971:286), Bar Bell, Oregon Bar, and Long Gulch (Jones 1971:288). On Ash Creek, north of the Klamath River, extensive mining took place on the steep hillsides (Jones

1971:288). In some areas, miners used wing dams to divert the river and expose the river bed and derrick mechanisms to move the large boulders. Gravels were processed to bedrock and the bedrock crevices were washed for gold (Jones 1971:288). Gravel bars of the Klamath River were also mined using large dredges, often employed on the large tributary streams, such as Cottonwood Creek (*Sacramento Union* 1908). Mineral patents indicate that no productive mining ever transpired on the Upper Klamath River east of Cottonwood Creek and east of the Klamath Mountains, although some prospecting likely occurred in the early days.

Many of the men and women who settled farms and ranches in the Upper Klamath River area originally worked the mines of Siskiyou County, particularly around Yreka, Hawkinsville, Scott Valley, Quartz Valley, and Humbug Creek. Some gave up mining to work in hotels and stores, butcher shops, laundries, banks, and mills, while others worked for express and stage companies. Others started livestock ranches, became ranch hands, returned to the medical profession, or entered politics. Many turned to fur trapping, hunting, and fishing to earn a living.

While early county records and histories indicate that there was a large Chinese population working the Klamath River mines around Henley, California, many of these miners left the area after the mines played out. Many Chinese men were hired to construct the Klamath Lake Railroad (KLRR) in 1901. A considerable number of Portuguese miners, along with miners of German or Prussian descent, came to Siskiyou County; many of these people later settled in the Upper Klamath River area, particularly in the Willow Creek and Bogus Creek areas.

### 3.2.3 Agriculture, Ranching, and Reclamation

As regional mining waned, some former miners remained and established ranches and farms, capitalizing on the area's rich soil, flat terrain, and plentiful water (PacifiCorp 2004: Exhibit E 6-64). Previously, the climate and abundant rangelands drew early stockmen such as Wallace Baldwin who, in 1852, trailed 50 horses from Rogue River to Keno, Oregon (PacifiCorp 2004: Exhibit E 6-64). Four years later, in the winter of 1856, Judge Frank Adams grazed 2,000 head of cattle near Keno. Adams observed that "the wild rye [was] so high and plentiful that stock came out in the spring fat and ready for market" (Western Historical Publishing Company [WHPC] 1905:931). That spring, Adams sold 1,200 cattle at \$80 per head in Yreka and other Northern California mining towns. Wendolen Nus, known as Klamath County's first permanent white settler, grazed a herd of cattle on the Klamath River in winter 1858–1859, several miles southeast of Klamath Falls, where Orson Avery Stearns later established a ranch (WHPC 1905:931). Nus returned to Klamath country in 1866 with a herd of cattle, which he raised several miles north of Klamath Falls for supplying beef to Fort Klamath (WHPC 1905:938).

In 1867, the Linkville town site (present Klamath Falls) was founded in Southern Oregon on the Klamath River near the outlet of Upper Klamath Lake. By 1869, approximately 100 people were living in the present Klamath County boundaries (WHPC 1905:940). Farther downriver, in the 1850s, a small community was founded at Whittles Ferry, near present-day Keno. By the 1860s, California communities developed in the present Copco Lake area at Oak Grove (present-day Copco Village) and Killebrews Ferry near Wards Bridge. While numerous family ranches eventually developed in the Iron Gate reservoir area, no distinct communities existed during the late nineteenth century.

Federal legislation related to public lands and irrigation shaped settlement patterns in the Upper Klamath Basin. The 1850 Donation Land Law and 1862 Homestead Act enabled settlers to acquire and develop public lands. Early regional agriculture primarily provided winter forage to the cattle and horses (Hayden 1941:103). After the Modoc War ended in 1873, settlement increased while stock-raising remained the area's principal industry (Hayden 1941:103). The ranching industry further expanded during the late 1880s when Lucien Applegate, who already owned 800 Hereford cows, brought Black Angus or Galloway Bulls overland from Sacramento. A few years later, N. G. Merrill brought Shorthorns by railroad from Chehalis through Montague (Noggle 1970:32). These resident stock raisers competed for access to bunch grass with "free-grazers," those from other parts of the west exploiting the basin's open rangelands (WHPC 1905:940).

The winter of 1889–1890, the worst in the Klamath Basin's history, rendered stock feed inaccessible, killed numerous cattle through hypothermia and starvation, and destroyed most of the area's original ranch outfits (Noggle 1970:32). Another significant event for the Basin's ranching industry was the arrival of the Southern Pacific Railroad (SPRR). Following the SPRR's 1907 arrival at Midland, cattle corrals were built 7 miles southwest of Klamath Falls. The railroad and corrals transformed Midland into a primary shipping point for cattle driven to the town (Klamath County Historical Society [KCHS] 1984:33). Two years later, in 1909, the SPRR was completed to Klamath Falls. This stimulated intensive growth in the local lumber industry and prompted a market for draft horses raised for use by loggers. Before the railroad's completion, all cattle arrived at Klamath Falls by trail. The line's completion to Klamath Falls enabled cattle to be shipped "fat" by rail (Noggle 1970:32).

Early agriculture in the Basin stemmed from the need to provide winter forage to the cattle and horses (Hayden 1941:103). Local attitudes towards agriculture shifted noticeably around 1880, when a Keno ranch used 36 acres to produce 36 bushels per acre of barley, leading other settlers to pursue cereal and other crops, as shown in Figure 3-5 (WHPC 1905:967). After a 1908 USBR survey, W.H. Heileman described the basin as "pre-eminently a dairy and stock raising country" with good quality native forage grasses growing abundantly. Heileman reported that:

*In the Klamath Basin, there is much fine livestock. Horses are bred in large numbers and the stock industry is greatly benefited by the surrounding range lands which afford ample summer range for cattle, horses and sheep. The basin lands will soon produce all the necessary feed that may be needed for winter fattening (Heileman 1908:17).*



Source: WHPC 1905

**Figure 3-5 Klamath County alfalfa field**

Recognizing the land's potential, residents began cultivating grain near Keno, Klamath Falls, and Klamath Lake's eastern shore to supply the local market (WHPC 1905:939). During the 1880s and 1890s, before irrigation became widespread, Klamath County farms used dryland farming techniques to produce crops such as barley and potatoes (KCHS 1984:232). By 1905, the local farms were producing large potato crops, as well as sugar beets, apples, pears, plums, prunes, cherries, peaches, berries, and grasses. During that era, buyers from throughout the west coast flocked to the Upper Klamath Basin to buy cattle (WHPC 1905:985,989).

The absence of patented homesteads recorded in the present J.C. Boyle Reservoir area indicates a lack of historic agricultural and ranching activities (Beckham 2006); however, the Homestead Act attracted many settlers to the Upper Klamath River canyon area downstream of J.C. Boyle Reservoir to the California–Oregon border. In addition, historical records for the area detail the influence of logging, lumber mills, and early transportation routes. However, as noted by Beckham (2006:62), only about 1 to 5 percent of this area's acreage was in private ownership, with most parcels retained as public domain lands.

Between 1882 and 1890, most of the lands surrounding and currently inundated by Copco Lake and Iron Gate Reservoir had been patented, with some additional claims between 1911 and 1919. Unlike the Oregon homestead patents, those on the California side encompassed a higher acreage

percentage (15 to 22 percent) of private land (Beckham 2006). This may have been related to the California side's gentler terrain and valley environments.

Many local geographic landmarks (e.g., Lennox Rock, Ward Canyon, Chase Mountain), historic sites (e.g., Beswick), and features (e.g., Miller-DeSoza ditch) in the project area are named for homestead claimants in the Copco Lake and Iron Gate Reservoir area. Historical summaries of these homesteads can be found in compilations by Hessig (1978) in several volumes of the *Siskiyou Pioneer* (Siskiyou County Historical Society 1974, 1982, 1995), and in a historical landscape overview by Beckham (2006). Figure 3-6 shows the Lennox and Ward ranches in 1910, and Figure 3-7 shows the land patents before Copco Lake.



**Figure 3-6 Overview of Lennox Ranch (foreground) and Raymond and Mary Ward ranches (background). Area is currently inundated by Copco Lake (1910 Photograph from John C. Boyle Collection, Southern Oregon Historical Society).**

Another piece of landmark legislation, the Reclamation Act of 1902, provided for conversion of unproductive land into small, irrigated farms (Foster 2002:153-154). The act built on the Upper Klamath Basin's early irrigation efforts, such as the Linkville Water Ditch Company's 1878 canal. The canal originated at the Link River, near its outlet from Upper Klamath Lake, to supply water to Linkville's (present-day Klamath Falls) town lots. Subsequent area canals enabled farmers to cultivate croplands that, after harvest, were pastured with large herds of stock cattle (Hayden 1941:103; Heileman 1908:15). The federal reclamation program, administered by what is now the USBR, substantially increased the acreage available for basin agriculture and ranching, mainly east of the Klamath River.

In 1905, the USBR approved the Klamath Reclamation Project, which required the federal government to purchase water rights from mostly private owners. The Klamath Reclamation Project area encompassed northern portions of Siskiyou and Modoc counties, California, and areas of Klamath County, Oregon (Heileman 1908:4-9). Construction projects included “dams, canals, ditches, and other facilities to drain, move and store of Upper Basin water” (Most 2018; Foster 2002:155).

Reclamation in the Klamath Basin coincided with growth and development in the region’s population and industries. In 1910, the U.S. Census reported that Siskiyou County’s population had reached 18,801, up about 2,000 from the previous decade, and that there were 1,114 farms in operation, up about 200 from the previous decade. Most farms averaged about 400 acres and collectively covered about half a million acres (French 1915:15). In Hornbrook, along the Klamath River in northeastern Siskiyou County, residents engaged in mining as well as agriculture and grazing (French 1915:27). Siskiyou County’s cattle industry was strong as compared to other California counties. Local stockmen required thousands of tons of hay and grain to feed herds and relied on the county’s alfalfa, barley, clover, corn, oats, and wheat crops (French 1915:7). By 1912, the county had about 57,000 acres of irrigated land. By 1914, the amount had nearly doubled to 100,000 acres through diversion of streams in the Shasta and Scott valleys (French 1915:13). During the 1910s, ranchers profited from annual shipments of around 20,000 cattle from Siskiyou County (French 1915:14).

Reclamation also led to a substantial increase in the percentage of cultivated Klamath Basin lands, and in Klamath County, dairying, farming, and stock-raising remained the principal industries. The 1920 U.S. Census reported that Klamath County contained 992 farms, with irrigated acreage amounting to about 60 percent of the total improved acreage. Dairying, farming, and stock-raising remained the principal industries. Total livestock was valued at nearly \$4 million, while crop values totaled about \$2.5 million, including cereals (\$0.5 million), hay and forage (\$1.8 million), vegetable, mostly potatoes (\$142,000) and dairy products (\$200,000). During the next two decades, potato farming thrived, accounting for nearly \$5 million, about half of the basin’s total income in 1936. Farm crops increased from \$1.2 to \$8 million between 1923 and 1936, while the number of farms nearly doubled (KCHS 1984:23). In 1970, the *Oregon Cattleman* examined the Klamath County cattle industry and noted that “Irrigation of the Basin has changed the whole perspective of the cattle business; ample feed is now available and fine purebred herds continue to maintain the fine quality of cattle” (Noggle 1970:35).

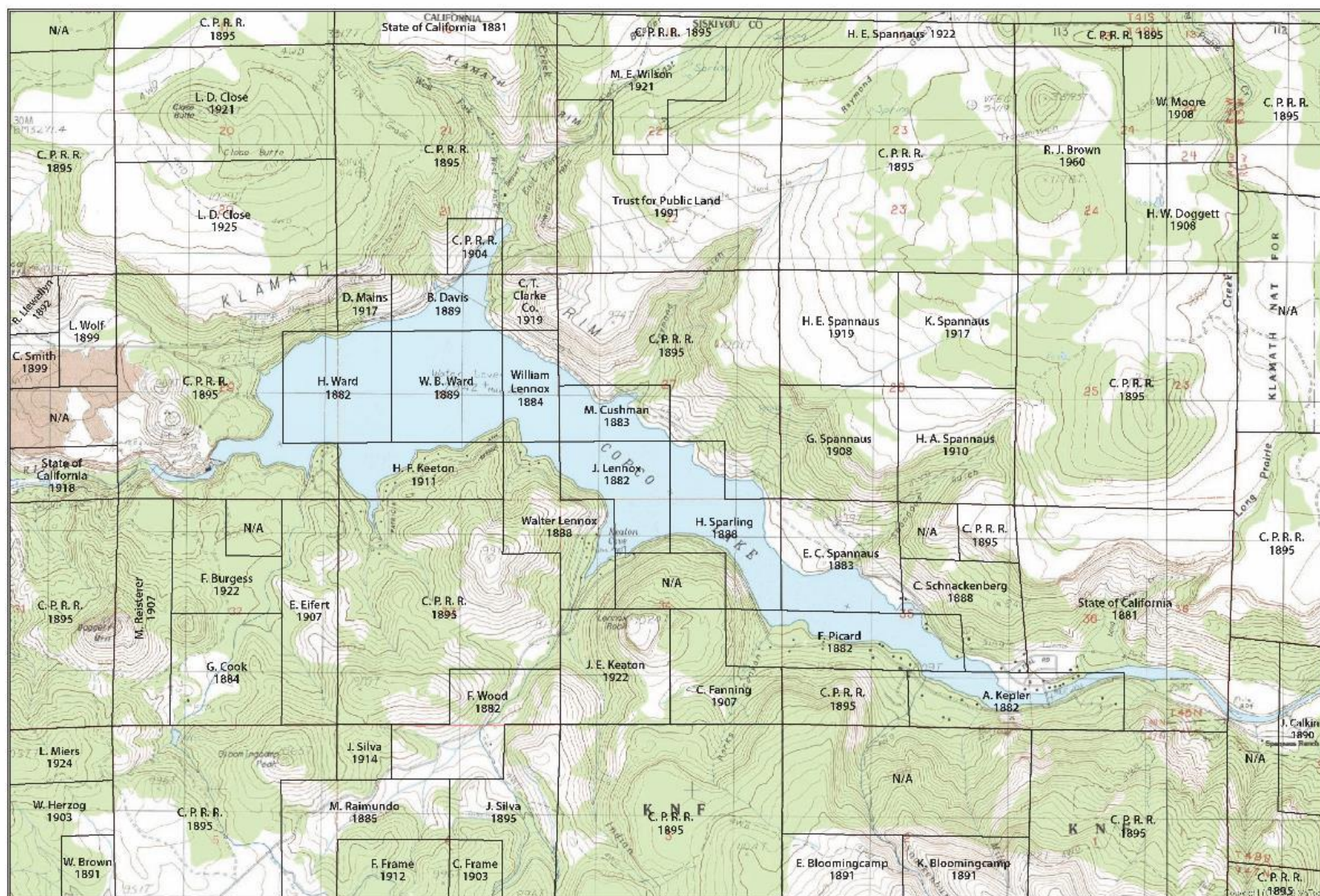


Figure 3-7 Copco Lake Land Patents before inundation

### 3.2.4 The Logging Industry

As the early mining population moved into the Klamath River area, there was a rapid need for lumber for the construction of dams, flumes, sluice boxes, and other mining structures, as well as for lumber to construct dwellings and infrastructure. As a result, several small sawmills were established on the Klamath River and its tributaries as early as the 1860s (Beckham 2006:138). Siskiyou County mills near the project area included an early sawmill on Cottonwood Creek at what later became the Herman Kurt ranch; the John Hilt sawmill on the West Branch Cottonwood Creek near the present town of Hilt; the Martin Frain and J. S. Baker sawmill at the mouth of Jenny Creek (later moved to Bogus Creek); and the Henry Harrison Ward sawmill on upper Fall Creek; (Jones 1971; KCHS 1973:98). Mills in Klamath County included the Naylor and Hockenhouse sawmill on Spencer Creek; the Gordon/McCormack Mill on Klamath River near Keno; the Connelly Mill on Klamath River; the Kinney Mill at Snowgoose Landing; and the Wise and Maxwell Sawmill at the top of Topsy Grade (Helfrich 1973:101). Large sawmill operations later developed along the river and included Klamathon in Siskiyou County, California; and the McCollum/Ellingson sawmill near Keno, the Kesterson Sawmill near Klamath Falls, and Weyerhaeuser Mill in Klamath County, Oregon.

The establishment of these and other mills spurred development in the greater Klamath–Siskiyou region. Before European American settlement, Klamath County contained about 2 million acres of timberlands, encompassing some of the world’s most valuable ponderosa and sugar pine stands (Bowden 2002:5). Early settlers operated small-scale sawmills in the 1860s and 1870s, often to supplement farming and ranching income (Kramer 2003a:6). In 1863, the federal government became the region’s first local timber supplier when the Army brought the first sawmill into Klamath County to construct the fort’s buildings and to supply lumber to the tribes as required by the treaty establishing the Klamath Indian Reservation (Lamm 1960:1). At that time, the Klamath Indian Reservation was the area’s primary lumber source, encompassing over a million acres, most of which was “timbered, hilly land, little suited to agriculture, but usable for grazing, hunting, fishing, and logging” (Dicken and Dicken 1985:3-4).

Outside of Fort Klamath, early logging and lumber production commonly involved small-scale, family operations which supplemented the income of local ranchers (Kramer 2003b:7; PacifiCorp 2004:2-46). Small private sawmills, called sash mills, were constructed mostly of wood and often powered by water wheels, requiring only one operator (Lamm 1960:4-5). According to W.E. Lamm, an early twentieth-century lumberman, “Most of the very early mills sawed logs from homesteads or just helped themselves to Government timber. Logging was done at the start with oxen skidding into the water, then with oxen and wagons. In the [eighteen] eighties oxen were being replaced with horses” (Lamm 1960:6). The mills cut 500 to 1,500 board feet per day, depending upon availability of water. The more advanced early mills had a circular head saw and operated with water turbines. Later mills that functioned without water power used steam traction engines. Local operators sold the lumber at the mill site (Lamm 1960:5-6). These small mills primarily produced building materials for local homes and businesses (KCHS 1984:25).

In 1868, Granville Naylor and John Hockenhouse established a water-powered sawmill on Spencer Creek, about 1 mile upstream from its confluence with the Klamath River, on the northern side of J.C. Boyle Reservoir. The mill, which was purchased by Hiram and Mary E. Spencer in 1871, provided

lumber for building Klamath Falls and the first bridge over the Link River (Beckham 2006:138). The Keno area witnessed several early sawmills, including those operated by Daniel Gordon, the Cooper Brothers (1883), Dusenberry (1888), and Connally (1895-1907) (Beckham 2006:138).

The Klamath River itself also contributed to the development of the logging industry. In 1888, the Klamath River Improvement Company staged a test log drive, dumping 135 logs into the river at the Oregon-California state line; 119 reached the company's mill site at Klamath City, California (later known as Klamathon). In early 1889, Klamath County granted the company a log-driving franchise for 20 years from the mouth of Spencer or Wetas Creek to the California border. The company agreed to improve the river to float logs, timber, and lumber and reserved the right to charge other firms using its franchise privileges (Beckham 2006: 139). That same year, crews working for the Klamath River Improvement Company built a splash dam about 5 miles west of Keno, Oregon, near the site of the McCollum or Ellingson sawmill. The company used this dam to raise the level of the Klamath River by artificial freshets to drive logs to its mill site in Siskiyou County. The Kerwin Ranch, in Oregon, near Topsy Grade, was one of the first areas logged for river driving timber. In 1890, floods carried away the blacksmith shop, dam, and other structures at Klamathon, leading to the demise of the Klamath River Improvement Company (Beckham 2006:139).

Cook, Pardee & Company began logging in the Klamath River watershed by the summer of 1892, employing over 110 men along the river and several experienced rafters following them in boats to keep the logs moving. An immense chute long was cut into the mountain slope, down which the logs were shot into the river. Logging crews used large carts, or "big wheels," horse teams, and eventually a small locomotive to drag the logs to the head of the chute. The company anticipated building logging railroads to haul the timber more distant from the chute. This log chute was one of the most dramatic of its kind in the Pacific Slope and drew the attention of tourists who came to watch its operations, as well as later generations intrigued with the technology of log transportation. The famed log chute near Klamath Hot Springs, California, and shown in Figure 3-8, dropped 835 feet in elevation over a distance of 2,650 feet from the Pokegama Plateau to the Klamath River (Beckham 2006:141-145).



**Figure 3-8 Pokegama log chute near Beswick, California, undated photograph (courtesy of the John C. Boyle Collection, Southern Oregon Historical Society)**

Around Klamath Falls, Oregon, wooden box manufacturers and other lumber concerns also established sawmills (Sisemore 1941:117,118). California fruit companies, which used enormous numbers of wooden boxes and crates for shipping produce, built large lumber mills and box factories in Klamath Falls (Bowden 2003:10; KCHS 1984:25). The timber supply began to shift after Weyerhaeuser and other large companies, such as Shevlin-Hixon and Gilchrist, acquired immense, private timber stands (Bowden 2003:3). Leading lumber companies bought timberlands by purchasing railroad land grants (Bowden 2002:6). In Siskiyou County, California, 4,000 residents were working in the lumber industry as loggers or mill hands by 1915. At that time, 50 county sawmills produced about 200 million board feet annually derived from sugar pine, ponderosa, white pine, fir, and cedar (French 1915:9,11).

By 1918, Klamath Falls had grown into one of Oregon's most important freight centers, second only to Portland, and the lumber industry became the region's primary employer (Bowden 2003:7). After surviving the Great Depression, the Klamath County lumber industry became Oregon's highest (and the nation's second highest) producer, with 843 million board feet in 1941 (Sisemore 1941). Other prominent local lumber companies along the Klamath River included McCollum mill and logging camp, established around 1920, 5 miles west of Keno (*Evening Herald* 1925). In 1934, McCollum sold the mill to Robert Parcher Ellingson of Ellingson Lumber Company (Lamm 1960:19). Figure 3-9 shows Ellingson's mill circa 1950. McCollum subsequently opened a new mill about 35 miles west in Malin, just north of the Oregon-California border (Sisemore 1941:119). The mill closed during the early 1950s (*Herald and News* 1953).



**Figure 3-9 Ellingson Mill Site (formerly McCollum Mill) ca. 1950 (courtesy of the Klamath County Museum)**

During the Great Depression, many lumber companies endured by substantially reducing production and closing the plant for extended periods (*Evening Herald* 1929). Economic recovery began in the mid-1930s, as the demand for inexpensive lumber and agricultural boxes gradually increased (KCHS 1984:27). By 1941, 30 lumber manufacturers, from small to large, were operating in Klamath County. While the number of manufacturers had declined since the 1930s, the total production had risen (Sisemore 1941:119). Weyerhaeuser acquired much of the remaining timberlands from companies that closed their mills (Bowden 2003:14). After World War II, the critical demand for building materials prompted companies to use salvaged wood for fabrication of new products (KCHS 1984:27). Weyerhaeuser remained the region's primary lumber interest until terminating operations in 1992. By 1996, the company had sold its forestlands to the U.S. Timberlands company. In 2003, the region's only remaining logging railroad was the Klamath Northern Railway at Gilchrist, Oregon (Bowden 2003).

### 3.2.5 Regional Transportation

The regional transportation systems that developed in the Upper Klamath River area helped link this large, remote, and resource-rich area, first among its indigenous Native American groups and then among the European American settlers who flocked to the area after the 1860s. The river itself and a system of Indian trails moved native peoples across the region, providing avenues for resource procurement and conveyance, communication, and social interaction (King 2004). After historic contact, such Native American trails were incorporated into a network of emigrant and wagon roads, some of these trails were subsequently converted into rural roads and local and regional highways. Transportation links helped create a set of distinct local and regional economies that moved travelers and agricultural and manufactured goods between farms, towns, and cities. Important

among these links was a railroad system that allowed connection with the growing nation and that eventually facilitated construction of the Copco No. 1 and Copco No. 2 hydroelectric developments.

## **Klamath Basin Waterways**

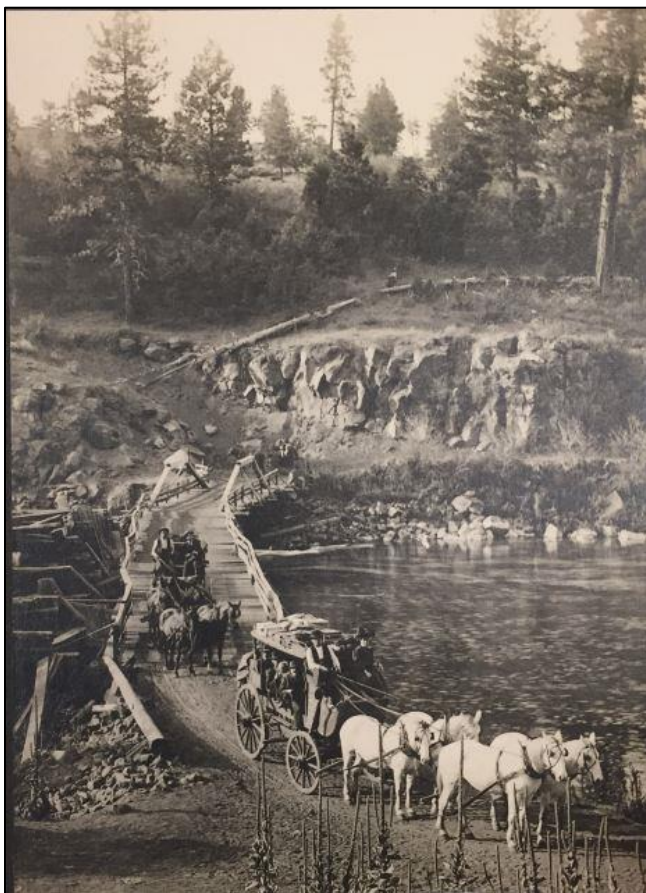
The Shasta, Klamath, and Modoc tribes were the first to navigate the Klamath River and Upper Klamath Basin's lakes and waterways using tule rafts and dugout canoes (Barrett 1910:247, 256; Drew 1974:1; Spier 1930:169-171). Later, European American settlers used the waterways to ferry passengers and cargo as an alternative to the area's inadequate road system (Drew 1974:1). Boating associated with the U.S. military began on Upper Klamath Lake around the time Fort Klamath was established in 1863. John Gleim built the first boat on Upper Klamath Lake during the Modoc Indian War to transport supplies from Fairchild to Klamath Falls (Federal Works Agency 1941:33). As the area grew in population and industry, water transportation for passengers, lumber and general freight necessitated better steamers, dock construction, and channel dredging. Through the late 1800s, the Upper and Lower Klamath lakes landings experienced heightened steamer activity, with the landing of Shippington, on the southeast end of Upper Klamath Lake, ranking as the busiest (Dicken and Dicken 1985:4-24). In 1889, Klamath County designated the major rivers, including Klamath River, as public highways for log transportation. The county later leased the Link River to the Moore family and the Klamath River Improvement Company as a toll highway for floating logs (Federal Works Agency 1941:33). After the turn of the twentieth century, the construction of railroads and road improvements, as well as the increasing use of automobiles, rendered water transportation virtually obsolete in the basin, although transportation of logs in rafts continued in Upper Klamath Lake and along the Klamath River (Dicken and Dicken 1985:4-25).

## **Klamath County, Oregon**

The Applegate Trail (Southern Emigrant Road) was the first European American trail through the Klamath River region and was a southern alternative to the western-most segment of the Oregon Trail. In 1846, a group of Oregon settlers from the Willamette Valley, led by brothers Jesse and Lindsay Applegate, established this wagon road, and the trail became the longest alternative route of the nineteenth-century overland emigrant trails (Hazelett 2010:222). After gold was discovered in California in 1849, the route became popular with gold miners en route to Southern Oregon and Northern California (PacifiCorp 2004: Exhibit E 6-62). During the 1860s, the trail became known as the Southern Oregon Wagon Road (SOWR) and, after its completion in 1873, facilitated freight shipping east from Rogue River Valley and livestock exporting west to valley markets (Beckham 2006:110-111). In the project area, the SOWR opened in 1869 as the Jackson County Road (Klamath County was originally part of Jackson County) and served as a primary trade and travel route for stage coaches, buggies, and freight wagons for about four decades (Pierce and Blanchard 2011:106).

Between the 1880s and 1910s, stagecoaches carrying passengers and mail ran through Keno, Oregon, from Ager, California, to Klamath Falls, Oregon, to Ashland, Worden, and Pokegama (MacDonald 2009). The last stagecoach traveled the SOWR in the basin in 1908, and automobiles used it until the completion of OR 66, which overlays a part of the old SOWR (Pierce and Blanchard 2011:106). Topsy Road, originally the Yreka-Fort Klamath Wagon Road, was one of the first major

roads in Upper Klamath Basin and was busiest between 1887 and 1903, as shown in Figure 3-10. Paralleling the Klamath River's east side, the road became an alternative for shipping supplies to Fort Klamath and to Upper Klamath Basin settlers. When it opened in 1871, the route extended from Yreka to ferries on the Klamath River, then to the Link River, passing through Klamath Falls and ending at Fort Klamath (Beckham 2006:114-116). Stage stations along Topsy Grade Road furnished stagecoaches with fresh horse teams and usually provided rest and food for stage passengers (Drew 1979:31). Topsy Grade's use as a stage road declined with the arrival of the SPRR in Klamath Falls (1909) (KCHS 2006:6). Until U.S. Route 97 was completed during the mid-twentieth century, Topsy Road had the only mail, freight, and stagecoach line connecting Yreka to Klamath Falls (PacifiCorp 2004: Exhibit E 6-62). Another notable stagecoach road was the Keno-Pokegama stagecoach line, which was discontinued around 1909 when the SPRR arrived in Klamath Falls.



**Figure 3-10 Topsy Grade Road dam-bridge over Klamath River west of Spencer Creek, built ca. 1890 (undated photograph courtesy of the Klamath County Museum)**

Railroads first arrived in the region in 1887 when the Oregon & California Railroad (O&C) was built through Siskiyou County, California, and Jackson County, Oregon. The SPRR acquired the O&C that same year (PacifiCorp 2004: Exhibit E 6-63). The KLRR was completed from the SPRR line in Thrall, California, to the Pokegama logging camps by 1903, and carried mostly logs and lumber, but also passengers and general freight. The KLRR began running in 1903 and extended from Thrall (formerly Laird's), a California rail station on the SPRR 2 miles south of Klamathon, to the Pokegama Plateau (Stephens 1964:3). The KLRR had 24.27 miles of track, 87 box culverts, 221 trestle bents, 9 cattle

guards, 4 water towers, 4 depots, 1 engineer's house, and 7 other buildings (Beckham 2006:128). Although the mill in Klamathon was destroyed by fire before the railroad's completion, the railroad stayed in business by transporting lumber for other mills. The railroad served passengers, with travelers to Klamath Falls taking the train to Pokegama and completing their journey via stagecoach (Stephens 1964:3).

After KLRR spent nearly a decade hauling lumber and passengers, the Siskiyou Electric Power & Light Company (SEP&L; predecessor to Copco) leased the railroad's remaining section from Thrall to Klamath Hot Springs, for use in constructing the Copco No. 1 hydroelectric plant. Copco also constructed a spur with switchbacks to the plant (Stephens 1964:3; Beckham 2006:131). The *Sunday Oregonian* described the KLRR and how Copco used it for hydro-facility construction:

*It is a rather good road, with good 60-pound steel, standard gauge, but the grades reach as high as 5 per cent. The present electrical company [Copco] bought this road, and built switch-backs from the main line down to the site of the new dam [Copco No. 1], and all of the material used from outside has been hauled over it by a big "galloping goose" truck or car, using gasoline for motive power . . . One item of the hauling was 70 carloads, Southern Pacific cars, and all of the steel use for reinforcing (Bennett 1922).*

When Copco's KLRR lease ended in 1914, the company bought the remaining section for \$35,000 (Bennett 1922; Stephens 1964:3). Copco maintained the KLRR track, shown in Figure 3-11, between Thrall and the Copco powerhouses until 1942 (Beckham 2006:131).



**Figure 3-11 The KLRR in 1922, moving part of a generator field down the spur switchbacks to the Copco No. 1 powerhouse**

For early KLRR travelers continuing to Klamath Falls, the daily stage from Pokegama carried up to 30 passengers on a 6-hour ride. At Keno Landing, freight and passengers were often transferred to steamer for the final leg of the trip to Klamath Falls (Dicken and Dicken 1985:4-22). The Oregon Truck Line, later called the Great Northern Railway, also served the basin and was completed from the Columbia River to Bend in 1916 and from Bend to Klamath Falls in 1927. The route was extended about 100 miles southward in 1931 to join the Western Pacific Railroad in Bieber, California (Dicken and Dicken 1985:4-26).

By the 1910s, a growing number of automobiles in the Klamath Basin prompted extension and improvement of the existing roads. U.S. Route 97 was the basin's first (and only) national road. The area's other major roads include State Highway 62 (from Fort Klamath to Medford, through the Cascades), part of which became State Highway 140 (eastward to Lakeview) (Dicken and Dicken 1985:4-22). OR 66 approximates the alignment of the Applegate Trail and Southern Oregon Wagon Road through the Klamath Basin (KCHS 1973:17). In 1917, the State of Oregon added State Highway 21, which was graveled in 1922 (Beckham 2006:136). By 1950, automobiles were the most common mode of transportation in Klamath County, and logging truck roads had replaced the logging railroads (common carrier rail lines still transported logs and lumber).

### **Siskiyou County, California**

First used as a network of Native American foot trails, and later as the route of HBC trappers and traders, mule train packers, stagecoach drivers, the Central Pacific Railroad, and finally as today's I-5, the Siskiyou Trail helped define the political, cultural, and natural history of the American West. During the 1820s and 1830s, HBC trapping brigades were sent south from company headquarters in Fort Vancouver, Washington, along what became known as the Siskiyou Trail, into Northern California as far south as the San Francisco Bay Area, where the company operated a trading post at Yerba Buena (San Francisco). After its use as an HBC route, Ewing Young repurposed the trail in the 1830s when he drove cattle northward from California, over the Siskiyou Summit, and into the Willamette Valley to provision the burgeoning American settlements. During and following the 1848 California Gold Rush, thousands of Oregonians used the Siskiyou Trail to enter and settle the Rogue Valley. In the final decades of the nineteenth century, the trail was re-engineered and re-plotted as a toll road in 1860, a telegraph line was completed in 1864, and the SPRR was completed in 1887 (Southern Oregon University 2005).

Until 1856, transporting items into the Siskiyou required a pack train, usually coming from Sacramento, Marysville, or Colusa. Once roads were constructed, teamsters driving stages generally replaced pack trains (Wells 1881:161). The O&C arrived in Hornbrook, California, in 1887, connecting with the SPRR in Ashland, Oregon, to complete the San Francisco–Portland line (*Mail Tribune* 1957).

Completed in 1931, SR 263, previously US 99's Shasta River Canyon segment, extends from Yreka to the State Route (SR) 96 (Klamath River Highway). SR 96, known as the Klamath River Highway, begins at the junction with SR 299 and follows the Trinity River, the Klamath's largest tributary, and the Klamath River through Karuk, Yurok, and Hoopa Tribal Reservations. The Klamath River Highway is the primary automobile route through the small, unincorporated community of Klamath River, which occupies about 11 miles on both sides of the Klamath River from Gottville to Kohl Creek (*Siskiyou Daily News* 2018).

### **Logging's Common Carrier Railroads**

While the establishment of dedicated logging railroads propelled the Klamath Basin's lumber industry, common carriers, such as the SPRR, were also critical to its growth and success. The SPRR's completion to Klamath Falls in 1909 led to a logging and lumber manufacturing boom in the basin. Using an existing logging railroad, SPRR completed construction on the 25-mile section

between Weed, California, and the Grass Lake vicinity in 1906. SPRR then extended the line from Grass Lake to Klamath Falls, bringing in the first train in May 1909. By December 1909, the railroad had been extended northward to Kirk (Bowden 2003:17-20).

### **Logging Truck Roads**

During the late 1920s and early 1930s, modern logging trucks replaced railroads as the preferred method for moving cut timber. The trucks brought logs from harvesting areas to reloading centers, where the logs were loaded onto common carrier railcars for transfer to the mills. As timber stands thinned over time, trucks began transporting logs directly from the forest to the mill (Bowden 2003:54-55). Eventually, the USFS began requiring logging companies contracting for timber sales to build truck roads for access, leading to the complete decline of logging railroads (Bowden 2003:57). At this time, trucking companies also replaced railroads as distributors of finished lumber.

### **Weyerhaeuser Timber Company**

Like other lumber companies, Weyerhaeuser operated a series of logging camps in Klamath Basin. The leading timber company in the Klamath Basin during the twentieth century, Weyerhaeuser established its initial presence in the basin by purchasing the Pokegama Sugar Pine Company holdings and KLRR in 1905 (Drew 1979:6-7). According to the December 14, 1905, *Klamath Republic*, “The [Weyerhaeuser] lumber company owns 2,780 acres of fine timberland, in T40, R5, and also had under contract nearly 20,000 acres of the Oregon & California Railroad lands, some of which is also owned in the same township” (Drew 1979:7). By 1923, the company had purchased its first mill site near Klamath Falls. The plant was completed and in operation by January 1930 and, by the early 1940s, employed 1,200 workers and operated at a capacity of 200 million feet per year (Sisemore 1941:119). The sawmill was also the construction site of the company’s logging camp cabins (Drew 1979:16). The cabins were built on skids, so they could be moved by rail (Drew 1979:34).

Camp 2, Weyerhaeuser’s original camp, was about 12 miles west of Keno and initially housed workers building the company’s logging railroad from Klamath Falls to eastern Jackson County. As work progressed, the logging railroad was extended to the area 4 miles north of Camp 2. As Camp 2 operations concluded, Weyerhaeuser established Camp 3 5 miles farther west. Weyerhaeuser employees ultimately logged at 12 camps (Camp 2 through Camp 14; there was never a Camp 13) (Drew 1979:42-43). Many loggers brought their families with them to the camps. To accommodate the families, Weyerhaeuser provided schoolhouses for camp children (Drew 1979:36). The company railroad transported camp buildings, such as bunkhouses, mess halls, and schoolhouses, which were mounted on rail cars for relocation to the next campsite (KCHS 1984:26) (Figure 3-12).



**Figure 3-12 Moving Weyerhaeuser Camp 3 to Camp 4 across Spencer Creek (courtesy of Klamath County Museum—20170029301)**

### 3.2.6 Education

The project area's pioneer schools initially served the children of ranchers and farmers and later the children of power company employees. In the first years of California statehood, less than 100 children between the ages of 5 and 18 were living in Siskiyou County (Wells 1981:93-94). One of Siskiyou County's first schools was a small private school in Yreka that opened in the winter of 1853–1854. In 1855, the county's first public school opened with funding from local citizens. That year, 43 of the county's 93 children attended the school. Between 1865 and 1881, the number of schools increased from 19 to 47, coinciding with the increase in population (Wells 1981:94).

Schools were part of the community in the late nineteenth and early twentieth centuries logging towns and settlements such as Klamathon and Pokegama, which grew up along the Klamath River. In addition to schools, the towns provided stores and post offices (PacifiCorp 2004:6-66). In the Klamath Basin, schools also accommodated the children of local farmers and ranchers. Many of these one-room schoolhouses were near the Klamath River and its tributaries or on farms and ranches. The earliest school districts in the Upper Klamath Basin were Bogus (circa [ca.] 1872), Oak Grove (1879), Topsy (ca. 1883), Chase (ca. 1885, ca. 1912), Klamathon (ca. 1888), Lowood (1893), Cleaveland (Cleveland) (ca. 1899), Cedar Gulch, and Fall Creek (1911) (Beckham 2006:93-94, 203, 217, 222, 231; Siskiyou County 2019). School districts historically in the APE include Topsy, the second Chase, Oak Grove, Lowood, Fall Creek, and Cedar Gulch.

#### **Topsy (Klamath County, Oregon)**

Topsy, also known as Elgin House, was a stage station at the east end of Topsy Grade Road and a key route for freight and passenger traffic from about 1897 to 1903. As early as 1883, Major Watson Overton's family settled the land, upon which was built a residence, stage station, post office, and school (Beckham 2006:100). Historic records reference three different schoolhouses: the first two were near Topsy, and the third was constructed west of the Topsy Grade base (Beckham

2006:217). In 1922, construction began for the new schoolhouse at the Topsy Grade base (*Evening Herald* 1922). The remains from this third Topsy schoolhouse were still present during a 2006 historic landscape survey (Beckham 2006:216).

### **Oak Grove (Siskiyou County, California)**

The Oak Grove School was carved out of the Bogus School District as early as 1879. Constructed just north of Shovel Creek for the children of James Owen, the school later served children living along the Klamath River from Shovel Creek to Snackenburg Creek. In some years, students would come from as far as Fall Creek. During the late nineteenth century, up to 30 students, including Native American children, were in attendance. Around 1890, the building was relocated to the Hessig Ranch east of Beswick, which had a fresh water spring (Beckham 2006:93-94). The building was destroyed by fire around 1905 and replaced with a new building in the same approximate location. In 1918, during construction of the Copco No. 1 dam, the school was moved approximately 3 miles to the Henry Spannaus Ranch (Beckham 2006:93-94, 231). The 1957 Metsker map for Siskiyou County notes the Oak Grove School near Beswick as “abandoned” (Metsker Maps 1957a:70).

Another Oak Grove school operated at the Dan Hahn ranch. The school appears on a circa 1910 map drafted by SEP&L engineers as part of survey activities for the Ward Canyon dam (later Copco No. 1 dam). The map depicted properties between Ward Canyon and Oak Grove to the east, including an 80-acre portion of the old Augustus Kepler parcel known as the Hahn Ranch. The map labels the Hahn residence and Oak Grove School within this parcel. The district lapsed in 1939 and was divided between the Bogus and Spring School Districts (Siskiyou County Oak Grove School District).

### **Lowood (Siskiyou County, California)**

The Lowood School District was established in 1893 at Camp Creek’s confluence with the Klamath River. Known locally as the Camp Creek School, the Lowood School was situated along the Hornbrook-Copco Road, about 13 miles east of Hornbrook. In 1899, 21 students attended (Siskiyou County 2019). The building was destroyed by fire in 1907 and later rebuilt (Beckham 2006:202). The school district lapsed and was annexed to the Hornbrook school district in 1941 (Siskiyou County 2019). The second building was sold and relocated in 1943. The original school site was inundated by the Iron Gate Reservoir (Beckham 2006:202). The school’s location was noted on the 1957 Metsker Map of Siskiyou County (Metsker Maps 1957b:89).

### **Fall Creek (Siskiyou County, California)**

When the Copco predecessor SEP&L completed the Fall Creek power plant in 1902, the surrounding area was sparsely populated. At that time, local students, mostly from ranching families, attended the Oak Grove, Cleveland, and Lowood school districts (*Oregonian* 1916). When the Fall Creek power plant was activated, SEP&L employees tasked with operating and maintaining the plant brought their families to the area (Wilson and Wilson 1989:63). These families urged Siskiyou County to create a new school district. On April 4, 1905, the county rejected the initial petition to form a new district. Nearly 6 years later, the Fall Creek School District was finally established on January 2, 1911, by

merging parts of the Oak Grove, Cleveland, and Lowood school districts (Siskiyou County Fall Creek School District).

The first Fall Creek School was a small one-room building constructed of “board and batten.” Around 1901–1903, the building housed an “end-of-track saloon” for KLRR construction workers. During construction of Copco No. 1 and No. 2, attendance reportedly increased from 11 students to a record high of 59 students (*Sacramento Bee* 1965a). In 1923, a second, larger school building and a teacher’s residence were built. Copco funded these improvements to accommodate the additional students that would arrive during the Copco No. 2 expansion project (1924–1925). The original school building was demolished several years later (Wilson and Wilson 1989:63; Beckham 2006:223).

Students used the second Fall Creek School building until the 1950s, although enrollment had substantially declined by then (Wilson and Wilson 1989:63). The school had a secondary function as a community center for voting, scout meetings, Copco film showings or seminars, potluck dinners, and Copco employee retirement ceremonies (*Mail Tribune* 1958; Wilson and Wilson 1989:66). The present Fall Creek School building, shown in Figure 3-13, was constructed in Copco Village in 1965. Gerald D. Matson (1920–2001) and Jack L. Nielson (1934–1976) designed the school building, which was constructed by A. P. Giordano and Sons (*Sacramento Bee* 1965b). By 1970, Fall Creek School enrollment was 10 students (Christenson 1970). That year, the school was reportedly one of eight surviving one- or two-room schoolhouses still operating in Siskiyou County, and one of five within 25 miles of Yreka, the Siskiyou County seat (Christenson 1970). By the mid-1980s, the Fall Creek School’s enrollment of seven students made it California’s smallest school district (Stanford University 1987).



**Figure 3-13 Fall Creek School soon after 1965 construction**

### 3.2.7 Hydroelectric Development

Hydroelectric development in the Klamath Basin began in 1891 to furnish Yreka, California (the Siskiyou County seat) with electricity by placing a water power wheel in Shasta River Canyon, below the mouth of Yreka Creek (Kramer 2003a:14). Four years later, the Klamath Falls Light and Water Company built the East Side power plant no. 1 in a wooden building. The power plant was on the Link River's east bank, within the Klamath Falls, Oregon, city limits. The plant supplied the city with its first electric power on November 1, 1895 (Boyle 1976:27; Kramer 2003a:15). These ventures soon attracted competitors; Copco formed in 1912 through the merger of SEP&L, Klamath Falls Light and Water Company, and Rogue River Electric Company. The newly created company acquired the assets of the predecessor companies, including the hydroelectric facilities at Fall Creek. SEP&L had operated Fall Creek since its completion in 1903 (Kramer 2003b:12). In 1920, 8 years after Copco formed, the company acquired the Keno Power Company, which operated the Keno hydroelectric development, built in 1911 and rebuilt in 1931 and 1966 (Kramer 2003b:5).

#### Fall Creek Hydroelectric Plant (Siskiyou County, California)

In the summer of 1902, Siskiyou County residents Jerome Jr. and Jesse Churchill, Alex Rosborough, and Hubert Steele formed the Siskiyou Electric Power Company to construct a new hydroelectric project to serve the Yreka market and compete with the small Shasta River plant constructed in 1891 (Kramer 2003a:16). Survey work for the new hydroelectric project focused on Fall Creek, a tributary of the Klamath River, which provided an abundant water source. Construction of the plant began during the summer of 1902, next to the KLRR line, and was completed by spring 1903 (Kramer 2003a). A recent photograph of the Fall Creek Plant is shown in Figure 3-14. In March 1903, SEP&L purchased the Ashland Electric Light and Power Company, founded in 1889, and planned to market power to both Ashland and Medford, Oregon (Beckham 2006). In the spring of 1910, SEP&L began surveys in Ward's Canyon and along the Klamath River for a projected dam, power plant, and reservoir, which eventually become the Copco No. 1 dam and Copco Lake (Beckham 2006). To realize its dream, the power company purchased the ranches of several families whose holdings once encompassed the broad Copco Valley, including those of William Lennox, Henry Keaton, Kitty Ward, Mary Ward, William Raymond, Stone and Edwards, Henry and Herman Spannaus, George L. Chase, D. D. Hahn, Erskine Parks, and Manuel Coville (Beckham 2006). This transfer of ownerships enabled construction of Copco No. 1 when Copco took over SEP&L (Beckham 2006; Boyle 1976:8).



**Figure 3-14 Fall Creek Power Plant**

### **Keno Power Company Plant (Klamath County, Oregon)**

Reclamation activities that the USBR began in the Klamath Basin area in early 1900s included the purchase of water rights and rights-of-way in the Keno Reef area of the Klamath River to lower the water level and possibly drain portions of Lower Klamath Lake to facilitate the discharge of water from the proposed Lost River Canal (Beckham 2006:160). In 1912, the Keno Power Company built a dam and generating facility at the Keno Reef site that went online in 1912 (Beckham 2006:160; Boyle 1976:4). Looking to construct transmission lines from their Keno plant to the City of Klamath Falls aligned the Keno Power Company into direct conflict with Copco, which already served the city. After years of tension and discord, in 1921, Copco purchased the Keno Power Company, setting up a series of investments along the Klamath River from near Spencer Creek to Keno that eventually led to the construction of J.C. Boyle Dam in the late 1950s.

### **Copco Through World War II (1912–1945)**

Copco's first project was the Copco No. 1 hydroelectric development, previously surveyed by SEP&L and known initially as the Ward's Canyon Dam Project. As construction progressed on Copco No. 1, the company's existing facilities were already powering major regional industries, including nearly all the large Northern California lumber mills and several large mining dredgers (*Sacramento Bee* 1917). Copco completed the first phase of Copco No. 1 in 1918, including the dam, water conveyance system, and powerhouse. In 1920, the company reorganized, becoming the California–Oregon Power Company (hyphen added), and moved its headquarters from San Francisco to Medford. In 1922, the company completed Copco No. 1 by raising the dam, expanding the powerhouse, and adding a new generating unit. Three years later, in 1925, the company completed the Copco No. 2 hydroelectric development, downstream from Copco No. 1.

Between 1926 and 1947, the company was owned and operated by Standard Gas and Electric Company. Ownership was acquired through purchase of Copco's outstanding common stock. In 1947, to follow provisions of the Public Utility Act of 1935, Standard Gas and Electric sold its Copco interests to an investment banking group, which in turn made a public offering of the acquired

shares (*Mail Tribune* 1960). During the late 1920s and 1930s, after completion of Copco No. 1 and Copco No. 2, Copco continued investigating the regional power potential of the Klamath, Rogue, and Umpqua River basins (Boyle 1962). Throughout that period, Copco made progress on the Prospect hydroelectric project along the Rogue River in Jackson County, Oregon (Gauntt 2012).

### **Copco No. 1 Hydroelectric Development (1918, 1922) (Siskiyou County, California)**

Constructed in Siskiyou County, Copco No. 1 was originally known as the Ward's Canyon Dam Project. Copco completed the development in 1918 for \$2 million and expanded it in 1922 (*Oregonian* 1917). The oldest major development in the KHP, Copco No. 1 was the first built on the Klamath River following formation of the California Oregon Power Company (later Copco) (Kramer 2003a:8). Copco, a conglomeration of regional power companies, assumed the project from SEP&L. Hermann Schussler, a prominent civil engineer, designed the dam, and Perry O. Crawford, Copco's chief engineer, designed the powerhouse (Myrtle 1919; *Oregonian* 1917).

The new Copco development would meet power demands in the Siskiyou District, which had relied on power transmission from Medford, Oregon, during the peak load. On installation of the first generating unit at Copco No. 1, capacity would exceed peak load demand, allowing the Medford service to be placed on standby (Merrick 1918:150). Preliminary work at the Copco No. 1 site began in May 1910, when SEP&L surveyed Ward's Canyon and the prospective reservoir area. The purpose of the survey was to determine the extent of lands that SEP&L would need to buy for the construction project.

The William Lennox Ranch, which was located where the Ager-Klamath Falls road approached the Klamath River, served as SEP&L's survey headquarters. At that time, John C. Boyle, who later became a prominent Copco officer, was hired as a SEP&L field surveyor. Boyle was born in Siskiyou County and graduated from the University of California, Berkeley, with an engineering degree. In 1916, 2 years after construction began on Copco No. 1, Boyle became the construction supervisor, tasked with assisting Perry O. Crawford, the engineer in charge (Kramer 2003b:19; *Oregonian* 1917).

At that time, the Ward's Canyon vicinity was a remote setting with nearby agricultural activities. In 1910, while engaged in survey, Boyle described the area comprising the Klamath River "bottomlands" as "covered with beautiful farms used mostly for cattle raising." Boyle also observed that, "[T]he homes and buildings were old but generally well kept" (Boyle 1976:8). The Klamath River slowly meandered through the area until descending into Ward's Canyon, where it began to flow rapidly. Boyle recognized that construction of a dam in the canyon would require flooding of "all those good farm lands" (Boyle 1976:8).

After completion of the reservoir survey, Boyle and the other SEP&L surveyors moved their base from the Lennox Ranch to the Sloan Ranch east of the Fall Creek powerhouse, where they continued to survey in Ward's Canyon. In May 1911, Ward's Camp (also known as Camp Ward and Camp No. 3) was established along the Klamath River, and work at the dam site began. Boyle recalled that Ward's Camp began with only a few men living there in tents "with an old barn for a cookhouse" (Boyle 1976:9). Unskilled laborers at Ward's Camp earned \$2.50/day, while foremen earned \$4.00/day, and Boyle earned \$125/month plus board. Work involved a 10-hour day, no overtime

pay, and 25 cents deducted for each meal. In July 1911, SEP&L began examining the dam site in preparation for laying the dam's foundation, and initiated river diversion. At this time, the company also began survey work for another plant of the same capacity (Copco No. 2) (Boyle 1976:9).

In December 1911, Copco was incorporated and acquired SEP&L's holdings; however, the two entities agreed that SEP&L would continue the dam work already underway. Dam excavation at the river bottom and shaft drilling began in October 1912 (Boyle 1976:12-13). By March 1, 1913, difficulties related to obtaining supplies left a reduced workforce of only 10. The remaining workers conducted dam foundation excavation, maintained company property, and unloaded powerhouse machinery (Sprout et al. 1912–1913).

Although construction progress had slowed, SEP&L's "Camp Ward" plans, dated March 22, 1913, depicted an expanded area in anticipation of the upcoming work at the site (Sprout et al. 1912–1913). The "power town" that evolved from Ward's Camp encompassed these buildings and structures, and accommodated hundreds of residents. The town became known as "Copco" (*Oregon Daily Journal* 1916).

#### Copco: A "Power Town"

During Copco No. 1's original construction phase (1912–1918), a "power town" named Copco developed on the bluff above the dam construction site. The word "Copco" was officially recognized on July 30, 1914, when U.S. Postmaster General Albert S. Burleson appointed John C. Boyle as the town's postmaster (Boyle 1976:18).

By November 1916, 360 men were working on Copco No. 1, and 560 persons were living in the town of Copco (*Oregon Daily Journal* 1916). The town contained numerous buildings and structures related to dam construction and worker accommodations. The *Evening Herald*, a local newspaper, described the new town in a November 1916 article:

*The town is situated entirely on the [Copco] power company's property, has a population of about five hundred and sixty persons, as a result of the employment of three hundred and sixty men by the company many of whom have located at Copco with their families. The little school house nearby which was formerly occupied by two or three pupils from the ranches along the river, is now filled with the children of the new residents and the genial office-seeker always makes it a point to drop in at the little burg as he realises [sic] that this little new town consists in the most part of a voting population (Evening Herald 1916a).*

Other newspaper reports publicized the town as having "all the conveniences of a modern village, including the ubiquitous moving picture show" (*Oregonian* 1917). Children of Copco workers attended the nearby Fall Creek School. At that time, Fall Creek School was in its original location near the Fall Creek powerhouse, about 1.5 miles along Copco Road from town. The third and final Fall Creek schoolhouse was rebuilt in 1965 at Copco Village near the Copco No. 2 powerhouse.

During the Copco No. 1 construction and expansion phases (1912–1918, 1922), the town of Copco contained a railroad spur, cement shed, and adjoining freight platform for unloading electric

machinery on arrival (Sprout et al. 1912–1913:226). There was a machine shop (Sprout et al. 1912–1913:224), two machinery platforms (Sprout et al. 1912–1913:109), tool house, combined compressor house (Sprout et al. 1912–1913:221) and blacksmith shop (Sprout et al. 1912–1913:210). The oil house was near the railroad spur at the foot of the cinder cone (Sprout et al. 1912–1913:222). The engineer’s office had a 10-foot-by-22-foot dark room/drawing room addition (Sprout et al. 1912–1913:211). Workers lived in tents and bunkhouses (Sprout et al. 1912–1913:224). Office employees also had living quarters and separate toilet facilities (Sprout et al. 1912–1913:85). A cookhouse with a cellar and attached meat house was built (Sprout et al. 1912–1913:224), as well as sleeping quarters adjoining the cookhouse for the cook and waiters (Sprout et al. 1912–1913:229).

The mixing plant was electrically operated, with sand machines, rock breakers, and mixers (Sprout et al. 1912–1913:127). A dynamite powder house was near the spur tracks (Sprout et al. 1912–1913:223). A 28-foot-by-8-foot freight platform was built under the cinder cone tramway (Sprout et al. 1912–1913:211) and two cableways delivered concrete and rock to the site. The gravity tramway had two main cables and a 400-foot span suspending two concrete chutes. The rock cableway supported a rock carrier from the quarry to the dam site (Sprout et al. 1912–1913:135). The concrete cableway stretched across Ward Canyon during the construction phase (Sprout et al. 1912–1913:219). In addition, some existing buildings on the eastern side of the river were disassembled and moved to the worker village on the western side (Sprout et al. 1912–1913:222).

Based on historic Copco construction photographs, a surviving concrete structure on the hill above town may have been associated with the gravity tramway. This tramway originated at the cinder cone and extended to the mixing plant at the edge of the bluff over the dam. The tramway delivered the cinder directly to the two sand machines, which crushed it and deposited it in storage bins below. After mixing at the plant, the concrete was discharged through spouts and moved by gravity in open troughs across the canyon. A rock cableway with traveling carrier delivered the rock to be laid with the concrete (Copco n.d.:4).

In 1922, during the Copco No. 1 expansion phase, the *Sacramento Bee* described the town of Copco as occupying both sides of the river with tents and cabins where workers and their families lived. A *Bee* reporter remarked on the abundance of automobiles parked around the “tent city,” stating that “[i]t looks as if at least half of the [worker] population drove to the job in their own cars, and the majority are not low priced vehicle[s]” (*Sacramento Bee* 1922).

The town’s circulation features facilitated transportation of workers, equipment, and materials throughout the project site. Construction on “Road #6” began on June 7, 1912 and was completed the following day. The road extended from town to the mixing plant via the lava flat east of the cinder cone. This allowed all freight to be unloaded at the spur track and taken to camp, bypassing the Klamath Springs Station (Sprout et al. 1912–1913:200-201).

A 1-mile railroad spur traversing the town of Copco was also built around 1912. The spur connected the KLRR mainline and the Copco No. 1 construction site for “a conveyance for all machinery and material on the original cars to the immediate locality of the dam and powerhouse” (Sprout et al. 1912–1913:31). The KLRR, a standard-gauge logging and passenger railroad, was completed in

1903 and extended from Thrall, the line's western end junction with the SPRR line, east past present-day Copco No. 1 and Klamath Hot Springs to Pokegama, Oregon. In 1910, Copco predecessor SEP&L leased the railroad's remaining section for use in constructing Copco No. 1. After assuming the project from SEP&L, Copco constructed the spur (Beckham 2006:131; Stephens 1964:3).

After the spur branched from the KLRR main line, it curved around the southern and western sides of the cinder cone to the mixing plant overlooking the dam site (Sprout et al. 1912–1913:123). As the spur traversed town, it ran parallel and next to large equipment platforms. According to *The Volt*, Copco's newsletter, the spur reached the Copco No. 1 powerhouse below the bluff via three switchbacks. When Copco's KLRR lease ended in 1914, the company purchased the remaining 14-mile section for \$35,000 (Stephens 1964:3; Bennett 1922). Copco also used the KLRR during Copco No. 2 construction in 1924 to 1925. Copco built a second spur, at river grade level, leading to the Copco No. 2 project site (Bullis 1964:2). Copco maintained the KLRR track between Thrall and the Copco powerhouses until 1942, when improved automobile roads rendered the rail spurs obsolete (Beckham 2006:131; Bullis 1964:2).

The Copco access road, built ca. 1942, is a vehicle road that appears to have been constructed atop the former KLRR spur's alignment. It consists of a 1-mile road section between Iron Gate Lake Road/Copco Road, a county road, and the Copco No. 1 powerhouse. From the county road fork, the Copco access road winds mostly southwest, then turns sharply to descend the river canyon to the powerhouse. The road passes through the former town of Copco and past the driveways of the town's two remaining bungalows. The road also passes by the garage/warehouse and within 200 feet of the Copco No. 1 substation.

At its peak in the early 1920s, the dynamic company town housed hundreds of workers and families and contained buildings, equipment, and operations with interrelated functions dedicated to Copco No. 1 construction. Out of dozens of buildings and structures, only four resources from the town have survived: the guesthouse remains, Bungalows 1107 and 1108, and Warehouse 1112. The guesthouse remains are present, but no longer easily accessible. Scattered concrete foundations hint at the extent of equipment and operations that the town of Copco once had. The important KLRR railroad spur, which transported materials and equipment to the construction site, has been removed.

### Copco Overcomes Obstacles to Complete the Development

By early 1916, more than \$1 million had already been spent on dam construction (*Sacramento Bee* 1916). At that point, the river had been diverted through a tunnel, excavations on the dam's abutment cuts were done, and the powerhouse had been excavated to water level. In addition, cement-mixing equipment was in place, the two powerhouse units had been delivered, and the former KLRR was operational, including the newly built 1-mile spur to the town of Copco and the powerhouse (Boyle 1976:14).

Financial issues, among other things, continued to delay the work. To obtain financing, Copco reorganized in 1916 and was able to attract new capital from investors in San Francisco (Kramer 2003b:20). Copco also revised the original construction plans to save on costs. As discussed above,

the revised plans reduced the powerhouse from four to two units, decreasing the system load factor from 40,000 kilowatt (kW) to 20,000 kW (Boyle 1976:15).

At this time, Copco also worked to overcome a major construction obstacle related to materials. The work site contained insufficient quantities of sand or gravel, necessary components of the concrete mixture to be used in erecting the dam structure. Copco engineers and chemists tested volcanic cinders in a nearby cone and determined that the cinders would constitute a satisfactory aggregate in the concrete mixture (*Ashland Tidings* 1916a).

The Copco No. 1 hydroelectric development was designed to provide a major source of electricity to local industry, commerce, and agriculture, as electric engines increasingly replaced steam in operations such as mills and irrigation pumps (*Ashland Tidings* 1916b). In fact, the entire Copco No. 1 construction operation itself was powered by electricity. D. W. Cole, senior engineer at the U.S. Reclamation Service (later USBR), noted that the electric operation at Copco No. 1 provided “a peculiarly modern appearance and advantage over the noisy, smoky, unsightly and comparatively inconvenient steam apparatus which ordinarily characterizes construction machinery on large works” (*Evening Herald* 1916b). As work progressed, anticipation built in the Copco service area. The *Ashland Tidings* reported that Copco No. 1 would be “in the center of the [power] distributing system, covering 450 miles of territory and giving electrical service to thirty-four cities and towns in southern Oregon and northern California” (*Ashland Tidings* 1916a).

Dam construction concluded in November 1917, and within 2 weeks, a reservoir named Copco Lake filled behind the dam (*Evening Herald* 1917; *Mail Tribune* 1917). The dam as it appeared in 1917 is shown in Figure 3-15. The creation of Copco Lake required relocation of the county road from Ager to Klamath Hot Springs. Copco rebuilt the inundated road at a higher elevation along a stretch of what became the Copco Lake shore. The reservoir also inundated a steel bridge that had to be rebuilt upriver and flooded local farm and ranchlands that Copco previously acquired as part of the project (*Evening Herald* 1916c; *Sacramento Bee* 1917; *Oakland Tribune* 1915).



**Figure 3-15 Copco No. 1, showing powerhouse, dam, and gatehouse no. 1, December 1917 (courtesy of the John C. Boyle Collection, Southern Oregon Historical Society)**

#### Copco No. 1 Begins Operations and Readies for Expansion

Copco No. 1's commercial operation began on January 17, 1918 (*Engineering and Mining Journal* 1918:399). The official dedication was held on February 2, 1918. A group of Copco officials and others attended the celebration (*Ashland Tidings* 1918). The *Sacramento Bee* reported that, "the floodgates of the great reservoir [Copco Lake] were opened for service by the California-Oregon Power Company. Following an inspection of the dam and the powerhouse, dinner was served to the officials and the invited guests followed by speech making" (*Sacramento Bee* 1918).

The new development linked to Copco's system in California's Siskiyou and Trinity Counties and the entire Southern Oregon service area. The development initially generated 15,000 horsepower, and its estimated cost of \$78 per horsepower unit made it one of the most economical power sources in the West (*Ashland Tidings* 1917). It greatly increased power availability in Copco's service area for domestic uses and irrigation, and for industrial operations such as gold mining, dredging, sawmills, and box factories (Myrtle 1919). In fact, the activation of Copco No. 1 doubled Copco's service capacity. Customers in Copco's California service area were no longer dependent on the Rogue River for power generation (*Engineering and Mining Journal* 1918:399). In 1918, Copco contracted with two California utilities, the Pacific Gas and Electric Company (PG&E) and Northern California Power Company (NCPC), to interconnect the three companies' systems, thereby increasing distribution of annual kilowatt-hours by 60 million. Proposed as a war emergency tie-in, Copco would supply 8,000 kW and extend its existing transmission system 95 miles south from Castella to the NCPC's main distributing substation in Kennett, Shasta County, California. An NCPC line 30 miles from Colusa Corners, Colusa County, would be reconstructed to increase voltage. PG&E would then extend its own line from Colusa Corners to Knights Landing, where it would join the company's high-tension transmission lines from the Sierras to San Francisco Bay (Merrick 1918:150; Myrtle 1919). Copco, PG&E, and NCPC shared the \$450,000 cost for the new transmission facilities (Boyle 1976:15).

Copco's role in this arrangement was to deliver Copco No. 1 power to Kennett, relieving NCPC's load at that center. This enabled NCPC to deliver more power through a new connection in the Sacramento Valley (Myrtle 1919). Through this interconnection, Copco obtained a market for power from its new plant, increasing its revenue. The added power requirements on Copco No. 1 required that Copco install the second powerhouse generating unit at Copco No. 1 (Boyle 1976:15). At that time, Copco also raised the dam 14 feet to increase storage capacity in Copco Lake without drawing on the Upper Klamath River (Myrtle 1919).

Preparatory work began for the installation of the second generating unit in December 1921. In addition to raising the dam, Copco extended the length of the powerhouse, built Gatehouse No. 2, modified Gatehouse No. 1, and installed a single penstock. Based on photographs from 1917 and 1922, the powerhouse was nearly doubled in length. It appears that Gatehouse No. 1 was also changed to resemble the newly built Gatehouse No. 2 in design and materials (Copco 1922). By April 1922, all excavation work, including a penstock tunnel and concrete foundation, had been completed. Beaver Portland Cement Company's Gold Hill plant in Jackson County, Oregon, furnished the cement. Copco used rock from the quarry next to Copco No. 1. Copco transported other building materials via motor trucks equipped with flanged wheels for adaption to rails along the KLRR. The 18,000-horsepower generating unit had already been in storage for several years, and work on the generator was scheduled to conclude on November 1, 1922 (Copco 1922; *San Francisco Examiner* 1922). Copco employed 175 to 200 workers to complete the Copco No. 1 expansion. The construction costs amounted to about \$500,000, with around \$25,000 in monthly payroll (*Sacramento Bee* 1922). Completion of the Copco No. 1 expansion coincided with relocation of the Copco headquarters from Yreka to Medford (*Mail Tribune* 1922).

The expansion and completion of Copco No. 1 was celebrated on November 5, 1922. Between 1,000 and 1,200 guests attended. The day's events began with a flag raising along the dam crest, live music, lunch, hydroelectric development tours, and activation of the powerhouse's second generating unit (Copco 1922). Attendees included officials of other regional power companies, such as Pacific Power general manager Lewis A. McArthur (Pacific Power acquired Copco in 1961). William A. Colvig, a judge from Medford, delivered the keynote address. Judge Colvig had delivered mail along the Klamath River between Yreka and Klamath Falls during the 1850s.

*Oregonian* reporter Addison Bennett seemed thoroughly impressed by Copco's achievements. Bennett wrote that, "[I]n every way the dam, powerhouses and the machinery installed are first class [sic]. In fact, everything being done by the company [Copco] is first class, as can be seen by viewing any of their plants" (Bennett 1922). Copco No. 1 has continued to provide hydroelectric power to the region ever since.

### **Copco No. 2 Hydroelectric Development (1925) (Siskiyou County, California)**

The Copco No. 2 hydroelectric development in Siskiyou County was completed in 1925, 3 years after the 1922 expansion of Copco No. 1. Preliminary survey, prospect, and foundation work for Copco No. 2 was completed while Copco No. 1 was under construction. Engineering reports indicated that Copco No. 1 would produce more power than the company's system could integrate. Consequently, Copco divided the development into Copco No. 1 and Copco No. 2. In 1911–1912, Copco No. 2 was

planned as a hydroelectric development with a dam, open canal, tunnel, and four-unit powerhouse. Copco ultimately reduced the Copco No. 2 powerhouse from four to two generation units to handle the flow through the Copco No. 1 powerhouse (Boyle 1976:10,16).

Construction for Copco No. 2 began in January 1924, with R. R. Kermack as construction supervisor (*Evening Herald* 1924; *Mail Tribune* 1924a). In promoting the project, Copco Vice President and General Manager Paul B. McKee emphasized benefits that construction and operations would bestow on the regional economy: “In labor, freight, hauling, materials and equipment the new plant will bring a very substantial activity to this whole territory while the plant is being built” (*Mail Tribune* 1924b). Additionally, at the peak of construction, the project employed up to 1,200 workers, most of whom were local residents (*Mail Tribune* 1925a).

In May 1924, work began on the dam, camp, and railroad, and a temporary road to the dam site (PacifiCorp 2004:6-2). The dam construction site encompassed a quarry, concrete-mixing plant, bypass flume, and tramway for transporting concrete (*News-Review* 1925). Construction began on the powerhouse in June 1924 (*Mail Tribune* 1924b). At the powerhouse site was a concrete-mixing plant, tower for placing concrete, penstock excavation area, and construction camp areas (*News-Review* 1925). By April 1925, Copco No. 2 project activity was nearing its peak, with about 1,000 workers on site (*Mail Tribune* 1925b). Copco generated interest and enthusiasm for the project by guiding local residents on tours of the work site. In keeping with Vice President McKee’s promise to bring “very substantial activity to this whole territory,” Copco purchased local materials such as lumber and cement whenever possible (*Mail Tribune* 1925a, b). The company used an estimated 200 to 300 carloads of cement, over 200 carloads of lumber, and about 30 carloads of reinforcing steel (*News-Review* 1925). The Beaver Portland Cement Company from Gold Hill, Oregon, furnished the cement; while local logging operations supplied the lumber (*Mail Tribune* 1925a). Copco’s decision to order 5,000 barrels of cement from Gold Hill, about 13 miles northwest of Medford, drew praise from the *Mail Tribune* as promoting local economic growth: “This action on the part of the power company in buying a local product in preference to all other competitive products is to be commended and might well be cited as a striking example of what ‘trading at home’ really means” (*Mail Tribune* 1924c).

The \$3 million Copco No. 2 project was regarded as an important new power development that would assure “an abundance of electric power for this whole territory for every industrial and domestic need” (*Mail Tribune* 1925a). At that time, at least 70 percent of rural households in the Copco service area used electricity (*News-Review* 1926). As the project neared completion, local residents and businesses expressed interest and anticipation about this new source of electricity. In July 1925, a window display at Paul’s Electric Store in Medford, Oregon, designed by People’s Electric and Power Company, featured new electric ranges adjacent to “an exact model of the new Copco No. 2 power house, representing the production, and the two ranges representing the consumption, of power” (*Mail Tribune* 1925c). The exhibit highlighted how Copco No. 2 would meet increasing regional electricity demands. Copco also roused enthusiasm over the new hydro-development through company-produced motion pictures, such as “A Trip to Copco.” The film depicted the construction of the Copco No. 1 and No. 2 plants, and screenings were in high demand at school and civic organizations throughout the Copco service area (*Mail Tribune* 1925d).

Completion of Copco No. 2 made additional power available not only for domestic and farm use, but for local lumber operations; nearly all relied on electricity. Copco No. 2 also helped power the pumps used in irrigation systems (*News-Review* 1926). In 1925, PG&E in California obtained a long-term lease for the Copco No. 2 plant's entire output (*News-Review* 1925). On completion of Copco No. 2, Copco boasted operation of 11 power plants along the Klamath, Rogue, and Umpqua Rivers (*Mail Tribune* 1925a).

The Copco No. 2 powerhouse was dedicated on July 5, 1925. Over 2,000 people attended, mostly local power customers and shareholders from Oregon and California. The day's events included local bands, a flag-raising, a dramatic dedication ceremony, and a cafeteria-style lunch consisting of "six thousand sandwiches" plus side-dishes and desserts. Tour guides walked visitors from the powerhouse site to the surge tank, where they descended into the newly built water conveyance system (*Mail Tribune* 1925e). The *News-Review* detailed the trip through the system:

*Walking through huge cement and wooden pipes in the bowels of the earth is a novel experience and old and young, women and children formed a line and started the journey. As one walked along the tunnel you could not help but marvel at man's skill in producing such a masterful piece of engineering. Each foot of the way represented hard toil. Emerging from the upper end of the tunnel you find yourself at the bottom of the mammoth diversion dam, constructed of cement (News-Review 1925).*

Visitors returned from the dam site, shown in Figure 3-16, to the powerhouse area on the "Copco-Thrall railroad," a section of the former KLRR (*Mail Tribune* 1925e). A *News-Review* reporter who attended the dedication wrote that, "[I]t is a stupendous task to attempt to describe a three-million-dollar job on a thirty-dollar typewriter," and encouraged everyone to visit the new plant to see "what mere men have accomplished in order that we may all be able to push a button and have light" (*News-Review* 1925).



**Figure 3-16 Copco No. 2 dam, showing original head gate and intake, undated photograph (courtesy of the Los Angeles Public Library, image LAPL00009700)**

### **The Post-World War II Era through the Pacific Power Acquisition (1946–1960)**

In the years following World War II, growth in population and expansion in industry spiked the regional demand for electricity. In response, Copco completed its first postwar project, the North Umpqua project, between 1947 and 1957, which doubled the company's capacity by building eight interconnected plants along the North Umpqua River east of Roseburg, Oregon. By 1950, well before completion of the project, Boyle and other Copco officials recognized that increased regional population and power demand would outpace the power supply, requiring new projects for future Copco customers (McCreedy 1950). Copco thus advanced a 10-year, \$70 million power development plan in the Klamath Basin. In addition to Big Bend No. 1 and No. 2 hydroelectric developments (consolidated and later rededicated as J.C. Boyle hydroelectric development), the plan included Iron Gate, completed by Pacific Power in 1962 (Guernsey 1957; Wynne 1957).

In 1958, when Big Bend began operations, the Copco service area contained about 50,000 square miles and a population approaching 250,000. The service area included 72 communities and adjacent rural areas in Klamath, Jackson, Josephine, Lake, and Douglas counties in Oregon, and in Siskiyou, Modoc, Del Norte, Trinity, and Shasta counties in California. At that time, the regional economy was still based on logging, farming, ranching, and mining industries with a long local history (*Mail Tribune* 1959).

### **J.C. Boyle Hydroelectric Development (1958) (Klamath County, Oregon)**

The J.C. Boyle hydroelectric development, located in a remote part of Klamath County, Oregon, was completed by Copco in 1958 to generate hydroelectric power. The development is a component of the LKP and is the easternmost of the four major hydroelectric developments, including Copco No. 1, Copco No. 2, and Iron Gate. Originally known as Big Bend after a nearby curve in the river, J.C. Boyle was the Klamath River's first post-World War II hydroelectric development. Unprecedented post-war population growth in Klamath, Jackson, Josephine, and Douglas counties in Oregon, and Siskiyou

County in California, led to soaring regional power demands. In response, Copco evaluated potential sites for a new hydropower project and identified a stretch of the Klamath River as an ideal location. In that area, west of Keno, Oregon, and north of the Oregon–California border, Copco proposed to build the Big Bend facilities to generate an additional 88,000 kW of power. The Big Bend hydroelectric development was completed in 1958. In 1962, 1 year after Pacific Power acquired Copco, Big Bend was rededicated as the J.C. Boyle hydroelectric project in honor of the Copco/Pacific Power engineer and official who designed and supervised construction of Big Bend, as well as other significant regional hydroelectric projects.

The J.C. Boyle hydroelectric development is part of the LKP. The development was designed by Copco engineers and construction personnel; specifically, John C. Boyle, who also supervised construction (*News-Review* 1958). Copco's project manager was Truman Runyan (Wynne 1957) and assistant project manager was Reuel Rians, Jr. (Underhill 1957:13). Copco hired Morrison-Knudsen Company, Inc., of Boise, Idaho, as general contractor (*Mail Tribune* 1958). Larry Wicks was the Morrison-Knudsen project superintendent, and Ed Heiser was the Morrison-Knudsen project engineer (PacifiCorp archive images BB-718, BB-719). Power generated by the new hydroelectric development was transmitted over a 70-mile, 230-kilovolt (kV) transmission line to Klamath Falls and Medford (Wynne 1958).

Big Bend was part of the original Klamath hydroelectric project survey in 1911; however, plans for constructing Big Bend were not advanced until the 1950s, after completion of Copco No. 1 and Copco No. 2 (Kramer 2003a:30-31). In January 1956, Copco entered into agreements with Public Utility Commissions in Oregon and California, the U.S. Department of the Interior, the USBR, and the Federal Power Commission (FPC) (present-day FERC). These agreements anticipated the construction of the Big Bend facilities, the first developments on the Klamath River after Copco No. 2 was dedicated in 1925 (Kramer 2003a:30-31). The agreements also provided, with some exceptions, that Copco would refrain from using Klamath River water “when it may be needed or required for use for domestic, municipal, or irrigations purposes within the Upper Klamath River Basin” (Boyle 1976:54). Although Copco initially proposed the Big Bend development as two different projects, the company ultimately consolidated the two projects, with a diversion dam at the original Big Bend No. 1 site, and an associated powerhouse at the original Big Bend No. 2 site. Copco filed an amended application with the FPC to reflect the consolidation plan. The FPC granted the 50-year license, effective March 1, 1956 (*Herald and News* 1956a).

Construction of Big Bend began in July 1956 (*News-Review* 1958). By August, 15 men were working on access roads and preparing the building site, including pouring sections of dam foundation (*Herald and News* 1956b). Although Copco generally used its own engineers for planning, the company hired Morrison-Knudsen as general contractor (*Mail Tribune* 1958; Wynne 1957). Morrison-Knudsen had been working continuously on Copco projects since 1952, including four hydroelectric developments on the North Umpqua River (Morrison-Knudsen 1958:3).

Morrison-Knudsen began construction on Big Bend in December 1956 (Morrison-Knudsen 1958:4). The company produced the sand and gravel used in on-site construction with portable crushers, washers, and sorters, while the Ideal Cement Company's Gold Hill plant supplied all project cement (*Mail Tribune* 1958). About 60,000 yards of concrete was estimated for use in the dam, and 10,000

yards of rock and dirt would provide the dam fill (Wynne 1957). At the peak of construction, about 700 men were employed (News-Review 1958). Project costs were 10 percent for area roads, 40 percent for labor, and the rest for materials, engineering, and administrative costs (Wynne 1957). The final estimated cost was \$12.4 million, and Big Bend's 80,000 kW capacity made it Copco's largest plant (News-Review 1958). As construction progressed, Copco personnel invited members of the public to tour the site. In June 1957, 42 members of the Klamath County Chamber of Commerce toured the dam site with Copco Vice President, General Manager, and Engineer, John C. Boyle (Wynne 1957).

By May 1958, the flume conveying water from the dam to the powerhouse, shown in Figure 3-17, was 70 percent complete. Morrison-Knudsen characterized the flume as a "long water artery [that] snakes along the hillside above the river on a broad bench that has to be carved into stubborn volcanic rock" (Morrison-Knudsen 1958:4). Flume construction required excavation of over 50,000 cubic yards of the rock, with sidecuts up to 150 feet deep. The flume's 16-foot-high concrete walls, built using standard forms, were reinforced with over 6 million pounds of steel. The walls range from 24 to 35 feet in width, with the widest sections in areas "where only a single outer wall is required, and the natural mountain slope serves as the inner wall confining the water." About half the flume has single wall sections (Morrison-Knudsen 1958:4).

Morrison-Knudsen's described Big Bend's inaugural operations in its monthly magazine:

*Scheduled to spin out its first electricity in September, the ingenious Big Bend development involves no towering dams nor vast reservoirs. Rather, it detours the fast-moving waters of the Klamath into a two-mile flume along a hillside, pours the flow through a mountaintop tunnel and then plunges the waters down a dizzying penstock slope to twin generating units in a compact powerhouse. This system of conveying water by flume or canal from mountain streams to high-head power plants is typical of nearly all of the economical and efficient generating facilities of COPCO, as the power company is familiarly known (Morrison-Knudsen 1958:3).*



**Figure 3-17 Big Bend (now J.C. Boyle) powerhouse, circa 1962 (courtesy of PacifiCorp, image BB-1053)**

Big Bend was dedicated on September 1, 1958, with about 30 people in attendance (*News-Review* 1958; Wynne 1958). Officials present included Copco president A. S. Cummins, as well as John C. Boyle (*News-Review* 1958). At the dedication ceremony, Cummins touted the new plant, declaring that, “The electrical energy from this plant will surge into the interconnected Copco network which serves the homes, farms, the commercial and industrial establishments and the public institutions of Southern Oregon and Northern California, and serves them all equally without discrimination” (Wynne 1958). Cummins also unveiled a bronze dedication plaque mounted on the powerhouse’s exterior wall. The plaque read, “[T]hrough God’s merciful providence and man’s ingenuity this plant is today placed in operation and is dedicated to the lasting benefit of the people we are honored to serve” (Wynne 1958).

On February 3, 1962, after Pacific Power had acquired Copco, Big Bend was officially renamed the John C. Boyle Hydroelectric Project. A rededication ceremony was held on June 25, 1962 (*Herald and News* 1962a). At the ceremony, a new plaque, mounted on the base of a powerhouse area flagpole, was unveiled. The plaque contained the original plaque’s text, plus Boyle’s name and a description of his professional contributions to Copco and Pacific Power. Glenn L. Jackson, a vice-chair of Pacific Power’s board of directors, stated that the former Big Bend project was the largest that Boyle had designed and constructed during his career. Following the rededication ceremony, over a hundred of Boyle’s friends and business associates attended a luncheon program at the Winema Hotel in Klamath Falls, Oregon (*Herald and News* 1962b).

#### John Christie Boyle (1887–1979)

In 1962, Pacific Power renamed Big Bend for John C. Boyle to honor his significant contributions to regional hydropower development. Boyle spent his 50-year career as an engineer, construction supervisor, and later company official at Copco and its successor company, Pacific Power. He

designed most of the hydroelectric projects in the southern Oregon/Northern California region. As noted by Kramer (2018), Boyle was “principally responsible for Copco’s ground-breaking multi-dam generation facilities on the Klamath and North Umpqua Rivers.”

Boyle was born at Fort Jones in Siskiyou County, California. He graduated with a degree in civil engineering from the University of California in 1910. That year, he was hired by SEP&L, one of Copco’s predecessor companies, as an assistant engineer (*Mail Tribune* 1962a). He began his tenure at SEP&L by surveying the Klamath River at Ward’s Canyon. Ward Canyon later became the site of the Copco No. 1 hydroelectric development. In 1916, 2 years after construction began on Copco No. 1, Boyle became the site construction supervisor (Kramer 2003b:19; *Oregonian* 1917). Boyle also engineered and built the Link River Dam (1921) at Klamath Falls, Oregon, which helped expand the region’s basic agricultural economy.

Throughout the 1920s and 1930s, Boyle continued investigating the power potential of the Klamath, Rogue, and Umpqua River basins. In the 1940s and 1950s, he used the data gathered to plan future hydroelectric sites. By then, Boyle was not only Copco’s chief engineer, but also vice president and general manager. In 1945, he led Copco in expanding the company’s generating capacity, primarily through the North Umpqua project. In 1951, Boyle was named Oregon’s Engineer of the Year by Professional Engineers of Oregon for design and development of the North Umpqua River projects’ eight plants (Boyle 1962). During the 1950s and 1960s, he engineered and supervised construction of the Big Bend (Boyle) and Iron Gate hydroelectric developments. Boyle retired as director of Pacific Power in 1963 but continued as a consultant (*Oregon Civil Engineer* 1975:1).

### **Pacific Power Expansion Phase (1961–1970)**

Pacific Power’s June 1961 acquisition of Copco led to significant changes in regional hydroelectric power generation and transmission (*Bend Bulletin* 1960). After buying Copco, Pacific Power initiated a \$500 million construction program, designed to last from 1961 to 1970. The program’s goals were to integrate the two companies’ systems, enhance power delivery to service areas, and accommodate workers involved in the expanded operations (Pacific Power 1961a:1). As the construction program proceeded, Pacific Power officials monitored developments and continued planning for future improvements (*Sacramento Bee* 1967). In 1962, Pacific Power (now PacifiCorp) completed Iron Gate as the final hydroelectric development along the Klamath River. Iron Gate was constructed primarily to regulate flows. In addition to fish catching and spawning facilities built into the Iron Gate dam and powerhouse site, an associated fish hatchery complex is 0.25-mile downstream.

When Pacific Power bought Copco, the two companies were supplying power to a total of 415,000 customers. Pacific Power earned about 60 percent of its revenue in Oregon, and the rest in Washington, Idaho, Western Montana, and Wyoming. Copco earned about 80 percent of its revenue in Southern Oregon (71,000 customers), including Medford, Grants Pass, Roseburg, Klamath Falls, and Lakeview. Copco did the remaining 20 percent of its business in Northern California (21,000 customers), including Tulelake, Yreka, Weed, Dunsmuir, Alturas, and Crescent City (*Bend Bulletin* 1960; *San Mateo Times* 1960).

When Copco president A.S. Cummins and Pacific Power board chairman Paul B. McKee jointly announced the merger, they stated that “directors of the companies have reached the conclusion that it is in the best interest of all concerned to join together the two neighboring systems and integrate their power resources and development programs” (*Bend Bulletin* 1960).

As part of Pacific Power’s 1961–1970 construction program, the company built new, or improved existing, power facilities such as transmission lines and substations, some at former Copco sites. Certain work was related to construction of the Iron Gate Development, which was well underway by 1961 (Pacific Power 1961b:2). For instance, to power construction at Iron Gate, Pacific Power erected a temporary switchyard at the Copco No. 2 substation. Iron Gate received power transmitted from the Copco No. 2 powerhouse through the temporary switchyard and (transmission) Line No. 62. In 1966, construction was completed on the Iron Gate hatchery, just downriver from Iron Gate Dam.

In 1970, Pacific Power budgeted around \$926,000 for planned expansions and improvements in the Yreka District. One of the primary projects was a 10-mile, \$297,000 transmission line between Ager and Copco No. 2. At Iron Gate, Pacific Power budgeted \$45,000 to improve recreation facilities such as construction of a public boat ramp below Iron Gate Dam, as well as installation of electric and water service at Camp Creek (*Sacramento Bee* 1970). Pacific Power also built new facilities such as single-family dwellings, a bunkhouse, and a new school to accommodate workers and their families based at Copco No. 2. These buildings date to around 1965–1970 (*Sacramento Bee* 1968).

### **Iron Gate Hydroelectric Development (1962) (Siskiyou County, California)**

In 1962, Pacific Power (now PacifiCorp) completed Iron Gate as the final hydroelectric development along the Klamath River. Iron Gate was constructed primarily to regulate flows, and thereby restore downstream fish habitat disturbed by the dams and operations at Copco No. 1 and Copco No. 2. Iron Gate’s secondary function was generating hydroelectric power. In addition to fish catching and spawning facilities built into the Iron Gate dam and powerhouse site, an associated fish hatchery complex is 0.25 mile downstream. Fish eggs collected at the dam site are transported to the complex, where they are hatched, and then moved into a series of raceways. The fish stay in the raceways until they are ready for release into the river.

Iron Gate was built by Pacific Power, a Copco successor company, in 1962. Designed by Pacific Power vice president and chief engineer John C. Boyle, Iron Gate encompasses a regulating dam, water conveyance system, powerhouse, reservoir, fish hatchery, and support facilities. The entire Iron Gate hydroelectric development, including the reservoir, extends between RM 200.0 and RM 193.1 along the Klamath River. The dam, built at RM 193.1, is about 20 miles northeast of Yreka, Siskiyou County, California. Named for the site’s “rust-hued canyon walls,” Iron Gate is the KHP’s seventh and farthest-downstream development (*Herald and News* 1961a).

The Iron Gate hydroelectric facilities was part of the original Klamath hydroelectric project development plan. Copco completed initial surveys for Iron Gate in the late 1920s and early 1930s. Around 1932, Copco submitted applications to the FPC to develop the Iron Gate site. The applications triggered disputes related to water rights, interstate rights, and other procedural hurdles, which postponed the project (Boyle 1976:51). Copco reinitiated efforts to advance the Iron Gate hydroelectric development in 1956 by submitting a water use application to the State of

California. The next year, Copco applied to the FPC for a license to construct the first stage of Iron Gate—an arch dam. To satisfy state and federal regulations related to issues such as river flows, water releases, and fish facilities, the company revised its plans and decided to build the project in only one stage. This included power and fish facilities and a rock-fill rather than arch dam. The FPC approved the license in March 1961, although construction of site access roads and other work had already begun. Several months later, after Pacific Power acquired Copco, the FPC transferred the license and extended the project completion deadline from December 31, 1961, to January 31, 1962 (Boyle 1976:55-56; Pacific Power 1962:3).

John C. Boyle, Pacific Power vice president and engineer, supervised design and construction of Iron Gate (*Mail Tribune* 1962b). The *Herald and News* characterized the completion of Iron Gate as “another personal triumph for John Boyle, PPL [Pacific Power] vice president and designer of Iron Gate, who has been the guiding force behind development of the [Klamath River] canyon. Boyle has been on hand for the planning and construction of virtually all the development in the area by Copco” (*Herald and News* 1962a).

Morrison-Knudsen began construction on Iron Gate in April 1960 under a contract with Copco executed prior to the merger with Pacific Power. After the merger, construction proceeded as a Pacific Power project (Morrison-Knudsen 1961:10). Iron Gate was the sixth project that Morrison-Knudsen had done for Copco within the past decade (Morrison Knudsen 1961:11). Morrison-Knudsen constructed permanent and temporary roads for access to construction areas and sites with natural resources suitable for dam construction. The company also rebuilt county road sections expected to be inundated by the Iron Gate Reservoir (Pacific Power 1962:4,13). Approximately 7 to 8 miles of county road were relocated, and on project completion, road ownership and maintenance transferred to Siskiyou County (Iron Gate circa 1962; Pacific Power 1962:2). The road relocation included a new wooden bridge with concrete footings and abutments over Jenny Creek. The company paid for the road and bridge construction, which was completed “in accordance with the specifications and standards furnished by Siskiyou County” (Pacific Power 1962:13). In December 1960, an access road to the top of the dam’s left abutment was completed (Pacific Power 1962: Schedule No. 4, Sheet 2 of 5). In April 1961, the relocated county road around the reservoir was mostly completed (Pacific Power 1962: Schedule No. 4, Sheet 2 of 5).

Pacific Power finalized Iron Gate’s plans and specifications, while Pioneer Service & Engineering Company of Chicago developed the structural design. Work crews contracted by Morrison-Knudsen built the diversion tunnel, dam, penstock foundations, powerhouse structure, dam fish facilities, and internal roads (Pacific Power 1962:15). Although construction camps for housing workers were used during Copco No. 1 and No. 2 construction, Pacific Power deemed such camps unnecessary due to the proximity of the Hornbrook community 10 miles to the west and the city of Yreka 25 miles to the southwest. During November 1961, the total number of supervisors, engineers, and construction workers at the Iron Gate site reached a high of 264 (Pacific Power 1962:15). The company contracted with SPRR for use of railroad right-of-way in Hornbrook to unload and store equipment. During the construction phase, Pacific Power erected three office trailers, a soils laboratory, a warehouse trailer, two small warehouse buildings, and two fuel tanks at the dam site (Pacific Power 1962:14). The trailers are visible in a February 1962 photograph, near the restroom building’s current site, but were later removed (*Herald and News* 1962b). Pacific Power’s plan for Iron Gate

included two operator residences, which were later built between the spillway outlet and Lakeview Road Bridge, on the Klamath River's northern bank (Pacific Power 1962:14).

The development's rockfill dam was built using 1.1 million cubic yards of fill materials and measured 173 feet high, with a 685-foot crest length. The dam's base thickness was 1,000 feet (Morrison Knudsen 1961:10). One of the dam's distinctive features was the fish facilities constructed at the embankment toe (Morrison Knudsen 1961:11). The fish facilities, consisting primarily of a fish ladder, spawning building, and holding tanks functioned in conjunction with the Iron Gate hatchery and were completed in 1966.

Pacific Power began filling the reservoir in November 1961 after engineers installed part of a concrete plug into the 16-foot-diameter tunnel that diverted the river around the construction site. The company expected that reservoir formation would take 7 weeks, although the Klamath River's natural upstream flow and water releases from upstream Copco facilities would determine the actual time (*Herald and News* 1961b).

Dedicated on February 3, 1962, Iron Gate cost an estimated \$7.5 million (Boyle 1976:55-56; *Herald and News* 1961a). On dedication day, shown in Figure 3-18, about 2,500 visitors arrived by automobile and chartered buses to tour the facility with Pacific Power guides. Dignitaries in attendance included California State Senator Randolph Collier, Klamath Falls Mayor Robert Veatch, *Herald and News* publisher William Sweetland, Pacific Power board members and employees, and Morrison-Knudsen company officers.



**Figure 3-18 Iron Gate dedication, February 3, 1962 (courtesy of PacifiCorp, image IG-290)**

In December 1964, within 2 years of Iron Gate's completion, flooding severely damaged the natural rock spillway channel. Rock was washed into the river channel downstream from the dam and water overflowed the powerhouse's generator deck. Pacific Power hired Morrison-Knudsen to complete the necessary repairs. This involved installing reinforced concrete for lining the walls and floors for over

630 feet of the spillway chute and building a new terminal structure with a flip bucket design to prevent overflows from causing damage. The new spillway walls were 50 feet at their maximum height and 40 feet thick at the base. Concrete used for the repairs was trucked in from a mixing plant about a half-mile from dam site. The terminal structure was backfilled with 14,000 yards of rock and earth (Morrison-Knudsen 1965:10).

Section 3.4.8 below includes the history of Iron Gate dam fish facilities and hatchery.

### 3.2.8 Fish Management

Starting in the late nineteenth century, dams have been built along the Klamath River for hydropower development, as well as logging operations, flood control, and agricultural irrigation.

In the Klamath region, efforts at fish management began with constructed fishways such as the fish ladder to allow passage over the Klamathon logging dam in 1889. Fish ladders were later built on the Link River dam in 1925, the Big Bend (now J.C. Boyle) dam in 1958, and the Keno dam in 1966. Other fish management strategies involved egg collection stations operated by State fish and game agencies in conjunction with fish hatcheries. In California, eggs were collected at stations, including Hornbrook (1901–1938), Bogus Creek (1910–1941), Camp Creek (1910–1934), and Klamathon (1910–1940). The Klamath River’s earliest known fish hatchery was at the river’s confluence with Spencer Creek and operated from 1914 to ca. 1954. The Fall Creek hatchery was established in 1919. The Klamath River experimental hatchery (1959–1960) was operated adjacent to Copco No. 2 powerhouse to determine the feasibility of a hatchery below the proposed Iron Gate Dam (Leitritz 1970:46). Finally, Iron Gate hydroelectric facility contains fish capturing and spawning facilities at the base of the dam (1962), which operate in conjunction with the nearby Iron Gate fish hatchery (1966).

#### Fish Husbandry and Hatcheries

The Fall Creek hatchery was part of California’s early statewide hatchery system, established to increase fishery populations. The hatchery implemented fish husbandry through artificial propagation and fish-rearing practices to further these goals. Additional discussion on this topic is available in the Hatchery Management Plan.

#### Early Fish Management Legislation and Practices

##### California

After California was admitted to the Union in 1850, the State promptly implemented legislation to protect fish habitat. In April 1852, the State criminalized in-stream obstructions to salmon migration in what became known as the 1852 Salmon Act; however, the act exempted mining, milling, and agricultural dams and did not impose minimum downstream flow requirements (Bork et al. 2012:817). California remained at the vanguard of fish and wildlife conservation by establishing the nation’s first wildlife conservation commission through the 1870 Law for the Preservation of Fish Act (*Marin County Journal* 1870). Appointed by the governor, the Board of Commissioners of Fisheries used appropriations to advance the restoration and preservation of California’s fish (Leitritz 1970:8-

9). In Section 3, the act charged commissioners with enforcing fishway or fish ladder construction by dam builders. Also, in 1870, the California Acclimatization Society initiated the State's early experiments with artificial propagation by establishing a small hatchery near San Francisco City Hall. The State Hatching House, California's first state-owned and operated hatchery, opened at the University of California, Berkeley, campus in 1870. About 60,000 eastern brook trout eggs were hatched and distributed in public waters that year (Leitritz 1970:7). In 1878, the San Leandro hatchery replaced operations at the State Hatching House (Leitritz 1970:15).

The Pacific Coast's first anadromous salmonid (a family of fish that includes salmon and trout) production began in 1872. That year, Livingston Stone, a national fish expert, was sent to the Pacific Coast by the U.S. Commissioner of Fisheries, Spencer F. Baird. Livingston's assignment was to obtain Chinook salmon eggs and ship them to the East Coast, where the Atlantic salmon population had been severely depleted. Assisted by local experts, Stone established the Pacific Coast's first salmon breeding station, a federally operated facility named after Baird, on the McCloud River in California. By 1875, the hatchery was responsible for the yearly release of 6 to 10 million salmon (Leitritz 1970:16). Several years later, the United States Bureau of Fisheries (USBF) and the State of California began cooperating in the egg transportation and fry release processes to increase spawning in local streams. The first California state salmon hatchery was built in 1885 on Hat Creek, which flows down Mount Lassen into the Pit River. The shortage of local Chinook eggs resulted in the abandonment of Hat Creek and the transfer of hatchery operations in 1888 to the state's new Mount Shasta hatchery in Siskiyou County (Wahle and Smith 1979:22).

The Klamath Basin's first salmon hatchery operated from 1889 to 1898 at Fort Gaston, California, on the Hoopa Reservation. Hatchery crew members raised Chinook salmon eggs taken from Redwood Creek and the Sacramento River. The basin's second hatchery was established soon afterward on an unspecified lower Klamath River tributary, using eggs from Redwood Creek, the Sacramento River, and Rogue River. In 1890, the USBF began programs for stocking the Upper Klamath Basin by planting fish from Sacramento River stocks. The California Fish Commission also stocked the Klamath intermittently between 1896 and 1916 with Chinook fry from the Mount Shasta hatchery (Klamath River Basin Fisheries Task Force 1991).

Through the 1910s and 1920s, state and federal governments continued building hatcheries on the Klamath, Sacramento, Eel, Russian, and Mad rivers in Northern California. Juvenile fish reared at these hatcheries, primarily fall Chinook salmon, were planted throughout the Klamath and Sacramento River drainages and northern coastal streams.

During this era, California continued to augment state fish protection laws by mandating that dam owners build and maintain fish ways (usually fish ladders) designed for year-round fish passage over dams, imposing de facto minimum flow requirements, and criminalizing obstruction of fish ways (Bork et al. 2012:818-819). Despite these requirements, the California Fish and Game Commission (CFGF) repeatedly noted inadequate instream flows. Power companies refused to comply with fish passage laws, and few allowed sufficient water to pass through their dams during the minimum flow periods (Bork et al. 2012:821). The 1915 Flow Act (Fish and Game Code Section 5937) sought to address this issue by requiring dam owners to allow enough water to pass through the fishway to keep downstream fish "in good condition" (Bork et al. 2012:822). California amended the 1915 Flow

Act in 1917 to allow construction of a hatchery instead of a fish way when the CFGC determined that a dam's height made fish way construction infeasible (Bork et al. 2012:823).

During the 1950s, before the construction of Iron Gate Dam, the CDFG initiated a program to restore fisheries along the Klamath River. The program involved the removal of abandoned mining dams and log jams to open 200 miles of "excellent spawning and nursery streams" (Saldana 1969). To prevent fingerlings being diverted to irrigation ditches, the department worked with local ranchers to install fish screens in irrigation diversions. Fish traps were also placed in heavily diverted streams.

In 1976, California had 13 hatcheries rearing fall Chinook salmon, coho salmon, and winter steelhead trout. One was federal, 10 were state, and two were private, with nearly half of them operating along the Sacramento River (Wahle and Smith 1979:22).

## Oregon

Oregon's earliest fish management legislation preceded its 1859 statehood. Following the establishment of the Oregon Territory in 1848, the Territorial Constitution was formed, with Section 12 providing that rivers and streams occupied by salmon should not be dammed or obstructed unless fish passage was established. In 1855, the Columbia River tribes signed a treaty with the United States to reserve their rights to hunt and fish in the "usual and accustomed places" (Oregon Department of Fish and Wildlife [ODFW] 2018). Additional legislation passed in 1872, requiring fishways over dams and prohibiting the use of poison or explosives for fishing practices. Oregon's first state Fish Commission was formed in 1878, but was not officially recognized until 1887, when it received a \$1,000 appropriation from the state legislature. The Fish Commission, now the Oregon Department of Fish and Wildlife, was the earliest official entity tasked with protecting state fish, wildlife, and forests. In the following decades, the commission's name, responsibilities, and approaches evolved (Halvorson 2002; ODFW 2018).

By 1875, U.S. Fish Commission hatcheries in California began serving an advisory role to Oregon hatchery operators (Bohner 2018:6). In 1876, the Oregon and Washington Fish Propagation Company constructed the first documented fish hatchery in the Columbia River Basin. More Oregon hatcheries were established in conjunction with the state's growing population and industries (Bohner 2018:3-4). In 1887, the Oregon Board of Fish Commissioners was authorized, and by 1911, Oregon formed the State Board of Game and Fish Commissioners, a sign of the state's growing interest in fish management (Bohner 2018:10-11).

In 1898, the State of Oregon passed salmon protection legislation. These laws prohibited fishing on spawning tributaries to the Columbia River; authorized the Fish Commissioner to remove fish passage barriers and to close streams stocked with fish; prohibited the introduction of non-indigenous fish to the state; and authorized the Board of Fish Commissioners to buy and construct fish hatcheries. Also, in 1928, Oregon voted to outlaw fish wheels (Gifford 2018).

With the technological advances in fish husbandry following World War II, Oregon hatcheries became increasingly standardized (Bohner 2018:18).

## **Fish Management Practices on the Klamath River: Fish Ladders, Egg Collecting Stations, and Hatcheries**

This section provides historical information about early fish management efforts along the Klamath River in California as well as in Oregon, where the Klamath River begins flowing from its source. It includes discussions of historical fish ladders, egg collecting stations, and hatcheries.

### **Fish Ladders**

#### J.C. Boyle Dam and Fish Ladder (1958) (Klamath County, Oregon)

The J.C. Boyle fish ladder was integrated into construction of the J.C. Boyle Dam. The fish ladder permits upstream fish, primarily river trout, to rise approximately 60 feet to pass through the dam, while the dam's four rotating fish screens collect fish and divert them downstream through a fish screen bypass pipe (USBR 2012:16-18). The J.C. Boyle fish ladder does not accommodate salmon, which cannot surmount the other downstream dams. The J.C. Boyle fish ladder has not been modified since its original construction and is deemed to have an outdated design.

### **Egg Collecting Stations**

Hatcheries operated in conjunction with egg-collecting stations, which used traps, nets, and racks to capture fish migrating upstream to their spawning grounds. After trapping the fish, station crew members removed the eggs from the females for eventual transport to the hatchery. Historic State fish and game reports indicate that some egg-collecting stations, such as Shovel Creek, also hatched a certain amount of eggs on site and released the fry into nearby streams. By 1921, the CFGC announced that, "the various egg-collecting stations along the Klamath River are in full swing . . . The first of the rainbow trout are 'running' in Bogus Creek, Camp Creek and Fall Creek and something over a million of eggs have been taken to date. The run of fish in Cottonwood Creek is somewhat later, but indications are for a successful take of eggs at the Hornbrook [Cottonwood Creek] Station" (Snyder 1921:123). In addition to traps and fish racks, egg-collecting stations included pipelines to convey water to fish tanks, holding and spawning tanks, retaining walls to prevent erosion near rivers and streams, bridges for access to roads/railroads, and worker accommodations such as shacks, cabins, and cottages. The egg collecting stations at Shovel Creek (Beswick), Klamath Station, Bogus Creek, Camp Creek, and Ward Canyon were all removed prior to World War II.

### **Fish Hatcheries**

The purpose of hatcheries on the Upper Klamath River was to stock the Klamath Basin's waterways with hatchery-raised fish (Lufkin 1991:636; Mills et al. 1997; White 1995:89-90). In addition to the Fall Creek hatchery, three other historic state-run hatcheries have been established along the Upper Klamath River.

There may have been other small, historic hatchery operations along the Upper Klamath River that have not been documented by the CDFW or its predecessors. Additionally, some egg collecting stations such as Cottonwood Creek engaged in hatchery activities as a function secondary to egg collection and/or on a temporary basis.

Fall Creek Hatchery (California) (1919–1949, 1979–2003) (Siskiyou County, California)

The Fall Creek hatchery’s history highlights its role in the conservation of the Klamath River’s native fish. From opening season in 1919 to the official closure in 1949, Fall Creek hatchery was central to salmon and trout propagation in the Klamath Basin. In 1918, the CFGC proposed building the Fall Creek hatchery as an alternative to the fish ladder originally planned for the new Copco No. 1 dam. California’s 1915 Flow Act required dam builders to install fish ladders to enable upstream fish migration for spawning; however, the proposed Copco ladder was designed to be at least 110 feet in height (*Mail Tribune* 1918). As an alternative to the ladder, Copco made an agreement with the CFGC to fund construction of a hatchery along Fall Creek near the company’s power plant. The purpose of the hatchery was to propagate Chinook salmon and to populate the Upper Klamath River above the dam with steelhead trout. When construction was completed, the hatchery encompassed a 125-foot hatchery building, shown in Figure 3-19, as well as two hatchery cottages, and three fish holding ponds (none of which remain).

The Fall Creek hatchery underwent a major expansion in 1937, when six additional rearing ponds were built to increase holding capacity for fall release of salmon and steelhead (Leitritz 1970:38). Two ponds (raceways) in a single concrete structure were built near the hatchery building and four others in a single structure were built about 400 feet to the south.



**Figure 3-19 Fall Creek hatchery building, completed in 1919, no longer extant (photography by J.H. Wales in 1935, in Leitritz 1970:37)**

In 1979, three decades after its original 1949 closure, the State of California reopened Fall Creek hatchery. Between 1979 and 2003, the CDFG regularly raised Chinook salmon in the hatchery raceways and released the fingerlings downstream near Iron Gate hatchery. When State funding for

the hatchery ended in May 2004, fish rearing at Fall Creek hatchery ceased (CDFW 2019). The hatchery is still managed as part of Iron Gate hatchery by the CDFW; however, the Fall Creek hatchery facilities are not currently in use.

Iron Gate Dam Fish Facilities (1962) and Iron Gate Hatchery (1966–present) (Siskiyou County, California)

The Iron Gate dam fish facilities and associated Iron Gate hatchery were constructed as a part of the larger Iron Gate Dam. Iron Gate Dam’s regulating function was deemed necessary because Copco No. 1 and No. 2 hydroelectric operations caused water level fluctuations. Pacific Power hired Morrison-Knudsen to construct the hatchery. Morrison-Knudsen had also constructed the Iron Gate dam and powerhouse (Neal 1965).

*Dam Fish Facilities (1962)*

The dam fish facilities, designed by the CDFG, occupy about 2 acres at the base of Iron Gate Dam (*Herald and News* 1962a). The facilities consist of a fish ladder and trap, spawning building, holding ponds, water supply pipe, and aerator. Morrison-Knudsen built the concrete fish ladder, shown in Figure 3-20, as well as the spawning building and the holdings ponds (CDFW 2014:4; Pacific Power 1962:15). At the dam’s left abutment, two intakes deliver cold reservoir water into the water supply pipe.



**Figure 3-20 Iron Gate dam fish facilities, fish ladder construction, December 27, 1961 (PacifiCorp archive image IG-231)**

The dam fish facilities were placed into operation in 1962, in conjunction with completion of the Iron Gate hydroelectric development (CDFW 2014:4; Pacific Power 1962:15). In 1964, Pacific Power installed an aerator at the dam site's southern side to improve water quality for fish-related operations (Durio 2003:109).

A 1962 Pacific Power booklet described the workings of the dam fish facilities, shown in Figure 3-21:

*Salmon and steelhead traveling up the river are attracted by the flow of water discharged from the [Iron Gate] powerhouse, which leads them into a fish ladder. A series of 20 pools leads them up in a sweeping curve to a series of six 'holding ponds.' Each of these ponds is 30 feet in diameter and approximately four feet deep. They are lined with redwood. Here the fish are held to 'ripen' until they are ready to spawn. Water to operate these holding ponds and the fish ladder is completely independent of the water used to operate the power-producing equipment. It flows through the dam in a 30-inch tube [water supply pipe] which parallels the large*

*power penstock. Two separate intakes permit water to be drawn from different levels of the reservoir as proper temperature indicates. If necessary, auxiliary water for these fish facilities also can be pumped from the tailrace. This fish water flows first into the series of holding ponds, each of which is connected to the fish ladder, and thence down the ladder to provide the current which attracts the migrant fish. The ladder is a series of 10-foot pools which form a stair-step arrangement to lead the salmon and steelhead up to the holding ponds (Pacific Power 1962:6).*

#### *Iron Gate Fish Hatchery (1966–present)*

The 17-acre Iron Gate Fish Hatchery, shown in Figure 3-22, was completed in 1966 to operate in conjunction with the upriver dam fish facilities. Eggs obtained at the spawning building (dam fish facilities) are transported to the downstream hatchery building.

The hatchery produces Chinook salmon, steelhead trout, and coho salmon by processing eggs collected and spawned at the Iron Gate dam fish facilities. Most of the hatchery's juvenile fish are released directly into the Klamath River. After the hatchery was completed, it became California's most prolific anadromous fish hatchery (Merriman 1974). At capacity, the hatchery could hold 2.8 million Chinook salmon reared to 90 days, and 75,000 coho salmon and 200,000 steelhead reared to yearling size (Saldana 1969). The hatchery building, essential to operations, is shown in Figure 3-23.



**Figure 3-21 Iron Gate Dam fish facilities—spawning building and holding ponds—with Iron Gate Dam in background, during the Iron Gate dedication on February 3, 1962. The viewing structure atop the dam is no longer extant.**

Pacific Power fish biologist Charles Jack Hanel designed the Iron Gate Fish Hatchery to comply with CDFG and United States Fish and Wildlife Service standards (Merriman 1974). Hanel was named Waltonian of the Year by the Oregon chapter of the Izaak Walton League, a national conservation organization, for his design of the Iron Gate Fish Hatchery (*Mail Tribune* 2002).

In the November 1965 issue of its monthly magazine, Morrison-Knudsen summarized construction on the fish hatchery to date: “The new fish-rearing facilities, located one mile downstream from the [Iron Gate] dam, were begun in September [1965] and are scheduled for completion in February of next year [1966]. They include four 22x400-foot concrete-lined rearing ponds and six accompanying buildings . . .” (Morrison-Knudsen 1965:10). On March 22, 1966, the hatchery was completed, and Pacific Power held an on-site ceremony to mark transfer of hatchery operations to the CDFG (Humboldt Standard 1966). The CDFW still manages hatchery operations (the CDFW was the CDFG until 2013). PacifiCorp, the successor to Pacific Power, funds hatchery operations and maintenance.



**Figure 3-22 Iron Gate fish hatchery, view facing southwest**

The Iron Gate Fish Hatchery continues to function in conjunction with fish facilities at the base of Iron Gate Dam, which consist of a fish ladder, spawning building, holding ponds (or tanks), water supply pipe, and aerator. Most Iron Gate Hatchery fish are released directly into the Klamath River from the hatchery. Occasionally, fish are trucked downstream for use in testing trapping equipment.

As of 2010, the hatchery employed seven permanent employees: two fish hatchery managers, four fish and wildlife technicians, and one office technician. Seasonal personnel worked when funds were available (CDFW 2014:3). Although the CDFW operates 21 hatcheries throughout the state, Iron Gate Fish Hatchery is Siskiyou County's only CDFW salmon and steelhead hatchery and the only one located along the Klamath River (CDFW 2018).



**Figure 3-23 Iron Gate hatchery building, view facing northwest**

### **Studies at Klamath River Hatcheries**

The historic-era fish science activities conducted at the Fall Creek and Iron Gate hatcheries supported the hatcheries' efforts at anadromous fish propagation and conservation.

Fall Creek hatchery was used as both a fish-rearing facility and a research venue focused on conservation of the Klamath River Chinook salmon. Fall Creek hatchery's opening season in 1919 corresponded with initial coordinated investigations by the Bureau of Commercial Fisheries and CDFG. Data collection for Chinook salmon related to growth, age, migration, and behavior (CFGC 1927:68).

As soon as it opened, Fall Creek hatchery became an important research site. During the Fall Creek hatchery's inaugural 1919 season, the CFGC had already begun sponsoring on-site research. One of the first series of experiments based at Fall Creek hatchery was the "stock transfer" studies by Snyder and W. L. Scofield, which introduced Sacramento River Chinook salmon at Fall Creek hatchery. W. L. Scofield, a relative of Eugene C. Scofield, described the experiment's methodology in an article entitled "King Salmon Marking Experiment at Klamath River, 1919." By November 15, all marked fish had been released into Fall Creek (Scofield 1920:101-103, Figure 3-24).

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CALIFORNIA FISH AND GAME.

King Salmon Marked at Fall Creek Hatchery.

Date	Number of fish marked	
	By Scofield	By Phillips
1919--November 3	243	} 1,172
November 4	713	
November 5	595	1,046
November 6	790	1,108
November 7	1,050	1,425
November 8	800	750
November 9	925	1,250
November 10	1,100	1,000
November 11	1,100	1,200
November 12	1,350	1,800
November 13	1,550	1,650
November 14	1,110	1,500
November 15	390	325
Totals	11,626	14,224
Total marked		25,850

Control Counted Out from the Total.

Date	From Scofield marking	From Phillips marking
1919--November 6	50	50
November 9	50	50
November 10	100	100
November 12	125	125
November 13	50	50
November 14	25	25
November 15	25	25
Totals	425	425
Total control		850

Number of Marked Fish Liberated in Fall Creek in November, 1919.

Date	Number
1919--November 7	5,535
November 8	1,425
November 9	4,675
November 10	1,900
November 12	5,200
November 13	3,100
November 14	2,590
November 15	605
Total	25,000

**Figure 3-24 Chinook salmon marked and released into Fall Creek during Snyder and Scofield's stock transfer experiment (Scofield 1920:104)**

The experiment was well-publicized and included a small monetary reward for data relating to captured fish (Snyder 1930:68).

Fall Creek hatchery became one of 11 state-operated hatcheries that closed in the late 1940s as part of efforts to "modernize" its hatchery system (*Telegram-Tribune* 1949).

#### Iron Gate Hatchery (Siskiyou County, California)

Iron Gate hatchery has been the site of innovations related to fish science. In 1969, CDFG fish biologists working at Iron Gate developed a new technique for retrieving eggs from spawning steelhead without harming the adult female: after tranquilizing the fish in a tank, a small stream of air discharged from a syringe into the female fish causes eggs to be released into a container (*Sacramento Bee* 1969).

Following the implementation of this technique, Pacific Power, the CDFG, and the Oregon State Game Commission embarked on a joint venture to study the feasibility of establishing a steelhead sport fishery above Copco No. 1 dam (*Sacramento Bee* 1970).

### **3.2.9 Recreation**

The Klamath River area has long been a gathering place for fishing, hunting, and other forms of recreation. Recreationists still engage in bank and boat fishing, hunting, reservoir boating,

whitewater boating, camping, sightseeing, swimming, picnicking, waterskiing, viewing scenery and wildlife, mountain biking, hiking, and off-highway vehicle use. In the 1960s through 1970s, the shoreline of Copco Lake experienced increased recreational and residential development.

## Fishing and Hunting

During the late nineteenth century, fishing and hunting among European American residents of the Upper Klamath River area progressed beyond subsistence-based activities to ones that provided a livelihood for local residents. Among the first of these individuals was Robert Whittle, who established a ferry at present-day Keno in the 1860s and fished and hunted to supply food to Yreka-based miners (Beckham 2006:94). In 1900, Joseph G. Pierce published a booklet promoting the Klamath region's fishing grounds which, he claimed, "taken altogether, for variety, quality, and abundance... [had] scarcely an equal in America for game and fish" (KCHS 1999).

As transportation facilities, including the railroad, opened the area to visitors and lodging became available, the river maintained its reputation as being "more plentifully stocked with fish than any in California" (Cumming and Dunn 1911:20). The SPRR promoted Klamath River fishing with advertisements for special rates at Klamath County's "fish and outing resorts" (*Evening Herald* 1916d).

In addition to river-based fishing which continues today, the reservoirs such as Copco Lake have provided fishing opportunities. Throughout the twentieth century, the Klamath River, its reservoirs, and tributaries remained an important source of bank, boat, and fly fishing (Shelby and Stein 1984:83-84).

## Boating

Recreational boating in the Klamath waterways got a boost at the turn of the twentieth century when steamboat owners began to offer outings. The steamboat *Alma* initiated Sunday excursions in 1901 and the *Winema* in 1905, in addition to regular passenger service (PacifiCorp 2004: Exhibit E: 6-68). Soon, boating enthusiasts were organizing their own excursions. In 1934, the Southern Oregon Boat club constructed improvements at Copco Lake, such as a dock, boat launching driveway, and sanitation facilities, to facilitate boating parties. The club also cleared ground by the shore for picnicking and other riverside activities (*Mail Tribune* 1937).

The development of the KHP created new boating opportunities along the Klamath River. The J.C. Boyle bypass reach, which extends about 4.3 miles from the dam to the powerhouse, provides whitewater boating during spill periods as well as trout fishing and other forms of recreation (PacifiCorp 2004:2-52). Hell's Corner reach extends about 16 miles from J.C. Boyle powerhouse to Copco Lake. The reach's 11-mile segment between the powerhouse and the Oregon border became an Oregon State Scenic Waterway in 1988 and a Scenic River in 1994.

## Day Trips and Historic Tours

Day trips and historic tours have offered residents and visitors a way to explore the Klamath area's landscape and cultural sites. During the 1940s and 1950s, as automobiles gained popularity, the

region's landscape and historic sites drew visitors motoring through the area. Many made the drive from Klamath Falls, along the Klamath River and over Topsy Grade to view the scenery, particularly spring wildflowers and fall foliage. The trip from Klamath Falls led motorists west along OR 66 through Keno to the now-demolished Klamath River Store where the historic Topsy Grade Road begins. A dirt road descending to the riverbank passed Big Bend, Frain Ranch, an old stage station, and the Pokegama log chute, with several picnic sites on the way (*Herald and News* 1957).

The project area contains 42 recreation sites, mostly at the reservoirs and along the Klamath River (PacifiCorp 2004: Recreation Resources FTR: 4-15). Camping, a popular activity in the river basin, generally occurs in conjunction with fishing and hunting. Camping opportunities along the river and reservoirs expanded during the 1960s, after construction of J.C. Boyle and Iron Gate Dams, as Pacific Power completed a series of improved campgrounds.

### **Residential and Recreational Development Around Copco Lake**

Beginning in 1952, Copco started selling parcels of land surrounding Copco Lake to Frank L. Lathrop of Yreka, California. By 1958, Lathrop had acquired nearly all of the lakefront properties except for a small parcel owned by the BLM at Keaton Cove. Copco retained water rights to the lake and property for administrative purposes and the continued operation of the Copco No. 1 dam and powerhouse. Lathrop acquired the majority of his holdings in 1954 for \$22,000, then began to develop the area into a wildlife refuge for deer, upland birds and waterfowl (State of California Wildlife Conservation Board 1958:8-9; University of California Riverside [UC Riverside] n.d.).

In 1959, California State Senator Randolph Collier of Yreka led an effort to purchase approximately 2,500 acres of Lathrop's 3,620-acre property around Copco Lake to establish Siskiyou County's first state park. Collier noted that, "The Klamath River has long been a mecca for sportsmen from all over the state and nation" (Jenkins 1960; State of California Department of Natural Resources 1960:21). Collier introduced a resolution authorizing a property survey to evaluate the lake's recreation opportunities and state park potential (*Sacramento Bee* 1959). After completing the survey, the California State Division of Beaches and Parks concluded that the area exhibited recreation potential at the local and state levels and merited state park status (State of California Department of Natural Resources 1960:20). However, the State of California lost interest in purchasing the property following additional studies of the lake's water quality. As a result, Lathrop pursued other buyers with advertisements in local and national newspapers, including the *Wall Street Journal* (UC Riverside n.d.).

In 1963, W.H. Clifford, a Southern California-based realtor acquired more than 2,200 acres of shoreline property surrounding Copco Lake. Partnering with Joe Girard and Art Pastel, Los Angeles attorneys, Clifford planned to subdivide the property into lakefront lots catering to fishers and hunters. Clifford envisioned a sportsman's subdivision of one-acre cabin sites and 10-acre estates or ranch sites (Radke 1965).

Initial promotional materials for the development advertised exceptional recreational experiences with captions such as "THE BEST fresh-water fishing lake and hunting area in California," "Now Yours for All-Year Hunting Fishing and Leisure Living!" and "California's largest per acre deer herd thrives

throughout the rolling hillsides and meadowlands. Copco Lake and region is truly a hunter's paradise" (W.H. Clifford Co. 1963). These claims were echoed by several Californian sports and recreation newspaper columnists who visited Copco Lake with Clifford as their guide in the 1960s. Copco Lake was portrayed as a "hunting and fishing haven," "paradise for the outdoorsman," and a "sportsman's smorgasboard" (Morgensen 1965; Freeman 1967). As a selling point of the subdivision, Clifford developed a private game preserve to ensure an abundance of wild game for property owners (W.H. Clifford Co. 1963).

Clifford's development around Copco Lake did not commence until circa 1964 when the first houses were constructed on the south side of the lake along Ager Beswick Road, Patricia Avenue, and Jacqueline Avenue. These properties primarily consisted of A-frame cabins and ranch houses. Clifford's Flying C Ranch was completed by 1965 and included eight A-frame rental cabins. In 1965, Californian newspapers began printing advertisements for the subdivision, touting lake front lots, year-round roads and excellent hunting and fishing (*Los Angeles Times* 1965). Owning nearly all of the lakefront properties, Clifford limited public access to the lake but granted permission to anyone if they were interested in purchasing a lot (Culpepper 1963). No camping or trailer parking was allowed on Clifford's properties to maintain a "certain appearance" (Morgensen 1965; Radke 1965). Throughout the 1960s, the Flying C Ranch served as the hub of Copco Lake recreation activities, offering rental cabins, boats, motors, fishing tackle and bait to visitors (Morgensen 1967). In 1968, A-frame cabins were advertised for \$125 a week and included use of a fishing boat. By that time, hunting on the property was exclusive to property owners (Freeman 1968).

Copco Lake's second phase of development began on the lake's north shore in 1969 when Clifford opened a new 127-lot recreational subdivision. Described as the lake's "North Shore Meadows" the new subdivision encompassed a community center, church, playground, and public swimming pool along Copco Road (*Valley Times* 1969). That year, alpine chalets were offered for rent and the Copco Lake Store opened. Properties were developed along Copco Road, Quail Lane, Teal Road, and Mallard Road, and residences were built primarily in the ranch and minimal traditional architectural styles. The North Shore Meadows development coincided with Clifford opening 7,000 acres of hunting land for exclusive use by Copco Lake property owners. He also imported wild turkeys from Missouri and Pennsylvania to increase hunting activity (Jaffray 1969).

By 1973, the 127-lot subdivision appears to have been renamed the Copco Lake Estates (Neal 1973). Cabin rentals were managed by the Copco Lake Store and available when owners were not on vacation at the lake (Ford 1973). Development of the lake front lots continued through the 1970s and 1980s but not to the same extent as the initial 1960s development. Large sections of Copco Road remain undeveloped today, particularly on the northwest side of the lake.

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## **Chapter 4: Identification of Historic Properties**

## 4. IDENTIFICATION OF HISTORIC PROPERTIES

### 4.1 Built Environment Resources

#### 4.1.1 Relicensing Proceeding

As a part of its FERC relicensing application in 2003, PacifiCorp recognized the KHP as an NRHP-eligible historic district for its significant association with the industrial and economic development of Southern Oregon and Northern California (Kramer 2003a, 2003b). To support this recognition, PacifiCorp completed a historic context statement for the KHP that provided background information as a prelude to conducting a review of potential historic significance under NHPA Section 106 (Kramer 2003a). The historic context traced the development of the KHP's components from the earliest history of electrical generation in the region to the completion of Iron Gate Dam in 1962. The context statement also included a brief analysis of the social, economic, and industrial history of the Southern Oregon and Northern California Klamath-Siskiyou region.

PacifiCorp also completed a Request for Determination of Eligibility report for the KHP (Kramer 2003b). The eligibility report documented resources in the KHP's seven developments or complexes: Link River Complex, Keno Dam Complex, J.C. Boyle Complex, Copco No. 1 Complex, Copco No. 2 Complex, Fall Creek Complex, and Iron Gate Complex. PacifiCorp offered determinations as to whether these "complexes" and their resources were eligible for the NRHP and defined the period of historic significance for the KHP as 1903–1958. On March 16, 2004, the Oregon SHPO agreed with PacifiCorp's determinations of eligibility in the state of Oregon for resources that would be affected by the proposed FERC relicensing (Oregon SHPO 2004). Therefore, the SHPO concurrence solely included the Link River Complex, Keno Dam Complex, and the J.C. Boyle Complex. The California SHPO never provided comments on the eligibility of resources in California discussed in the 2003 Kramer reports. PacifiCorp's 2003 studies were based on a survey of the hydroelectric development resources that had the potential to be affected by FERC relicensing at that time and excluded non-hydroelectric resources, such as bridges and residences outside of the KHP development but in the current APE. The study also omitted transmission lines originating in the hydroelectric developments and some of the associated power substations in the APE.

In September 2003, CH2M Hill completed survey inventory forms for California and Oregon that documented what was then called the "Klamath River Hydroelectric Project" historic district (Durio 2003). For the purposes of this report, this resource is referred to as the Klamath Hydroelectric Project (KHP) historic district.

With respect to the current APE, the Copco No. 1, Copco No. 2, and J.C. Boyle complexes, along with most of their primary components, were identified as contributing to the eligible KHP historic district. In contrast, the Iron Gate Complex and its constituent resources (1962) and the Iron Gate fish hatchery (1966) were recommended as non-historic and non-contributing. The Oregon SHPO

concluded with the eligibility determinations related to J.C. Boyle complex (Oregon SHPO 2004). The California SHPO did not provide concurrence for the eligibility determinations related to Copco No. 1, Copco No. 2, and the Iron Gate complexes, or for the Fall Creek hatchery, which was included in the evaluations of Fall Creek hydroelectric development. As part of a separate project to alter the crest of the Iron Gate Dam in 2003, PacifiCorp determined that the Iron Gate Complex was not eligible for the NRHP as it had yet to attain 50 years of age and was not of exceptional importance. The California SHPO agreed with that determination on May 28, 2003 (California SHPO 2003).

In 2019, the Renewal Corporation reevaluated these four hydroelectric developments and the Fall Creek hatchery and updated the NRHP eligibility evaluations (Section 5.2.2).

### 4.1.2 Research Methods for the Lower Klamath Project

In support of the Proposed Action, the Renewal Corporation conducted 1) repository research; and 2) historic resources studies involving hydroelectric, transportation, and private property resources. Each of these components is detailed below. Additional information related to NRHP eligibility of hydroelectric resources is provided in Section 5.2.2.

#### Repository Research

To better understand the historic context of the built environment resources in the APE, the Renewal Corporation conducted research at the following repositories for historical information, maps, and other relevant sources. Table 4-1 provides a listing of the repositories. On-site research was conducted at all locations, except for Oregon State University, the University of Oregon, and the National Archives at Seattle, which were researched online.

**Table 4-1 List of Repositories**

Repositories	
Bureau of Land Management 2795 Anderson Avenue #25, Klamath Falls, OR 97603 (541) 885-4114	Klamath County Library 126 S. 3rd Street, Klamath Falls, OR 97601 (541) 882-8894
Klamath County Museum 1451 Main Street, Klamath Falls, OR 97601 (541) 882-1000	Klamath County Surveyor 305 Main Street #2, Klamath Falls, OR 97601 (541) 883-4696
Multnomah County Library 801 SW 10th Avenue, Portland, OR 97205 (503) 988-5123	National Archives at Seattle 6125 San Point Wy NE, Seattle, WA 98115 (206) 336-5125 (Obtained finding aids and research guidance via email but did not visit the facility.)
Oregon Department of Fish and Wildlife 1850 Miller Island Road West, Klamath Falls, OR 97603 (541) 883-5732	Oregon Historical Society 1200 SW Park Avenue, Portland, OR 97205 (503) 222-1741

Repositories	
Oregon Institute of Technology Shaw Historical Library 3201 Campus Drive, Klamath Falls, OR 97601 (541) 885-1686	Oregon State University Corvallis, OR (Research conducted on university's online database only.)
PacifiCorp 825 NE Multnomah Street Portland, Oregon 97232 (888) 221-7070	Siskiyou County Assessor 311 4th St. #108, Yreka, CA 96097 (530) 842-8036
Siskiyou County Building Department 806 S. Main St., Yreka, CA 96097	Southern Oregon Historical Society 106 N. Central Avenue, Medford, OR 97501 (541) 773-6536
Southern Oregon University Hannon Library 1250 Siskiyou Boulevard, Ashland, OR 97520 (541) 552-6442	University of Oregon Aerial Photograph Collection <a href="https://library.uoregon.edu/maps/aerial">https://library.uoregon.edu/maps/aerial</a>
University of Oregon Special Collections Knight Library 1501 Kincaid Street, Eugene, OR 97403-1299 (541) 346-3053	

In addition to conducting the above repository research, the Renewal Corporation also investigated the following sources:

- Aerial photography databases (historicaerials.com)
- Archival photographs provided by PacifiCorp
- Boise State Digital Collections
- Digital photography collections (California State University at Chico, Los Angeles Public Library)
- Digital newspaper and genealogy databases: newspapers.com, genealogybank.com, ancestry.com, chroniclingamerica.loc.gov [Library of Congress], oregonnews.uoregon.edu [historic Oregon newspapers], cdnc.ucr.edu [California digital newspaper collection].
- Google Books (digitalized books, magazines, journals, newsletters)
- Google Scholar (technical and scientific articles)
- Hathitrust Digital Library
- JSTOR (scholarly and scientific articles)
- Technical and Environmental reports obtained online
- United States Geological Survey maps

## Historic Resource Studies and Field Investigations

The Renewal Corporation completed three historic resource studies focused on historic resources in the APE that had the potential to be affected by the Proposed Action. These three studies involved

the following categories of resources: 1) Hydroelectric, 2) Transportation, and 3) Private Property. the Renewal Corporation conducted these surveys, inventories, and evaluations to identify historic properties in the APE that are eligible for and/or listed in the NRHP. These investigations were completed following the Secretary of the Interior's Standards for Archaeology and Historic Preservation under the guidance of professionals that meet the Secretary of the Interior's Standards for Archaeology and Historic Preservation Professional Qualification Standards (36 C.F.R. Part 61).

The Hydroelectric Resource Study evaluated the KHP, which consists of seven hydroelectric developments along the Klamath River in Southern Oregon and Northern California. This study focused on the KHP and four of the hydroelectric developments within the APE: J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate. Except for J.C. Boyle, which is in Oregon, each of the hydroelectric developments is in California. The Renewal Corporation did not evaluate the Link River, Keno, and Fall Creek hydroelectric developments, which are not within the scope of the Proposed Action nor are they affected by the Proposed Action. The Renewal Corporation evaluated each of the four hydroelectric developments and their built resources, including bridges, road sections, and culverts. As a result of the study, the Renewal Corporation identified five NRHP-eligible historic districts subject to effects from the Proposed Action: the KHP, J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate. The KHP is a previously identified historic district. When the KHP historic district was identified in 2003, J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate were evaluated as contributing or non-contributing to the KHP. The KHP historic district is not listed on the NRHP, nor is it listed by the State of California or Oregon. The Renewal Corporation study evaluated the eligibility of these four hydroelectric developments as discrete historic districts in the larger KHP historic district as well as potential contributors to the KHP historic district. The Renewal Corporation identified four individually eligible resources that may be subject to effects: Copco No. 1 dam, Copco No. 2 powerhouse, Copco No. 2 water conveyance system, and Fall Creek School (Copco No. 2).

The Transportation Study evaluated bridges, road sections, and culverts in the APE but outside the boundaries of the hydroelectric historic districts. The Renewal Corporation evaluated bridges, road sections, and culverts inside the boundaries of the hydroelectric historic districts as contributing or non-contributing resources to the district. As a result of the study, the Renewal Corporation did not identify any transportation-related historic properties outside of the hydroelectric development historic districts.

The Private Property study focused on the potential eligibility of commercial, residential, and recreational properties in the California portion of the APE, along the Klamath River corridor. These properties are situated along the shorelines of the Klamath River (Hornbrook and Klamath River Community) and Copco Lake. Note that the Copco Lake residences have Montague addresses but are about 25 miles northeast of the city of Montague.

While the APE extends from the J.C. Boyle facility to the Pacific Ocean, due to the nature of effects, the inventory did not assess resources in areas where effects will not occur. This includes areas where 1) run-of-the-river conditions currently exist and would exist after the Proposed Action; 2) no physical disturbance to resources would occur; and 3) no palpable visual changes to the river's existing condition would occur. Therefore, the field surveys considered whether previously recorded resources had the potential to be affected by potential changes to the setting and feeling of the

surrounding landscape. For instance, the Fall Creek Complex is in the APE; however, that hydroelectric facility will remain operational for the duration of the Proposed Action and would have no potential to be directly or indirectly affected by Proposed Action-related activities. Due to the lack of potential effects, the Fall Creek Complex was not evaluated further.

### **Field Survey for Hydroelectric Facilities**

The Renewal Corporation conducted architectural inventories in the APE between Iron Gate Dam and Humbug Creek and around Copco Lake using a combination of pedestrian and windshield survey. The surveys encompassed lands in the APE owned by PacifiCorp and by private individuals. Pedestrian surveys were conducted with permission on PacifiCorp lands (Parcel B lands). Windshield reconnaissance surveys were conducted near privately owned lands. The teams accessed the survey sites through a combination of public roads and LKP access roads. PacifiCorp escorts provided access to facility sites not open to the public. The survey teams documented resources using geospatial technology, photography, and digital tablets. The survey teams took photographs and notes in the field to develop narrative descriptions and integrity analyses for each resource. This documentation was embedded into interactive geospatial maps.

The survey teams recorded each resource's architectural/structural characteristics, form, design, construction materials, use, condition, historical integrity, and spatial relationship to other resources. Historic photographs and previous documentations were reviewed to assess all seven aspects of historic integrity (i.e., location, design, setting, materials, workmanship, feeling, and association). When recording resources in California, resources were recorded on Department of Parks and Recreation (DPR) forms for primary records; building, structure, object records; and/or district records.

For the survey of any previously recorded built environment resources, the Renewal Corporation compared the existing conditions and historical integrity of previously recorded historic resources to those recorded on site forms. Updates to the survey forms were provided where significant changes to resource condition or integrity were observed.

### **Field Survey of Additional Properties in the APE**

During 2019 reconnaissance-level field surveys, the Renewal Corporation performed a windshield architectural survey and aerial photography review of private properties (at least 45 years old) in the California portion of the APE around Copco Lake and between Iron Gate Dam and Humbug Creek. Associated effects in this area below Iron Gate Dam would be related to the Proposed Action that would cause an increase in river elevation during 100-year flood events. Moving or increasing elevation to buildings would minimize effects from changes in the river elevation but would potentially affect the integrity of historic properties (if they exist). The principal effect to the Copco Lake (Montague) area would consist of the dewatering of the Copco Reservoir and subsequent restoration activities. Historical and descriptive information for these properties was gathered through reconnaissance and intensive-level field observations, available photographs, Siskiyou County assessor data, and internet research. For the Copco Lake area, the residences in this area were evaluated collectively as a whole.

## Cultural Landscapes

Although not defined in the C.F.R., the concept of “cultural landscape” is a type of resource discussed in NPS and NRHP program guidance documents (Melnick et al. 1984; Keller and Keller 1987; National Park Service [NPS] 1994; Birnbaum 1994; McClelland et al. 1999; Page et al. 1998; Page et al. 2009; ACHP 2016). Collectively, these guidance materials assist in defining what cultural landscapes are, in addition to how to identify, record, and evaluate them for the purposes of the NRHP Criteria for Evaluation and Section 106 compliance.

An inclusive term, cultural landscapes may have constituent parts that include any and/or all of the five property categories (buildings, structures, objects, sites, and districts). While made up of one or more property categories, cultural landscapes may also be classified into several types, including historic sites, historic designed landscapes, historic vernacular landscapes, and ethnographic landscapes (Birnbaum 1994). Building upon Parker and King’s National Register Bulletin on Traditional Cultural Properties (1998), Tribes have used various terms, such as “Indigenous Cultural Landscapes” and “tribal cultural landscapes” when considering tribally important landscape level resources (Beacham 2011; Ball et al. 2015). The ACHP published an information paper on “Traditional Cultural Landscapes” designed to assist in understanding and interpreting indigenous places and landscapes in coordination with the NRHP program (ACHP 2016). Several tribal communities have explored the concept of tribal cultural landscapes as a means for evaluating how a tribe and its cultural practices, beliefs, or identity may connect with geographic places and be considered important. For the purposes of this report, the cultural landscapes considered in this report review only the historic period.

Under the cultural landscape umbrella, the concept of context (as described in Section 3), or the intersection of time, historical theme, and geographic area, is critical to understanding the relationship of resources and their comparative significance. Indeed, “the structured system of functional interrelationships” where “we give the object meaning by seeing how it functions in relation to...other factors and processes and in relation to economic and social structures” is central to the study of material culture and thus cultural landscapes (Hodder 1986). Due to the location of this Proposed Action at the culturally layered precontact and historic-period Klamath River Canyon of Oregon and California, the Renewal Corporation has integrated this brief assessment of the APE and its potential importance as a historic vernacular landscape.

The APE includes several different cultural layers that find expression on the existing landscape. This includes layers that involve agriculture (ranching, timber extraction, etc.), hydroelectric power, recreation, transportation, and fisheries management. With the imposition of hydroelectric power along the Klamath River, hydroelectric-related facilities dominate the landscape in discrete points with the reservoirs, dams, powerhouses, penstocks, and electrical switchyards representing the most visible elements of the landscape. In these areas the reservoirs tend to obscure the pre-hydroelectric landscape components that are now submerged. In intervening locations in the APE, the area’s resources related to agriculture tend to predominate with ranches, ditches, agricultural buildings, scattered residences, stands of timber, and transportation-related resources tying these historic elements together. Given the predominance of the hydroelectrical facilities at discrete locations in the APE, the identification and evaluation of built environment resources tends to focus on those components of the cultural landscape and considers each complex as a single district with all of

these individual districts forming a non-contiguous but historically related system that also forms a district as an interrelated whole.

The intervening locations where most of the agricultural resources reside are not affected by the Proposed Action due to the steep and sinuous nature of the Klamath River Canyon and associated vegetation, which limit views from historic landscape components, in addition to the lack of Proposed Action activities along extensive reaches of the river. Some notable exceptions include some transportation-related resources and recreational residences that had the potential to be affected by the Proposed Action.

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## **Chapter 5: Historic Properties**

# 5. HISTORIC PROPERTIES

## 5.1 NRHP Evaluation

Cultural resources identified in the APE were assessed based on the NRHP evaluation criteria (36 C.F.R. Part 60), their historic significance, and integrity. The NRHP is the official federal list of historic properties, including districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture. A historic property (i.e., NRHP-eligible) may be of national, state, or local significance.

The Renewal Corporation's NRHP assessment relied on a multifaceted program that included extensive archival research, historical landscape analysis, geoarchaeological modeling, inventory and recordation of archaeological sites and built environment resources, limited subsurface testing of archaeological sites, and tribal consultation to identify traditional cultural properties and other tribal cultural resources.

The significance of a property is best judged and explained when it is evaluated in its historic context or how it relates to its geographic area, prevailing historical themes, and chronological period (Wyatt 2009). By exploring the patterns or trends by which a specific occurrence, property, or site is understood, its meaning and comparative significance in history is made clear (National Park Service [NPS] 1997). Historic contexts serve as the framework for which NRHP criteria are applied to specific properties. A key principle of historic contexts is that resources, properties, and events do not occur in isolation but reflect larger historical developments, associations, and/or patterns.

After identifying the relevant historic context with which a property is associated, four criteria of evaluation were considered to assess NRHP significance. These criteria serve as the standards that every property nominated to the NRHP is judged by. The criteria are written broadly to recognize the nation's wide variety of historic properties and to identify the range of resources and kinds of significance that qualify properties as eligible for NRHP listing. The criteria recognize associative, design, and information values, as listed in 36 C.F.R. Part 60:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess historic integrity, and:

- Are associated with events that have made significant contributions to the broad pattern of our history (Criterion A); or
- Are associated with the lives of persons significant in our past (Criterion B); or
- Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C); or

- Have yielded, or may be likely to yield, information important in history or prehistory (Criterion D).

To be eligible for listing in the NRHP, a property must not only be shown to be significant under one or more criteria, but it also must have integrity (NPS 2000). The NRHP recognizes seven aspects or qualities that, in various combinations, define integrity (NPS 1997). The seven aspects of integrity are: location, design, setting, materials, workmanship, feeling, and association.

**Location** is the place where the historic property was constructed or the place where the historic event occurred. The actual location of a historic property, complemented by its setting, is particularly important in recapturing the sense of historic events and persons.

**Setting** is the physical environment of a historic property. It refers to the historic character of the place where the property played its historical role. It involves how, not just where, the property is situated and its historical relationship to surrounding features and open space. The physical features that constitute the historic setting of a historic property can be either natural or built and include such elements as topography, vegetation, paths or fences, and the relationships between buildings and other features or open spaces

**Design** is the combination of elements that create the historic form, plan, space, structure, and style of a property. This includes such elements as organization of space, proportion, scale, technology, ornamentation, and materials. Design can also apply to districts and to the historic way that the buildings, sites, or structures are related.

**Materials** are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property. If the property has been rehabilitated, the historic materials and significant features must have been preserved. The property must also be an actual historic resource, not a re-creation; a property with historic features that have been lost and then reconstructed is usually not eligible.

**Workmanship** is the physical evidence of the crafts of a particular culture or people during any given period in history. It is the evidence of artisans' labor and skill in constructing or altering a building, structure, object, or site. It may be expressed in vernacular methods of construction and plain finishes or in highly sophisticated configurations and ornamental detailing. Examples of workmanship in historic buildings include tooling, carving, painting, graining, turning, and joinery.

**Feeling** is a property's expression of the aesthetic or historic sense of a particular period of time. It results from the presence of physical features that, taken together, convey the property's historic character. For example, a rural historic district that retains its original design, materials, workmanship, and setting will relate the feeling of agricultural life in the nineteenth century.

**Association** is the direct link between an important historic event or person and a historic property. A property retains association if it is the place where the event or activity occurred and is sufficiently intact to convey that relationship to an observer. Like feeling, association requires the presence of physical features that convey a property's historic character.

Although not listed in the seven aspects of historic integrity, the NPS does allow the physical condition of a property to be taken into consideration when evaluating property type and integrity as part of the assessment of historic context. The evaluation should state how the particular property meets the integrity requirements for its type. When a property is disqualified for loss of integrity, the evaluation statement should focus on the kinds of integrity expected for the property type, those that are absent for the disqualified property, and the impact of that absence on the property's ability to exemplify architectural, historical or research values in a particular historic context. The integrity of the property in its current condition, rather than its likely condition after a proposed treatment, should be evaluated. Factors such as structural problems, deterioration, or abandonment should be considered in the evaluation only if they have affected the integrity of the significant features or characteristics of the property (NPS 2019).

It is recognized that all properties change over time and it is not necessary for a property to retain all historic physical characteristics or features; however, it must retain essential physical features that enable it to convey its historic identity that define why it is significant and when it was significant (NPS 1997).

If a resource is determined eligible for the NRHP, Section 106 of the NHPA and its implementing regulations (36 C.F.R. Part 800) require that effects of a proposed project on that historic property be determined. If NRHP listed or eligible properties are identified and will be adversely affected by the project implementation, then measures to avoid, minimize, or otherwise mitigate any adverse effects must be taken. If adverse effects are anticipated, the ACHP, SHPO, tribes (if they ascribe significance to the resource), and other consulting parties must be provided an opportunity to review and comment on these measures. The public and other applicable consulting parties must also be notified of project impacts on historic properties. The ACHP has adopted regulations (36 C.F.R. Part 800) that implement these consultation and notice requirements.

Historic properties include those that are above-ground (i.e., “Built Environment”) and those that are in ruin on or below the ground (i.e., “Archaeological”) by definition. Each of these categories is described separately.

## 5.2 Historic Hydroelectric Properties

### 5.2.1 Built Environment Districts

The Renewal Corporation identified five NRHP-eligible historic districts that will be subject to effects from the Proposed Action.

The Renewal Corporation evaluated four hydroelectric developments as individual historic districts in the larger KHP historic district:

- Copco No. 1
- Copco No. 2
- Iron Gate
- J.C. Boyle

The Renewal Corporation identified four individually eligible resources that may be subject to effects from the Proposed Action:

- Copco No. 1 dam
- Copco No. 2 powerhouse
- Copco No. 2 water conveyance system
- Fall Creek School (Copco No. 2)

The Renewal Corporation evaluated the KHP historic district as well as the potentially eligible historic districts in the larger KHP, specifically Copco No. 1, Copco No. 2, Iron Gate (California), and J.C. Boyle (Oregon). The Renewal Corporation also evaluated the NRHP eligibility of Fall Creek hatchery (California).

NRHP regulations define historic districts (36 C.F.R. Part 60.3[d]) as follows:

*A geographically definable area, urban or rural, possessing a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united by past events or aesthetically by plan or physical development. A district may also comprise individual elements separated geographically but linked by association or history.*

The four hydroelectric-related NRHP-eligible historic districts in California and Oregon are now owned and operated by PacifiCorp as the LKP under FERC License No. 14803. Each is a discrete historic district with significant concentrations of related resources that contributed to the early development and distribution of electricity in the Southern Oregon and Northern California region. Each discrete historic district also contributes to the larger KHP, a noncontiguous NRHP-eligible historic district that follows the Klamath River through certain areas of Southern Oregon and Northern California. The KHP and its four constituent historic districts appear to be eligible under **NRHP Criterion A** in the area of **Commerce** as components of a regionally significant, locally owned and operated private utility and in the area of **Industry** for substantially increasing electrical capacity to promote expansion of the regional timber, agriculture, and recreation industries (Kramer 2003b). In addition, the KHP is significant under **NRHP Criterion A** in the area of **Conservation** for its controversial role in regional fish management activities. The KHP is also significant under **NRHP Criterion C** in the area of **Engineering** as its hydroelectric developments embody the distinctive characteristics of early- and mid-twentieth century hydroelectric developments that implemented technological advances in their conceptions, designs, and construction, and that demonstrate the functional interconnections of the unified KHP system. Under Criterion C, the KHP also best represents the work of master hydro-engineer John C. Boyle, who was important to regional hydroelectric development and who began his association with the KHP as a young engineer surveying Copco No. 1 for the SEP&L.

Certain historic resources within the districts appear to be individually eligible for the NRHP, such as the Copco No. 1 dam, which is significant under **NRHP Criterion C** in the area of **Engineering**. The Copco No. 2 powerhouse and the Fall Creek School appear to be individually eligible under **NRHP Criterion C** in the area of **Architecture**.

Each of the four potential hydroelectric historic district and their contributing resources were documented in California or Oregon SHPO historic resource documentation forms, depending on location. Copco No. 1, Copco No. 2, and Iron Gate historic districts were documented in California DPR forms. DPR 523A (primary) forms were completed for each district and each contributing resource in a district. DPR 523D (district) forms were completed for each district, providing an overall historic context for the district and a list of contributing and non-contributing resources. DPR 523A and 523B (building, structure, object) forms were completed for each contributing resource in a district and for each individually eligible resource in a district. J.C. Boyle historic district and its contributing resources were documented in individual Oregon Historic Sites Database forms.

Fall Creek hatchery was also evaluated for NRHP eligibility. Fall Creek hatchery has regional significance under NRHP Criterion A in the area of Conservation for its pioneering role in early twentieth century fish management and science in Northern California. DPR 523A and 523D forms were completed for Fall Creek. Due to lack of integrity, Fall Creek hatchery appears to be not eligible for the NRHP and, therefore, DPR 523A and 523B forms were not completed for individual resources within the district.

Archaeological districts and the properties of religious and cultural significance are not discussed in this report.

## Hydroelectric Districts

This section briefly describes the NRHP-eligible KHP historic district and the four discrete NRHP-eligible historic districts in its boundaries. A table for each of the four historic districts includes information on the districts' contributing and non-contributing resources, including names and function, dates of construction/major alteration, previous eligibility evaluations, and updated eligibility evaluations. Detailed information beyond these brief table summaries, including recent and historic photographs, is contained in DPR and Oregon Historic Sites Database forms. The KHP historic district, as well as the four historic districts within its boundaries and their contributing resources, are presently identified by the KHP's DPR primary number (47-004015), which was assigned by the California SHPO in 2003. In addition, the California SHPO has assigned individual primary numbers to the Copco No. 1 powerhouse (47-002267), Copco No. 1 guest house remains (CA-SIS-2824), and Copco No. 2 powerhouse (47-002266).

### **Klamath Hydroelectric Project (KHP) Historic District (Klamath County, Oregon and Siskiyou County, California)**

The remaining hydroelectric developments in the KHP were built between 1903 and 1962 by Copco and its successor Pacific Power. The KHP was previously evaluated as eligible for the NRHP but is not listed in the NRHP.

The Renewal Corporation has identified four NRHP-eligible hydroelectric developments within the KHP's boundaries that constitute individual historic districts, with each contributing to the larger KHP historic district: J.C. Boyle (Oregon), Copco No. 1 (California), Copco No. 2 (California), and Iron Gate (California). Summaries of the NRHP evaluations for the four historic districts and the resources they contain are provided in the tables below.

### **Copco No. 1 Hydroelectric Development District (Siskiyou County, California)**

Copco No. 1, placed into operation in 1918 and expanded in 1922, was the first hydroelectric development constructed by Copco after the company was organized in 1912 (Figure 5-1). Copco No. 1 is not currently listed in the NRHP.



**Figure 5-1 Copco No. 1, showing powerhouse, penstocks, dam, and gatehouse no. 1**

Based on the Renewal Corporation's evaluation, the Copco No. 1 hydroelectric development is eligible for the NRHP as a historic district. Copco No. 1 also contributes to the larger KHP historic district. In addition, the Copco No. 1 dam is individually eligible. Table 5-1 summarizes the eligibility determinations for the Copco No. 1 historic district and its resources.

**Table 5-1 Copco No. 1 Hydroelectric Development District NRHP Eligibility Determinations**

Resource	Function	Construction/ Alterations	PacifiCorp NRHP Determination and Criteria: A, B, C, or D <sup>1</sup>	Renewal Corporation NRHP Determination and Criteria: A, B, C, D
Copco No. 1 Hydroelectric Development (historic district)	Generate hydropower for regional consumers.	1918/1922	Contributing: Criterion A	Eligible historic district: Criteria A and C. Contributes to the larger KHP historic district: Criteria A and C.

Resource	Function	Construction/ Alterations	PacifiCorp NRHP Determination and Criteria: A, B, C, or D <sup>1</sup>	Renewal Corporation NRHP Determination and Criteria: A, B, C, D
Dam	Impound Copco Lake reservoir to enable generation of hydropower.	1918/1922	Contributing: Criterion A	Contributes to the Copco No. 1 historic district: Criterion A. Dam, water conveyance system, and powerhouse collectively contribute to the Copco No. 1 historic district: Criterion C. Individually eligible: Criterion C.
Water Conveyance System	Convey water impounded by Copco Lake through the dam and into powerhouse.	1918/1922	Contributing: Criterion A	Contributes to the Copco No. 1 historic district: Criterion A. Dam, water conveyance system, and powerhouse collectively contribute to the Copco No. 1 historic district: Criterion C.
Powerhouse/ 47-002267	House the massive machinery that generates the facility's power.	1918/1922	Contributing: Criterion A	Contributes to the Copco No. 1 historic district: Criterion A. Dam, water conveyance system, and powerhouse collectively contribute to the Copco No. 1 historic district: Criterion C.
Warehouse 1112	Support facility for construction and operations.	ca. 1913/ unknown	Contributing: Criterion A	Contributes to the Copco No. 1 historic district: Criterion A.
Guesthouse Remains/ CA-SIS-2824H	Company officer and guest residence.	ca. 1916/ ca. 1980 (demolished)	Contributing: Criterion A	Contributes to the Copco No. 1 historic district: Criterion A.
Bungalows 1107 and 1108 (2)	Worker residences.	Circa 1925	Contributing: Criterion A	Contributes to the Copco No. 1 historic district: Criterion A.

<sup>1</sup> Durio 2003; Kramer 2003a, 2003b

The Renewal Corporation has completed State of California DPR forms (Appendix A), which provide a detailed description of Copco No. 1, a discussion of the historic context, and evaluations for significance and integrity.

### **Copco No. 2 Hydroelectric Development District (Siskiyou County, California)**

Copco No. 2 was completed in 1925, 3 years after the Copco No. 1 expansion (Figure 5-2). Copco No. 2 is not currently listed in the NRHP.



**Figure 5-2 Copco No. 2, showing powerhouse and penstock**

Based on the Renewal Corporation's evaluation, the Copco No. 2 hydroelectric development is eligible for the NRHP as a historic district. Copco No. 2 also contributes to the larger KHP historic district. In addition, the Copco No. 2 powerhouse, Copco No. 2 water conveyance system, and Fall Creek School are individually eligible. Table 5-2 summarizes the eligibility determinations for the Copco No. 2 historic district and its resources.

Note: An oil and gas storage house previously recommended as eligible by Kramer (and as not eligible by Durio) was demolished ca. 2015 and therefore was not evaluated by the Renewal Corporation. The demolished oil and gas storage house is not included in Table 5-2. The radio station near the Copco No. 2 powerhouse area was not previously recorded and is included in Table 5-2.

**Table 5-2 Copco No. 2 Hydroelectric Development District NRHP Eligibility Determinations**

Resource	Function	Construction/ Alterations	PacifiCorp NRHP Determination and Criteria: A, B, C, or D1	Renewal Corporation NRHP Determination and Criteria: A, B, C, or D
Copco No. 2	Operate in conjunction with Copco No. 1 to generate hydropower for regional consumers.	1925	Contributing: Criterion A	Eligible historic district: Criteria A and C. Contributes to the larger KHP historic district: Criteria A and C.
Dam	Impound small, unnamed reservoir to enable generation of hydropower.	1925/1996 (headgate rebuilt)	Contributing: Criterion A	Contributes to the Copco No. 2 historic district: Criterion A. Dam, water conveyance system, and powerhouse collectively contribute to the Copco No. 2 historic district: Criterion C.
Water Conveyance System	Convey water impounded in Copco Lake and small unnamed reservoir through the dam and into the powerhouse.	1925	Contributing: Criterion A	Contributes to the Copco No. 2 historic district: Criterion A. Dam, water conveyance system, and powerhouse collectively contribute to the Copco No. 2 historic district: Criterion C. Individually eligible: Criterion C.
Powerhouse/4 7-002266	House the massive machinery that generates the facility's power.	1925	Contributing: Criterion A	Contributes to the Copco No. 2 historic district: Criterion A. Dam, water conveyance system, and powerhouse collectively contribute to the Copco No. 2 historic district: Criterion C. Individually eligible: Criterion C.
Substation	Transforms voltage for transmission and distribution of electrical power generated at powerhouse.	ca. 2000 (rebuilt after major fire in early 2000s)	Not contributing	Non-contributing: Out of Period
Daggett Road Bridge	Bridge over Klamath River between Copco Road and Copco No. 2 powerhouse area.	1924/1960 (raised)/1981 (rebuilt)	None	Non-contributing: Out of Period

Resource	Function	Construction/ Alterations	PacifiCorp NRHP Determination and Criteria: A, B, C, or D1	Renewal Corporation NRHP Determination and Criteria: A, B, C, or D
Radio Station	Microwave radio communication station building and radio tower operated by PacifiCorp.	ca. 1950	None	Contributes to the Copco No. 2 and KHP historic districts: Criterion A.
Control Center	Automated control center for Copco No. 1 and Copco No. 2.	1966	Not Contributing	Contributes to the Copco No. 2 and KHP historic districts: Criterion A.
Maintenance Building	Vehicle/equipment maintenance and storage.	1991	Not Contributing	Non-contributing: Out of Period
Former Cookhouse/ Bunkhouse	Multi-worker residence and kitchen.	1941	Contributing: Criterion A	Non-contributing: lacks integrity
Bungalow	Worker residence.	ca. 1925	Contributing: Criterion A	Contributes to the Copco No. 2 historic district: Criterion A.
Fall Creek School	Former School and community center. Present PacifiCorp training facility.	1965	Not Contributing	Contributes to the Copco No. 2 historic district: Criterion A. Individually eligible: Criterion C.
Modern Bunkhouse	Multi-worker residence.	1964	Not Contributing	Contributes to the Copco No. 2 historic district: Criterion A.
Ranch Houses (4)	Worker residences.	1967 and 1968	Not Contributing	Contribute to the Copco No. 2 historic district: Criterion A.
Modular Residences (3)	Worker residences.	1985	Not Contributing	Non-contributing: Out of Period
Garage	Vehicle storage for now-demolished cottages.	1971	Not Contributing	Non-contributing: lacks integrity
Modern Garage	Vehicle storage.	ca. 2009	None	Non-contributing: Out of Period

Resource	Function	Construction/ Alterations	PacifiCorp NRHP Determination and Criteria: A, B, C, or D1	Renewal Corporation NRHP Determination and Criteria: A, B, C, or D
Fuel Service Station	Fuel station.	ca. 2010	None	Non-contributing: Out of Period

<sup>1</sup> Durio 2003; Kramer 2003a, 2003b

The Renewal Corporation has completed State of California DPR forms (Appendix A), which provide a detailed description of Copco No. 2, a discussion of the historic context, and evaluations for significance and integrity.

### **Iron Gate Hydroelectric Development (Siskiyou County, California)**

The Iron Gate hydroelectric development was completed in 1962, the year after Pacific Power acquired Copco (Figure 5-3). At the time when PacifiCorp completed its NRHP evaluations for the KHP in 2003, the Iron Gate hydroelectric development, including the fish hatchery, was less than 45 years old and not considered of sufficient age (i.e., 50 years) for NHRP eligibility. The Renewal Corporation evaluated the NRHP eligibility of the Iron Gate hydroelectric development because its resources are now over 50 years old and has designated a 1970 end date for the period of significance.



**Figure 5-3 Iron Gate, showing dam site**

Based on the Renewal Corporation's evaluation, the Iron Gate hydroelectric development is eligible for the NRHP as a historic district. Iron Gate also contributes to the larger KHP historic district. Furthermore, the Iron Gate hydroelectric development contains the Iron Gate fish hatchery. The hatchery is evaluated as a component of the Iron Gate historic district rather than a separate historic district, because the hatchery's functions are inextricably bound to fish management facilities at the Iron Gate dam site. Table 5-3 summarizes the eligibility determinations for the Iron Gate historic district and its resources. The Renewal Corporation has completed State of California DPR forms (Appendix A) that provide a detailed description of the Iron Gate hydroelectric development, a discussion of the historic context, and evaluations for NRHP significance and integrity.

**Table 5-3 Iron Gate Hydroelectric Development District NRHP Eligibility Determinations**

Resource	Function	Construction/ Alterations	PacifiCorp NRHP Determination and Criteria: A, B, C, or D1	Renewal Corporation NRHP Determination and Criteria: A, B, C, or D
Iron Gate	Re-regulate downstream water flow and generate hydropower.	1962	Not Contributing	Eligible historic district: Criteria A and C Contributes to the larger KHP historic district: Criteria A and C.
Dam	Impound Iron Gate reservoir to enable regulation of downstream water flow and generation of hydropower.	1962	Not Contributing	Contributes to the Iron Gate historic district: Criterion A. Dam, water conveyance system, and powerhouse collectively contribute to the Iron Gate historic district: Criterion C.
Water Conveyance System	Convey water impounded by Iron Gate reservoir through the dam and into the powerhouse.	1962	Not Contributing	Contributes to the Iron Gate historic district: Criterion A. Dam, water conveyance system, and powerhouse collectively contribute to the Iron Gate historic district: Criterion C.
Powerhouse	Contain fish trapping facilities and house the massive machinery that generates the facility's power.	1962	Not Contributing	Contributes to the Iron Gate historic district: Criterion A. Dam, water conveyance system, and powerhouse collectively contribute to the Iron Gate historic district: Criterion C.
Substation	Transforms voltage for transmission and distribution of electrical power generated at powerhouse.	1962	Not previously evaluated	Contributes to the Iron Gate historic district: Criterion A.

Resource	Function	Construction/ Alterations	PacifiCorp NRHP Determination and Criteria: A, B, C, or D1	Renewal Corporation NRHP Determination and Criteria: A, B, C, or D
Dam Fish Facilities	Trap and spawn fish.	1962	Not Contributing	Contributes to the Iron Gate historic district: Criterion A.
Communication Building	Communication and controls.	1962	Not Contributing	Contributes to the Iron Gate historic district: Criterion A.
Restroom Building	Visitor and worker restroom.	1962	Not Contributing	Contributes to the Iron Gate historic district: Criterion A.
Operator Residences (2)	Worker residences.	1963	None	Contributes to the Iron Gate historic district: Criterion A.
Hatchery Building	Contains equipment used to rear fish from egg to fry stage.	1966	Not Contributing	Contributes to the Iron Gate historic district: Criterion A.
Hatchery Raceways (8) and Settling Ponds (2)	Structures for rearing fry (raceways). Treat water drained from raceways (settling ponds).	1966	Not Contributing	Contributes to the Iron Gate historic district: Criterion A.
Hatchery Fish Feed Silos	Store fish feed.	1966	Not Contributing	Contributes to the Iron Gate historic district: Criterion A.
Hatchery Auxiliary Trap and Fish Ladder	Fish trap and ladder.	1984	Not Contributing	Non-contributing: Out of Period
Hatchery Office	Visitor reception/administrative area.	1966	Not Contributing	Contributes to the Iron Gate historic district: Criterion A.
Hatchery Shop	Equipment storage/repairs.	1966	Not Contributing	Contributes to the Iron Gate historic district: Criterion A.
Hatchery Modern Shed	Support facility.	ca. 1994	Not Contributing	Non-contributing: Out of Period
Hatchery Gas Shed	Gasoline storage.	1966	Not Contributing	Contributes to the Iron Gate historic district: Criterion A.
Hatchery Picnic and Visitor Center	Hatchery visitor facilities.	ca. 1994	Not Contributing	Non-contributing: Out of Period
Hatchery Residences (4)	Hatchery worker residences.	1966	Not Contributing	Contributes to the Iron Gate historic district: Criterion A.

Resource	Function	Construction/ Alterations	PacifiCorp NRHP Determination and Criteria: A, B, C, or D1	Renewal Corporation NRHP Determination and Criteria: A, B, C, or D
Lakeview Road Bridge	Bridge over Klamath River between Copco Road and Iron Gate.	1960	None	Contributes to the Iron Gate historic district: Criterion A.

<sup>1</sup> Durio 2003; Kramer 2003a, 2003b

### **J.C. Boyle Hydroelectric Development District (Klamath County, Oregon)**

J.C. Boyle was completed in 1958 as the final hydroelectric development that Copco completed along the Klamath River before the company was acquired by Pacific Power in 1961 (Figure 5-4). J.C. Boyle is not currently listed in the NRHP.



**Figure 5-4 J.C. Boyle powerhouse**

Based on the Renewal Corporation's evaluation, the J.C. Boyle hydroelectric development is eligible for the NRHP as a historic district. J.C. Boyle also contributes to the larger KHP historic district. Table 5-4 summarizes the eligibility determinations for the J.C. Boyle historic district and its resources.

**Table 5-4 J.C. Boyle Hydroelectric Development District NRHP Eligibility Determinations**

Resource	Function	Construction/ Alterations	PacifiCorp NRHP Determination and Criteria: A, B, C, or D <sup>1</sup>	Renewal Corporation NRHP Determination and Criteria: A, B, C, or D
J.C. Boyle Hydroelectric Development (historic district)	Generate hydropower for regional customers.	1958	Contributing: Criterion A	Eligible historic district: Criteria A and C. Contributes to the larger KHP historic district: Criteria A and C.
Dam	Impound J.C. Boyle Reservoir to enable generation of hydropower.	1958	Contributing: Criterion A	Contributes to the J.C. Boyle historic district: Criterion A. Dam, water conveyance system, and powerhouse collectively contribute to the J.C. Boyle historic district: Criterion C.
Water Conveyance System	Convey water impounded by J.C Boyle reservoir through the dam and into powerhouse.	1958	Contributing: Criterion A	Contributes to the J.C. Boyle historic district: Criterion A. Dam, water conveyance system, and powerhouse collectively contribute to the J.C. Boyle historic district: Criterion C.
Powerhouse	House the massive machinery that generates the facility's hydropower.	1958	Contributing: Criterion A	Contributes to the J.C. Boyle historic district: Criterion A. Dam, water conveyance system, and powerhouse collectively contribute to the J.C. Boyle historic district: Criterion C.
Armco Warehouse	Storage and support facility for construction and operations.	1957	Contributing: Criterion A [Durio 2003] and Not Contributing [Kramer 2003]	Contributes to the J.C. Boyle historic district: Criterion A.
Red Barn	Administrative building.	1958/1978	Not Contributing	Non-contributing: lacks historic integrity.
Truck Shop/Fuel Station and Waste Storage Area	Vehicle storage and repair/ vehicle fueling station.	1991	Not Contributing	Non-contributing: Out of Period.
Fire System Control	Fire system control with electric pump.	ca. 1995	Not Contributing	Non-contributing: Out of Period.

Resource	Function	Construction/ Alterations	PacifiCorp NRHP Determination and Criteria: A, B, C, or D <sup>1</sup>	Renewal Corporation NRHP Determination and Criteria: A, B, C, or D
Dam Communication	Contain equipment for communication with PacifiCorp's Merwin Dam facility.	ca. 1995	Not Contributing	Non-contributing: Out of Period.
Operator Residences (2)	Worker residences.	ca. 1975 and ca. 1985	Not Contributing	Non-contributing: Out of Period.
Domestic Well house	Well house containing pump.	1958/ ca. 1997	Not Contributing	Non-contributing: Out of Period.
Timber Bridge	Bridge over Klamath River between dam and flume areas.	1956, 1971, 2003 (rebuilt)	Not Contributing	Non-contributing: Out of Period.
Powerhouse Residence Site	Previous site of worker residences near powerhouse.	ca. 1958, 1995	Not Contributing	Non-contributing: lacks historic integrity.

<sup>1</sup>Durio 2003; Kramer 2003a, 2003b

The Renewal Corporation has completed Oregon Historic Site Forms (Appendix B) that provide a detailed description of J.C. Boyle, a discussion of the historic context, and evaluations for significance and integrity.

### Fall Creek Hatchery (Siskiyou County, California)

Fall Creek hatchery is included in this discussion of hydropower resources because it was surveyed in 2003 as a component of Fall Creek hydroelectric development in the larger KHP historic district. The hatchery was completed in 1919 as mitigation for the Copco No. 1 dam, which blocked upstream anadromous fish migration. The hatchery, shown in Figure 5-5, is not currently listed in the NRHP.



**Figure 5-5 Fall Creek hatchery, 1937 raceways and former incubation shed**

During PacifiCorp's evaluations, the Fall Creek hatchery resources were recommended as contributing to the KHP historic district. The Renewal Corporation evaluated the Fall Creek hatchery as a potential historic district under the NRHP. Based on the Renewal Corporation's evaluation, the Fall Creek hatchery is not eligible for the NRHP as a historic district and does not contribute to the larger KHP historic district. Although the hatchery appears to have local or statewide significance under Criterion A in the area of Conservation, the hatchery has lost its historic integrity. Historic fish holding ponds built in 1937 are still present at the hatchery; however, the original hatchery building, worker cottages, and holding ponds no longer exist. The absence of these key resources substantially detracts from the hatchery's historic integrity.

The Renewal Corporation has completed State of California DPR forms (Appendix A) that provide a detailed description of the Fall Creek hatchery and its components, a discussion of the historic context, and evaluations for significance and integrity.

## **5.3 Historic Transportation Properties**

The Renewal Corporation evaluated the NRHP eligibility for all transportation resources, including bridges and culverts, in the APE. The evaluation involved field work where each transportation resource was identified and photographed, as well as review of prior documentation of history and NRHP eligibility. Transportation resources in the boundaries of a hydroelectric historic district were evaluated as contributing or non-contributing resources to the district. For example, the Daggett Road bridge was evaluated as a contributing resource to Copco No. 2, and the Lakeview Road bridge was evaluated as a contributing resource to Iron Gate.

The bridges and culverts evaluated during this study are listed in Table 5-5. The “Resource” column in Table 5-5 provides each specific bridge type. All culverts observed during field survey were modern corrugated steel pipe structures, apparently less than 40 years of age. When possible, the “State (number)” column in Table 5-5 provides the California DPR Primary number, California Department of Transportation (Caltrans) number, or other identifying number for each resource. For resources built after 1975, the NRHP determination (last column) is “Out of Period,” indicating that the resource was built outside of the historic period by at least 5 years.

The Renewal Corporation conducted field survey of the Klamath River Bridge (California DPR Primary #47-004212, State Bridge No. 02-0015) on August 29, 2019. As noted in Table 5-5 (row 3), a replacement bridge was completed in 2021 and the older 1931 bridge was removed. The 1931 bridge, therefore, is no longer eligible for the NRHP.

**Table 5-5 Transportation Resources**

Resource	State (number)	Construction/ Alterations	Previous NRHP Determination and Criterion: A, B, C, or D	Renewal Corporation NRHP Determination and Criteria: A, B, C, or D
<b>Bridges</b>				
Dry Creek Bridge (single span timber beam and deck with asphalt overlay)	California (2C0144)	1960	Not Eligible; California Department of Transportation Bridge Inventory (2022) (Local Agency Bridges, District 02)	Not Eligible
Ash Creek Bridge (Baltimore petit truss)	California (DPR Primary #47-04414, PL- 96-04)	1901 (replaced in 2012)	Eligible: Criteria A and C. This evaluation occurred in 2000 before the original bridge was replaced.	Not Eligible: Out of Period (replacement bridge that does not conform to the Secretary of the Interior Standards)
Klamath River Bridge (six-span concrete t-beam)	California (DPR Primary #47- 004212, State Bridge No. 02- 0015)	1931 (demolished and replaced in 2021)	Eligible: Criteria A and C. This evaluation occurred in 2004 before construction began on the replacement bridge.	Not Eligible (Demolished 2021)
Spencer Bridge (three-span continuous welded steel plat girder)	Oregon (Department of Transportation Bridge No. 19789)	2005	None	Not Eligible: Out of Period
Cottonwood Creek Bridge (single-span reinforced concrete slab)	California (02C0257)	1980	None	Not Eligible: Out of Period

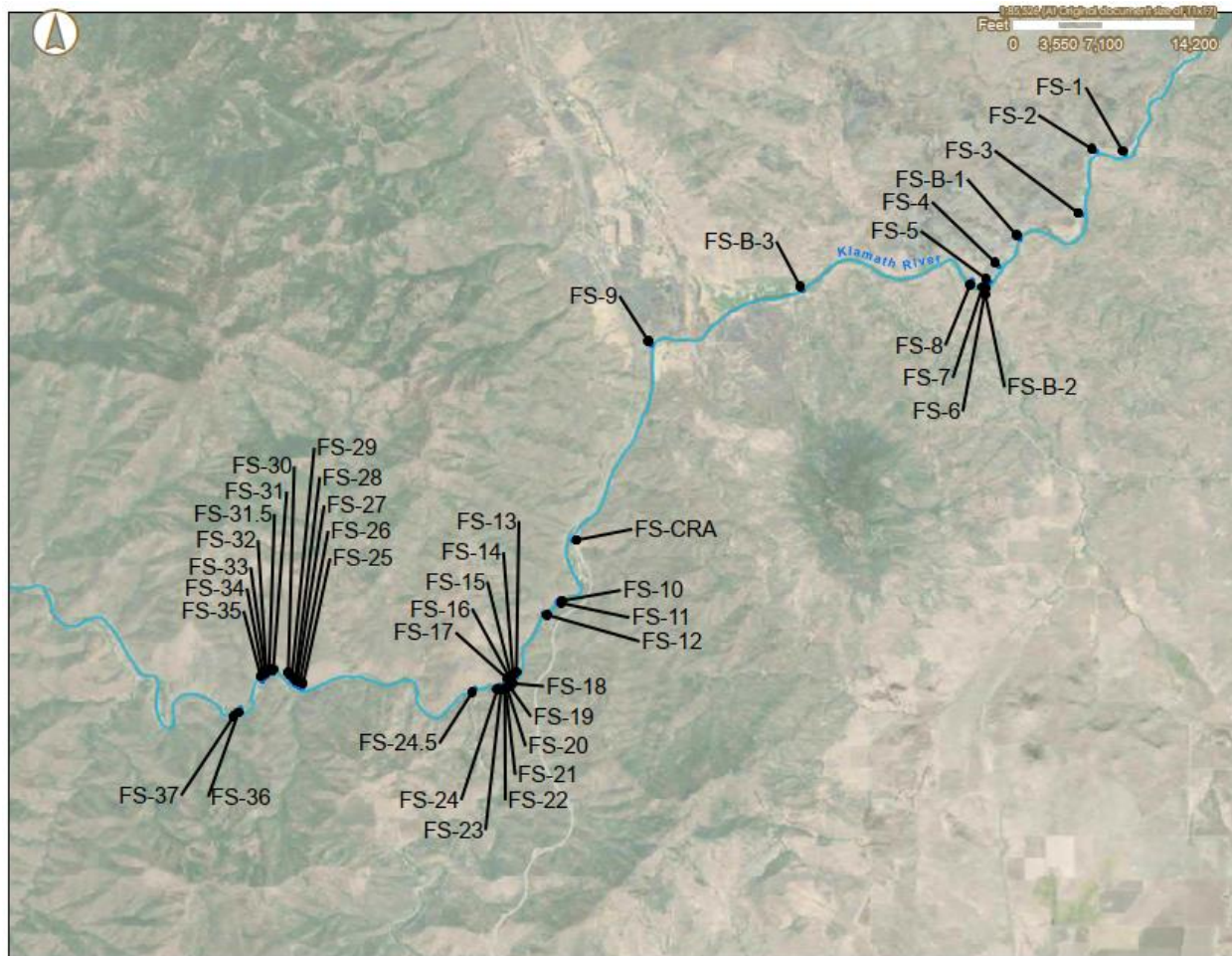
Resource	State (number)	Construction/ Alterations	Previous NRHP Determination and Criterion: A, B, C, or D	Renewal Corporation NRHP Determination and Criteria: A, B, C, or D
Brush Creek Bridge (single span reinforced concrete slab)	California (02C0224A)	1976	None	Not Eligible: Out of Period
Jenny Creek Bridge (single span precast prestressed deck bulb tee girder)	California (02C0280A)	2008	None	Not Eligible: Out of Period
Fall Creek Bridge (single span timber beam with concrete deck)	California (02C0198)	1969	Not Eligible (California Department of Transportation Bridge Inventory 2022)	Not Eligible
Copco Road Bridge (two-span cast-in- place post- tensioned concrete box girder)	California (02C0039)	1988	Not Eligible (California Department of Transportation Bridge Inventory 2022)	Not Eligible: Out of Period
(FS-B-1) Pedestrian Bridge (cable suspension bridge)	California (privately owned)	Unknown	None	Not Eligible
(FS-B-2) Pedestrian Bridge (cable suspension bridge)	California (privately owned by Klamath River Country Estates)	Circa 1970	None	Not Eligible
(FS-B-3) Central Oregon and Pacific Railroad Bridge (seven-span ballasted concrete bridge)	California	1900, Rebuilt in 1980 after failure	None	Not Eligible: Out of Period (1900 bridge failed in 1980, new bridge installed 1980)
<b>Culverts</b>				
Topsy Road Grade Culvert at unnamed creek	California	Post-1980	None	Not Eligible: Out of Period
Unnamed Culvert at unnamed road near J.C. Boyle	California	Post-1980	None	Not Eligible: Out of Period

Resource	State (number)	Construction/ Alterations	Previous NRHP Determination and Criterion: A, B, C, or D	Renewal Corporation NRHP Determination and Criteria: A, B, C, or D
Copco Road Culvert at Raymond Gulch	California	Post-1980	None	Not Eligible: Out of Period
Copco Road Culvert at Beaver Creek	California	Post-1980	None	Not Eligible: Out of Period
Patricia Avenue Culvert at Camp Creek	California	Post-1980	None	Not Eligible: Out of Period
Copco Road Culvert at Camp Creek	California	Post-1980	None	Not Eligible: Out of Period
Copco Road Culvert at Scotch Creek	California	Post-1980	None	Not Eligible: Out of Period
Copco Road Drainage Culverts between Brush Creek and Camp Creek	California	Post-1980	None	Not Eligible: Out of Period

## 5.4 Historic Private Properties

Under the Proposed Action, sediment would be released into the Klamath River during dam removal. Sediment deposition may also result in streambed aggradation that would result in changes to the 100-year floodplain in the first 8 miles downstream from Iron Gate Dam (Interior and California DFG, 2012). The Renewal Corporation is currently proposing mitigation for property owners of affected properties which may take the form of raising building elevations or creating berms or flood walls to reduce the effects of potential flooding. Most of these resources are located in the Hornbrook vicinity and located further downriver in the Klamath River Community (See Figure 5.6).

In addition, the Proposed Action would potentially affect the settings and views of historic-period residential buildings around Copco Lake as the lake would be dewatered, the Klamath River channel would be reestablished, and the vegetation would be restored. The residences around Copco Lake, therefore, were evaluated. Depictions of desired future conditions are shown in Figure 6.1.



**Figure 5-6 Hornbrook and Klamath River Community private properties analyzed for floodplain effects. The Iron Gate Dam is located in the upper righthand corner of the map. No work or effects were identified at FS-CRA.**

### 5.4.1 Hornbrook Area

The Renewal Corporation identified five private properties in the APE near Hornbrook, California, that may be affected by the Proposed Action (Table 5-6). The properties were built between 1937 and 1983 and are situated on the north bank of the Klamath River, east of I-5 and west of Iron Gate Dam. NHPA eligibility determinations are based on architectural surveys and aerial photography.

Within the 5 properties located in the Hornbrook area, nine buildings were identified during the architectural survey. Of the nine buildings, two were not 45 years old and one building was located outside of the projected post-project floodplain, would not be affected by the Proposed Action, and was not evaluated. The remaining six buildings were assessed as not eligible either due to the lack of historical integrity or not meeting any of the NRHP Criteria for Evaluation. The Renewal Corporation has completed State of California DPR forms (Appendix A) that provide a detailed description of these private properties, a discussion of the historic context, and evaluations for significance and integrity.

**Table 5-6 Private Properties on the Klamath River in the Hornbrook Area**

Resource #	Property & Address	Date	Potential for Effect	NRHP Eligibility
FS-1, FS-2	Fish Hook Restaurant 6930 Copco Road	1983	yes	FS-1 Not eligible (out of period) FS-2 Not eligible (out of period)
FS-3	R-Ranch Klamath River Campground 225 Ditch Creek Road	1971	yes	FS-3 Not Eligible
FS-4	4824 Copco Road	1950s	no; building out of post-project floodplain	FS-4 No evaluation
FS-5, FS-6, FS-7, FS-8	Klamath River Country Estates Owners' Association Campground Facilities and Office 4701-4799 Whitefish Place	1970s	yes	FS-5, FS-6, FS-7, FS-8 Not Eligible
FS-9	Single-Family Residence 13624 Hornbrook Road	1937	yes	FS-9 Not Eligible

## 5.4.2 Klamath River Community

The Renewal Corporation identified 18 properties in the Klamath River Community area, built between 1925 and ca. 1975 that may be affected by the Proposed Action (Table 5-7). The properties are situated west of I-5 along State Highway 96 and Klamath River Road in an area known as the Klamath River Community. NHPA eligibility determinations are based on architectural surveys and aerial photography.

Within the 18 properties located in the Klamath River Community area, 29 buildings were identified during the reconnaissance level survey. Of the 29 buildings, 5 were not 45 years old and 8 buildings were located outside of the projected post-project floodplain, would not be affected by the Proposed Action, and were not evaluated. The remaining 16 buildings were assessed as not eligible either due to the lack of historical integrity or not meeting any of the NRHP Criteria for Evaluation. The Renewal Corporation has completed State of California DPR forms (Appendix A) that provide a detailed description of these private properties, a discussion of the historic context, and evaluations for significance and integrity.

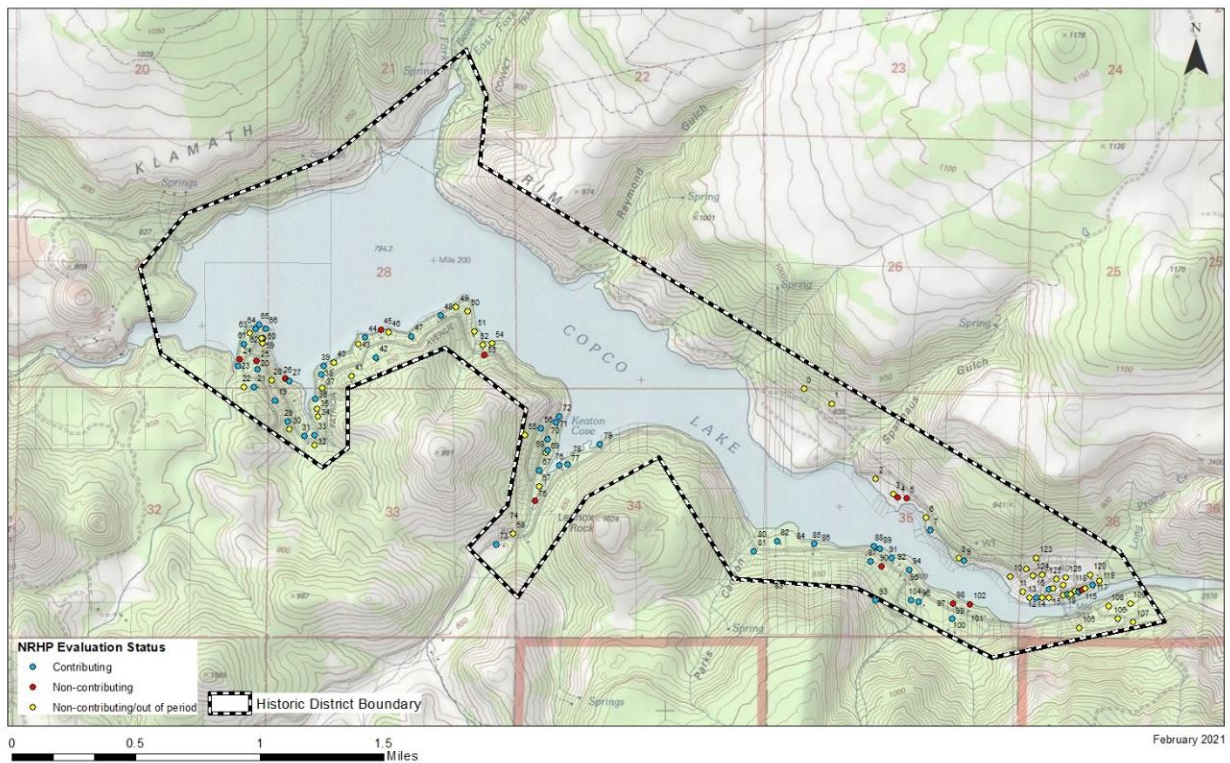
**Table 5-7 Private Properties in the Klamath River Community Area**

Resource #	Address	Date	Potential for Effect	NRHP Eligibility
FS-10 and FS-11	904 State Highway 96	1925	FS-10 (no; building out of post-project floodplain) FS-11 (yes)	FS-10 No evaluation FS-11 Not Eligible
FS-12	1131 State Highway 96	ca. 1950	FS-12 (yes)	FS-12 Not Eligible
FS-13, FS-14, & FS-15	1920 State Highway 96	ca. 1950	FS-13 (yes) FS-14 (no; building out of post-project floodplain) FS-15 (yes)	FS-13 Not Eligible FS-14 No Evaluation FS-15 Not Eligible
FS-16 and FS-17	1936 State Highway 96	1957	FS-16 (no; building out of post-project floodplain) FS-17 (yes)	FS-16 No Evaluation FS-17 Not Eligible
FS-18 and FS-19	1942 State Highway 96	ca. 1950	FS-18 (yes) FS-19 (yes)	FS-18 Not Eligible FS-19 Not Eligible
FS-20	2014 State Highway 96	ca. 1950	FS-20 (yes)	FS-20 Not Eligible
FS-21 and FS-22	2020 State Highway 96	ca. 1969	FS-21 (yes) FS-22 (yes)	FS-21 Not Eligible
FS-23	2032 State Highway 96	1950 (1983 bedroom addition)	FS-23 (yes)	FS-22 Not Eligible
FS-24	2100 State Highway 96	1974	FS-24 (yes)	FS-24 Not Eligible
FS-25 and FS-26	4617 State Highway 96	1978 (2001)	FS-25 (no) FS-26 (yes)	FS-25 & FS-26 Not Eligible (Out of Period)
FS-27 and FS-28	4830 State Highway 96	ca. 1970	FS-27 (no) FS-28 (no) Buildings on property determined to be out of post-project floodplain.	FS-27 & FS-28 No evaluation
FS-29	4834 State Highway 96	1971	FS-29 (yes)	FS-29 Not Eligible
FS-30	4730 State Highway 96	1977	FS-30 (no; building out of post-project floodplain)	FS-30 No evaluation
FS-31 and FS-31.5	5125 Klamath River Road	1968	FS-31 (yes) FS-31.5 (yes)	FS-31 & FS-31.5 Not Eligible
FS-32 and FS-33	5215 Klamath River Road	1990	FS-32 (yes) FS-33 (yes)	FS-32 & FS-33 Not Eligible (out of period)

Resource #	Address	Date	Potential for Effect	NRHP Eligibility
FS-34	Unknown (west of 5215 Klamath River Road)	1980s	FS-34 (yes)	FS-34 Not Eligible (out of period)
FS-35	5231 Klamath River Road	1998	FS-35 (yes)	FS-35 Not Eligible (out of period)
FS-36 and FS-37	5814 State Highway 96	ca. 1980s	FS-36 (no) FS-37 (no) Buildings on property determined to be out of post-project floodplain.	FS-36 & FS-37 No evaluation (no effect & out of period)

### 5.4.3 Copco Lake

Based on windshield surveys, aerial photographs, county building permits, and real estate websites, The Renewal Corporation evaluated 127 properties in the Copco Lake area that as resources in a potential NRHP historic district (Table 5-8). The residential/recreational properties, many with boat docks, are clustered primarily along the lakesides of Copco Road, Quail Lane, Ager Beswick Road, Jacqueline Avenue, and Patricia Avenue (Figure 5-6). Copco Road and Quail Lane extend along Copco Lake's north shore. Ager Beswick Road, Jacqueline Avenue, and Patricia Avenue extend along Copco Lake's southern shore. County assessor data indicates that construction dates for the Copco Lake residences date to as early as 1935, with the majority built in the mid to late 1960s and 1970s, after completion of Iron Gate Dam and Reservoir, and the associated improvements made to sections of Copco Road..



**Figure 5-7 Copco Lake recreational residences historic district boundary and evaluation status**

The Copco Lake recreational residences primarily consist of single-family residential houses owned and occupied by retirees (Aschbrenner 2012). The houses reflect a variety of architectural styles including A-frame, Ranch, Minimal Traditional, and Contemporary. Except for 21235 Ager Beswick Road, constructed in 1935, each property was built between 1964 and 2011. Many of the Copco Lake properties identified during field survey and desktop research have boat docks or ramps that extend into Copco Lake and appear to have been built for recreational and residential use. Sixty-two of the 129 properties were constructed before 1976. Available photographs and permits indicate that 12 of the 62 potentially contributing properties have undergone substantial alterations that may have diminished historic integrity. The Copco Lake recreational residences may have local significance under Criteria A, B, and C. The period of significance is 1964-1975, representing the two primary periods of development on each side of the lake. See Recreation (Section 3.2.9) for historic context related to development of Copco Lake's residential and recreational resources. Although the Copco Lake recreational residences generally retain some of their historical integrity as a discernable group, there are more non-contributing resources than contributing resources. Based on this evaluation, the Copco Lake recreational residences were found not to be eligible as a NRHP historic district and do not contribute to the larger KHP historic district.

The Renewal Corporation has completed State of California DPR forms (Appendix A) that provide a detailed description of the Copco Lake recreational residences and its components, a discussion of the historic context, and evaluations for significance and integrity.

**Table 5-8 Private Properties in the Copco Lake Area**

	Property	Address	Construction	Property Information
1	Single-Family Property	18604 Ager Beswick Road	ca.1965	One-story single-family residence
2	Single-Family Property	18825 Ager Beswick Road	1967	Heavily altered two-story A-frame cabin with 1974 garage and 1990 covered deck
3	Two Single-Family Properties	19001 Ager Beswick Road	1966	Includes two one and one-half-story A-frame cabins and a 1974 metal ancillary building
4	Single-Family Property	19003 Ager Beswick Road	1966	One-story single-family residence
5	Single-Family Property	19225 Ager Beswick Road	1968	One-story single-family residence
6	Single-Family Property	20204 Ager Beswick Road	1967	A-frame cabin
7	Single-Family Property	20231 Ager Beswick Road	1966	One-story single-family residence and 2015 storage building
8	Single-Family Property	20421 Ager Beswick Road	1968	One-story single-family residence
9	Single-Family Property	20638 Ager Beswick Road	1966	Two-story single-family residence. Property records indicate substantial renovations and/or additions
10	Single-Family Property	20701 Ager Beswick Road	1964	One and one-half-story A-frame cabin
11	Single-Family Property	20709 Ager Beswick Road	1965	One and one-half-story A-frame cabin
12	Single-Family Property	20738 Ager Beswick Road	1966	One-story single-family residence with 1994 addition and 1997 detached garage
13	Single-Family Property	20805 Ager Beswick Road	1965	One-story single-family residence
14	Single-Family Property	20820 Ager Beswick Road	1965	One-story single-family residence
15	Single-Family Property	20841 Ager Beswick Road	1970	One-story single-family residence. Property records indicate substantial renovations and/or additions
16	Single-Family Property	21000 Ager Beswick Road	1964	Single family-residence possibly constructed by W.H. Clifford and a 1973 garage
17	Single-Family Property	21115 Ager Beswick Road	1966	Heavily altered A-frame cabin with rear addition and 2013 deck
18	Single-Family Property	21116 Ager Beswick Road	1972	One and one-half-story single-family residence

	Property	Address	Construction	Property Information
19	Single-Family Property	21205 Ager Beswick Road	1967	Single-family residence with 2008 bedroom addition
20	Single-Family Property	21235 Ager Beswick Road	1935	Single-family residence and 2007 garage
21	Single-Family Property	15738 Patricia Avenue	1967	Two-story single-family residence with 1975 garage and addition
22	Single-Family Property	15830 Patricia Avenue	1973	One and one-half-story A-frame cabin with new wrap-around deck
23	Single-Family Property	15835 Patricia Avenue	1969	One and one-half single-family residence
24	Single-Family Property	15935 Patricia Avenue	1973	Single-family modular house with 1981 addition, 1975 garage, and 1981 storage shed
25	Single-Family Property	15939 Patricia Avenue	1973	Single-family residence with 1986 garage addition and 1987 porch addition
26	Single-Family Property	16104 Patricia Avenue	1973	Single-family residence with 1982 garage and 1987 covered deck
27	Single-Family Property	16139 Patricia Avenue	1969	Single-family residence with 1982 carport and 1988 basement
28	Single-Family Property	16141 Patricia Avenue	1970	One and one-half-story single-family residence
29	Single-Family Property	16338 Patricia Avenue	1970	Two-story single-family residence
30	Copco Lake Fire Department	16490 Patricia Avenue	ca.1970	Two single-car garages
31	Single-Family Property	16509 Patricia Avenue	1968	Single-family residence with possible additions and garage
32	Single-Family Property	16705 Patricia Avenue	1969	Single-family residence with 1996 garage and carport
33	Single-Family Property	16801 Patricia Avenue	1968	One-story single-family residence
34	Single-Family Property	16805 Patricia Avenue	1968	One-story single-family residence
35	Single-Family Property	17004 Patricia Avenue	1967	Single-family residence
36	Single-Family Property	17025 Patricia Avenue	1967	One-story single-family residence
37	Single-Family Property	17105 Patricia Avenue	1969	One-story single-family residence with 1990 bedroom addition and 1988 garage

	Property	Address	Construction	Property Information
38	Single-Family Property	17125 Patricia Avenue	1967	Likely single-family residence (not visible from public right-of-way)
39	Single-Family Property	17411 Patricia Avenue	1969	One and one-half-story single-family residence with enclosed front porch
40	Single-Family Property	17700 Patricia Avenue	1967	One and one-half-story A-frame cabin with large 1984 addition and 1987 deck addition
41	Single-Family Property	18205 Patricia Avenue	1969	One-story single-family residence
42	Single-Family Property	17116 Janice Avenue	1974	Single-family residence(Highly obscured from public right-of-way)
43	Single-Family Property	17117 Janice Avenue	1970	Single-family residence with garage
44	Single-Family Property	17139 Janice Avenue	1969	One-story single-family residence with attached two car garage
45	Single-Family Property	17143 Janice Avenue	1975	One-story single-family residence
46	Single-Family Property	17147 Janice Avenue	1967	One and one-half story A-frame cabin
47	Single-Family Property	16634 Jacqueline Avenue	1965	One and one-half story A-frame cabin with possible additions and a 1974 garage
48	Single-Family Property	16738 Jacqueline Avenue	1969	One-story single-family residence
49	Single-Family Property	16812 Jacqueline Avenue	1975	One-story single-family residence
50	Single-Family Property	16838 Jacqueline Avenue	1966	One-story single-family residence
51	Single-Family Property	16900 Jacqueline Avenue	1972	One-story single family residence with basement
52	Complex of four single family residences	16138 Valerie Road	1969, 1972	Single-family residence constructed in 1969 and three cabins constructed in 1972
53	Single-Family Property	27820 Quail Lane	1971	One-story single-family residence with c. 2000 addition
54	Single-Family Property	27904 Quail Lane	1973	Two-story single-family residence with carport
55	Single-Family Property	27906 Quail Lane	1970	Two-story single-family residence with 1978 garage and second story game room

	Property	Address	Construction	Property Information
56	Single-Family Property	27924 Quail Lane	1969	Single family residence and detached garage
57	Single-Family Property	27931 Quail Lane	1969	One-story single-family residence
58	Single-Family Property	27004 Copco Road	1971	One-story single-family residence with 2000 addition
59	Single-Family Property	27008 Copco Road	1971	One-story single-family residence with 2008 garage and 2009 carport
60	Single-Family Property	27204 Copco Road	1969	One and one-half-story single-family residence and two ancillary buildings
61	Single-Family Property	27334 Copco Road	1969	Two-story single family residence with attached garage and detached garage (not visible from public right-of-way)
62	Store/Single-Family Residence	27734 Copco Road	1969/1972	Two-story store and single-family residence
63	Copco Lake Fire Department	27805 Copco Road	ca.1969	Single-story building with two garage bays

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## **Chapter 6: Project Effects**

## 6. PROJECT EFFECTS

The Proposed Action will have direct and indirect effects on historic properties in the ADI and/or the APE. An effect would constitute an “alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register” (36 C.F.R. § 800.16[i]). “An adverse effect occurs when project activities ‘alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association.’ Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative” (36 C.F.R. § 800.5[a][1]).

The types of effects anticipated by the Proposed Action include:

- the demolition of hydroelectric-related buildings and structures;
- changes to the visual setting caused by the dewatering of the reservoirs, removal of hydroelectric facilities, and revegetation;
- changes in the use of existing historic-era recreational-related resources including fishing areas, boat ramps, campgrounds, and/or recreational residences with water access; and
- floodproofing of habitable structures in the modeled post-dam removal floodplain may occur between Iron Gate Dam and the Klamath River-Humbug Creek confluence in California;
- Specified term for protections offered by Section 106 of the NHPA for historic properties located in the FERC Boundary.

While the withdrawal of FERC’s jurisdiction would affect historic properties within the APE, the impact would be minimized by existing state and local laws and regulations governing the protection of cultural resources located on private and state lands (e.g. CEQA, ORS 358.658, etc.; see also Section 1.2.2).

Additionally, the changes to the visual settings from the proposed action would modify the views of historic-period residential buildings around Copco Lake as the lake would be dewatered, the Klamath River channel would be reestablished, and the vegetation would be restored. The visual characteristics related to the linear nature and engineering of the hydroelectric developments within the APE would be largely removed.

Figure 6.1 depicts the nature of these visual changes in various locations within the APE to provide a general indication of the existing setting and the future conditions after dam removal. Please note that these images are an artist’s conception of the desired future conditions at the Proposed Action’s footprint and is not intended to convey a plan to achieve a specific visual outcome.



Existing View Looking Downstream from Iron Gate Narrows



Future Condition after Dam Removal Looking Downstream from Iron Gate Narrows

Existing view of Iron Gate Narrows

Future conditions after dam removal at Iron Gate Narrows



Existing View Looking across Copco Lake from near Janice Avenue



Future Condition after Dam Removal Looking across Copco Lake from near Janice Avenue

Existing view of Copco Lake

Future conditions after dam removal at Copco Lake



Existing view of J.C. Boyle



Future conditions after dam removal at J.C. Boyle

**Figure 6-1 Artist's conception of the desired future conditions at locations within the APE.**

In addition to changes in setting, there could also be atmospheric effects as well as noise and vibratory impacts during the deconstruction of the facilities. It is anticipated that air quality control measures, as noted in the Renewal Corporation's noise and vibration control plan in the DDP (2020), would minimize the potential for noise and vibration effects to built environment historic properties. In addition, the Renewal Corporation's Construction Management Plan, as edited at the request of FERC, will include measures to control blasting related dust as well as general construction dust within the APE.

Due to the extent of Proposed Action activities, there will be cumulative effects to historic properties. Decommissioning activities, for instance, will result in a cumulative adverse effect to the four hydroelectric districts which would no longer be individually or collectively eligible for the NRHP. There is also the potential for cumulative effects to built environment resources located within the 100-year floodplain that could be affected by increases in river elevation that could occur later in time or that would be reasonably foreseeable. The cumulative effects to historic properties that predate the development of the hydroelectric facilities along the Klamath would be largely beneficial due to the fish habitat and vegetation restoration activities that would occur.

## 6.1 Historic Hydroelectric Properties

### 6.1.1 Klamath Hydroelectric Project (Klamath County, Oregon, and Siskiyou County, California)

The KHP is an eligible NRHP historic district that consists of multiple hydroelectric developments in Southern Oregon and Northern California. The LKP is the portion of the KHP eligible NRHP historic district that is affected by the Proposed Action, containing the J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate hydroelectric developments. The KHP also encompasses the Link River, Keno Dam, and Fall Creek hydroelectric developments, which are not subject to or affected by Proposed Action activities. The Proposed Action involves removal of the dams, powerhouses, and water conveyance systems, as well as other associated resources, at J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate. Proposed Action activities would substantially compromise the KHP's overall integrity of design, setting, materials, workmanship, feeling, and association, causing a direct adverse effect to the KHP historic district.

The Proposed Action would result in an **adverse effect** to the KHP historic district.

### 6.1.2 Copco No. 1 Hydroelectric Development (Siskiyou County, California)

The Copco No. 1 hydroelectric development is an eligible NRHP historic district (Copco No. 1 historic district) that also contributes to the larger KHP historic district. The Proposed Action involves removal of Copco No. 1's contributing resources, including the dam, powerhouse, and water conveyance system, which are the district's primary components. Copco Lake, the reservoir impounded by the dam, will also be dewatered. Proposed Action activities would substantially compromise Copco No. 1's integrity of design, setting, materials, workmanship, feeling, and association, causing a direct

adverse effect to the historic district and its contributing resources. The Proposed Action would also cause a direct adverse effect to an individually eligible resource in the district—the Copco No. 1 dam.

The Proposed Action would result in an **adverse effect** to Copco No. 1 historic district, a discrete historic district that also contributes to the larger KHP historic district. In addition, the Proposed Action would result in an **adverse effect** to the Copco No. 1 dam, an individually eligible resource in the Copco No. 1 historic district.

### 6.1.3 Copco No. 2 Hydroelectric Development (Siskiyou County, California)

The Copco No. 2 hydroelectric development is an eligible NRHP historic district (Copco No. 2 historic district) that also contributes to the larger KHP historic district. The Proposed Action involves removal of Copco No. 2's contributing resources, including the dam, powerhouse, and water conveyance system, which are the district's primary components. Proposed Action activities would substantially compromise Copco No. 2's integrity of design, setting, materials, workmanship, feeling, and association, causing a direct adverse effect to the historic district and its contributing resources. The Proposed Action would also cause a direct adverse effect to individually eligible resources in the district—the Copco No. 2 powerhouse, Copco No. 2 water conveyance system, and Fall Creek School.

The Proposed Action would result in an **adverse effect** to the Copco No. 2 historic district, a discrete historic district that contributes to the larger KHP historic district. In addition, the Proposed Action would result in **adverse effects** to the Copco No. 2 powerhouse, Copco No. 2 water conveyance system, and Fall Creek School, individually eligible resources in the Copco No. 2 historic district.

### 6.1.4 Iron Gate Hydroelectric Development (Siskiyou County, California)

The Iron Gate hydroelectric development is an eligible NRHP historic district (Iron Gate historic district) that also contributes to the larger KHP historic district. The Proposed Action involves removal of Iron Gate's contributing resources, including the dam, powerhouse, and water conveyance system, which are the district's primary components. The Proposed Action activities would substantially compromise Copco No. 2's integrity of design, setting, materials, workmanship, feeling, and association, causing a direct adverse effect to the historic district and its contributing resources, including the Iron Gate hatchery. Buildings and structures in the Iron Gate hatchery area will remain in place; however, by removing the Iron Gate hydroelectric facilities and dam fish facilities, the Proposed Action would substantially diminish the hatchery's integrity of setting and association.

The Proposed Action would result in an **adverse effect** to the Iron Gate historic district, a discrete historic district which also contributes to the larger KHP historic district.

### 6.1.5 J.C. Boyle Hydroelectric Development (Klamath County, Oregon)

The J.C. Boyle hydroelectric development is an eligible NRHP historic district (J.C. Boyle historic district) that also contributes to the larger KHP historic district. The Proposed Action involves removal of J.C. Boyle's contributing resources including the dam, powerhouse, and water conveyance system, which are the district's primary components. J.C. Boyle Reservoir, the reservoir impounded by the

dam, will also be dewatered. Proposed Action activities would substantially compromise J.C. Boyle's integrity of design, setting, materials, workmanship, feeling, and association, causing a direct adverse effect to the historic district and its contributing resources.

The Proposed Action would result in an **adverse effect** to J.C. Boyle historic district, a discrete historic district that also contributes to the larger KHP historic district.

### 6.1.6 Fall Creek Hatchery (Siskiyou County, California)

The Fall Creek hatchery was evaluated as a component of the Iron Gate historic district, not as a separate historic district. Based on its location in the KHP boundaries and its association with the construction of Copco No. 1 dam, Fall Creek hatchery had a significant role in California's early twentieth century fish management practices. As part of the Proposed Action, Fall Creek hatchery will be renovated with construction of new structures such as fish holding tanks. A survey and investigation of Fall Creek hatchery revealed that this potential historic district lacks integrity and, therefore, is not eligible for the NRHP as a discrete historic district or as a contributor to the KHP historic district.

The Proposed Action would result in **no historic properties affected** for the Fall Creek Hatchery.

## 6.2 Historic Transportation Properties

The Proposed Action would result in **no historic properties affected** for the transportation resources that are located outside of the hydroelectric development historic districts as none were recommended as eligible for the NRHP.

## 6.3 Historic Private Properties

The historic-period private properties located within the APE may be affected by visual changes to the existing setting caused by the removal of the hydroelectric facilities as well as the dewatering of the reservoirs. While removing the physical and visual characteristics related to the hydroelectric developments that have existed along the Klamath River since the early twentieth century, the removals would somewhat return the area to its pre-development landscape appearance and thus serve as a beneficial effect to historic properties located within the APE that predate the hydroelectric developments.

The Copco Lake recreational residences were evaluated as a potential historic district based on its location in the KHP boundaries, association with the construction of Copco No. 1 dam, and significant role in the development of recreational properties in the region during the mid-twentieth century. A survey and investigation of the Copco Lake recreational residences revealed that this potential historic district consists of more non-contributing resources than contributing resources and therefore, is not eligible for the NRHP as a discrete historic district or as a contributor to the KHP historic district. The Proposed Action would result in **no historic properties affected** for the Copco Lake recreational residences.

In addition, an architectural survey was performed on private properties located in the Hornbrook area and Klamath River Community that have the potential to be affected by adjustments to the floodplain from sediment transport downriver of the Iron Gate Dam. All 41 of the buildings identified in these areas were either not eligible for the NRHP, not yet 45 years old, or would not be affected by the Proposed Action because they are located beyond the projected post-project 100-year floodplain, thus a **no historic properties affected** finding is appropriate for these private properties.

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## **Chapter 7: Management and Treatment Measures**

## 7. MANAGEMENT AND TREATMENT MEASURES

The Proposed Action will result in adverse effects to J.C. Boyle Complex, Copco No. 1 Complex, Copco No. 2 Complex, Iron Gate Complex which are contributors to the KHP historic district that lie within the APE. To resolve these adverse effects, the Renewal Corporation will continue to consult with the FERC, BLM, USFS, Oregon and California SHPOs, tribes, and other consulting parties. This section includes measures for mitigating the adverse effects by the Proposed Action for the purposes of Section 106 of the NHPA. It should be noted that the Renewal Corporation's final management and treatment obligations for the Proposed Action will be governed by the measures contained in the PA and HPMP. No management and treatment measures are proposed for contributors to the KHP that lie outside of the APE and/or that are a part of FERC Project No. 2082.

### 7.1 Treatment Measures: Hydroelectric Resources

#### 7.1.1 National Park Service Documentation

The NPS program known as Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscapes Survey (HABS/HAER/HALS) traces its origins to the act of Congress commonly known as the Historic Sites Act of 1935, now codified at 54 U.S.C. §§ 320101-320106, which, among things, directs the Secretary of the Interior to "secure, collate, and preserve drawings, plans, photographs, and other data of historic and archeologic sites, buildings, and objects" (54 U.S.C. § 320102[b]). Congress subsequently granted the Secretary of the Interior additional authorities and responsibilities with respect to documenting historic properties, notably in the NHPA. More particularly, the NHPA directs the Secretary to promulgate regulations "establishing a uniform process and standards for documenting historic properties by public agencies and private parties for purposes of incorporation into, or complementing, the national historical architectural and engineering records within the Library of Congress" (54 U.S.C. § 302107). The NHPA defines "historic property" broadly to mean "any prehistoric or historic district, site, building, structure, or object included on, or eligible for inclusion on, the National Register [of Historic Places]." 54 U.S.C. § 300308. The collection of national historical architectural and engineering records in the Library of Congress is now known informally as the HABS/HAER/HALS collection (NPS 2016).

According to the NPS, the Library of Congress represents the gold standard in caring for, and providing access to, our important documents, fulfilling the intent of the Historic Sites Act of 1935 and the NHPA. This is why Congress stipulated the "Architecture and Engineering Collection at the Library of Congress" as the final repository for mitigation documentation. Because the collection was designed to be "a complete résumé of the builders' art," as expressed by NPS landscape architect Charles Peterson in 1933, it is the appropriate repository for mitigation documentation of NRHP-listed or eligible sites of state and local, as well as national, significance (NPS 2016).

Based on the NPS guidance, the Renewal Corporation includes HABS/HAER/HALS documentation as a critical treatment for mitigating the Proposed Action's adverse effects on the five NRHP-eligible hydroelectric historic districts. The Renewal Corporation will ensure that these historic districts, the districts' contributing resources, and individually eligible resources within the districts are recorded following the HABS/HAER/HALS standards consistent with 54 U.S.C. §§ 302107 and 306103 and in consultation with the NPS. HABS/HAER/HALS documentation generally involves production of a historic narrative report, resource drawings, and large format photographs.

### **Procedures for HABS/HAER/HALS Recordation**

Prior to the commencement of decommissioning, the Renewal Corporation will contact the regional HABS/HAER/HALS coordinator at the National Park Service Interior Regions 8,9,10, and 12 Regional Office (NPS) to request that NPS stipulate the level and procedures for completing the documentation. Within 10 days of receiving the NPS stipulation letter, the Renewal Corporation shall send a copy of the letter to all consulting parties for their information.

The Renewal Corporation will ensure that all recordation documentation activities are performed or directly supervised by architects, historians, photographers, and/or other professionals meeting the qualification standards in the Secretary of the Interior's Professional Qualification Standards (36 CFR 61, Appendix A).

Upon receipt of the NPS written acceptance letter that accepts the documentation for submittal to the Library of Congress, the Renewal Corporation will make any archival, digital and bound library-quality copies of the documentation and provide them to FERC, Tribes, California and Oregon SHPOs, Oregon Institute of Technology, PacifiCorp, Southern Oregon University, Oregon State University, Southern Oregon Historical Society, University of Oregon (Special Collections), Klamath County Historical Society, Siskiyou County Historical Society, City of Yreka, Siskiyou County Library, Klamath County Library, Northeast Information Center (California State University Chico), College of the Redwoods, and University of California Berkeley.

The Renewal Corporation will notify FERC, as well as the California and Oregon SHPO that the documentation is complete and all copies distributed as outlined above. The Renewal Corporation also will include the completion of the documentation in the Annual Report (as specified in the Programmatic Agreement). All documentation shall be completed prior to the commencement of the decommissioning.

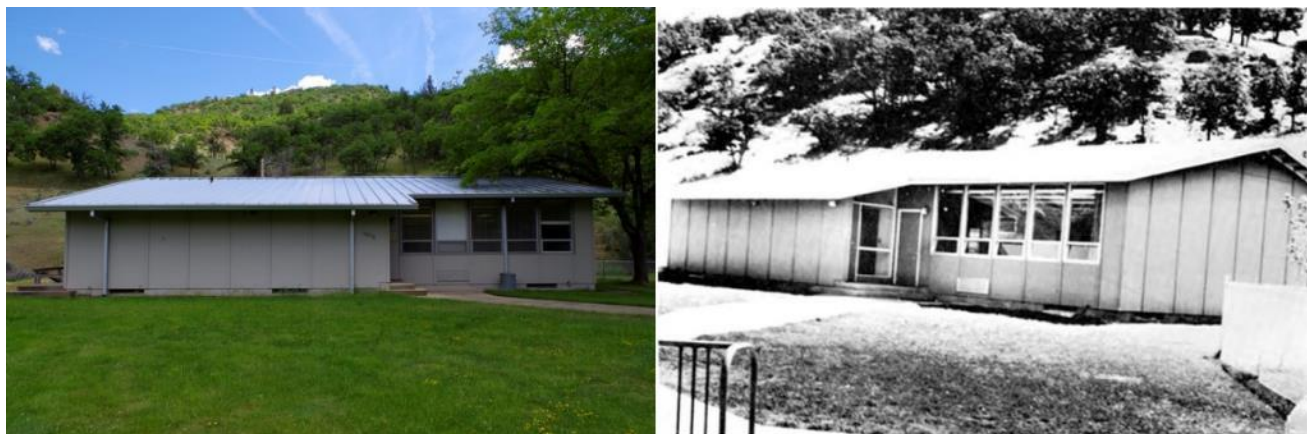
### **7.1.2 Adaptive ReUse Plan**

In addition to the HABS/HAER documentation described above, the Renewal Corporation will develop, in coordination with consulting parties, a study of the potential adaptive reuse of the Copco No. 2 powerhouse (historic; Figure 7-1), Fall Creek School (historic; Figure 7-2), Red barn (non-historic; J.C. Boyle Development), Truck Shop (non-historic; J.C. Boyle Development) and 12 operator residences (historic and non-historic; Figure 7-3) within the KHP. The operator residences include two non-historic ranch houses at J.C. Boyle (Oregon), a historic ranch bunkhouse at Copco No. 2 (California), four historic ranch houses at Copco No. 2, three non-historic modular residences at Copco No. 2, and two historic ranch houses at Iron Gate (California).

The potential retention of these historic properties would be subject to consultation with the State of Oregon or the State of California as the successor landowner consistent with the requirements of Exhibit I of the *Amended Application for Surrender of License for Major Project and Removal of Project Works* (Amended December 15, 2021). If not removed, these structures will be transferred to the State of Oregon or State of California (as applicable) for active usage and maintenance. The adaptive reuse plan would guide this active usage and maintenance. The plan's component will include the following sections: Introduction (Plan Purpose and Process; Historic Context; Local/State/Federal Preservation Standards and Guidelines; Land Use; Transportation; Economic Development; Organizational Structures for Facility Management; Capital and Non-capital Planning and Funding Strategies; and Schedule for Decisions and Action. This plan would not guarantee a particular outcome for the remaining buildings but provide a general framework and guidance for making informed decisions concerning the long-term use and preservation of these buildings to accommodate future uses. This guidance would include provisions for considering how the Secretary of the Interior's Standards and Guidelines for the Treatment of Historic Properties may be integrated into future planning.



**Figure 7-1** Copco No. 2 powerhouse, shown in 2018 (left) and 1924 (right)



**Figure 7-2** Fall Creek School, 2018 (left) and circa 1965 (right)



**Figure 7-3 From top left and clockwise: modern bunkhouse (Copco No. 2), ranch house no. 4 (Copco No. 2), operator residence no. 1 (Iron Gate), and operator residence no. 1 (J.C. Boyle)**

### 7.1.3 Interpretation

The Renewal Corporation will develop an interpretative plan featuring the KHP and the interconnected history of hydroelectric energy and fish management in the region. The interpretative plan will address methods, scope, and content of historical interpretation opportunities, plan implementation, and a proposed schedule. The historic resources interpretative plan will be developed in consultation with the SHPOs, tribes, local communities, regional historical societies and museums, preservation organizations, and other interested parties.

As part of the interpretive plan, the Renewal Corporation will evaluate Iron Gate hatchery as a potential site for interpretive materials. The hatchery already hosts a small visitor center next to the Klamath River, a picnic area, and parking facilities. The evaluation of Iron Gate Hatchery as a site for interpretive materials will incorporate the Parcel B transfer process and also be conducted in consultation with the CDFW. The Renewal Corporation will also evaluate the Klamath County Museum, Oregon Institute of Technology, Siskiyou County Historical Society, and other potential repositories for interpretive materials.

## **7.2 Treatment Measures: Transportation Resources**

Due to the lack of NRHP-eligible transportation resources located outside of the hydroelectric development historic districts, no mitigation is required.

## **7.3 Treatment Measures: Private Property Resources**

Due to the lack of NRHP-eligible resources identified at Copco Lake and the downriver private property areas, no mitigation is required.

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## **Chapter 8: References**

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A decorative banner with a wavy, undulating shape. It consists of two layers: a top layer of light blue and a bottom layer of a darker blue. The text is centered within the darker blue layer.

## **Chapter 9: List of Preparers**

## 9. LIST OF PREPARERS

Name	Education	Qualifications
Russell Bevill	B.A. Anthropology	30 years of experience in archaeology and cultural resources management.
Shoshana Jones, JD, MA	J.D. Law M.A. History	8 years of experience in architectural history and historic resource management.
Michael S. Kelly, MA, RPA	M.A. Anthropology B.A. Anthropology	40 years of experience in archaeology and cultural resources management.
Sarah McDaniel, MA, RPA	M.A. Anthropology B.A. International Studies	20 years of experience in archaeology and cultural resources management.
Elena Nilsson, MA	M.A., Anthropology B.A., English	41 years of experience in archaeology and cultural resources management.
Kirk Ranzetta, PhD	PhD. Urban Affairs and Public Policy M.A. Urban Affairs and Public Policy B.A. Historic Preservation	27 years of experience in architectural history and historic resource management
Patience Stuart, MS	M.S. Historic Preservation B.A. Cultural Anthropology	12 years of experience in architectural history and historic resource management
Timothy Wood, MS	M.S. Historic Preservation B.A. History	3 years of experience in architectural history and historic resource management

## **APPENDIX A      CALIFORNIA DEPT. OF PARKS & RECREATION (DPR) FORMS**

Klamath Hydroelectric Project Historic District

Copco No. 1 Historic District

Copco No. 2 Historic District

Iron Gate Historic District

Fall Creek Hatchery Historic District

Copco Lake Recreational Residences Historic District

Private Properties located west of Iron Gate Dam

## PRIMARY RECORD

Primary #47-004015

HRI #

Trinomial

NRHP Status Code 3S

Other Listings  
Review Code

Reviewer

Date

Page 1 of 5

Resource Name or #: Klamath Hydroelectric Project Historic District

P1. Other Identifier: Klamath Hydroelectric Project Historic District

\*P2. Location: ☒ Unrestricted

\*a. County: Siskiyou, Calif; Klamath, Ore.

\*b. USGS 7.5' Quad ([See Continuation Sheet](#))

c. Address \_\_\_\_\_ City \_\_\_\_\_ Zip \_\_\_\_\_

d. UTM: ([See Continuation Sheet](#))

e. Other Locational Data: N/A

\*P3a. Description:

The Klamath Hydroelectric Project (KHP) is a previously documented historic district that consists of seven hydroelectric developments along the Klamath River in southern Oregon and northern California, built by the California Oregon Power Company (Copco) and its successor Pacific Power and Light Company (Pacific Power). The seven developments are Copco No. 1, Copco No. 2, Iron Gate, Fall Creek [in California] and J.C. Boyle, Link River, and Keno [in Oregon]. (See **D6. Significance** on [District Record](#) for information regarding previous recordation and evaluation and see attached Oregon Inventory of Historic Properties Section 106 Documentation Form and State of California Department of Parks and Recreation [DPR] 523 form).

This Primary Record and District Record provides an overall description of the hydroelectric resources at the four hydroelectric developments that are proposed for removal within the KHP Historic District (Copco No. 1, Copco No. 2, Iron Gate, and J.C. Boyle), a historic context of the development of the KHP, and an updated National Register of Historic Places (NRHP) evaluation. Following the District Record are the Primary, Building Structure and Object (BSO) Records, and Continuation Sheets for the Copco No. 1, Copco No. 2, and Iron Gate hydroelectric developments. The J.C. Boyle Historic District is documented in the Oregon Historic Sites Database (see attached Oregon Inventory of Historic Properties Section 106 Documentation Form.). ([See District Record.](#))

The KHP consists of dams, water conveyance systems, powerhouses, administrative and support facilities and, in certain locations, fisheries management structures situated along remote sections of the Klamath River and its tributaries in Klamath County, Oregon, and Siskiyou County, California. The KHP boundary begins at the Link River Dam in Klamath Falls, Oregon, and extends in a southwest direction following the Klamath River (see Location Map & Sketch Map). (See D3. Detailed Description on [District Record](#))

\*P3b. Resource Attributes: AH2, AH3, AH6, AH8, AH15, AH16, HP2, HP3, HP4, HP6, HP8, HP9, HP11, HP15, HP20, HP21, HP22, HP39, P21

\*P4. Resources Present: ☒ District ☒ Buildings ☒ Structures

P5a. Photograph:



P5b. Description of Photo: Copco No. 1 powerhouse and dam, facing west (June 11, 2018).

\*P6. Date Constructed/Age and Source: ☒ Historic, 1903-1962 (Boyle 1976)

**\*P7. Owner and Address:**

PacifiCorp  
825 NE Multnomah, Suite 1500  
Portland, OR 97232

\*P8. Recorded by:  
Shoshana Jones, AECOM  
111 SW Columbia Street, Suite 1500  
Portland, OR 97201

\*P9. Date Recorded: June 11, 2018

\*P10. Survey Type: Intensive Level

\*P11. Report Citation: Klamath River  
Renewal Corporation. 2020. Lower  
Klamath Project Built Environment  
Technical Report.

\*Attachments: ☒ Location Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☒ District Record

Page 2 of 5

Resource Name or #: Klamath Hydroelectric Project Historic District

\*P2b. Location/Township, Range, and Section (continued):

COPCO NO. 1

USGS 7.5' Quad Copco, CA Date 2018; Mount Diablo B.M.

Resource	Township	Range	Section
Dam	48N	4W	SE 1/4 of SW 1/4 of Sec. 29
Penstocks	48N	4W	SE 1/4 of SW 1/4 of Sec. 29
Powerhouse	48N	4W	SE 1/4 of SW 1/4 of Sec. 29
Warehouse 1112 (garage/warehouse)	48N	4W	SE 1/4 of SW 1/4 of Sec. 29
Guesthouse Remains	48N	4W	SE 1/4 of SW 1/4 of Sec. 29
Bungalow 1107 (bungalow no. 1)	48N	4W	SE 1/4 of SW 1/4 of Sec. 29
Bungalow 1108 (bungalow no. 2)	48N	4W	NE 1/4 of SW 1/4 of Sec. 29

COPCO NO. 2

USGS 7.5' Quad Copco, CA Date 2018; Mount Diablo B.M.

Resource	Township	Range	Section
Dam	48N	4W	SW 1/4 of SW 1/4 of Sec. 29
Concrete-Lined Tunnel (Water Conveyance System)	48N	4W	SE 1/4 of SE 1/4 of Sec. 30
Wood Stave Pipe (Water Conveyance System)	48N	4W	SW 1/4 of SE 1/4 of Sec. 30
Concrete Tunnel (Water Conveyance System)	48N	4W	NW 1/4 of NW 1/4 of Sec. 31
Penstock (Water Conveyance System)	48N	4W	NE 1/4 of NW 1/4 of Sec. 31
Powerhouse	48N	4W	NE 1/4 of NW 1/4 of Sec. 31
Radio Station	48N	4W	NW 1/4 of NE 1/4 of Sec. 31
Former Cookhouse/Bunkhouse	48N	4W	L2 of Sec. 31
Bungalow 1121	48N	4W	L2 of Sec. 31
Fall Creek School	48N	4W	L2 of Sec. 31
Modern Bunkhouse	48N	4W	L2 of Sec. 31
Ranch House No. 1	48N	4W	L1 of Sec. 31
Ranch House No. 2	48N	4W	L1 of Sec. 31
Ranch House No. 3	48N	4W	L2 of Sec. 31
Ranch House No. 4	48N	4W	L2 of Sec. 31
Daggett Road Bridge	48N	5W	NE 1/4 of NE 1/4 of Sec. 36

Page 3 of 5

Resource Name or #: Klamath Hydroelectric Project Historic District

\*P2b. Location/Township, Range, and Section (continued):

IRON GATE

USGS 7.5' Quad Iron Gate Reservoir, CA Date 2018; Mount Diablo B.M.

Resource	Township	Range	Section
Dam	47N	5W	SW 1/4 of SW 1/4 of Sec. 9
Dam Fish Facilities	47N	5W	SW 1/4 of SW 1/4 of Sec. 9
Penstock (Water Conveyance System)	47N	5W	SW 1/4 of SW 1/4 of Sec. 9
Powerhouse	47N	5W	SW 1/4 of SW 1/4 of Sec. 9
Substation	47N	5W	SW 1/4 of SW 1/4 of Sec. 9
Communication Building (Support Facilities)	47N	5W	SW 1/4 of SW 1/4 of Sec. 9
Restroom Building (Support Facilities)	47N	5W	SW 1/4 of SW 1/4 of Sec. 9
Operator Residence No. 1	47N	5W	SW 1/4 of SW 1/4 of Sec. 9
Operator Residence No. 2	47N	5W	SW 1/4 of SW 1/4 of Sec. 9
Hatchery Building (Hatchery Fish Facilities)	47N	5W	NE 1/4 of NE 1/4 of Sec. 17
Raceways (Hatchery Fish Facilities)	47N	5W	NE 1/4 of NE 1/4 of Sec. 17
Settling Ponds (Hatchery Fish Facilities)	47N	5W	NE 1/4 of NE 1/4 of Sec. 17
Fish Feed Silos (Hatchery Fish Facilities)	47N	5W	NE 1/4 of NE 1/4 of Sec. 17
Office (Hatchery Administration and Auxiliary Facilities)	47N	5W	NE 1/4 of NE 1/4 of Sec. 17
Shop (Hatchery Administration and Auxiliary Facilities)	47N	5W	NE 1/4 of NE 1/4 of Sec. 17
Gas Shed (Hatchery Administration and Auxiliary Facilities)	47N	5W	NE 1/4 of NE 1/4 of Sec. 17
Hatchery Residence No. 1	47N	5W	NE 1/4 of NE 1/4 of Sec. 17
Hatchery Residence No. 2	47N	5W	NE 1/4 of NE 1/4 of Sec. 17
Hatchery Residence No. 3	47N	5W	NE 1/4 of NE 1/4 of Sec. 17
Hatchery Residence No. 4	47N	5W	NE 1/4 of NE 1/4 of Sec. 17
Lakeview Road Bridge	47N	5W	NE 1/4 of NE 1/4 of Sec. 17

J.C. BOYLE

USGS 7.5' Quad Chicken Hills, OR-CA Date 2012; Willamette B.M.

Resource	Township	Range	Section
Dam	40S	7E	NE 1/4 of NW 1/4 of Sec. 6
Concrete Flume	40S	6E	NE 1/4 of NW 1/4 of Sec. 6
Forebay	40S	6E	SE 1/4 of SW 1/4 of Sec. 12
Powerhouse	40S	6E	L9 of Sec. 13
Substation	40S	6E	L6 of Sec. 14
Powerhouse Residence Site	40S	6E	L6 of Sec. 14
Armco Warehouse	40S	6E	L9 of Sec. 13

\*P2d. Location/UTM (continued):

COPCO NO. 1

Resource	Zone	UTM
Dam	10 T	555121mE/4647704mN
Single Penstock (Water Conveyance System)	10 T	555056mE/4647689mN
Double Penstock (Water Conveyance System)	10 T	555075mE/4647686mN
Powerhouse	10 T	555063mE/4647650mN
Bungalow 1107 (Town of Copco)	10 T	554879mE/4647744mN
Bungalow 1108 (Town of Copco)	10 T	555008mE/4647959mN
Warehouse 1112 (Town of Copco)	10 T	554976mE/4647802mN
Guesthouse Remains (Town of Copco)	10 T	555097mE/4647801mN

COPCO NO. 2

Resource	Zone	UTM
Dam	10 T	554669mE/4647646mN
Concrete-Lined Tunnel (Water Conveyance System)	10 T	553980mE/4647514mN
Wood Stave Pipe (Water Conveyance System)	10 T	553590mE/4647478mN
Concrete Tunnel (Water Conveyance System)	10 T	553289mE/4647326mN
Penstock	10 T	553198mE/4647279mN
Powerhouse	10 T	553185mE/4647280mN
Radio Station	10 T	553579mE/4647210mN
Former Cookhouse/Bunkhouse	10 T	553098mE/4646913mN
Bungalow 1121	10 T	552990mE/4646958mN
Fall Creek School	10 T	552860mE/4646776mN
Modern Bunkhouse	10 T	553099mE/4646943mN
Ranch House No. 1	10 T	553080mE/4647018mN
Ranch House No. 2	10 T	553051mE/4647017mN
Ranch House No. 3	10 T	552964mE/4646936mN
Ranch House No. 4	10 T	552948mE/4646913mN
Daggett Road Bridge	10 T	552669mE/4646955mN

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Resource Name or #: Klamath Hydroelectric Project Historic District

\*P2d Location/UTM (continued):

IRON GATE

Resource	Zone	UTM
Dam	10 T	546707mE/4642665mN
Dam Fish Facilities	10 T	546688mE/4642547mN
Penstock (Water Conveyance System)	10 T	546778mE/4642568mN
Powerhouse	10 T	546694mE/4642489mN
Substation	10 T	546704mE/4642495mN
Communication Building (Support Facilities)	10 T	546702mE/4642509mN
Restroom Building (Support Facilities)	10 T	546688mE/4642429mN
Operator Residence No. 1	10 T	546455mE/4642431mN
Operator Residence No. 2	10 T	546417mE/4642422mN
Hatchery Building (Hatchery Fish Facilities)	10 T	546255mE/4642149mN
Raceways (Hatchery Fish Facilities)	10 T	546266mE/4642094mN
Settling Ponds (Hatchery Fish Facilities)	10 T	546220mE/4642014mN
Fish Feed Silos (Hatchery Fish Facilities)	10 T	546292mE/4642187mN
Office (Hatchery Administration and Auxiliary Facilities)	10 T	546288mE/4642144mN
Shop (Hatchery Administration and Auxiliary Facilities)	10 T	546267mE/4642170mN
Gas Shed (Hatchery Administration and Auxiliary Facilities)	10 T	546284mE/4642155mN
Hatchery Residence No. 1	10 T	546324mE/4642110mN
Hatchery Residence No. 2	10 T	546338mE/4642087mN
Hatchery Residence No. 3	10 T	546351mE/4642068mN
Hatchery Residence No. 4	10 T	546343mE/4642046mN
Lakeview Road Bridge	10 T	546306mE/4642288mN

J.C. BOYLE

Resource	Zone	UTM
Dam	10 T	578683mE/4663824mN
Intake	10 T	578649mE/4663772mN
Steel Pipeline	10 T	578649mE/4663772mN to 578525mE/4663630mN
Intake Flume Headgate	10 T	578525mE/4663630mN
Concrete Flume	10 T	578525mE/4663630mN to 576990mE/4660833mN
Forebay	10 T	576990mE/4660833mN
Tunnel	10 T	576990mE/4660833mN to 576857mE/4660638mN
Surge Tank	10 T	576857mE/4660638mN
Penstock	10 T	576857mE/4660638mN to 576845mE/4660622mN
Powerhouse	10 T	576845mE/4660622mN

## DISTRICT RECORD

Page 1 of 18

Resource Name or #: Klamath Hydroelectric Project

\*Resource Name or #: Klamath Hydroelectric Project

D1. Historic Name: N/A

D2. Common Name: Klamath Hydroelectric Project

D3. Detailed Description:

Before crossing into California, the river flows by the J.C. Boyle hydroelectric development west of the Keno Dam at Keno, Oregon. Within the State of California, the river flows by the next development, Copco No. 1. Nearby, along Fall Creek, is the Fall Creek hydroelectric development. The Klamath River continues past the Copco No. 2 and Iron Gate hydroelectric developments. Iron Gate is the western boundary of the KHP. The geographic boundary for the KHP Historic District coincides with the KHP boundary as defined by the Federal Energy Regulatory Commission (FERC) License No. 2082.

Each hydroelectric development consists primarily of interconnected components that function collectively to generate electricity: (1) a dam that impounds a reservoir; (2) a water conveyance system that conveys water impounded in the reservoir through the dam and into a powerhouse; and (3) a powerhouse that houses the massive machinery that generates the electrical power. The four developments also contain administrative and operations facilities and worker residences. In addition, J.C. Boyle and Iron Gate implement fisheries management facilities designed to mitigate the impacts of hydroelectric developments on Klamath River fish habitats. The fish ladder at J.C. Boyle dam was designed to enable fish passage over the dam. Fisheries facilities, including a hatchery at Iron Gate's dam are operated by the California Department of Fish and Wildlife.

D4. Boundary Description: The district boundary is the Federal Energy Regulatory Commission (FERC) boundary for the Klamath Hydroelectric Project (see Location Map and Sketch Map).

D5. Boundary Justification: The boundary is consistent with the FERC boundary for the Klamath Hydroelectric Project.

D6. Significance:

Theme: Hydroelectric development and fisheries management

Area: Southern Oregon and Northern California

Period of Significance: 1903 – 1970

Applicable Criteria: National Register of Historic Places (NRHP) Criterion A and Criterion C

See Continuation Sheets for historic context and NRHP re-evaluation.

D7. References: See Continuation Sheets.

D8. Evaluator: Shoshana Jones, AECOM

Date: June 11, 2018

**Affiliation and Address:** AECOM, 111 SW Columbia Street, Suite 1500, Portland, Oregon 97201

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Resource Name or #: Klamath Hydroelectric Project

D3. Detailed Description (Continued):

The KHP is characterized by its seven hydroelectric developments and by the Upper Klamath basin, a predominantly remote landscape consisting of the winding Klamath River, narrow river canyons, large manmade reservoirs, prominent basalt rock formations, and pine and fir forests. Located in south-central Oregon and northwestern California, the Klamath River Basin is a large north-south oriented watershed that drains nearly 16,000 square miles, with approximately 35 percent of the drainage in Oregon and 65 percent in California (NRCS 2018). The Klamath River headwaters begin in Upper Klamath Lake, Oregon's largest natural freshwater lake, and flows for approximately 250 miles until it reaches the Pacific Ocean at Requa, California. The Klamath River Basin geography, topography, hydrology, and biology are distinct from other watersheds in the Pacific Northwest because water in the Klamath River originates in relatively flat, open valleys before crossing the Trinity and Coast Ranges in a steep river canyon and intercepting cold water inputs from the Scott, Salmon, and Trinity Rivers (USBR and CDFG 2012). The river is one of only three waterways that pass through the Cascade Mountains to the Pacific Ocean. The river basin is generally rural, with a total population of approximately 120,000. Its largest communities are Klamath Falls, Oregon and Yreka, California.

The Klamath River Basin is divided into Upper and Lower Klamath basins, with Iron Gate Dam serving as the dividing feature (NRCS 2018). The Upper Klamath Basin includes the headwaters, Sprague River, Williamson River, Upper Klamath Lake, Lost River, Upper Klamath East, and Butte Creek Sub-basins that flow through Jackson, Lake, and Klamath Counties in Oregon, and Siskiyou and Modoc Counties in California. Five main lakes are in the Upper Klamath Basin: Crater Lake, Upper Klamath Lake, Lower Klamath Lake, Clear Lake, and Tule Lake. Additionally, numerous creeks empty into the Klamath River, notably Spencer Creek (near J.C. Boyle), Fall Creek (near Copco No. 2), and Bogus Creek (near Iron Gate). The Lower Klamath Basin includes 200 miles of river corridor downstream from Iron Gate Dam to the Pacific Ocean.

The KHP and the United States Bureau of Reclamation's (USBR's) Klamath Project currently manage water flow in the Klamath River Basin via several diversions in the Upper Klamath Basin. Along its 250-mile course, water flows from Upper Klamath Lake through Link River Dam into the Link River and then through the Keno Impoundment/Lake Ewauna (controlled by Keno Dam) and the KHP reach (from J.C. Boyle Dam to Copco No. 1 and No. 2 dams, to Iron Gate Dam), before reaching the Pacific Ocean.

**D6. Significance (continued):**

As a part of its FERC relicensing application in 2003, PacifiCorp, the current owners and operators of the Klamath Hydroelectric Project,<sup>1</sup> recognized the KHP as an NRHP-eligible historic district for its significant association with the industrial and economic development of Southern Oregon and Northern California (Kramer 2003a, 2003b). To support this recognition, PacifiCorp completed a historic context statement for the KHP that provided background information as a prelude to conducting a review of potential historic significance under NHPA Section 106 and as well as a Request for Determination of Eligibility report for the KHP (Kramer 2003a; Kramer 2003b). PacifiCorp offered recommendations as to whether these "complexes" and their resources were eligible for the NRHP and defined the period of historic significance for the KHP as 1903–1958 and hired CH2M Hill in September 2003 to complete California and Oregon survey inventory forms that documented the overall KHP District and the seven hydroelectric developments using the numbering the numbering convention and evaluation established in the Request for Determination of Eligibility (Durio 2003a; Durio 2003b) (see attached Oregon Inventory of Historic Properties Section 106 Documentation Form and State of California Department of Parks and Recreation [DPR] 523 form). On March 16, 2004, the Oregon SHPO agreed with PacifiCorp's determinations of eligibility within the State of Oregon for resources that would be affected by the proposed FERC relicensing (OR SHPO 2004). The SHPO concurrence, therefore, solely included the Link River Complex, Keno Dam Complex, and the J.C. Boyle Complex. The CA SHPO never provided comments on the eligibility of resources in California, but the KHP historic district, as well as the four historic districts within its boundaries in California and their contributing resources, are presently identified by the KHP's DPR primary number (47-004015), which was assigned by the California SHPO in 2003. In addition, the California SHPO has assigned individual primary numbers to the Copco No. 1 Powerhouse (47-002267), Copco No. 1 guest house remains (CA-SIS-2824), and Copco No. 2 Powerhouse (47-002266).

With respect to the current Project the Copco No. 1, Copco No. 2, and J.C. Boyle complexes, along with most of their primary components, were identified as contributing to the eligible KHP historic district. In contrast, Iron Gate Complex and its constituent resources (1962) and the Iron Gate fish hatchery (1966) were recommended as non-historic and non-contributing. The Oregon SHPO concurred with the eligibility determinations related to J.C. Boyle complex (OR SHPO 2004). The California SHPO did not provide concurrence for the eligibility determinations related to Copco No. 1, Copco No. 2, and the Iron Gate complexes, or for the Fall Creek hatchery, which was included in the evaluations of Fall Creek hydroelectric development. As part of a separate project to alter the crest of the Iron Gate Dam in 2003, PacifiCorp determined that the Iron Gate Complex was not eligible for the NRHP as it had yet to attain 50 years of age and was not of exceptional importance. The California SHPO agreed with that determination on May 28, 2003 (CA SHPO 2003).

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<sup>1</sup> The Link River Dam is owned by the USBR and is not included in the Klamath project license. However, Kramer identifies the dam as part of the Klamath hydroelectric system (Kramer 2003a:36).

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Resource Name or #: Klamath Hydroelectric Project

**D6. Significance (continued):**

Period of Significance

The previously proposed period of significance ends in 1958. Kramer reasoned that, based on the National Park Service's "50-year rule" for historic-era properties, the 2006 FERC license renewal for the Klamath Hydroelectric Project would typically invoke 1956 as the period's closing date. The 1956 date would encompass "all the main generation resources built prior to World War II [Copco No. 1 and Copco No. 2] and defin[e] both the J.C. Boyle and Iron Gate developments, dated from 1958 and 1962, respectively, as non-historic" (Kramer 2003a:57). Consequently, Kramer proposed extending the period of significance end date two years beyond the "50-year rule" to encompass construction of the J.C. Boyle hydroelectric development and reflect important post-war project development (Kramer 2003a:57-58). Although the 1958 end date included J.C. Boyle within the period of significance, it excluded the Iron Gate hydroelectric development, completed in 1962.

Now that 17 years have elapsed since the 2003 surveys, AECOM recommends extending the KHP's period of significance end date to 1970. This would encompass significant system evolution that occurred during the decade following Copco's 1961 acquisition by Pacific Power and Light Company. Significant projects of this period include the Iron Gate hydroelectric development (1962), which was part of the original Klamath hydroelectric project survey in the early twentieth century, and the Iron Gate fish hatchery (1966). The year 1970 also marks completion of the construction program that Pacific Power undertook after acquiring Copco to modernize its power transmission facilities and integrate them with the existing Copco system (1961-1970). This system evolution reflects how the long-term vision of the Klamath Hydroelectric Project's original engineers had finally come to fruition.

Additionally, PacifiCorp's 2003 studies were based on a survey of the hydroelectric development resources that had the potential to be affected by the FERC relicensing at that time and excluded non-hydroelectric resources, such as bridges and residences outside of the KHP development but within the current Project Area of Direct Impact (ADI). The study also omitted transmission lines originating within the hydroelectric developments and some of the associated power substations within the Project Area.

Klamath River Renewal Corporation (KRRRC) proposes to remove four hydroelectric developments: Copco No. 1, Copco No. 2, Iron Gate, and J.C. Boyle. Because more than five years has elapsed since these hydroelectric developments were recorded, this form updates the descriptions and photographs of the hydroelectric resources at the three California hydroelectric developments (Copco No. 1, Copco No. 2, and Iron Gate) and evaluates each as an individual historic district, reevaluates each as a contributor to the larger KHP Historic District, as well as reevaluate the NRHP eligibility evaluation of the Iron Gate hydroelectric development since it is now over 50-years of age and falls with AECOM's expanded period of significance for the KHP Historic District (1903-1970).

**Historic Context**

[This form incorporates by reference the Klamath Hydroelectric Project Historic Context Statement by George Kramer, which provides a detailed corporate history of the California Oregon Power Company (Copco) and the region's economic and industrial development (Kramer 2003b).]

*The Klamath Hydroelectric Project*

The KHP consists of seven hydroelectric generation developments and their associated resources along the Klamath River and its tributaries in Klamath County, Oregon and Siskiyou County, California: (1) J.C. Boyle (1958), (2) Copco No. 1 (1912-1918, 1922), (3) Copco No. 2 (1924-1925), (4) Iron Gate (1960-1962), (5) Keno (1966), and (6) Fall Creek (1903). [The Link River development (1921) is owned by the USBR and is not included in the Klamath project license. However, Kramer identified the dam as part of the Klamath hydroelectric system (Kramer 2003a:36)]. The KHP integrated groups of hydroelectric elements—dams, powerhouses, water conveyance systems—into a layered landscape of pre-contact occupation and historic land use. Sites of pre-contact occupation were associated with Native American customs and culture, subsistence and recreational fishing, as well as sites of early European-American industries such as ranching, mining, and logging. KHP construction geographically and temporally overlapped with these types of sites and activities, causing significant impacts to the land and its peoples.

Development of hydroelectric plants in the Klamath Basin began in 1891 in Shasta River Canyon to provide electricity to the City of Yreka. In 1895, another facility was constructed along the Link River to supply power to Klamath Falls, Oregon. The authorization of the USBR's Klamath Project in 1905 triggered additional hydrologic changes to the Klamath River and led to the construction of Link River Dam by California Oregon Power Company (now PacifiCorp) in 1921, as well as several hundred miles of irrigation ditches and canals that diverted water from the Klamath River and its wetlands to convert land for agricultural use (USBR and CDFG 2012:3.6-7). As the largest water management effort in the Upper Klamath Basin, the USBR's Klamath Project features a vast system of reservoirs, dams, canals, and pumps. Development and construction of these features occurred between 1905 and 1966, with most major facilities completed by the early 1940s (USBR and CDFG 2012:1-12).

The USBR originally designed the Klamath Project to irrigate agricultural lands in the Upper Klamath Basin. Upper Klamath Lake and storage impounded by Link River Dam became the principal water sources enabling the Klamath Project to deliver water upriver of the hydroelectric developments (Kramer 2003b:21). Hydroelectric development in the Klamath Basin began in 1891 to supply electricity to Yreka, California, the Siskiyou County seat. Four years later, the Klamath Falls Light and Water Company built the East Side Power Plant No. 1. The power plant was on the Link River's eastern bank, within the city limits of Klamath Falls,

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Resource Name or #: Klamath Hydroelectric Project

**D6. Significance (continued):**

Oregon. The plant supplied the city with its first electric power on November 1, 1895 (Boyle 1976:27). These ventures soon attracted competitors.

The California Oregon Power Company (Copco) formed in 1912 through the merger of the Siskiyou Electric Power and Light Company (SEP&L), Klamath Falls Light and Water Company, and Rogue River Electric Company. The newly created company acquired the assets of the predecessor companies, including the hydroelectric facilities at Fall Creek which SEP&L had operated since its completion in 1903 (Kramer 2003b:12). In 1920, eight years after Copco formed, the company acquired the Keno Power Company, which operated the Keno hydroelectric development, built in 1911 (Kramer 2003b:5).

Copco Through World War II (1912-1945)

Copco's first construction project was the Copco No. 1 hydroelectric development, previously surveyed by the SEP&L, and known initially as the Ward's Canyon Dam Project. As construction progressed on Copco No. 1, the company's existing facilities were powering major regional industries, including nearly all the large Northern California lumber mills and several large mining dredgers (*Sacramento Bee* 1917). Copco completed the first phase of Copco No. 1 in 1918, including the dam, water conveyance system, and powerhouse. In 1920, the company reorganized, becoming the California – Oregon Power Company (with hyphen), and moved its headquarters from San Francisco to Medford. In 1922, the company completed Copco No. 1 by raising the dam, expanding the powerhouse, and adding a new generating unit. Three years later, in 1925, the company completed the Copco No. 2 hydroelectric development, downstream from Copco No. 1.

Between 1926 and 1947, the company was owned and operated by Standard Gas and Electric Company. Ownership was acquired through purchase of Copco's outstanding common stock. In 1947, to comply with provisions of the Public Utility Act of 1935, Standard Gas and Electric sold its Copco interests to an investment banking group, which made a public offering of the acquired shares (*Mail Tribune* 1960). During the late 1920s and 1930s, after completion of Copco No. 1 and Copco No. 2, Copco continued investigating the regional power potential of the Klamath, Rogue, and Umpqua River basins (Boyle 1962). Throughout that period, Copco made progress on the Prospect hydroelectric project, located along the Rogue River in Jackson County, Oregon. Prospect's fourth and final powerhouse was completed in 1944 (Gauntt 2012).

The Post-World War II Era Through the Pacific Power Acquisition (1946-1960)

In the years following World War II, growth in population and expansion in industry spiked regional demand for electricity. In response, Copco completed its first post-war project, the North Umpqua project, between 1947 and 1957. Led by chief engineer John C. Boyle, Copco doubled the company's capacity by building eight interconnected plants along the North Umpqua River east of Roseburg, Oregon: Clearwater No. 1 and No. 2, Fish Creek, Lemolo No. 1 and No. 2, Slide Creek, Soda Springs, and Toketee (McCready 1950). Meanwhile, the number of Copco customers grew from about 40,000 to about 90,000 (*Mail Tribune* 1959). By 1950, well before completion of the project, Boyle and other Copco officials recognized that increased regional population and power demand would outpace power supply, requiring new projects for future Copco customers (McCready 1950).

Seeking to develop additional power facilities, Copco began to reassess the Klamath River's power generation potential, reigniting conflict over Klamath Basin irrigation and water rights, as well as fishing and recreational interests (Kramer 2003b:30-31). Despite strong regional opposition to additional Klamath River dams, Copco officials still regarded the Klamath as the best location for power development. In *50 Years on the Klamath*, Boyle wrote that, "Klamath Canyon was most attractive, being near the Copco load center where construction cost and transmission lines would be minimum [sic]" (Boyle 1976:53). During the 1950s, Copco advanced a 10-year, \$70 million power development plan in the Klamath Basin. In addition to Big Bend No. 1 and No. 2 hydroelectric developments, the plan included Iron Gate, completed by Pacific Power in 1962. The other planned facilities at Salt Caves, Aspen Lake, Keno, Big Bend No. 3, Warm Springs, and Round Lake were never built (Guernsey 1957; Wynne 1957). Big Bend No. 1 and No. 2 were the first of these proposed projects (Wynne 1958).

The Big Bend development (renamed in 1962 after John C. Boyle) was part of the original Klamath hydroelectric project survey in 1911; however, plans for constructing Big Bend were not completed until the 1950s, as power demands soared (Kramer 2003b:30-31). In 1958, when Big Bend began operations, Copco's residential customers had the highest average annual usage of any private utility nationwide. The service area contained about 50,000 square miles in 72 communities and adjacent rural areas in Klamath, Jackson, Josephine, Lake, and Douglas counties in Oregon, and in Siskiyou, Modoc, Del Norte, Trinity, and Shasta counties in California. At that time, the population was approaching 250,000 and the regional economy was still based on logging, farming, ranching, and mining; industries with a long local history (*Mail Tribune* 1959).

Pacific Power Expansion Phase (1961-1970)

Pacific Power's June 1961 acquisition of Copco led to significant changes in regional hydroelectric power generation and transmission. After the acquisition, Pacific Power initiated a \$500 million construction program spanning from 1961 to 1970. The program's goal was to integrate the two companies' systems, enhance power delivery to service areas, and accommodate workers involved in the expanded operations (Pacific Power 1961a:1).

**D6. Significance (continued):**

When Pacific Power acquired Copco, the two companies were supplying power to 415,000 customers. Pacific Power earned about 60 percent of its revenue in Oregon, and the rest in Washington, Idaho, Western Montana, and Wyoming. Copco earned about 80 percent of its revenue in Southern Oregon (71,000 customers), including Medford, Grants Pass, Roseburg, Klamath Falls, and Lakeview. Copco did the remaining 20 percent of its business in Northern California (21,000 customers), including Tulelake, Yreka, Weed, Dunsmuir, Alturas, and Crescent City (*San Mateo Times* 1960; *Bend Bulletin* 1960).

Pacific Power and Copco deemed consolidation necessary to generate sufficient funds for the expensive construction program. According to *The Bend Bulletin*, both companies spent a combined \$243 million on new construction between 1955 and 1960, and "estimated they will be required to do more than \$500 million between 1961 and 1970 to meet power needs" (*Bend Bulletin* 1960). Additionally, Pacific Power advised its shareholders in a pamphlet dated January 10, 1961 that the consolidated system with Copco would create an "enlarged operating and financial base" to enable future construction (Pacific Power 1961a:2). When Copco president A.S. Cummins and Pacific Power board chairman Paul B. McKee jointly announced the merger, they stated that "directors of the companies have reached the conclusion that it is in the best interest of all concerned to join together the two neighboring systems and integrate their power resources and development programs" (*Bend Bulletin* 1960).

As part of Pacific Power's 1961-1970 construction program, the company built new, or improved existing, power facilities such as transmission lines and substations, some at former Copco sites. Some work was related to construction of the Iron Gate Development, which was well under way by 1961 (Pacific Power 1961b:2). For instance, to power construction activities at Iron Gate, Pacific Power erected a temporary switchyard at the Copco No. 2 substation. Iron Gate received power transmitted from the Copco No. 2 powerhouse through the temporary switchyard and (transmission) Line No. 62.

By 1962 Pacific Power energized its largest substation, located in Albany, Oregon. The substation was part of a 230-kV circuit to "provide a larger capacity interconnection" between Pacific Power and the former Copco system. A new line in the 230-kV system between Medford, Roseburg, and Albany would "permit fully integrated operation of the hydroelectric generating plants located in the Copco Division with the Company's other power sources, particularly on the Lewis River [in Washington] and the middle reaches of the Columbia River" (Pacific Power 1962:3).

In 1962, Pacific Power also completed Iron Gate as the final hydroelectric development along the Klamath River. Iron Gate was constructed to regulate downstream flows. In addition to fish catching and spawning facilities at the dam site, an associated fish hatchery complex – Iron Gate fish hatchery – was completed in 1966 about a quarter-mile downstream. Fish eggs collected at the dam site are transported to the fish hatchery complex where they are hatched and then moved into a series of raceways. The fish remain in the raceways until they are ready for release into the river.

As Pacific Power's construction program proceeded, officials monitored the existing developments and continued planning for future improvements. Progress was interrupted by historic flooding along the Klamath River in December 1964 that caused severe damage to the Copco No. 1 and Iron Gate facilities which required Rebuilding the Copco No. 1 powerhouse and Iron Gate spillway channel. In September 1967, company officials, including the Copco division manager, met in Yreka, California to evaluate system operations, review 1967 construction progress, and plan projects for 1968. Construction work in 1967 was estimated at over \$500,000 and was implemented to build new power facilities and expand services (*Sacramento Bee* 1967). Projects in 1968 included \$50,000 worth of upgrades at Copco No. 2 substation, including three new 69-kV transformers and a new circuit breaker to increase the available power in anticipation of increased local growth and power demands at the Copco No. 2 development (*Sacramento Bee* 1968a). In 1970, Pacific Power budgeted around \$926,000 for planned expansions and improvements in the Yreka District. One of the primary projects was a 10-mile, \$297,000 transmission line between Ager and Copco No. 2. At Iron Gate, Pacific Power budgeted \$45,000 to improve recreation facilities such as construction of a public boat ramp below Iron Gate Dam and installation of electric and water service at Camp Creek (*Sacramento Bee* 1970). During the 1960s, Pacific Power also built new single- and multi-family housing and a school to accommodate workers and their families based at Copco No. 2 (*Sacramento Bee* 1968b).

The reservoirs created by the Copco No. 1, J.C. Boyle, and Iron Gate hydroelectric developments are used by the public for outdoor recreation, such as fishing, camping, birdwatching, and hiking. Campgrounds and boat docks are scattered along the reservoir shorelines.

John Christie Boyle (1887-1979)

Pacific Power renamed the Big Bend development after John C. Boyle in honor of his significant contributions to regional hydropower development. Boyle spent his 50-year career as an engineer, construction supervisor, and later as a company official at Copco and its successor company, Pacific Power. He designed most of the hydroelectric projects in the Southern Oregon/Northern California region and as noted by Kramer (2018), he was "principally responsible for Copco's ground-breaking multi-dam generation facilities on the Klamath and North Umpqua Rivers" (Boyle 1962).

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Resource Name or #: Klamath Hydroelectric Project

**D6. Significance (continued):**

Boyle was born in 1887 at Ft. Jones in Siskiyou County, California. He graduated with a degree in civil engineering from the University of California in 1910. That same year, he was hired by the Siskiyou Electric Power & Light Company (SEP&L), one of Copco's predecessor companies, as an assistant engineer. He began his tenure at SEP&L by surveying the Klamath River at Ward's Canyon which became the site of the Copco No. 1 hydroelectric development. In 1916, two years after construction began on Copco No. 1, Boyle became the site construction supervisor (Kramer 2003a:19; Oregonian 1917). Boyle also engineered the Link River Dam (1921) at Klamath Falls, Oregon which helped expand the region's agricultural economy.

Throughout the 1920s and 1930s, Boyle continued investigating the power potential of the Klamath, Rogue, and Umpqua river basins and in the 1940s and 1950s, he used the gathered data to plan future hydroelectric sites. By then, Boyle was not only Copco's chief engineer, but also vice-president and general manager. In 1945, he led Copco in expanding the company's generating capacity, primarily through the North Umpqua project. In 1951, Boyle was named Oregon's Engineer of the Year by Professional Engineers of Oregon for the design and development of the North Umpqua River projects' eight plants (Boyle 1962). During the 1950s and 1960s, he engineered and supervised construction of the Big Bend (Boyle) and Iron Gate hydroelectric developments. He retired as director of Pacific Power in 1963 but continued as a consultant (Oregon Civil Engineer 1975:1).

**Re-Evaluation: Eligible Historic District**

The 2003 Request for Determination of Eligibility report for the KHP and the corresponding California and Oregon survey inventory forms did not formally evaluate the KHP Historic District and its resources under all four NRHP criteria (Kramer 2003b; Durio 2003a; Durio 2003b). The evaluation in the California DPR and the Oregon Inventory of Historic Properties Section 106 Documentation stated:

The resources of the Klamath River Hydroelectric Project are strongly associated with the early development of electricity in the southern Oregon and northern California region, and they played a significant role in the area's economy both directly and indirectly, through the role that increased electrical capacity played in the expansion of the region's timber, agriculture, and recreation industries during the first six decades of the 20th century. They are significant under Criterion A, as defined by the National Park Service, for its association with events that have made a significant contribution to the broad patterns of our history. Specific portions of the project, such as COPCO #1, are also significant under Criterion C for design and engineering characteristics that exemplify the design of early hydroelectric generation facilities. The applicable areas of significance for the project are **Commerce**, for the development of electrical services, and **Industry**, for the economic impact on the area as a result of abundant hydropower capacity. Individual resources such as the Fall Creek Powerhouse and COPCO #1 may also be evaluated under the area of Engineering. For industrial resources such as those associated with the Klamath River Hydroelectric Project, the inherent nature of the project as a continuously operating generation facility complicates the evaluation of integrity. New technologies are often required to allow a powerhouse, water management feature, or other element to continue functioning in a highly structured, highly regulated environment. (Durio 2003a; Durio 2003b).

The current study includes an expanded historic context and a reevaluation that applies all four criteria of the NRHP below.

**NRHP Criterion A**

The KHP is locally (regionally) significant under NRHP Criterion A in the area of **Commerce** for its role in the development of electrical generation and transmission services in the Southern Oregon – Northern California region, and in the area of **Industry** for the important role that electrical generation and transmission played in industrial expansion in California and the region (Kramer 2003a). The KHP played a significant role in regional commerce for its critical role in meeting growing regional demands for electricity. The KHP also significantly contributed to the development of regional industry as a "regionally-significant, locally-owned and operated, private utility" and by supplying power that contributed to the early-twentieth-century growth of regional industries, such as timber, mining, agriculture, and recreation (Kramer 2003a:58).

The KHP is also locally (regionally) significance under NRHP Criterion A in the area of **Conservation** for its fisheries management activities during the early- and mid-twentieth century. The KHP's fisheries management efforts began in large part with construction of the Fall Creek hatchery (1919). About 40 years later, the KHP's final hydroelectric development, Iron Gate, was built by Pacific Power as a reregulating facility. Four years after completion of the Iron Gate Dam, Pacific Power built the Iron Gate fish hatchery. The hatchery operates in conjunction with the Iron Gate Dam and the dam's fish capture, spawning and holding facilities to advance regional fish management objectives (see Iron Gate historic district DPR forms for more detailed information).

**D6. Significance (continued):**

**NRHP Criterion B**

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Resource Name or #: Klamath Hydroelectric Project

Research has not indicated that the KHP is associated with any historically significant individuals under NRHP Criterion B. While the KHP is associated with master hydropower engineer John C. Boyle, Boyle's association with the KHP is more appropriately evaluated under NRHP Criterion C as the work of a master rather than under NRHP Criterion B, which is generally used to evaluate the eligibility of residences and workplaces of historically important persons (NPS 1997:16).

NRHP Criterion C

The KHP is significant under NRHP Criterion C in the area of **Engineering** for embodying the distinctive characteristics of twentieth century hydroelectric development that implemented technological advances in conception, design, and construction.

The KHP is also significant under NRHP Criterion C in the area of **Engineering** as representing the work of master hydropower engineer John C. Boyle. Boyle made highly important contributions to twentieth-century hydropower development in the Southern Oregon/Northern California region. Boyle began his association with the KHP as a young SEP&L engineer surveying Ward's Canyon for the Copco No. 1 dam. He became construction site supervisor for Copco No. 1, and also engineered the Link River dam to help expand the region's basic agricultural economy. During his tenure as an officer and engineer for Copco and, later, Pacific Power, Boyle designed the J.C. Boyle and Iron Gate hydroelectric developments. The J.C. Boyle hydroelectric development, originally named Big Bend, was re-dedicated in Boyle's honor shortly after Pacific Power acquired Copco. Boyle's involvement in design and construction of the entire KHP enabled him to write the 1976 book *50 Years on the Klamath*, which documented the KHP's history.

NRHP Criterion D

The KHP is not significant as a source (or likely source) of important information regarding history or prehistory. It does not appear likely to yield important information about historic construction materials or technologies and is not significant under NRHP Criterion D.

The contributing resources at each of the four hydroelectric developments are listed in **Table 1** below.

**Integrity Analysis**

In addition to meeting one or more of the NRHP criteria, a property must also retain a significant amount of its historic integrity to its period of significance to be considered eligible for listing. Integrity is the authenticity of an historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. The KHP retains overall integrity of location, design, setting, materials, workmanship, feeling, and association; and continues to convey its historic role in the Upper Klamath Basin's twentieth century hydroelectric development. According to the Klamath Hydroelectric Project Historic Context, "Minor alterations, particularly to support facilities or improvements to generation facilities that enable their continued function within the system do not seriously reduce the ability to convey original character or association with historic events and themes under [the] context" (Kramer 2003a:57).

**Location** is the place where the historic property was constructed or the place where the historic event took place.

The KHP retains integrity of location, because the primary components of its hydroelectric developments, such as dams, water conveyance systems, and powerhouses, remain in their original locations.

**Design** is the composition of elements that constitute the form, plan, space, structure, and style of a property.

The KHP retains integrity of design, generally conveying the original as-built construction of its primary components at their original locations and with their original functional interconnections. Certain alterations within the KHP, which have occurred over time, are historic in their own right. For instance, in 1922, the Copco No. 1 Dam was raised by 14 feet to substantially increase reservoir storage and output capacity. At that time, Copco installed the single penstock, built Gatehouse No. 2, enlarged the powerhouse, and added a second powerhouse generator unit. These design modifications and augmentations occurred during the period of significance, and only 4 years after the development's original completion. Alterations within discrete KHP hydroelectric development historic districts are detailed in their own DPR form sets. Many of the observed alterations are relatively minor and reflect modifications over time, but do not substantially diminish the KHP's overall integrity of design.

**Setting** is the physical environment of a historic property that illustrates the character of the place.

The KHP retains integrity of setting, which consists of a predominantly remote landscape characterized by the winding Klamath River, narrow river canyons, large manmade reservoirs, prominent basalt rock formations, and pine and fir forests within south-central Oregon and northwestern California.

**D6. Significance (continued):**

**Materials** are the physical elements combined in a particular pattern or configuration to form the historic property.

The KHP retains integrity of materials, particularly the massive concrete and earthen elements in the dams, the steel and concrete elements in the water conveyance systems, and the concrete construction of its powerhouses (except for the Copco No. 1 powerhouse).

**Workmanship** is the physical evidence of the crafts of a particular culture or people during any given period of history. The KHP

Page 8 of 18

Resource Name or #: Klamath Hydroelectric Project

retains integrity of workmanship; specifically, the engineering skill demonstrated by the excavation of the canyon walls for dam alignments and the large-scale construction of dams, water conveyance systems, and powerhouses with functional interconnections.

**Feeling** is the quality that a historic property has in evoking the aesthetic or historic sense of a past period of time.

The KHP engineering features—the dams, water conveyance systems, and powerhouses—as well as the remote setting and intensive use of natural and industrial construction materials, collectively convey the historic character of the region's historic twentieth-century hydroelectric development, and support integrity of feeling. A variety of historic-era buildings and structures that were designed for administration and operations are present throughout the KHP and further support the integrity of feeling.

**Association** is the direct link between a property and the event or person for which the property is significant.

The presence of the intact, historic hydroelectric resources and features within the KHP boundaries directly links the KHP with historic power development in the region, contributing to integrity of association.

**In conclusion, the KHP is an eligible historic district that is locally (regionally) significant under NRHP Criterion A in the areas of Conservation and Commerce and Industry, and locally (regionally) significant under Criterion C in the area of Engineering and retains integrity to convey its significance.**

**Table 1: Klamath Hydroelectric Project Contributing Resources**

Hydroelectric Development	Resource Name	Year Constructed
Copco No. 1	Dam	1918/1922
	Water Conveyance System	1918/1922
	Powerhouse	1918/1922
	Bungalow 1107	c.1925
	Bungalow 1108	c.1925
	Warehouse 1112	c.1913
	Guesthouse Remains	c.1917
Copco No. 2	Dam	1925
	Water Conveyance System	1925
	Powerhouse	1925
	Bungalow/Building 1121	1925
	Radio Station	c.1950
	Modern Bunkhouse	1964
	Fall Creek School	1965
	Control Center	1966
	Ranch House Nos. 1,2,3 and 4	1967-1968
Iron Gate	Dam	1962
	Dam Fish Facilities	1962
	Water Conveyance System	1962
	Powerhouse	1962
	Support Facilities (communication building and restroom)	1962
	Operator Residence No. 1 and 2	c.1964
	Hatchery Fish Facilities (hatchery building, raceways and settling ponds, fish feed silos)	1966

	Hatchery Residence Nos. 1,2,3 and 4	1966
	Lakeview Road Bridge	1960
JC Boyle	Dam	1958
	Water Conveyance System	1958
	Powerhouse	1958
	Armco Warehouse	1956

Representative photographs of components at each of the four hydroelectric developments are included below.

**District Representative Photographs:**



**Photograph 1.** Copco No. 1 Powerhouse and dam, completed between 1918 and 1922; facing southwest/downstream, 2018.



**Photograph 2.** Copco No. 1, December 1917; facing northeast/upstream (SOHS 1917).



**Photograph 3.** Copco No. 2 Dam, completed 1925; facing southwest, 2018.



**Photograph 4.** Copco No. 2 Dam, July 8, 1925; facing southeast/upstream (PacifiCorp Archive image CO2-91).



**Photograph 5.** Copco No. 2 Powerhouse, completed 1925; facing north, 2018.



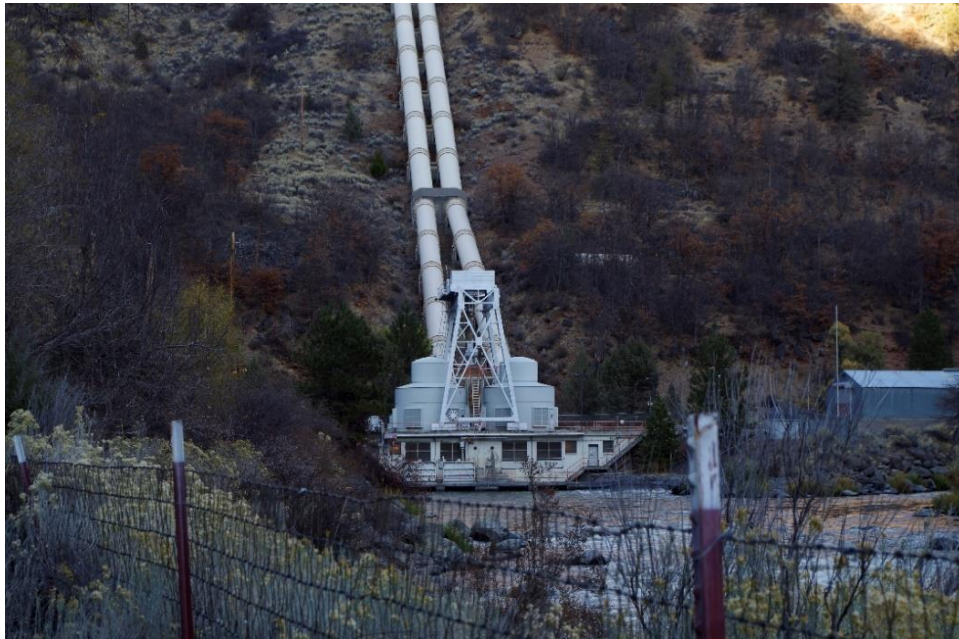
**Photograph 6.** Copco No. 2 Powerhouse, 1924; facing southeast (PacifiCorp archive image CO2-36).



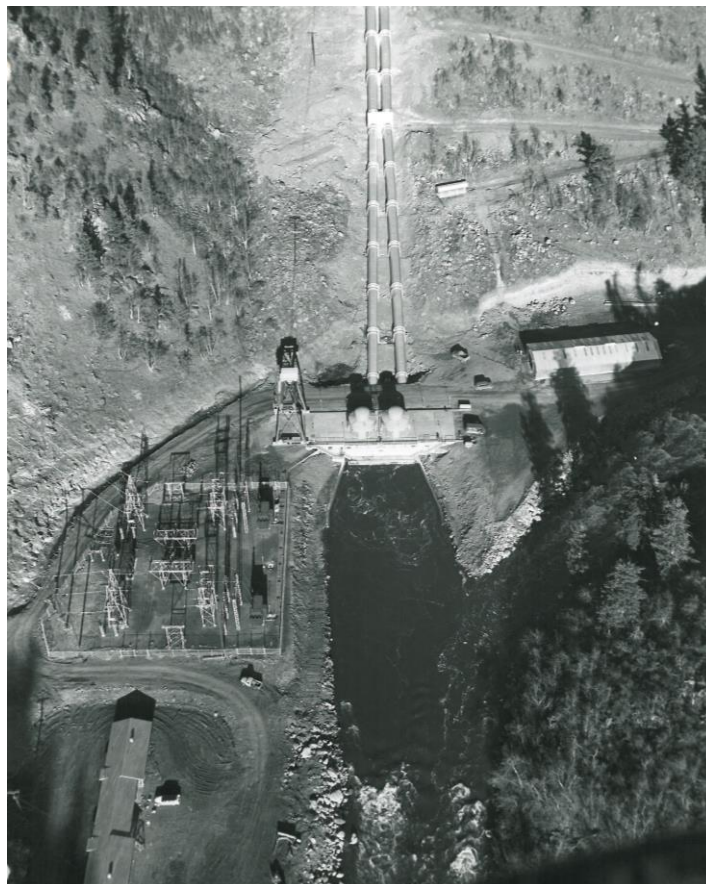
**Photograph 7.** J.C. Boyle Dam; facing northwest/downstream, 2018.



**Photograph 8.** J.C. Boyle Dam; view facing northwest/downstream, c.1958 (PacifiCorp Archive image BB-494).



**Photograph 9.** J.C. Boyle Powerhouse, completed 1958; facing north, 2018.



**Photograph 10.** J.C. Boyle Powerhouse, aerial view, c.1958 (PacifiCorp Archive image BB-1043).



**Photograph 11.** Iron Gate Dam, completed 1962; facing north, 2018.



**Photograph 12.** Iron Gate dedication, February 3, 1962 (PacifiCorp archive image IG-290).

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Resource Name or #: Klamath Hydroelectric Project

References:

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[https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/home/?cid=nrcs143\\_023523](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/home/?cid=nrcs143_023523), accessed February 15, 2019.
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1961a Stockholder Pamphlet. July 10 (University of Oregon, Knight Library, HD9685.U7 P33 1961 July).  
1961b Stockholder Pamphlet. October 10 (University of Oregon, Knight Library, HD9685.U7 P33 1961 October).  
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1968a "Pacific Power Installs Copco Unit Equipment." October 9.  
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- Southern Oregon Historical Society (SOHS)  
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1917 Copco No. 1, December 1917 [photograph]. J.C. Boyle Collection.

D7. References:

U.S. Bureau of Reclamation and California Department of Fish and Game (USBR and CDFG). 2012. Klamath Facilities Removal Final EIS/EIR. US Department of Interior, Bureau of Reclamation and California Department of Fish and Game.

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1958 "Power of Upper Klamath Harnessed By Copco." *Herald and News*. October 2.



Map Location

○ Dams

Project Location

Klamath River Watershed

EPA Ecoregions Level III

Coast Range

Central Basin and Range

Cascades

Sierra Nevada

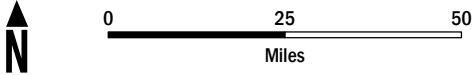
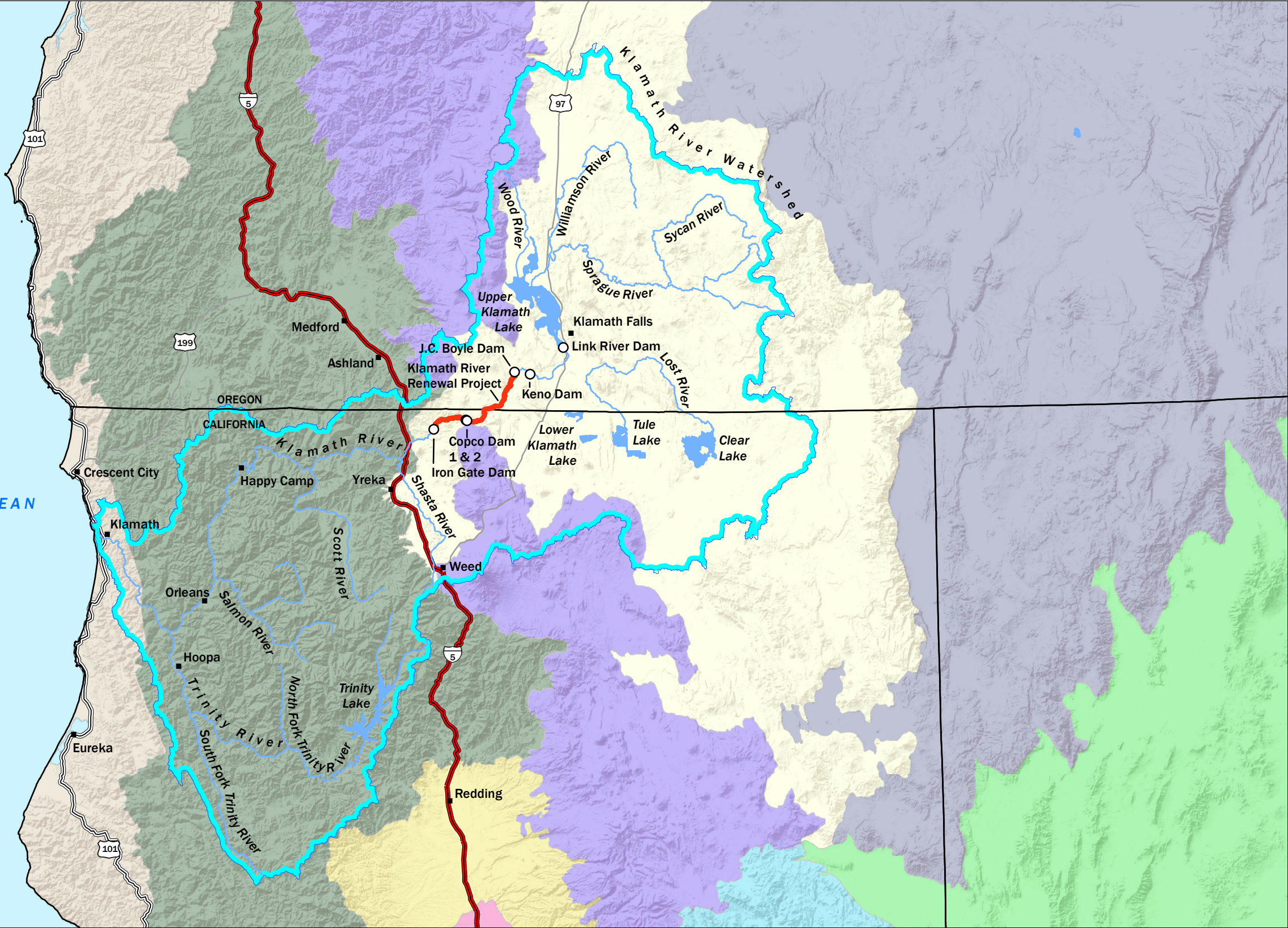
Central California Foothills and Coastal Mountains

Central California Valley

Klamath Mountains/California High North Coast Range

Northern Basin and Range

Eastern Cascades Slopes and Foothills



Sources: ESRI, USGS, NOAA

State of California - The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION  
**PRIMARY RECORD**

Primary #47-00415 (Klamath Hydroelectric Project)  
HRI #  
Trinomial  
NRHP Status Code 3D

Other Listings  
Review Code

Reviewer

Date

Page 1 of 2

Resource Name or #: Copco No. 1 Historic District

P1. Other Identifier: Copco No. 1 Historic District

\*P2. Location: ☒ Unrestricted

\*a. County: Siskiyou

\*b. USGS 7.5' Quad Copco, CA Date 2018 T 48N; R 4W; SE 1/4 of SW 1/4 of Sec 29; Mount Diablo B.M. See Continuation Sheet.

c. Address \_\_\_\_\_ City \_\_\_\_\_ Zip \_\_\_\_\_

d. UTM: Zone 10 T, 555121mE/4647704mN See Continuation Sheet.

e. Other Locational Data: N/A

\*P3a. Description:

The Copco No. 1 Historic District is part of the larger, discontinuous Klamath Hydroelectric Project (KHP) Historic District. The KHP is a previously documented Historic District within Southern Oregon and Northern California. It consists of seven hydroelectric developments. Discrete Historic Districts within the KHP include Copco No. 1 (California), Copco No. 2 (California), J.C. Boyle (Oregon), and Iron Gate (California). A detailed description of Copco No. 1 is provided in the DPR 523D (District Record) form.

Copco No. 1 is a hydroelectric power-generating development built by the California Oregon Power Company (Copco) in 1912-1918 and expanded by Copco in 1922. The development is in a remote area of the Upper Klamath River basin in Siskiyou County, California. Copco No. 1 extends between River Mile (RM) 208.3 and 201.8. The dam is at RM 198.6. California's border with Oregon and the Cascade-Siskiyou National Monument lie about 2 miles to the northwest, while Daggett Mountain's 1,075-foot peak lies 1.7 miles to the south. Interstate 5 is 13 miles to the west. Copco Lake's two developed recreation sites are Mallard Cove, along the reservoir's southern shore, and Copco Cove, along the reservoir's western shore.

Copco No. 1 is comprised of a concrete gravity arch dam that impounds the Copco Lake reservoir; a water conveyance system consisting of a double and single penstock; a two-unit powerhouse; and associated buildings and structures (Bungalow 1107, Bungalow 1108, Warehouse 1112, and guesthouse remnants) [See **Site Map** and separate DPR 523A (primary record) forms and 523B (building, structure, object record) forms for each resource].

\*P3b. Resource Attributes: (HP21) Dam; (HP22) Lake/river/reservoir; (HP11) Engineering structure (powerhouse, water conveyance system); (HP2) Single-family property (bungalows); (HP4) Ancillary buildings (warehouse); (HP39) Other (substation and transmission lines); (AH2) Foundations/structure pads (guesthouse remains).

\*P4. Resources Present: ☒ District ☒ Buildings ☒ Structures

P5a. Photograph:



P5b. Description of Photo: Copco No. 1 powerhouse and dam, viewing southwest (June 11, 2018).

\*P6. Date Constructed/Age and Source:

☒ Historic, 1918, 1922 (Boyle 1976).

**\*P7. Owner and Address:**

PacifiCorp  
825 NE Multnomah, Suite 1500  
Portland, OR 97232

\*P8. Recorded by:  
Shoshana Jones, AECOM  
111 SW Columbia Street, Suite 1500  
Portland, OR 97201

\*P9. Date Recorded: June 11, 2018

\*P10. Survey Type: Intensive Level

\*P11. Report Citation: Klamath River  
Renewal Corporation. 2021. Lower  
Klamath Project Built Environment  
Technical Report.

\*Attachments: ☒ Location Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☒ District Record

## CONTINUATION SHEET

Property Name: Copco No. 1 Historic District  
Page 2 of 2

P2d. Location (continued):

USGS 7.5' Quad Copco, CA Date 2018 T 48N; R 4W; SE 1/4 of SW 1/4 of Sec 29; Mount Diablo B.M.

Resource	Township	Range	Section
Dam	48N	4W	SE 1/4 of SW 1/4 of Sec. 29
Penstocks	48N	4W	SE 1/4 of SW 1/4 of Sec. 29
Powerhouse	48N	4W	SE 1/4 of SW 1/4 of Sec. 29
Warehouse 1112 (garage/warehouse)	48N	4W	SE 1/4 of SW 1/4 of Sec. 29
Guesthouse Remnants	48N	4W	SE 1/4 of SW 1/4 of Sec. 29
Bungalow 1107 (bungalow no. 1)	48N	4W	SE 1/4 of SW 1/4 of Sec. 29
Bungalow 1108 (bungalow no. 2)	48N	4W	NE 1/4 of SW 1/4 of Sec. 29

P2d. UTM (continued):

Resource	Zone	UTM
Dam	10 T	555121mE/4647704mN
Single Penstock (Water Conveyance System)	10 T	555056mE/4647689mN
Double Penstock (Water Conveyance System)	10 T	555075mE/4647686mN
Powerhouse	10 T	555063mE/4647650mN
Warehouse 1112	10 T	554976mE/4647802mN
Guesthouse Remnants	10 T	555097mE/4647801mN
Bungalow 1107	10 T	554879mE/4647744mN
Bungalow 1108	10 T	555008mE/4647959mN

## DISTRICT RECORD

Property Name: Copco No. 1 Historic District  
Page 1 of 27

\*Resource Name or #: Copco No. 1 Hydroelectric Development

D1. Historic Name: N/A

D2. Common Name: Copco No. 1

D3. Detailed Description:

Copco No. 1 is a hydroelectric power-generating development built by the California Oregon Power Company (Copco) in 1912-1918 and expanded by Copco in 1922. The development is in a remote area of the Klamath River Canyon in Siskiyou County, California. Copco No. 1 consists of a concrete gravity arch dam that impounds the Copco Lake reservoir; a single and double penstock water conveyance system; a two-unit powerhouse; and associated buildings and structures. Copco No. 1 extends between River Mile (RM) 208.3 and 201.8. The dam is at RM 198.6. California's border with Oregon and the Cascade-Siskiyou National Monument lie about 2 miles to the northwest and the 1,075-foot peak of Daggett Mountain lies 1.7 miles to the south. Interstate 5 is 13 miles to the west. See Continuation Sheets and separate DPR 523A (primary record) forms for detailed descriptions of each contributing resource.

D4. Boundary Description: The district boundary is the Federal Energy Regulatory Commission (FERC) boundary for the Klamath River Hydroelectric Project (see Klamath River Hydroelectric Project location map).

D5. Boundary Justification: The boundary is consistent with the FERC boundary for the Klamath River Hydroelectric Project.

D6. Significance:

Theme: Hydroelectric development

Area: Southern Oregon and Northern California

Period of Significance: Copco No. 1 Historic District: 1918 – 1970; Klamath River Hydroelectric Project Historic District: 1903 – 1970

Applicable Criteria: National Register of Historic Places (NRHP) Criterion A and Criterion C. See Continuation Sheets.

D7. References:

AECOM. 2017. Klamath River Renewal Project. California Environmental Quality Act (CEQA) and California and Oregon 401 Water Quality Certifications Technical Support Document. AECOM Technical Services, Inc.: Oakland, CA.

*Ashland Tidings* [Ashland, Oregon]

1916a. "Harnessing Klamath River at Copco." December 7.

1916b. "Electric Company Rushes Work on Dam." January 3.

1917. "Big Copco Dam Is Finally Complete." November 19.

1918. "Here and There." February 14.

Beckham, Stephen Dow. 2006. "Historical Landscape Overview of the Upper Klamath River Canyon of Oregon and California. Cultural Resource Series No. 13." Bureau of Land Management. U.S. Department of the Interior.

*Bend Bulletin* [Bend, Oregon]. 1960. "Agreement Made on Power Merger: PP&L Due to Absorb COPCO Firm." December 30.

Bennett, Addison. 1922. "Portlanders Attend Big Dam Opening At Copco, Cal." *Sunday Oregonian* [Portland, Oregon]. November 12.

See Continuation Sheets.

D8. Evaluator: Shoshana Jones, AECOM

Date: June 11, 2018

**Affiliation and Address:** AECOM, 111 SW Columbia Street, Suite 1500, Portland, Oregon 97201

## CONTINUATION SHEET

Property Name: Copco No. 1 Historic District  
Page 2 of 27

### D3. Detailed Description (continued):

The landscape is characterized by the narrow river canyon, prominent basalt rock formations, vegetation, and a cinder cone about 500 feet northwest of, and uphill from, the dam. Copco Road, a steep, narrow gravel access road, extends from the county road through a gate to the dam and powerhouse. Ager-Beswick Road, an extension of Topsy Grade Road in Oregon, provides access to the dam's eastern abutment. On a bluff overlooking the dam and Copco Lake are extant built environment resources from a now-defunct construction town called "Copco," including two bungalows with detached garages, a garage/warehouse, and the remnants of a guesthouse.

The Copco No. 1 Dam impounds the approximately 972-acre Copco Lake, a landscape feature associated with the development. Copco Lake provides approximately 33,724 acre-feet of total storage capacity at river water system (RWS) elevation 2,611. The maximum and minimum reservoir operating levels are between RWS elevations 2,611 and 2,604.5, a vertical operating range of 6.5 feet, but the reservoir is normally maintained at RWS elevation 2,609.5, or 1.5 feet below the top of the spillway gates (AECOM 2017:2-9). Most of the reservoir shoreline is steeply sloped and consists of open Oregon oak and western juniper woodland. Denser mixed-oak conifer forests are along the slopes south of the reservoir. The Copco Lake shoreline has numerous modern residences.

Developed recreation sites on Copco Lake are Mallard Cove, Copco Cove, and smaller dispersed shoreline recreational sites. Mallard Cove is located on the south shore of Copco Lake, off Ager-Beswick Road at Keaton Cove, and is owned and managed by PacifiCorp. The naturally-wooded site consists of a day use/picnic area with eight wood-plank picnic tables, 12 cooking grills, and seven concrete fire rings. The restroom building has two vault toilets and two trash receptacles. The boat launch has a 100-foot-long, 25-footwide single-lane concrete ramp. A 25-foot-long, 5-foot-wide dock made of composite decking and poly floats, with concrete abutment, is adjacent to the boat ramp. The 20-foot-long, 5-foot-wide gangway has an aluminum frame and pipe railing. The six informational signs are mounted into concrete bases. The gravel parking area has eight concrete wheel-stops and about 25 vehicle spaces.

Copco Cove, also owned and managed by PacifiCorp, is located on the western shoreline of Copco Lake, off Copco Road. The picnic area is naturally wooded and has two wood-plank picnic tables with one user-defined fire ring at each. The site has one portable toilet and one trash receptacle. The boat launch has an 80-foot-long, 25-foot-wide single-lane concrete ramp. A 14-foot-long, 5-foot-wide concrete boat dock is adjacent to the boat ramp. The six informational signs are mounted into concrete bases. The gravel parking area has five vehicle spaces.

### D6. Significance (continued):

As a part of its FERC relicensing application in 2003, PacifiCorp, the current owners and operators of the Klamath River Hydroelectric Project,<sup>1</sup> recognized the KHP as an NRHP-eligible historic district for its significant association with the industrial and economic development of Southern Oregon and Northern California (Kramer 2003a, 2003b). To support this recognition, PacifiCorp completed a historic context statement for the KHP that provided background information as a prelude to conducting a review of potential historic significance under NHPA Section 106 and as well as a Request for Determination of Eligibility report for the KHP (Kramer 2003a; Kramer 2003b). PacifiCorp offered recommendations as to whether these "complexes" and their resources were eligible for the NRHP and defined the period of historic significance for the KHP as 1903–1958 and hired CH2M Hill in September 2003 to complete California and Oregon survey inventory forms that documented the overall KHP District and the seven hydroelectric developments using the numbering convention and evaluation established in the Request for Determination of Eligibility (Durio 2003a; Durio 2003b) (see attached Oregon Inventory of Historic Properties Section 106 Documentation Form and State of California Department of Parks and Recreation [DPR] 523 form). On March 16, 2004, the Oregon SHPO agreed with PacifiCorp's determinations of eligibility within the State of Oregon for resources that would be affected by the proposed FERC relicensing (OR SHPO 2004). The SHPO concurrence, therefore, solely included the Link River Complex, Keno Dam Complex, and the J.C. Boyle Complex. The CA SHPO never provided comments on the eligibility of resources in California, but the KHP historic district, as well as the four historic districts within its boundaries in California and their contributing resources, are presently identified by the KHP's DPR primary number (47-004015), which was assigned by the California SHPO in 2003. In addition, the California SHPO has assigned individual primary numbers to the Copco No. 1 Powerhouse (47-002267), Copco No. 1 guest house remains (CA-SIS-2824), and Copco No. 2 Powerhouse (47-002266).

With respect to the current Project the Copco No. 1, Copco No. 2, and J.C. Boyle complexes, along with most of their primary components, were identified as contributing to the eligible KHP historic district. In contrast, Iron Gate Complex and its constituent resources (1962) and the Iron Gate fish hatchery (1966) were recommended as non-historic and non-contributing. The Oregon SHPO concurred with the eligibility determinations related to J.C. Boyle complex (OR SHPO 2004). The California SHPO did not provide concurrence for the eligibility determinations related to Copco No. 1, Copco No. 2, and the Iron Gate complexes, or for the Fall Creek hatchery, which was included in the evaluations of Fall Creek hydroelectric development. As part of a separate project to alter the

<sup>1</sup> The Link River Dam is owned by the USBR and is not included in the Klamath project license. However, Kramer identifies the dam as part of the Klamath River hydroelectric system (Kramer 2003a:36).

## CONTINUATION SHEET

Property Name: Copco No. 1 Historic District  
Page 3 of 27

### D6. Significance (continued):

crest of the Iron Gate Dam in 2003, PacifiCorp determined that the Iron Gate Complex was not eligible for the NRHP as it had yet to attain 50 years of age and was not of exceptional importance. The California SHPO agreed with that determination on May 28, 2003 (CA SHPO 2003).

#### Period of Significance

The previously proposed period of significance ends in 1958. Kramer reasoned that, based on the National Park Service's "50-year rule" for historic-era properties, the 2006 FERC license renewal for the Klamath Hydroelectric Project would typically invoke 1956 as the period's closing date. The 1956 date would encompass "all the main generation resources built prior to World War II [Copco No. 1 and Copco No. 2] and defin[e] both the J.C. Boyle and Iron Gate developments, dated from 1958 and 1962, respectively, as non-historic" (Kramer 2003a:57). Consequently, Kramer proposed extending the period of significance end date two years beyond the "50-year rule" to encompass construction of the J.C. Boyle hydroelectric development and reflect important post-war project development (Kramer 2003a:57-58). Although the 1958 end date included J.C. Boyle within the period of significance, it excluded the Iron Gate hydroelectric development, completed in 1962.

Now that 17 years have elapsed since the 2003 surveys, AECOM recommends extending the KHP's period of significance end date to 1970. This would encompass significant system evolution that occurred during the decade following Copco's 1961 acquisition by Pacific Power and Light Company. Significant projects of this period include the Iron Gate hydroelectric development (1962), which was part of the original Klamath River hydroelectric project survey in the early twentieth century, and the Iron Gate fish hatchery (1966). The year 1970 also marks completion of the construction program that Pacific Power undertook after acquiring Copco to modernize its power transmission facilities and integrate them with the existing Copco system (1961-1970). This system evolution reflects how the long-term vision of the Klamath River Hydroelectric Project's original engineers had finally come to fruition.

Additionally, PacifiCorp's 2003 studies were based on a survey of the hydroelectric development resources that had the potential to be affected by the FERC relicensing at that time and excluded non-hydroelectric resources, such as bridges and residences outside of the KHP development but within the current Project Area of Direct Impact (ADI). The study also omitted transmission lines originating within the hydroelectric developments and some of the associated power substations within this project's Area of Direct Impact (ADI).

Klamath River Renewal Corporation (KRRRC) proposes to remove four hydroelectric developments: Copco No. 1, Copco No. 2, Iron Gate, and J.C. Boyle. Because more than five years has elapsed since these hydroelectric developments were recorded, this form updates the descriptions and photographs of the hydroelectric resources at the three California hydroelectric developments (Copco No.1, Copco No. 2, and Iron Gate) and evaluates each as an individual historic district, reevaluates each as a contributor to the larger KHP Historic District, as well as reevaluate the NRHP eligibility evaluation of the Iron Gate hydroelectric development since it is now over 50-years of age and falls with AECOM's expanded period of significance for the KHP Historic District (1903-1970).

#### Historic Context

[This form incorporates by reference the Klamath Hydroelectric Project Historic Context Statement by George Kramer, which provides a detailed corporate history of the California Oregon Power Company (Copco) and the region's economic and industrial development (Kramer 2003b).]

#### *The Klamath Hydroelectric Project*

The KHP consists of seven hydroelectric generation developments and their associated resources along the Klamath River and its tributaries in Klamath County, Oregon and Siskiyou County, California: (1) J.C. Boyle (1958), (2) Copco No. 1 (1912-1918, 1922), (3) Copco No. 2 (1924-1925), (4) Iron Gate (1960-1962), (5) Keno (1966), and (6) Fall Creek (1903). [The Link River development (1921) is owned by the USBR and is not included in the Klamath project license. However, Kramer identified the dam as part of the Klamath River hydroelectric system (Kramer 2003a:36)]. The KHP integrated groups of hydroelectric elements—dams, powerhouses, water conveyance systems—into a layered landscape of pre-contact occupation and historic land use. Sites of pre-contact occupation were associated with Native American customs and culture, subsistence and recreational fishing, as well as sites of early European-American industries such as ranching, mining, and logging. KHP construction geographically and temporally overlapped with these types of sites and activities, causing significant impacts to the land and its peoples.

Development of hydroelectric plants in the Klamath Basin began in 1891 in Shasta River Canyon to provide electricity to the City of Yreka. In 1895, another facility was constructed along the Link River to supply power to Klamath Falls, Oregon. The authorization of the USBR's Klamath Project in 1905 triggered additional hydrologic changes to the Klamath River and led to the construction of Link River Dam by California Oregon Power Company (now PacifiCorp) in 1921, as well as several hundred miles of irrigation ditches and canals that diverted water from the Klamath River and its wetlands to convert land for agricultural use (USBR and CDFG 2012:3.6-7). As the largest water management effort in the Upper Klamath Basin, the USBR's Klamath Project features a vast system of reservoirs, dams, canals, and pumps. Development and construction of these features occurred between 1905 and 1966, with most major facilities completed by the early 1940s (USBR and CDFG 2012:1-12).

## CONTINUATION SHEET

Property Name: Copco No. 1 Historic District  
Page 4 of 27

### D6. Significance (continued):

The USBR originally designed the Klamath Project to irrigate agricultural lands in the Upper Klamath Basin. Upper Klamath Lake and storage impounded by Link River Dam became the principal water sources enabling the Klamath Project to deliver water upriver of the hydroelectric developments (Kramer 2003b:21). Hydroelectric development in the Klamath Basin began in 1891 to supply electricity to Yreka, California, the Siskiyou County seat. Four years later, the Klamath Falls Light and Water Company built the East Side Power Plant No. 1. The power plant was on the Link River's eastern bank, within the city limits of Klamath Falls, Oregon. The plant supplied the city with its first electric power on November 1, 1895 (Boyle 1976:27). These ventures soon attracted competitors. The California Oregon Power Company (Copco) formed in 1912 through the merger of the Siskiyou Electric Power and Light Company (SEP&L), Klamath Falls Light and Water Company, and Rogue River Electric Company. The newly created company acquired the assets of the predecessor companies, including the hydroelectric facilities at Fall Creek which SEP&L had operated since its completion in 1903 (Kramer 2003b:12). In 1920, eight years after Copco formed, the company acquired the Keno Power Company, which operated the Keno hydroelectric development, built in 1911 (Kramer 2003b:5).

#### Copco Through World War II (1912-1945)

Copco's first construction project was the Copco No. 1 hydroelectric development, previously surveyed by the SEP&L, and known initially as the Ward's Canyon Dam Project. As construction progressed on Copco No. 1, the company's existing facilities were powering major regional industries, including nearly all the large Northern California lumber mills and several large mining dredgers (*Sacramento Bee* 1917). Copco completed the first phase of Copco No. 1 in 1918, including the dam, water conveyance system, and powerhouse. In 1920, the company reorganized, becoming the California – Oregon Power Company (with hyphen), and moved its headquarters from San Francisco to Medford. In 1922, the company completed Copco No. 1 by raising the dam, expanding the powerhouse, and adding a new generating unit. Three years later, in 1925, the company completed the Copco No. 2 hydroelectric development, downstream from Copco No. 1.

Between 1926 and 1947, the company was owned and operated by Standard Gas and Electric Company. Ownership was acquired through purchase of Copco's outstanding common stock. In 1947, to comply with provisions of the Public Utility Act of 1935, Standard Gas and Electric sold its Copco interests to an investment banking group, which made a public offering of the acquired shares (*Mail Tribune* 1960). During the late 1920s and 1930s, after completion of Copco No. 1 and Copco No. 2, Copco continued investigating the regional power potential of the Klamath, Rogue, and Umpqua River basins (Boyle 1962). Throughout that period, Copco made progress on the Prospect hydroelectric project, located along the Rogue River in Jackson County, Oregon. Prospect's fourth and final powerhouse was completed in 1944 (Gauntt 2012).

#### The Post-World War II Era Through the Pacific Power Acquisition (1946-1960)

In the years following World War II, growth in population and expansion in industry spiked regional demand for electricity. In response, Copco completed its first post-war project, the North Umpqua project, between 1947 and 1957. Led by chief engineer John C. Boyle, Copco doubled the company's capacity by building eight interconnected plants along the North Umpqua River east of Roseburg, Oregon: Clearwater No. 1 and No. 2, Fish Creek, Lemolo No. 1 and No. 2, Slide Creek, Soda Springs, and Toketee (McCready 1950). Meanwhile, the number of Copco customers grew from about 40,000 to about 90,000 (*Mail Tribune* 1959). By 1950, well before completion of the project, Boyle and other Copco officials recognized that increased regional population and power demand would outpace power supply, requiring new projects for future Copco customers (McCready 1950).

Seeking to develop additional power facilities, Copco began to reassess the Klamath River's power generation potential, reigniting conflict over Klamath Basin irrigation and water rights, as well as fishing and recreational interests (Kramer 2003b:30-31). Despite strong regional opposition to additional Klamath River dams, Copco officials still regarded the Klamath as the best location for power development. In *50 Years on the Klamath*, Boyle wrote that, "Klamath Canyon was most attractive, being near the Copco load center where construction cost and transmission lines would be minimum [*sic*]" (Boyle 1976:53). During the 1950s, Copco advanced a 10-year, \$70 million power development plan in the Klamath Basin. In addition to Big Bend No. 1 and No. 2 hydroelectric developments, the plan included Iron Gate, completed by Pacific Power in 1962. The other planned facilities at Salt Caves, Aspen Lake, Keno, Big Bend No. 3, Warm Springs, and Round Lake were never built (Guernsey 1957; Wynne 1957). Big Bend No. 1 and No. 2 were the first of these proposed projects (Wynne 1958).

The Big Bend development (renamed in 1962 after John C. Boyle) was part of the original Klamath River hydroelectric project survey in 1911; however, plans for constructing Big Bend were not completed until the 1950s, as power demands soared (Kramer 2003b:30-31). In 1958, when Big Bend began operations, Copco's residential customers had the highest average annual usage of any private utility nationwide. The service area contained about 50,000 square miles in 72 communities and adjacent rural areas in Klamath, Jackson, Josephine, Lake, and Douglas counties in Oregon, and in Siskiyou, Modoc, Del Norte, Trinity, and Shasta counties in California. At that time, the population was approaching 250,000 and the regional economy was still based on logging, farming, ranching, and mining; industries with a long local history (*Mail Tribune* 1959).

## CONTINUATION SHEET

Property Name: Copco No. 1 Historic District  
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D6. Significance (continued):

### Pacific Power Expansion Phase (1961-1970)

Pacific Power's June 1961 acquisition of Copco led to significant changes in regional hydroelectric power generation and transmission. After the acquisition, Pacific Power initiated a \$500 million construction program spanning from 1961 to 1970. The program's goal was to integrate the two companies' systems, enhance power delivery to service areas, and accommodate workers involved in the expanded operations (Pacific Power 1961a:1).

When Pacific Power acquired Copco, the two companies were supplying power to 415,000 customers. Pacific Power earned about 60 percent of its revenue in Oregon, and the rest in Washington, Idaho, Western Montana, and Wyoming. Copco earned about 80 percent of its revenue in Southern Oregon (71,000 customers), including Medford, Grants Pass, Roseburg, Klamath Falls, and Lakeview. Copco did the remaining 20 percent of its business in Northern California (21,000 customers), including Tulelake, Yreka, Weed, Dunsmuir, Alturas, and Crescent City (*San Mateo Times* 1960; *Bend Bulletin* 1960).

Pacific Power and Copco deemed consolidation necessary to generate sufficient funds for the expensive construction program. According to *The Bend Bulletin*, both companies spent a combined \$243 million on new construction between 1955 and 1960, and "estimated they will be required to do more than \$500 million between 1961 and 1970 to meet power needs" (*Bend Bulletin* 1960). Additionally, Pacific Power advised its shareholders in a pamphlet dated January 10, 1961 that the consolidated system with Copco would create an "enlarged operating and financial base" to enable future construction (Pacific Power 1961a:2). When Copco president A.S. Cummins and Pacific Power board chairman Paul B. McKee jointly announced the merger, they stated that "directors of the companies have reached the conclusion that it is in the best interest of all concerned to join together the two neighboring systems and integrate their power resources and development programs" (*Bend Bulletin* 1960).

As part of Pacific Power's 1961-1970 construction program, the company built new, or improved existing, power facilities such as transmission lines and substations, some at former Copco sites. Some work was related to construction of the Iron Gate Development, which was well under way by 1961 (Pacific Power 1961b:2). For instance, to power construction activities at Iron Gate, Pacific Power erected a temporary switchyard at the Copco No. 2 substation. Iron Gate received power transmitted from the Copco No. 2 powerhouse through the temporary switchyard and (transmission) Line No. 62.

By 1962 Pacific Power energized its largest substation, located in Albany, Oregon. The substation was part of a 230-kV circuit to "provide a larger capacity interconnection" between Pacific Power and the former Copco system. A new line in the 230-kV system between Medford, Roseburg, and Albany would "permit fully integrated operation of the hydroelectric generating plants located in the Copco Division with the Company's other power sources, particularly on the Lewis River [in Washington] and the middle reaches of the Columbia River" (Pacific Power 1962:3).

In 1962, Pacific Power also completed Iron Gate as the final hydroelectric development along the Klamath River. Iron Gate was constructed to regulate downstream flows. In addition to fish catching and spawning facilities at the dam site, an associated fish hatchery complex – Iron Gate fish hatchery – was completed in 1966 about a quarter-mile downstream. Fish eggs collected at the dam site are transported to the fish hatchery complex where they are hatched and then moved into a series of raceways. The fish remain in the raceways until they are ready for release into the river.

As Pacific Power's construction program proceeded, officials monitored the existing developments and continued planning for future improvements. Progress was interrupted by historic flooding along the Klamath River in December 1964 that caused severe damage to the Copco No. 1 and Iron Gate facilities which required Rebuilding the Copco No. 1 powerhouse and Iron Gate spillway channel. In September 1967, company officials, including the Copco division manager, met in Yreka, California to evaluate system operations, review 1967 construction progress, and plan projects for 1968. Construction work in 1967 was estimated at over \$500,000 and was implemented to build new power facilities and expand services (*Sacramento Bee* 1967). Projects in 1968 included \$50,000 worth of upgrades at Copco No. 2 substation, including three new 69-kV transformers and a new circuit breaker to increase the available power in anticipation of increased local growth and power demands at the Copco No. 2 development (*Sacramento Bee* 1968a). In 1970, Pacific Power budgeted around \$926,000 for planned expansions and improvements in the Yreka District. One of the primary projects was a 10-mile, \$297,000 transmission line between Ager and Copco No. 2. At Iron Gate, Pacific Power budgeted \$45,000 to improve recreation facilities such as construction of a public boat ramp below Iron Gate Dam and installation of electric and water service at Camp Creek (*Sacramento Bee* 1970). During the 1960s, Pacific Power also built new single- and multi-family housing and a school to accommodate workers and their families based at Copco No. 2 (*Sacramento Bee* 1968b).

The reservoirs created by the Copco No. 1, J.C. Boyle, and Iron Gate hydroelectric developments are used by the public for outdoor recreation, such as fishing, camping, birdwatching, and hiking. Campgrounds and boat docks are scattered along the reservoir shorelines.

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Property Name: Copco No. 1 Historic District  
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D6. Significance (continued):

### John Christie Boyle (1887-1979)

Pacific Power renamed the Big Bend development after John C. Boyle in honor of his significant contributions to regional hydropower development. Boyle spent his 50-year career as an engineer, construction supervisor, and later as a company official at Copco and its successor company, Pacific Power. He designed most of the hydroelectric projects in the Southern Oregon/Northern California region and as noted by Kramer (2018), he was "principally responsible for Copco's ground-breaking multi-dam generation facilities on the Klamath and North Umpqua Rivers" (Boyle 1962).

Boyle was born in 1887 at Ft. Jones in Siskiyou County, California. He graduated with a degree in civil engineering from the University of California in 1910. That same year, he was hired by the Siskiyou Electric Power & Light Company (SEP&L), one of Copco's predecessor companies, as an assistant engineer. He began his tenure at SEP&L by surveying the Klamath River at Ward's Canyon which became the site of the Copco No. 1 hydroelectric development. In 1916, two years after construction began on Copco No. 1, Boyle became the site construction supervisor (Kramer 2003a:19; *Oregonian* 1917). Boyle also engineered the Link River Dam (1921) at Klamath Falls, Oregon which helped expand the region's agricultural economy.

Throughout the 1920s and 1930s, Boyle continued investigating the power potential of the Klamath, Rogue, and Umpqua river basins and in the 1940s and 1950s, he used the gathered data to plan future hydroelectric sites. By then, Boyle was not only Copco's chief engineer, but also vice-president and general manager. In 1945, he led Copco in expanding the company's generating capacity, primarily through the North Umpqua project. In 1951, Boyle was named Oregon's Engineer of the Year by Professional Engineers of Oregon for the design and development of the North Umpqua River projects' eight plants (Boyle 1962). During the 1950s and 1960s, he engineered and supervised construction of the Big Bend (Boyle) and Iron Gate hydroelectric developments. He retired as director of Pacific Power in 1963 but continued as a consultant (Oregon Civil Engineer 1975:1).

### Copco No. 1

Constructed in Siskiyou County, Copco No. 1 was originally known as the Ward's Canyon Dam Project. Copco completed the development in 1918 for \$2 million and expanded it in 1922 (*Oregonian* 1917). The oldest major development in the Klamath Hydroelectric Project, Copco No. 1 was the first built on the Klamath River following formation of the California Oregon Power Company (later Copco) (Kramer 2003a:8). Copco, a conglomeration of regional power companies, assumed the project from SEP&L. Hermann Schussler, a prominent civil engineer, designed the dam and Perry O. Crawford, Copco's chief engineer, designed the powerhouse (*Oregonian* 1917; Myrtle 1919). (For more information on Hermann Schussler, see DPR 523B for Copco No. 1 Dam. For more information on Perry O. Crawford, see DPR 523B for Copco No. 1 Powerhouse.)

The new Copco development would meet power demands in the Siskiyou District, which had relied on power transmission from Medford, Oregon during the peak load. Upon installation of the first generating unit at Copco No. 1, capacity would exceed peak load demand, allowing the Medford service to be placed on standby (Merrick 1918:150).

Preliminary work at the Copco No. 1 site began in May 1910, when SEP&L surveyed Ward's Canyon and the prospective reservoir area. The survey identified the lands that SEP&L would need to purchase for the project.

The William Lennox Ranch, located where the Ager-Klamath Falls Road approached the Klamath River, served as SEP&L's survey headquarters. At that time, John C. Boyle, who later became a prominent Copco officer, was hired as a SEP&L field surveyor. Boyle was born in 1887 in Siskiyou County and graduated from the University of California, Berkeley with an engineering degree in 1910. In 1916, two years after construction began on Copco No. 1, Boyle became the construction supervisor, tasked with assisting Perry O. Crawford, the engineer in charge (Kramer 2003b:19; *Oregonian* 1917).

At that time, the Ward's Canyon vicinity was a remote setting with nearby agricultural activities. In 1910, while engaged in survey, Boyle described the area comprising the Klamath River "bottomlands" as "covered with beautiful farms used mostly for cattle raising." He also observed that, "[T]he homes and buildings were old but generally well kept" (Boyle 1976:8). The Klamath River slowly meandered through the area until descending into Ward's Canyon, where it began to flow rapidly. Boyle recognized that construction of a dam in the canyon would require flooding of "all those good farm lands" (Boyle 1976:8).

After completion of the reservoir survey, Boyle and the other SEP&L surveyors moved their base from the Lennox Ranch to the Sloan Ranch east of the Fall Creek powerhouse, where they continued to survey in Ward's Canyon. In May 1911, Ward's Camp (also known as Camp Ward and Camp No. 3) was established along the Klamath River, and work at the dam site began. Boyle recalled that Ward's Camp originated with a few men living in tents "with an old barn for a cookhouse" (Boyle 1976:9). Unskilled laborers at Ward's Camp earned \$2.50/day, while foremen earned \$4.00/day, and Boyle earned \$125/month plus board. Work involved a 10-hour day, no overtime pay, and 25 cents deducted for each meal. In July 1911, SEP&L began examining the dam site in preparation for laying the dam's foundation and initiated river diversion. At this time, the company also began survey work for another plant of the same capacity (Copco No. 2) (Boyle 1976:9).

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Property Name: Copco No. 1 Historic District  
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### D6. Significance (continued):

In December 1911, Copco was incorporated, and acquired SEP&L's holdings; however, the two entities agreed that SEP&L would continue the dam work already under way. Dam excavation at the river bottom and shaft drilling began in October 1912 (Boyle 1976:12-13). By March 1, 1913 difficulties related to obtaining supplies left a reduced workforce of only 10 men. The remaining workers conducted dam foundation excavation, maintained company property, and unloaded powerhouse machinery (Sprout et al. 1912-1913).

Although construction progress had slowed, SEP&L's "Camp Ward" plans, dated March 22, 1913, depicted a considerably expanded area in anticipation of the upcoming work at the site (Sprout et al. 1912-1913). The "power town" that evolved from Ward's Camp encompassed these buildings and structures, and accommodated hundreds of residents. The town became known as "Copco" (*Oregon Daily Journal* 1916).

#### *Copco: A "Power Town"*

During Copco No. 1's original construction phase (1912-1918), a "power town" named Copco developed on the bluff above the dam construction site. The word "Copco" was officially recognized on July 30, 1914, when U.S. Postmaster General Albert S. Burleson appointed John C. Boyle as the town's postmaster (Boyle 1976:18).

By November 1916, 360 men were working on Copco No. 1, and 560 persons were living in the town of Copco (*Oregon Daily Journal* 1916). The town contained numerous buildings and structures related to dam construction and worker accommodations. The *Evening Herald*, a local newspaper, described the new town in a November 1916 article:

The town is situated entirely on the [Copco] power company's property, has a population of about five hundred and sixty persons, as a result of the employment of three hundred and sixty men by the company many of whom have located at Copco with their families. The little school house nearby which was formerly occupied by two or three pupils from the ranches along the river, is now filled with the children of the new residents and the genial office-seeker always makes it a point to drop in at the little burg as he realises [*sic*] that this little new town consists in the most part of a voting population (Evening Herald 1916a).

Other newspaper reports publicized the town as having "all the conveniences of a modern village, including the ubiquitous moving picture show" (*Oregonian* 1917). Children of Copco workers attended the nearby Fall Creek School. At that time, Fall Creek School was in its original location near the Fall Creek Powerhouse, about 1.5 miles from town along Copco Road. The third and final Fall Creek schoolhouse was rebuilt in 1965 at Copco Village near the Copco No. 2 Powerhouse.

During the Copco No. 1 construction and expansion phases (1912-1918 & 1922), the town of Copco contained a railroad spur, cement shed, and adjoining freight platform for unloading electric machinery on arrival (Sprout et al. 1912-1913:226). There was a machine shop (Sprout, et al. 1912-1913:224), two machinery platforms (Sprout et al. 1912-1913:109), tool house, combined compressor house (Sprout et al. 1912-1913:221) and blacksmith shop (Sprout et al. 1912-1913:210). The oil house was near the railroad spur at the foot of the cinder cone (Sprout et al. 1912-1913:222). The engineer's office had a 10-foot by 22-foot dark room/drawing room addition (Sprout et al. 1912-1913:211). Workers lived in tents and bunkhouses (Sprout et al. 1912-1913:224). Office employees also had living quarters and separate toilet facilities (Sprout et al. 1912-1913:85). A cookhouse with a cellar and attached meat house was built (Sprout et al. 1912-1913:224), as well as sleeping quarters adjoining the cookhouse for the cook and waiters (Sprout et al. 1912-1913:229).

The mixing plant was electrically operated, with sand machines, rock breakers and mixers (Sprout, et al. 1912-1913:127). A dynamite powder house was located near the spur tracks (Sprout et al. 1912-1913:223). A 28-foot by 8-foot freight platform was built under the cinder cone tramway (Sprout et al. 1912-1913:211); and two cableways delivered concrete and rock to the site. The gravity tramway had two main cables and a 400-foot span suspending two concrete chutes. The rock cableway supported a rock carrier from the quarry to the dam site (Sprout et al. 1912-1913:135). The concrete cableway stretched across Ward Canyon during the construction phase (Sprout et al. 1912-1913:219). In addition, some existing buildings on the eastern side of the river were disassembled and moved to the worker village on the western side (Sprout et al. 1912-1913:222).

Based on historic construction photographs, surviving extant concrete structure on the hill above town may have been associated with the gravity tramway. This tramway originated at the cinder cone and extended to the mixing plant at the edge of the bluff over the dam. The tramway delivered the cinder directly to the two sand machines, which crushed it and deposited it in storage bins below. After mixing at the plant, the concrete was discharged through spouts and moved by gravity in open troughs across the canyon. A rock cableway with traveling carrier delivered the rock to be laid with the concrete (Copco n.d.:4).

In 1922, during the Copco No. 1 expansion phase, the *Sacramento Bee* described the town of Copco as occupying both sides of the river with tents and cabins where workers and their families lived. A *Bee* reporter remarked on the abundance of automobiles parked around the "tent city," stating that "[i]t looks as if at least half of the [worker] population drove to the job in their own cars, and the majority are not low priced vehicle[s]" (*Sacramento Bee* 1922).

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Property Name: Copco No. 1 Historic District  
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### D6. Significance (continued):

The town's circulation features facilitated transportation of workers, equipment, and materials throughout the project site. Construction on "Road #6" began on June 7, 1912 and was completed the following day. The road extended from town to the mixing plant via the lava flat east of the cinder cone. This allowed all freight to be unloaded at the spur track and taken to camp, bypassing the Klamath Springs Station (Sprout, et al. 1912-1913:200-201).

A 1-mile railroad spur traversing the town of Copco was also built around 1912. The spur connected the Klamath Lake Railroad (KLRR) mainline and the Copco No. 1 construction site for "a conveyance for all machinery and material on the original cars to the immediate locality of the dam and powerhouse" (Sprout, et al. 1912-1913:31). The KLRR, a standard-gauge logging and passenger railroad, was completed in 1903 and extended from Thrall, the line's western end junction with the Southern Pacific Railroad line, east past present Copco No. 1 and Klamath Hot Springs to Pokegama, Oregon. In 1910, Copco predecessor SEP&L leased the railroad's remaining section for use in constructing Copco No. 1. After assuming the project from SEP&L, Copco constructed the spur (Stephens 1964:3; Beckham 2006:131).

A November 12, 1922 issue of the *Oregonian* explained how Copco used the KLRR during the Copco No. 1 expansion phase:

It is a rather good road, with good 60-pound steel, standard gauge, but the grades reach as high as 5 per cent. The present electrical company [Copco] bought this road, and built switch-backs from the main line down to the site of the new [Copco No. 1] dam, and all of the material used from outside has been hauled over it by a big "galloping goose" truck or car, using gasoline for motive power . . . One item of the hauling was 70 carloads, Southern Pacific cars, and all of the steel use for reinforcing (Bennett 1922).

After the spur branched from the KLRR main line, it curved around the southern and western sides of the cinder cone to the mixing plant overlooking the dam site (Sprout, et al. 1912-1913:123). As the spur traversed town, it ran parallel and adjacent to large equipment platforms. According to *The Volt*, Copco's newsletter, the spur reached the Copco No. 1 Powerhouse below the bluff via three switchbacks. When Copco's KLRR lease ended in 1914, the company purchased the remaining 14-mile section for \$35,000 (Stephens 1964:3; Bennett 1922). Copco also used the KLRR during Copco No. 2 construction in 1924 to 1925. At some point, Copco built a second spur, at river grade level, leading to the Copco No. 2 project site (Bullis 1964:2). Copco maintained the KLRR track between Thrall and the Copco powerhouses until 1942, when improved automobile roads rendered the rail spurs obsolete (Beckham 2006:131; Bullis 1964:2).

The Copco access road, built circa 1942, is a vehicle road that appears to have been constructed atop the former KLRR spur's alignment, following removal of the tracks. It consists of a 1-mile road section between Iron Gate Lake Road/Copco Road, a county road, and the Copco No. 1 Powerhouse. From the county road fork, the Copco access road winds mostly southwest, then turns sharply to descend into the river canyon to the powerhouse. The road passes through the former town of Copco and past the driveways of the town's two remaining bungalows. The road also passes by the garage/warehouse, and within 200 feet of the Copco No. 1 substation.

At its peak in the early 1920s, the dynamic company town housed hundreds of workers and families, and contained buildings, equipment, and operations with interrelated functions dedicated to Copco No. 1 construction. Out of dozens of buildings and structures, only four resources from the town have survived: Bungalows 1107 and 1108, a garage/warehouse, and remnants of a guesthouse remains which are not easily accessible. Scattered concrete foundations hint at the extent of equipment and operations that the town of Copco once had. The important KLRR railroad spur, which transported materials and equipment to the construction site, has been removed.

### *Copco Overcomes Obstacles to Complete the Development*

By early 1916, more than \$1 million had already been spent on dam construction (*Sacramento Bee* 1916). At that point, the river had been diverted through a tunnel, excavations on the dam's abutment cuts were done, and the powerhouse had been excavated to water level. Additionally, cement-mixing equipment was in place, the two powerhouse units had been delivered, and the former Klamath Lake Railroad was operational, including the newly built 1-mile spur to the town of Copco and the powerhouse (Boyle 1976:14).

A number of issues, including finances, continued to delay the work. In an effort to obtain financing, Copco reorganized in 1916, and was able to attract new capital from investors in San Francisco (Kramer 2003b:20). Copco also revised the original construction plans to save on costs. As discussed above, the revised plans reduced the powerhouse from four to two units, decreasing the system load factor from 40,000 kW to 20,000 kW (Boyle 1976:15).

At this time, Copco also worked to overcome a major construction obstacle related to building materials. The work site contained insufficient quantities of sand or gravel, necessary components of the concrete mixture to be used in erecting the dam structure. Copco engineers and chemists tested volcanic cinders in a nearby cone and determined that the cinders would constitute a satisfactory aggregate in the concrete mixture (*Ashland Tidings* 1916a). (See DPR 523A and 523B for Copco No. 1 dam.)

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Property Name: Copco No. 1 Historic District  
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### D6. Significance (continued):

The Copco No. 1 Development was designed to provide a major source of electricity to local industry, commerce, and agriculture, as electric engines increasingly replaced steam engines in operations such as mills and irrigation pumps (*Ashland Tidings* 1916b). In fact, the entire Copco No. 1 construction operation itself was powered by electricity. D.W. Cole, senior engineer at the U.S. Reclamation Service (later U.S. Bureau of Reclamation), noted that the electric operation at Copco No. 1 provided “a peculiarly modern appearance and advantage over the noisy, smoky, unsightly and comparatively inconvenient steam apparatus which ordinarily characterizes construction machinery on large works” (*Evening Herald* 1916b). As work progressed, anticipation built in the Copco service area. The *Ashland Tidings* reported that Copco No. 1 would be “in the center of the [power] distributing system, covering 450 miles of territory and giving electrical service to thirty-four cities and towns in southern Oregon and northern California” (*Ashland Tidings* 1916a).

Dam construction concluded in November 1917; and within two weeks, a reservoir named Copco Lake filled behind the dam (*Evening Herald* 1917; *Mail Tribune* 1917). The creation of Copco Lake required relocation of the county road from Ager to Klamath Hot Springs. Copco rebuilt the inundated road at a higher elevation along a stretch of what became the Copco Lake shore. The reservoir also inundated a steel bridge that had to be rebuilt upriver and flooded local farm and ranchlands that Copco acquired as part of the project (*Evening Herald* 1916c; *Sacramento Bee* 1917b; *Oakland Tribune* 1915).

### Revisions to Original Plans

The Copco No. 1 design reflects a revised version of the original construction plans, implemented as a cost-savings measure. The modified design reduced the planned powerhouse capacity from four to two units and the system load factor from 40,000 kilowatts (kW) to 20,000 kW (Boyle 1976:15). The redesign also called for two 10-foot-diameter penstocks instead of a single 17-foot-diameter penstock. The redesigned penstocks eliminated the need for a forebay on the dam's downstream side. According to the *Journal of Electricity*, elimination of the forebay was considered a “novel feature of the development,” making full capacity of the Copco Lake storage reservoir available for immediate use (*Journal of Electricity* 1918). Eliminating the forebay also enabled Copco to build the powerhouse adjacent to the dam, instead of downriver at the current Copco No. 2 dam site (Copco n.d.:8; Boyle 1976:10).

The original plan for Copco No. 1 contemplated a dam fish ladder. However, California fish and game officials determined that the proposed 130-foot ladder, which would have been one of the world's tallest, was too steep for trout and salmon passage (*Mail Tribune* 1918; *Sacramento Union* 1918). As an alternative, Copco constructed a hatchery along Fall Creek, a tributary of the Klamath River, with its confluence just below the Copco No. 1 dam (Shebley 1919:39). The California Department of Fish and Game (CDFG) operated Fall Creek Hatchery, situated near the Fall Creek powerhouse, from 1919 until 1948, when the hatchery closed for economic reasons (Merriman 1974; *Sacramento Bee* 1918a). The hatchery was restored and reopened in 1979; it is now operated by the California Department of Fish and Wildlife (CDFW), formerly the CDFG (Kramer 2003a:13).

### *Copco No. 1 Begins Operations and Readies for Expansion*

Commercial operation of Copco No. 1 began on January 17, 1918 but the official dedication was held on February 2, 1918. A group of Copco officials and others attended the celebration (EMJ 1918:399; *Ashland Tidings* 1918). The *Sacramento Bee* reported that, “the floodgates of the great reservoir [Copco Lake] were opened for service by the California-Oregon Power Company. Following an inspection of the dam and the power house, dinner was served to the officials and the invited guests followed by speech making” (*Sacramento Bee* 1918b).

The new development linked to Copco's system in California's Siskiyou and Trinity Counties and the entire Southern Oregon service area. The development initially generated 15,000 horsepower, and its estimated cost of \$78 per horsepower unit made it one of the most economical power sources in the West (*Ashland Tidings* 1917). It greatly increased power availability in Copco's service area for domestic uses and irrigation and for industrial operations such as gold mining, dredging, saw mills, and box factories (Myrtle 1919). In fact, the activation of Copco No. 1 doubled Copco's service capacity. Customers in Copco's California service area were no longer dependent on the Rogue River for power generation (EMJ 1918:399). In 1918, Copco contracted with two California utilities, the Pacific Gas and Electric Company (PG&E) and Northern California Power Company (NCPC), to interconnect the three companies' systems, thereby increasing distribution of annual kilowatt-hours by 60 million. Proposed as a war emergency tie-in, Copco would supply 8,000 kW and extend its existing transmission system 95 miles south from Castella to the NCPC's main distributing substation in Kennett, Shasta County, California. An NCPC line 30 miles from Colusa Corners, Colusa County, would be reconstructed to increase voltage. PG&E would then extend its own line from Colusa Corners to Knights Landing in Yolo County, where it would join the company's high-tension transmission lines from the Sierras to San Francisco Bay (Myrtle 1919; Merrick 1918:150). Copco, PG&E, and NCPC shared the \$450,000 cost for the new transmission facilities (Boyle 1976:15).

Copco's role in this arrangement was to deliver Copco No. 1 power to Kennett to relieve NCPC's load at that center. This enabled NCPC to deliver more power through a new connection in the Sacramento Valley (Myrtle 1919). Through this interconnection, Copco obtained a market for power from its new plant, greatly increasing its revenue. The additional power demands on Copco No. 1 required Copco to install the second powerhouse generating unit at Copco No. 1 (Boyle 1976:15). At that time, Copco also raised the dam 14 feet to increase storage capacity in Copco Lake without drawing on the Upper Klamath River (Myrtle 1919).

## CONTINUATION SHEET

Property Name: Copco No. 1 Historic District  
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D6. Significance (continued):

### Expansion of Copco No. 1

Preparatory work for the installation of the second generating unit began in December 1921. In addition to raising the dam, Copco extended the length of the powerhouse, built Gatehouse No. 2, modified Gatehouse No. 1, and installed a single penstock. Based on photographs from 1917 and 1922, the powerhouse was nearly doubled in length. It appears that Gatehouse No. 1 was also modified to resemble the newly built Gatehouse No. 2 in both design and materials (SOHS 1917; Copco 1922). By April 1922, all excavation work, including a penstock tunnel and concrete foundation, had been completed. Beaver Portland Cement Company's Gold Hill plant in Jackson County, Oregon furnished the cement and Copco used rock from the quarry adjacent to Copco No. 1. Copco transported other building materials via motor trucks equipped with flanged wheels for adaption to rails along the KLRR. The 18,000-horsepower generating unit had already been in storage for several years, and work on the generator was scheduled to conclude on November 1, 1922 (Copco 1922; *Ashland Daily Tidings* 1922). Copco employed 175 to 200 workers to complete the Copco No. 1 expansion. The construction costs amounted to about \$500,000, with around \$25,000 in monthly payroll (*Sacramento Bee* 1922). Completion of the Copco No. 1 expansion coincided with relocation of the Copco headquarters from Yreka to Medford (*Mail Tribune* 1922).

The expansion and completion of Copco No. 1 was celebrated on November 5, 1922 with approximately 1,200 guests in attendance. The day's events began with a flag raising along the dam crest, live music, lunch, hydroelectric development tours, and activation of the powerhouse's second generating unit (Copco 1922). Attendees included officials of other regional power companies, such as Pacific Power general manager Lewis A. McArthur (Pacific Power acquired Copco in 1961). William A. Colvig, a judge from Medford who delivered mail along the Klamath River between Yreka and Klamath Falls during the 1850s, delivered the keynote address.

*Oregonian* reporter Addison Bennett seemed thoroughly impressed by Copco's achievements. Bennett wrote that, "[I]n every way the dam, powerhouses and the machinery installed are first class [*sic*]. In fact, everything being done by the company [Copco] is first class, as can be seen by viewing any of their plants" (Bennett 1922). Copco No. 1 has provided hydroelectric power to the region ever since.

### *Pacific Power Acquisition and Improvements*

Following completion of the Copco No. 1 expansion in 1922, most of the buildings and structures in Copco used for construction purposes were removed, including the large bunkhouses for work crews, equipment unloading platforms, and the cement mixing plant. Permanent facilities such as operator housing remained and families living in Copco still sent their children to the nearby Fall Creek School adjacent to the Fall Creek powerplant.

By 1961, Pacific Power acquired all Copco power facilities and starting work to integrate and modernize the newly merged systems. In 1964, as part of modernization, Pacific Power initiated the process of transferring control of Copco No.1 operations from its powerhouse to a proposed control center near the Copco No. 2 Powerhouse. The implementation of supervisory (remote) control of Copco No. 1 at the Copco No. 2 Powerhouse area caused Pacific Power to reassess worker housing needs at both developments, which resulted in reduced housing at Copco No. 1 and increased housing at Copco No. 2. In March 1964, Pacific Power officers confirmed that "some of the houses in the Copco area will be razed following completion of the program under way to modernize and remotely control the Copco 1 Plant" (Pacific Power 1964). Pacific Power subsequently demolished several 1920s-era bungalows in the town of Copco, leaving only two remaining. Meanwhile, during 1964-1965, additional worker facilities were under construction at the Copco No. 2 Powerhouse area, including a 12-person bunkhouse (Modern Bunkhouse), a new school (Fall Creek School), and a remodel of the Former Cookhouse/Bunkhouse, buildings that are still extant. In 1967-1968, Pacific Power built four more single-family worker residences (extant Ranch House Nos. 1 – 4) at Copco No. 2.

During the system modernization period of the 1960s, Copco No. 1 underwent major changes related not only to the system merger, but to natural events. In December 1964, the Klamath River experienced historic flooding that overwhelmed hydroelectric facilities along the river, particularly at Copco No. 1 and the new Iron Gate development. The flooding severely damaged the Copco No. 1 Powerhouse, requiring reconstruction of the eastern wall.

## CONTINUATION SHEET

Property Name: Copco No. 1 Historic District  
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D6. Significance (continued):

### **Re-Evaluation: Eligible Historic District**

The 2003 Request for Determination of Eligibility report for the KHP and the corresponding California and Oregon survey inventory forms did not formally evaluate the KHP Historic District and its resources under all four NRHP criteria (Kramer 2003b; Durio 2003a; Durio 2003b). The evaluation in the California DPR and the Oregon Inventory of Historic Properties Section 106 Documentation stated:

The resources of the Klamath River Hydroelectric Project are strongly associated with the early development of electricity in the southern Oregon and northern California region, and they played a significant role in the area's economy both directly and indirectly, through the role that increased electrical capacity played in the expansion of the region's timber, agriculture, and recreation industries during the first six decades of the 20th century. They are significant under Criterion A, as defined by the National Park Service, for its association with events that have made a significant contribution to the broad patterns of our history. Specific portions of the project, such as COPCO #1, are also significant under Criterion C for design and engineering characteristics that exemplify the design of early hydroelectric generation facilities. The applicable areas of significance for the project are **Commerce**, for the development of electrical services, and **Industry**, for the economic impact on the area as a result of abundant hydropower capacity. Individual resources such as the Fall Creek Powerhouse and COPCO #1 may also be evaluated under the area of Engineering. For industrial resources such as those associated with the Klamath River Hydroelectric Project, the inherent nature of the project as a continuously operating generation facility complicates the evaluation of integrity. New technologies are often required to allow a powerhouse, water management feature, or other element to continue functioning in a highly structured, highly regulated environment. (Durio 2003a; Durio 2003b).

The current study includes an expanded historic context and a reevaluation that applies all four criteria of the NRHP below.

### **Evaluation: Eligible Historic District/Contributes to Klamath River Hydroelectric Project Historic District**

#### **Criteria Analysis**

##### **NRHP Criterion A**

Copco No. 1, the first hydroelectric development completed by the California Oregon Power Company, contributes to the Klamath Hydroelectric Project (KHP) Historic District. The KHP is locally (regionally) significant under NRHP Criterion A in the area of **Commerce** for its role in the development of electrical generation and transmission services in the Southern Oregon – Northern California region, and in the area of **Industry** for the important role that electrical generation and transmission played in industrial expansion in California and the region (Kramer 2003b).

As a major component of the KHP, Copco No. 1 played a significant role in regional commerce for substantially increasing the output of the Copco system to meet growing regional demands for electricity. Copco No. 1 also significantly contributed to the development of regional industry in two ways. First, Copco No. 1 was a major development of a “regionally-significant, locally-owned and operated, private utility” (Kramer 2003b:58). Second, as part of the Copco system, Copco No. 1 supplied power that contributed to the early-twentieth-century growth of regional industries, such as timber, mining, agriculture, and recreation (Kramer 2003b:58).

##### **NRHP Criterion B**

Research has not indicated that Copco No. 1 is associated with any historically significant individuals under NRHP Criterion B.

##### **NRHP Criterion C**

The Copco No. 1 dam, powerhouse, and water conveyance system are collectively significant under NRHP Criterion C (Engineering) for embodying the distinctive characteristics of an early-twentieth-century hydroelectric development that implemented technological advances in its conception, design, and construction.

The dam is also individually significant under NRHP Criterion C (Engineering) for its distinctive method of concrete block construction and pioneering use of local cinder ash in the cement mixture.

##### **NRHP Criterion D**

Copco No. 1 is not significant as a source (or likely source) of important information regarding history or prehistory. It does not appear likely to yield important information about historic construction materials or technologies and is not significant under NRHP Criterion D.

## CONTINUATION SHEET

Property Name: Copco No. 1 Historic District  
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D6. Significance (continued):

### **Period of Significance (Copco No. 1 Historic District): 1918 – 1970**

Copco No. 1's period of significance begins in 1918, when the development began generating power, and ends in 1970, when Pacific Power finished the construction program designed to modernize its power transmission facilities and integrate them with the existing Copco system.

### **Integrity Analysis**

In addition to meeting one or more of the NRHP criteria, a property must also retain a significant amount of its historic integrity to its period of significance to be considered eligible for listing. Integrity is the authenticity of an historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. The Copco No. 1 hydroelectric development retains overall integrity of location, design, setting, materials, workmanship, feeling, and association; and continues to convey its historic identity as an early-twentieth-century hydroelectric development. According to the Klamath Hydroelectric Project Historic Context, "Minor alterations, particularly to support facilities or improvements to generation facilities that enable their continued function within the system do not seriously reduce the ability to convey original character or association with historic events and themes under [the] context" (Kramer 2003b:57).

**Location** is the place where the historic property was constructed or the place where the historic event took place. Copco No. 1 retains integrity of location, because primary district components, such as the dam, water conveyance system, and powerhouse, remain in their original locations.

**Design** is the composition of elements that constitute the form, plan, space, structure, and style of a property.

Copco No. 1 retains integrity of design, generally conveying the original as-built construction. Certain alterations to the development, which have occurred over time, are historic in their own right. For instance, in 1922, Copco raised the dam by 14 feet to substantially increase reservoir storage and output capacity. At that time, Copco installed the single penstock, built Gatehouse No. 2, enlarged the powerhouse, and added a second powerhouse generator unit. These design modifications and augmentations occurred during the period of significance, and only 4 years after the development's original completion. The powerhouse has undergone post-1922 alterations, which are detailed in the DPR 523B form for the Copco No. 1 powerhouse. The alterations to the powerhouse reflect modifications over time, but do not substantially diminish the district's overall integrity of design.

**Setting** is the physical environment of a historic property that illustrates the character of the place.

Copco No. 1 retains integrity of setting, which consists of the surrounding canyon, river, and associated hydroelectric structures. Copco No. 1 was constructed in Ward's Canyon, a remote, undeveloped area of the Klamath River basin in Siskiyou County, California. The development's setting is characterized by the Klamath River, Copco Lake (impounded by the dam), the canyon's basalt rock formations, and the largely undeveloped landscape. The gravel road that provides access to the dam and powerhouse appears to follow the alignment of the historic Klamath Lake Railroad spur, which Copco used for dam construction. The Copco No. 2 Dam, built 0.25 mile downriver in 1925 as an extension of the Klamath River hydroelectric project, is a smaller dam that operates in conjunction with Copco No. 1. During dam construction, a bustling worker town named "Copco" was located on the bluff above the dam site. Most of the town's buildings and structures have been removed; however, they served their limited purposes for staging, construction, and temporary worker accommodations. Their absence does not substantially diminish the integrity of Copco No. 1's overall setting.

**Materials** are the physical elements combined in a particular pattern or configuration to form the historic property.

Copco No. 1 retains integrity of materials, particularly the massive concrete elements in the gravity arch dam and the steel elements in the penstocks.

**Workmanship** is the physical evidence of the crafts of a particular culture or people during any given period of history. Copco No. 1 also retains integrity of workmanship; specifically, the engineering skill demonstrated by the excavation of the canyon walls, the dam alignment, arched shape, and stepped downstream face, as well as the interconnection between the dam, penstocks, and powerhouse.

**Feeling** is the quality that a historic property has in evoking the aesthetic or historic sense of a past period of time.

The Copco No. 1 engineering features—the dam, penstocks, and powerhouse—as well as the remote setting and intensive use of natural and industrial construction materials, collectively convey the historic character of an early-twentieth-century hydroelectric development, and support integrity of feeling.

**Association** is the direct link between a property and the event or person for which the property is significant.

The presence of the intact, historic physical features at this location directly links the property with early power development in the region, contributing to integrity of association.

## CONTINUATION SHEET

Property Name: Copco No. 1 Historic District  
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D6. Significance (continued):

**In conclusion, Copco No. 1 is an eligible Historic District that is locally (regionally) significant in the areas of Commerce and Industry and retains integrity to convey its significance. The Copco No. 1 Historic District also contributes to the larger KHP Historic District.**

Table 1.

<b>Copco No. 1 Historic District Resources</b>	<b>Construction, Major Alterations</b>	<b>Previous NRHP Recommendations and Criteria: A, B, C, D [by Kramer 2003a and Durio 2003]</b>	<b>Current AECOM NRHP Eligibility Evaluations</b>
Dam	1918 (Dam and Gatehouse No. 1 completed), 1922 (dam raised and Gatehouse No. 2 completed)	Contributing to KHP Historic District: Criterion A	Contributing: NRHP Criterion A.  Individually eligible: NRHP Criterion C.  Dam, water conveyance system, and powerhouse collectively contributing: NRHP Criterion C.
Water conveyance system	1918 (double penstock), 1922 (single penstock)	Contributing: Criterion A	Contributing: NRHP Criterion A.  Dam, water conveyance system, and powerhouse collectively contributing: NRHP Criterion C.
Powerhouse [Primary #47-002267]	1918 (completed), 1922 (expanded)	Contributing: Criterion A	Contributing: NRHP Criterion A.  Dam, water conveyance system, and powerhouse collectively contributing: NRHP Criterion C.
Bungalow 1107	circa 1925	Contributing: Criterion A	Contributing: NRHP Criterion A.
Bungalow 1108	circa 1925	Contributing: Criterion A	Contributing: NRHP Criterion A.
Warehouse 1112	circa 1913	Contributing: Criterion A	Contributing: NRHP Criterion A.
Guesthouse remnants [Primary #47-002824]	circa 1917 (completed) circa 1980 (mostly demolished)	Contributing: Criterion A	Contributing: NRHP Criterion A.

## CONTINUATION SHEET

Property Name: Copco No. 1 Historic District  
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### D7. References (continued):

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## CONTINUATION SHEET

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Photographs:



**Photograph 1.** Copco No. 1 Dam, powerhouse, penstocks, Gatehouse No. 1, and substation; facing southwest, 2018



**Photograph 2.** Copco No. 1 Powerhouse; facing northeast, 2018.

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Property Name: Copco No. 1 Historic District  
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Photographs (continued):



**Photograph 3.** Copco No. 1 Dam, diversion intake, and gate hoist system; facing east, 2018.



**Photograph 4.** Copco No. 1 single penstock, with double penstock, and powerhouse in background; facing southeast, 2018.

## CONTINUATION SHEET

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Photographs (continued):



**Photograph 5.** Copco No. 1 Substation; facing southeast, 2018.



**Photograph 6.** Line No. 15; facing northwest, 2018.

## CONTINUATION SHEET

Property Name: Copco No. 1 Historic District  
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Photographs (continued):



**Photograph 7.** Copco Lake; facing northeast, 2018.



**Photograph 8.** Siskiyou Electric Power & Light Company (SEP&L) surveyors, including John C. Boyle (second from right) at William Lennox ranch (Camp No. 1) in June 1910 (SOHS 1910). From left: Frank Silva, Howard O'Connor, Lawrence Sinka, Bill Lennox, J.C. Boyle, and Mona Lennox.

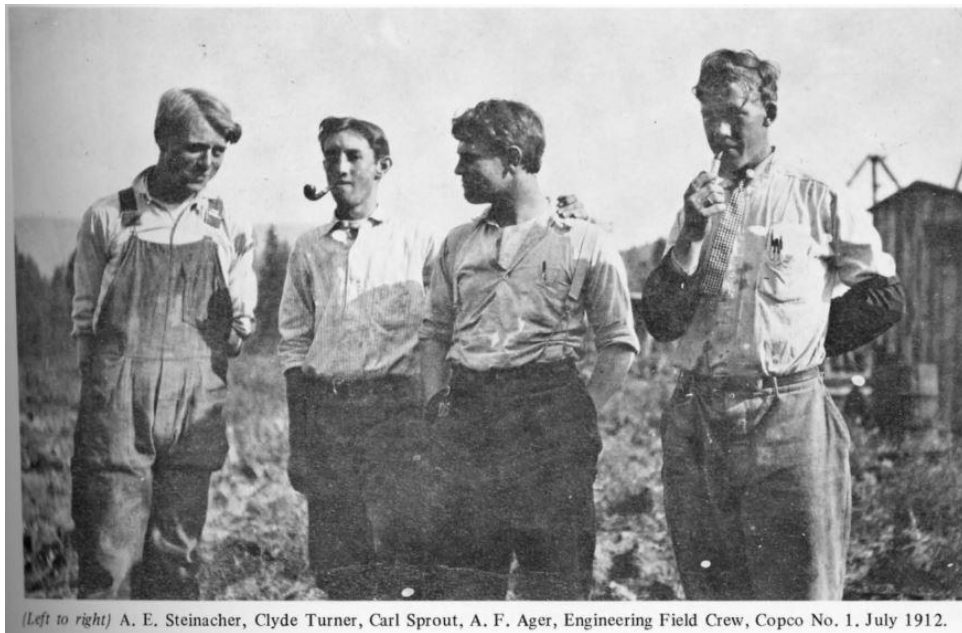
## CONTINUATION SHEET

Property Name: Copco No. 1 Historic District  
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Photographs (continued):



**Photograph 9.** Copco Reservoir, showing proposed dam and reservoir site, July 1911 (SOHS 1911).



(Left to right) A. E. Steinacher, Clyde Turner, Carl Sprout, A. F. Ager, Engineering Field Crew, Copco No. 1, July 1912.

**Photograph 10.** Copco No. 1 engineering field crew, showing from left: A.E. Steinacher, Clyde Turner, Carl Sprout, and A.F. Ager (Boyle 1976).

## CONTINUATION SHEET

Property Name: Copco No. 1 Historic District  
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Photographs (continued):



**Photograph 11.** Copco No. 1 construction, showing powerhouse, circa 1914 (PacifiCorp Archive image C01-17).

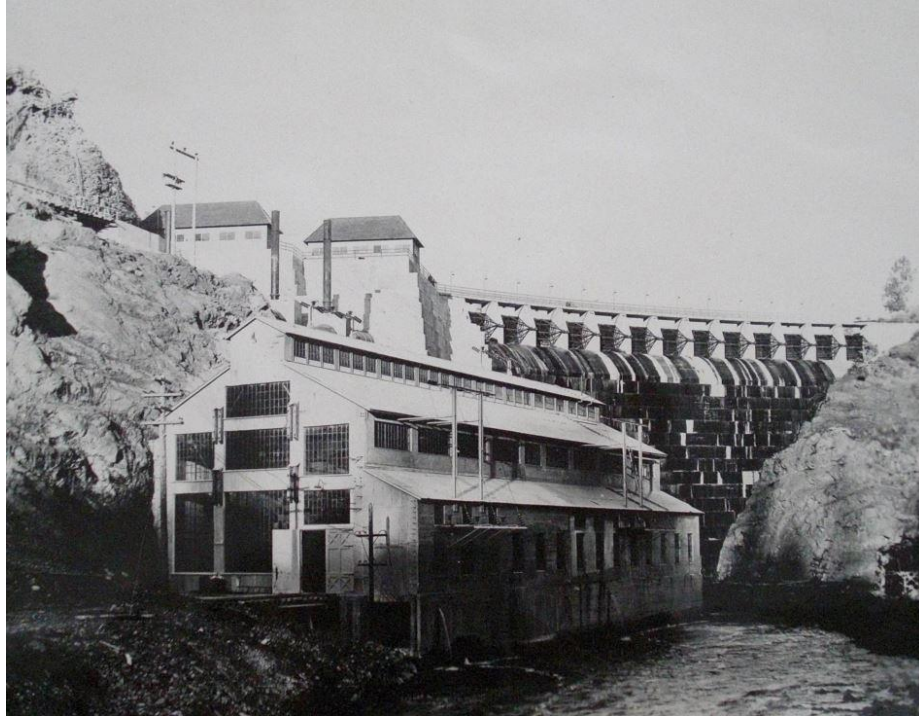


**Photograph 12.** Copco No. 1, showing powerhouse, dam, and Gatehouse No. 1, December 1917 (SOHS 1917).

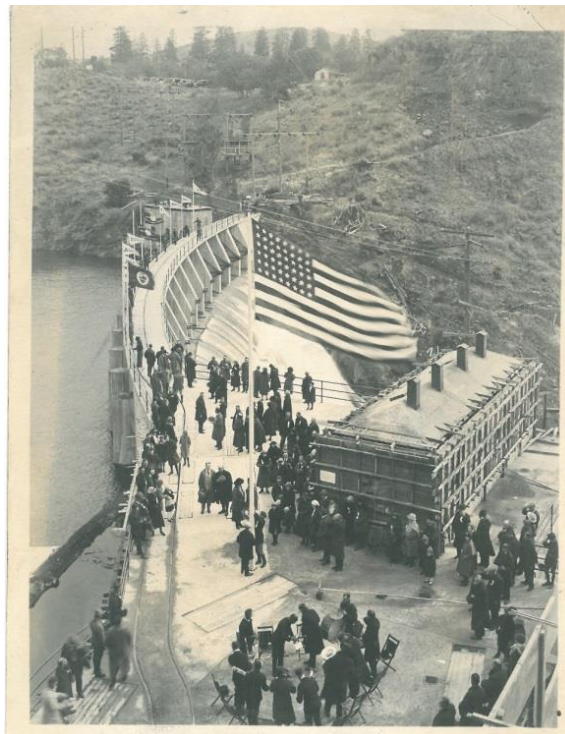
## CONTINUATION SHEET

Property Name: Copco No. 1 Historic District  
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Photographs (continued):



**Photograph 13.** Copco No. 1 after dam raised and Gatehouse No. 1 added, circa 1922 (SOHS circa 1922).  
Note that the powerhouse has been significantly enlarged to accommodate the second generating unit.

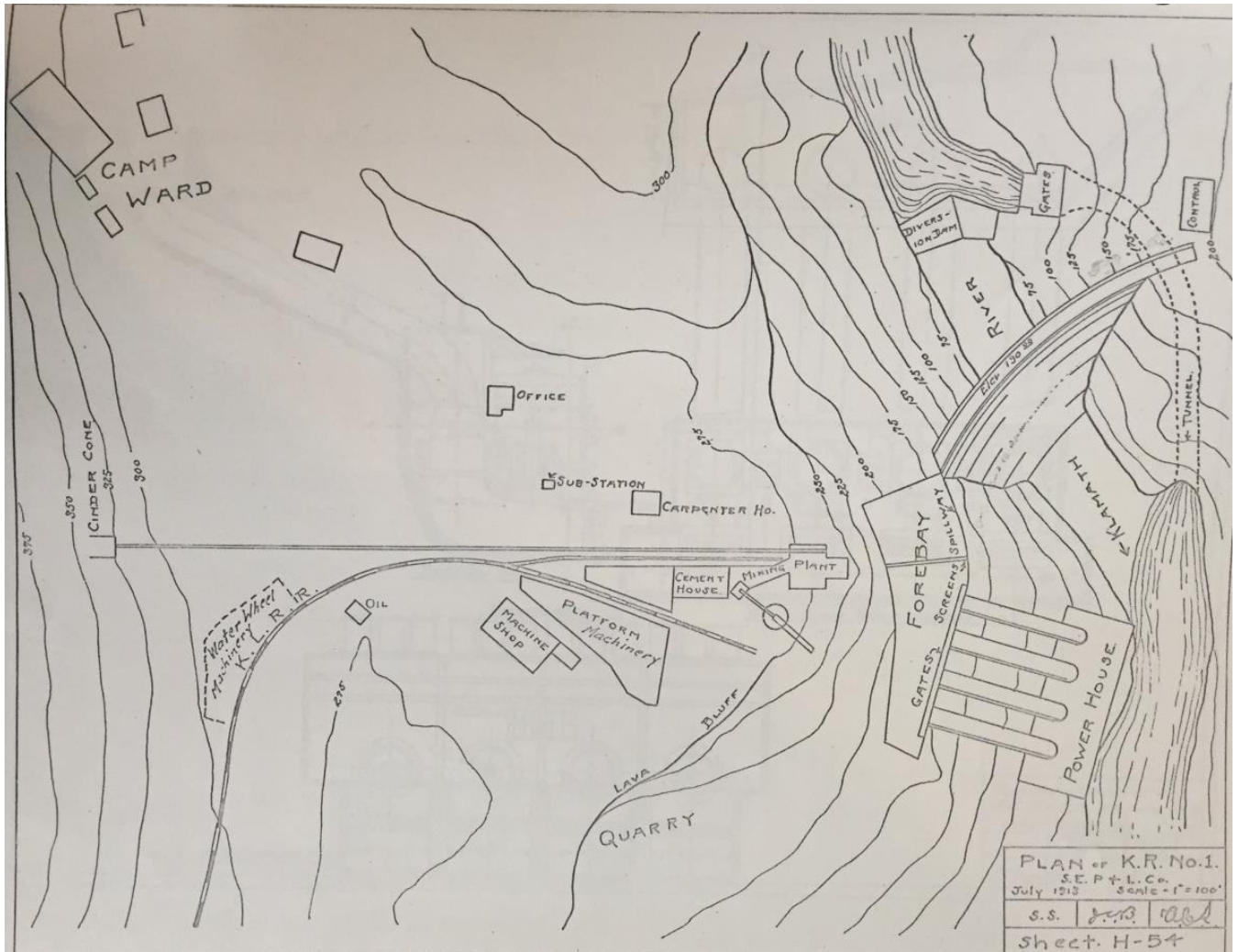


**Photograph 14.** Copco No. 1 dedication, showing dam crest and Gatehouse No. 1, 1918  
(PacifiCorp Archive image CO1-1).

## CONTINUATION SHEET

Property Name: Copco No. 1 Historic District  
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Figures:



**Figure 1.** Plan of K.R. No. 1: Early plan for Copco No. 1 that included a forebay (which was never built), 1913. The drawing indicates the location of Camp Ward, predecessor to the town of Copco (SOHS 1913).

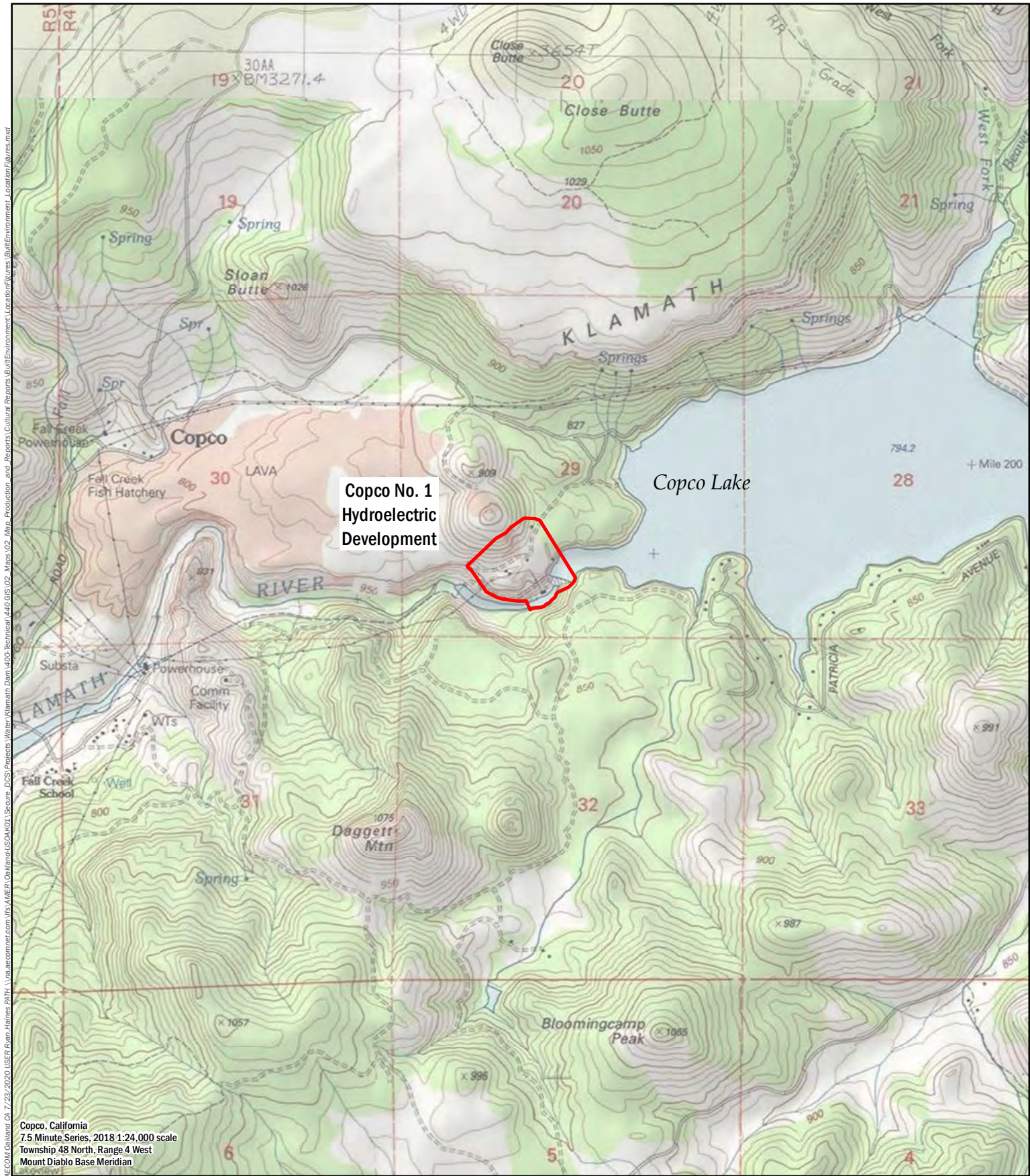
State of California - Natural Resources Agency  
DEPARTMENT OF PARKS AND RECREATION


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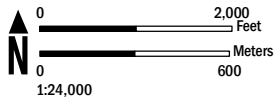
## LOCATION MAP

Property Name: Copco No. 1 Historic District  
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\*Map Name: \_\_\_\_\_ \*Scale: \_\_\_\_\_ \*Date of map: \_\_\_\_\_



 Copco No. 1 Hydroelectric Development



**Copco No. 1 Hydroelectric Development**

**Klamath River Dam Removal  
 Copco Road  
 Copco, Siskiyou County, California**

**AECOM**  
 July 2020

## SKETCH MAP

Property Name: Copco No. 1 Historic District

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\*Drawn by: \_\_\_\_\_

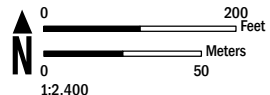
\*Date of map: \_\_\_\_\_

AECOM Oakland CA 7/29/2020 USER Ryan.Haines PATH: \\va.alconet.com\VA\AMER\_Oakland\USD\AK01\Secure\_DCS\Projects\Water\Klamath Dam\400-Technical\440 GIS\02 Maps\02 Map\_Production\_and\_Reports\Cultural\Reports\BulEnvironment\LocationFigures\BulEnvironment\_SiteFigures.mxd



Image Source: GMA Hydrology, Inc., 2018

 Copco No. 1 Hydroelectric Development



Copco No. 1 Hydroelectric Development

Klamath River Dam Removal  
Copco Road  
Copco, Siskiyou County, California

**AECOM**  
July 2020

## PRIMARY RECORD

Primary #47-004015

HRI #

Trinomial

NRHP Status Code 3B

Other Listings  
Review Code

Reviewer

Date

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Resource Name or #: Copco No. 1 Dam

P1. Other Identifier: Copco No. 1 Dam

\*P2. Location: ☒ Unrestricted

\*a. County: Siskiyou

\*b. USGS 7.5' Quad Copco, CA Date 2018 T 48N; R 4W; SE 1/4 of SW 1/4 of Sec 29; Mount Diablo B.M.

c. Address \_\_\_\_\_ City \_\_\_\_\_ Zip \_\_\_\_\_

d. UTM: Zone 10 T, 55121mE/4647704mN

e. Other Locational Data: N/A

\*P3a. Description:

The Copco No. 1 Dam was completed in 1918 as a primary component of the Copco No. 1 hydroelectric development. In the narrow, V-shaped gorge of Ward's Canyon, Copco engineers excavated the dam site to a depth of 125 feet before reaching solid bedrock and built the dam to a height approximately 115 feet above the riverbed (*Sacramento Bee* 1917). Prominent civil engineer Hermann Schussler designed the dam with his distinctive reinforced-concrete block method. The design employed iron reinforcing bars that were twisted to improve their bonds with the concrete blocks. In 1922, four years after initial operations, Copco raised the dam approximately 14 feet to increase reservoir storage capacity as part of the Copco No. 1 hydroelectric development expansion.

See Continuation Sheets.

\*P3b. Resource Attributes: (HP21) Dam (Concrete gravity arch)

\*P4. Resources Present: ☒ Structure ☒ Element of District

P5a. Photograph:



P5b. Description of Photo: Copco No. 1 Dam, viewing east (June 11, 2018).

\*P6. Date Constructed/Age and Source: ☒ Historic, 1918, 1922 (PacifiCorp archive image CO1-1)

\*P7. Owner and Address:  
PacifiCorp  
825 NE Multnomah, Suite 1500  
Portland, OR 97232

\*P8. Recorded by:  
Shoshana Jones, AECOM  
111 SW Columbia Street, Suite 1500  
Portland, OR 97201

\*P9. Date Recorded: June 11, 2018

\*P10. Survey Type: Intensive Level

\*P11. Report Citation: Klamath River Renewal Corporation. 2021. Lower Klamath Project Built Environment Technical Report.

\*Attachments: ☒ Location Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record

## BUILDING, STRUCTURE, AND OBJECT RECORD

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\*NRHP Status Code: 3B

\*Resource Name or #: Copco No. 1 Dam

B1. Historic Name: Klamath River Dam, Ward's Canyon Dam

B2. Common Name: Copco No. 1 Dam

B3. Original Use: generate hydropower B4. Present Use: generate hydropower

B5. Architectural Style: concrete gravity arch dam

B6. Construction History: The Copco No. 1 dam was originally constructed in 1918 as a major component of the Copco No. 1 hydroelectric development. Copco substantially expanded Copco No. 1 in 1922 to increase power output by raising the dam height, erecting a second gatehouse at the dam's western abutment, installing the single penstock, enlarging the powerhouse structure, and activating a second generating unit. Workers poured about 11,000 cubic yards of concrete to raise the dam by approximately 14 feet (originally planned for 20 feet) and used 150 tons of steel-reinforcement materials. Approximately 250,000 feet of lumber were used, mostly for fabricating the concrete forms (*Sacramento Bee* 1922). The single-track rail spur used during initial construction, which extended across the dam crest, was converted for use in the current gate hoist system (Kramer 2003:8). In 1981, the gate hoist mechanism was repaired, and a new engine and pulley hoist installed (Durio 2003: 7/57). The dam's stop-log system was installed in 1992 and modified in 1994 (PacifiCorp 2004:5-2). Field observation in May 2018 confirmed that the gated concrete intake, used for flow regulation during dam construction, remains abandoned in place and non-operational.

B7. Moved? No

B8. Related Features: The dam is a contributing resource to the Copco No. 1 Historic District, which is within in the larger Klamath Hydroelectric Project (KHP) Historic District. The KHP Historic District consists of seven hydroelectric developments, including Copco No. 1, in Southern Oregon and Northern California.

B9a. Architect: Hermann Schussler

b. Builder: California Oregon Power Company (Copco)

B10. Significance:

Theme: hydroelectric power development

Area: Southern Oregon and Northern California

Period of Significance: 1918-1970 (Copco No. 1 Historic District)

Property Type: Dam

Applicable Criteria: National Register of Historic Places (NRHP) Criterion A (contributing) and NRHP Criterion C (contributing and individually eligible)

See Continuation Sheets.

B11. Additional Resource Attributes: (HP21)—concrete gravity arch dam

B12. References:

AECOM. 2017. Klamath River Renewal Project. California Environmental Quality Act (CEQA) and California and Oregon 401 Water Quality Certifications Technical Support Document. Submitted to: California State Water Resource Control Board and Oregon Department of Environmental Quality. Submitted by Klamath River Renewal Corporation. September.

See Continuation Sheets.

B13. Remarks: None

B14. Evaluator: Shoshana Jones, AECOM

Date of Evaluation: June 11, 2018

(This space reserved for official comments.)



## CONTINUATION SHEET

Property Name: Copco No. 1 Dam  
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### P3a. Description (continued):

Copco No. 1 generates power by the force of water flowing from the higher-level reservoir, Copco Lake, through the dam and into the penstocks. As water flows from the penstocks into the powerhouse scroll case, vanes in the scroll case direct the water against the blades of the water wheel, which turn the turbine. The turbine blades are connected to a shaft that turns the generator. Within the generator, one set of coils creates a magnetic field through which the other set of coils passes, breaking the magnetic field and generating electricity. The electricity is transmitted over transmission lines connected to the powerhouse. After turning the turbine blades, the reservoir water discharges into the tailrace (the Klamath River at the dam's downstream side).

Copco No. 1 Dam is a concrete gravity arch structure approximately 135 feet tall, with a 492-foot radius at the upstream face. The crest length between the rock abutments is approximately 410 feet at elevation 2,613. The upstream face of the dam is vertical at the top, then battered at 1 horizontal to 15 vertical. The downstream face is stepped, with risers generally about 6 feet in height. A 224-foot-long, ogee-type overflow spillway is located on the crest of the dam and is divided into 13 bays controlled by 14-foot by 14-foot radial (Tainter) gates, with a spillway crest at elevation 2,593.5. Individual hoists are not provided for every gate. Instead, three electrically-powered traveling gate hoists operate the spillway gates and stop-log slots are provided upstream of each opening. One of the three hoists has an auxiliary gasoline engine for emergency use in the event of an electric power failure. Two of the hoists are kept permanently connected to gates, and can be operated at the dam, or from Copco No. 1 powerhouse, or at Copco No. 2 (USBR 2012:20-21).

As originally designed, the spillway crest was approximately 115 feet above the original river bed. After construction began, the river gravel was found to be over 100 feet deep at the dam site, and was excavated and then backfilled with concrete, making the total structural height of the dam 230 feet, measured from the lowest depth of excavation to the spillway crest, or 250 feet to the top of the spillway deck. The estimated spillway discharge capacity at River Water System (RWS) elevation 2,607.5, with all 13 gates fully open, is 34,000 cubic feet per second. The normal tailwater surface for powerhouse operation is maintained at elevation 2,483 by the Copco No. 2 dam located 0.25 mile downstream (USBR 2012:20-21).

A 16-foot by 18-foot diversion tunnel was excavated through the left abutment for streamflow diversion during construction but was later sealed by the construction of a concrete plug approximately 200 feet upstream from the downstream tunnel portal. A gated concrete intake structure was provided upstream of the dam for flow regulation of diversion releases during construction, containing three upstream 72-inch-diameter flap (or clack) valves, three 72-inch-diameter butterfly regulating valves, and three 12-inch-diameter filling lines with valves. All valves were manually operated from hoists on a concrete deck upstream of the left abutment of the dam, using gate stems and wire ropes. The current condition of the valves and upstream tunnel is unknown. The existing hoists, stems, and wire ropes were abandoned in place and are not currently operational (USBR 2012:20-21). The tunnel outlet is 13 feet above the original river bed (Fowler 1923:94).

The intakes for the penstocks are at approximately invert elevation 2,575.0 in the right (west) abutment section of the dam. Two cast-iron slide gates are provided for each penstock, with electric motor hoists in two concrete gatehouses. Two 10-foot-diameter (reducing to 8-foot-diameter) steel penstocks closest to the river feed Unit No. 1 in the powerhouse; while a single, 14-foot-diameter (reducing to two 8-foot-diameter) steel penstock feeds Unit No. 2. Additional facilities consisting of two slide gates and a short penstock section were provided adjacent to the penstocks for possible future expansion of the powerhouse with the addition of a third unit, which was never constructed. Trashracks with bar spacings of 3 inches are provided in front of each intake (USBR 2012:20-21).

The gatehouses that house the electric motor hoists are at the dam's western abutment. Gatehouse No. 1, built in 1918, and the adjacent Gatehouse No. 2, completed during the 1922 dam expansion, occupy the deck along the dam's northern abutment, and are oriented facing northeast (Durio 2003:61). The two similarly constructed gatehouses display rectangular plans, wood-frame construction, and poured-concrete walls. The steeply pitched hipped roofs have wide overhanging eaves, exposed rafter tails, and approximately 16-inch-long copper shingles. Fiberglass has replaced the original glazing in the double wood-frame awning windows, which retain their wood sills and surrounds.

Gatehouse No. 1, on the deck's eastern side, is situated closest to the spillway and supplies the double penstock. The gatehouse has a raised concrete foundation and two concrete steps that lead to a narrow loading dock extending along the northern (primary) elevation. This elevation has a symmetrical design with two pairs of double wood-frame awning windows flanking the centered wood double door. The identifier "C11" is printed on one leaf of the double door. The eastern elevation, closest to the spillway, has a centered double wood-frame window. The southern (rear) elevation contains a band of five symmetrically spaced, double wood-frame awning windows. The northern elevation lacks fenestration, but it appears that an original window has been infilled with concrete. The gatehouse interior is characterized by its wood-board ceiling with exposed wood beams and the concrete floor with metal grates covering the intake gates. A plaque is mounted on the raised foundation and reads, "COPCO Power Plant - Dedicated to Public Service - The Embodiment of Broad Vision, Abiding Faith, Unfaltering Devotion, Steadfast Courage, Consummate Skill, Masterful Leadership and Faithful Toil. 1918 1922." The plaque was installed in advance of the November 1922 dedication ceremony. Gatehouse No. 1 was rebuilt in 1922 to resemble the newly constructed Gatehouse No. 2 (SOHS 1917).

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### P3a. Description (continued):

Gatehouse No. 2, built in 1922, is 15 feet west of Gatehouse No. 1. The northern (primary) elevation has a symmetrical design with two pairs of double wood-frame awning windows flanking the metal double door (circa 2005) centered along the elevation. The door's small black sign with white lettering reads "C12 Gatehouse" ("C1" indicates Copco 1, "2" indicates Gatehouse 2). A plywood door centered along the eastern elevation appears inoperable. Three irregularly spaced wood-frame double-awning windows with fiberglass glazing occupy the southern (rear) elevation. A similar window is centered along the narrow western elevation. Historic photographs indicate that the western elevation had four symmetrically spaced windows, but one was infilled on an unknown date.

Copco No. 1 Dam, including Gatehouse No. 1, was originally constructed in 1918 as a major component of the Copco No. 1 hydroelectric development. Copco substantially expanded Copco No. 1 in 1922 to increase power output, which involved raising the dam height, erecting Gatehouse No. 2 at the dam's western abutment, installing the single penstock, enlarging the powerhouse structure, and activating a second generating unit. Workers poured about 11,000 cubic yards of concrete to raise the dam by approximately 14 feet (originally planned for 20 feet) and used 150 tons of steel-reinforcement materials. Approximately 250,000 feet of lumber were used, mostly for fabricating the concrete forms (*Sacramento Bee* 1922). The single-track rail spur used during initial construction, which extended across the dam crest, was converted for use in the current gate hoist system (Kramer 2003:8). In 1981, the gate hoist mechanism was repaired, and a new engine and pulley hoist installed (Durio 2003: 7/57). The dam's stop-log system was installed in 1992 and modified in 1994 (PacifiCorp 2004:5-2). Field observation in 2018 confirmed that the gated concrete intake, used for flow regulation during dam construction, remains abandoned in place and non-operational.

Features associated with the dam include a dynamite hole and a wood shed. Copco workers used the dynamite hole to store explosives during dam construction. Located in the canyon wall near the dam's western abutment, the hole is situated about 8 feet above grade, and measures approximately 4 to 5 feet high and 3 to 4 feet wide. During 2018 field work, the hole was covered with plywood sheet sections. The wood shed has an unknown construction date. It is an open wood-frame structure with corrugated metal roofing, about 250 feet northwest of the Copco No. 1 powerhouse. Measuring approximately 15 feet by 12 feet, the shed currently stores wooden stop-logs used for dam operations. During work on the powerhouse turbines, the stop-logs are placed in front of the intake gates to control water flow. Based on the shed's unknown construction date, it does not appear to be a contributing feature to the dam.

The dam and associated features appear to be in good condition.

### Historic Context

Copco No. 1 Dam was initially completed in 1918 within the narrow Klamath River gorge of Ward's Canyon. The gorge's shape and geology influenced the dam's form and height. Although dam architect Hermann Schussler designed Copco No. 1 Dam as a concrete gravity structure, the final construction reflects a curved plan that was an adaptation to the narrow site. As designed, the dam's original height was 115 feet from the riverbed to the spillway crest, however, during the early construction phase, work crews discovered that the dam site had a buried river channel about 120 feet deep that was filled with sand, gravel and boulders (Bechtel 1968:3-1). Buried river channels proliferate in volcanic regions, such as the Upper Klamath Basin, and occur when "a deeply incised stream is blocked by lava flows, resulting a lower stream gradient and subsequent backfilling of the channel" (Bechtel 1968:4-2). To address the buried channel, work crews diverted river flow through a 16 x 18-foot tunnel in the left abutment, excavated the channel, and backfilled it with concrete. The process required the construction of two concrete cutoff walls on the upstream and downstream sides to divert groundwater from the excavation process and minimize the requirement for dewatering pumping. The upstream wall's maximum thickness measured 20 feet and the downstream wall's measured eight feet. Crews ultimately incorporated these walls into the completed dam structure and the dam's final height measured 230 feet from the deepest point of excavation (Bechtel 1968:3-2).

### The Copco No. 1 Dam's Distinctive Block Construction

Dam architect Hermann Schussler's designed Copco No. 1 Dam using irregularly shaped concrete blocks rather than building the dam with concrete "en mass" (**Photograph 9** and **Plates 2 and 3**). The block method involved assembling concrete blocks of varying sizes with each block containing twisted iron rods with exposed ends to connect adjacent blocks. The blocks in each layer varied in height and were interlocked to interrupt continuous seams. The lack of a continuous seam or joint within the dam structure increased durability (Cain, et al. 1912:475-476). During a 1968 dam safety investigation, Bechtel Corporation noted that, "The concrete was poured with an intricate system of interlocking construction joints, both vertically and horizontally. None of the joints were grouted" (Bechtel 1968:3-4). Construction records indicate that the dam was reinforced throughout with 465 tons of 10 pound per foot steel rails (Bechtel 1990:3).

During the 1930s, the designers of the famed Boulder (Hoover) Dam used the same concrete block construction method as Schussler's 1890 Crystal Springs Dam and the Copco No. 1 Dam (Torgen 2008:111). In fact, the 1938 *Encyclopedia of American Biography* described the Copco No. 1 Dam as "a miniature of the famous Boulder Dam [completed in 1936 along the Arizona-Nevada border] in that the type of construction used is the block system, which was invented by Mr. Schussler, chief engineer of the Spring Valley Water Company" (Downs 1938:85). In 1918, the year that Copco No. 1 Dam was completed, Schussler delivered a presentation entitled, "[T]he Construction of the Copco Dam on Klamath River" to the American Society of Civil Engineers, San

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Property Name: Copco No. 1 Dam  
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### B10. Significance (continued):

Francisco Chapter. During his presentation, Schussler described Copco No. 1 Dam's distinctive features, including "the largest gate valves ever built on the Pacific Coast" (ENR 1918:780).

#### Copco No. 1 Dam's Innovative Use of Local Materials

The incorporation of volcanic ash extracted from a cinder cone near the dam site was an innovative use of natural materials in the construction of Copco No. 1 Dam. The site's geology not only influenced the dam's height, as discussed above, but also dictated the types of natural materials used in its construction. One of the primary materials quarried for dam construction was local basalt (volcanic rock). Work crews extracted columnar basalt from a quarry on the bluff above the dam site to obtain coarse and fine aggregate, then processed the basalt in a rock crusher for use in cement mixtures (Bechtel 1968:3-4). Although local basalt was plentiful, the area contained insufficient quantities of sand or gravel, which were necessary components of certain concrete mixtures. To address this issue, Copco engineers and chemists assessed the feasibility of using volcanic ash (cinders) from the nearby cinder cone (Ashland Tidings 1916). In 1913, construction supervisor John C. Boyle confirmed that cinder could be used in dam construction, stating that, "[B]ack from the edge of the bluff 400 ft. is a cinder cone of a consistent quality of black volcanic cinder, which, after analyses and extensive tests was found to be useful as a substitute for sand in the concrete" (Boyle 1913:175). After test results indicated that the cinders would serve as a satisfactory aggregate, the construction area was organized to excavate and process the cinders:

A gravity tramway to the edge of the bluff at the mixing plant will handle the cinder directly to the two sand machines, which together will crush it to the required size and deposit it in a storage bin below. The two rock breakers in the mixing plant will crush rock handled directly to them by the derrick from the quarry, and discharge the broken pieces into a storage bin beneath them. All the cement used will be handled from the cars to the storage house or directly from the cars to the mixing plant and after passing a small storage bin will be measured into the charging hoppers of the mixers. The ingredients thus passing into the mixture by gravity are mixed at the rate of 40 cu. ft. per batch into concrete. The concrete is discharged from the spouts of the mixers into open troughs in which it travels by gravity across the canyon or to any spot where it is to be placed. Remixers, boiling boxes and branch troughs can be placed where needed. For delivering the rock to be laid in the concrete, a rock cableway with a traveling carrier has been provided (Boyle 1913:175).

Copco employed a "cinder roaster" to remove moisture from the ash before it reached the mixing plant (Sprout et al. 1912-1913:93). After Copco discovered the cinder roaster did not sufficiently dry the cinders to prevent it from clogging the grinder gates which caused extensive wear on the equipment it was already used up to Elevation 2517 with the spillway crest at Elevation 2593.5) (Crawford 1923) (Bechtel 1968:3-4, 5-1). During a 1968 dam safety investigation, Bechtel Corporation identified 16 different mixes used during dam construction and noted that "varying amounts of crushed cinders were used in all the mixes in the buried river channel, and in the dam itself up to El. 2517" (Bechtel 1968:3-4, 5-1). In some cement mixes, Bechtel confirmed, workers supplemented fine aggregate with crushed volcanic ash (Bechtel 1968:3-4). In its report, Bechtel conceded that, "It is difficult to estimate what the effect of the crushed volcanic cinders would be on the concrete where it was used" but noted that "Volcanic ash is a source of pozzolona, and when ground to a fine powder and added to concrete, it is beneficial, reducing the rate of heat development, increasing sulphate resistance, and economizing on cement. However, if it is not finely ground it can act similarly to reactive aggregates and cause expansion and cracking of the concrete" (Bechtel 1968:6-2). In this case of Copco No. 1 Dam, the grading of the crushed ash used as a sand substitute is unknown (Bechtel 1968:6-3).

According to D.W. Cole, then senior engineer for the United States Reclamation Service, the use of cinder as concrete aggregate constituted a distinctive dam engineering method. Cole featured Copco No. 1 Dam construction in his 1916 article for the *Reclamation Record*, describing how Copco was "building a dam of notable magnitude and by somewhat new methods" (Cole 1916:472). Cole opined that, "[T]he one feature of this dam which is perhaps unique among all dams built in America is the use of volcanic cinders for the concrete aggregate" (Cole 1916:472). He explained how the cinder was extracted from the cone in varying sizes, "almost like a big gravel bank. The mass is easily excavated, spouted directly into big rock crushers, and thence through pulverizing machines for producing the supplementary supply of sand" (Cole 1916:472). Cole noted that, although the weight of the cinder was about 105 pounds per cubic foot, the "plum stones" (large stones) to be imbedded in the concrete were so heavily mineralized that the dam's in-place concrete would weight five pounds more than usual (155 pounds per cubic foot) (Cole 1916:472).

#### Hermann Schussler: Copco No. 1 Dam Architect

The interlocking method of concrete block construction, developed by Hermann Schussler (1842-1919) and used in the Copco No. 1 dam design, represented technological advances in dam construction during the late nineteenth and early twentieth centuries, cemented Schussler's status as a master dam architect of the era. Schussler was born in Oldenberg, Germany on August 2, 1842, graduated from the Prussian Military Academy of Oldenburg in 1862 (Ancestry.com 2007). During training as a civil engineer, he learned to fabricate pipe at the Lucerne Vulcan Iron Works in Germany, an experience that helped him design water systems in the United States. After arriving in California in 1864, Schussler began working as a civil engineer for the Spring Valley Water Works of San Francisco (SVWW) (WEF 2018).

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### B10. Significance (continued):

Schussler designed a number of dams and water systems for the SVWW but was best known for the 148-foot tall Crystal Springs dam (1890), located in San Mateo County, California and built inadvertently at the San Andreas Fault. One of the first concrete gravity dams in the American West, Crystal Springs was reportedly the world's largest concrete dam at the time of its construction (Richter 2005). The Crystal Springs dam's engineering gained notoriety after the dam survived the 1906 San Francisco earthquake without a crack (Oregonian 1917). (The dam also survived the 1989 destructive Loma Prieta earthquake.) Schussler's novel method of construction for the Crystal Springs dam incorporated numerous irregularly shaped concrete blocks and reflected his "exceptional engineering ability" (Richter 2005). Almost 30 years after completion of the Crystal Springs dam, Schussler implemented this interlocking concrete block method in the design for the Copco No. 1 Dam.

Schussler worked as a SVWW engineer for 51 years, mostly in the role of chief engineer. During his career at SVWW, Schussler supervised nearly all the company's water system projects. In 1905, President Theodore Roosevelt offered him a position on the Board of Consulting Engineers to consider plans for a Panama Canal, but Schussler was too busy with SVWW projects, and declined (SVWC 1929:7). Schussler resigned from SVWW in 1909 to enter private practice. Soon thereafter, Copco hired Schussler to design the Copco No. 1 Dam, which was completed shortly before Schussler died in 1919 (SVWC 1929:7).

### **Evaluation (Contributes to Copco No. 1 Historic District and Individually Eligible)**

#### **Criteria Analysis**

##### NRHP Criterion A

The Copco No. 1 Historic District contributes to the larger KHP Historic District, both of which are significant under NRHP Criterion A in the areas of Commerce and Industry. The Copco No. 1 Dam adds to the significance of the Copco No. 1 Historic District by impounding the Copco Lake Reservoir, which enables the generation of hydroelectric power.

##### NRHP Criterion B

Research does not indicate that the dam is associated with any historically significant individuals under NRHP Criterion B. The dam was designed by master hydro-engineer Hermann Schussler; however, Schussler's significant association with the dam is more appropriately analyzed under NRHP Criterion C as the work of a master.

##### NRHP Criterion C

The dam, water conveyance system, and powerhouse are collectively significant under NRHP Criterion C in the area of Engineering for embodying the distinctive characteristics of an early-twentieth-century hydroelectric development that implemented technological advances in its conception, design, and construction.

The dam is also individually significant under NRHP Criterion C in the area of Engineering for its distinctive interlocking block construction, innovative use of cinder ash in the cement mixtures, and association with master hydro-engineer Hermann Schussler.

##### NRHP Criterion D

The Copco No. 1 Dam is not significant as a source (or likely source) of important information regarding history or prehistory. It does not appear likely to yield important information about historic construction materials or technologies and is not significant under NRHP Criterion D.

#### **Integrity Analysis**

The Copco No. 1 Dam retains integrity of location, design, setting, materials, workmanship, feeling, and association; and continues to convey its historic identity as an early-twentieth-century hydroelectric development dam.

**Location** is the place where the historic property was constructed or the place where the historic event took place. The dam retains integrity of location, because it remains at its original location in Ward's Canyon.

**Design** is the composition of elements that constitute the form, plan, space, structure, and style of a property. The dam retains integrity of design as a gravity arch dam with distinctive interlocking concrete block construction. Although Copco raised the dam by about 14 feet and added Gatehouse No. 2 in 1922, these historic alterations occurred only four years after the dam was erected and were part of the original plan to increase reservoir storage capacity and enable the development to generate additional power. Non-historic alterations, such as the gate hoist upgrade in 1981 and stop-log installation in 1992, are relatively minor alterations to improve the facilities and enable their continued function within the system. These types of alterations do not "seriously reduce the ability to convey original character or association with historic events and themes under [the] context" (Kramer 2003:57). Furthermore, these alterations do not detract from the dam's distinctive concrete-block method of construction.

**Setting** is the physical environment of a historic property that illustrates the character of the place. The dam retains integrity of setting. The Copco No. 1 hydroelectric development was constructed in Ward's Canyon, a remote, undeveloped area of the Klamath River basin in Siskiyou County, California. The dam's setting is characterized by the downstream Klamath River, the upstream Copco

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### B10. Significance (continued):

Lake (which the dam impounds), a cinder cone, basalt formations, pine trees, and other vegetation. The gravel roads that provide access to the dam and powerhouse follow the alignment of the former Klamath Lake Railroad spur, used during dam construction.

**Materials** are the physical elements combined in a particular pattern or configuration to form the historic property. The dam retains integrity of materials, particularly its massive blocks of reinforced concrete.

**Workmanship** is the physical evidence of the crafts of a particular culture or people during any given period of history. The dam retains integrity of workmanship, as demonstrated by the engineering skill required to excavate the site, align the dam, form the dam's arched shape, assemble the massive interlocking concrete blocks, and integrate the dam with the water conveyance system.

**Feeling** is the quality that a historic property has in evoking the aesthetic or historic sense of a past period of time. The dam's remote setting and intensive use of industrial construction materials convey the historic character of an early-twentieth-century hydroelectric dam and contribute to integrity of feeling.

**Association** is the direct link between a property and the event or person for which the property is significant. The presence of the intact dam and its related features at this location directly link the property with early power development in the Southern Oregon-Northern California region, contributing to integrity of association.

**The Copco No. 1 Dam retains a high level of integrity and is eligible as a contributing resource to the Copco No. 1 Historic District. The dam is also individually eligible.**

Table 1.

Resource(s)	Construction/ Major Alterations	Applicable NRHP Criteria	Area(s) of Significance	Contributing/ Individually Eligible
Dam	1918 (completed)	A	Commerce and Industry	Contributing
	1922 (expanded)	C	Engineering	Individually Eligible
Dam, powerhouse, and water conveyance system (collectively)	1918 (completed) 1922 (expanded)	C	Engineering	Contributing

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Property Name: Copco No. 1 Hydroelectric Development  
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### B12. References (continued):

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#### Bechtel Corporation

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PacifiCorp. 2004. Klamath Hydroelectric Project. FERC No. 2082. Cultural Resources Final Technical Report and Associated Confidential Documents. Exhibit C. Construction History and Proposed Construction. February.

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-----1922. "Work of Enlarging Copco Power Plant is Rushed." September 9.

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SOHS (Southern Oregon Historical Society). 1917. J.C. Boyle Collection, photograph.

## CONTINUATION SHEET

Property Name: Copco No. 1 Hydroelectric Development  
Page 8 of 21

### B12. References (continued):

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WEF (Water Education Foundation). 2018. "Hermann Schussler: A Water Systems Engineer and Architect of Bay Area Dams." From the San Mateo Daily Journal, June 8, 2009. <https://www.watereducation.org/aquaforia-news/hermann-schussler-water-systems-engineer-and-architect-bay-area-dams> (accessed August 21, 2018).

## CONTINUATION SHEET

Property Name: Copco No. 1 Dam  
Page 9 of 21

Photographs:



**Photograph 1.** Copco No. 1 Dam; view facing southwest, 2018.



**Photograph 2.** Copco No. 1 Dam, showing gate hoist system along crest and diversion intake; view facing southeast, 2018.

## CONTINUATION SHEET

Property Name: Copco No. 1 Dam  
Page 10 of 21

### Photographs (continued):



**Photograph 3.** Copco No. 1 dam, showing Gatehouse Nos. 1 and 2, single penstock, and double penstock; view facing east, 2018.



**Photograph 4.** Diversion tunnel's downstream outlet; view facing northeast (AECOM 2017:2-11).

## CONTINUATION SHEET

Property Name: Copco No. 1 Dam  
Page 11 of 21

### Photographs (continued):



**Photograph 5.** Gatehouse No. 1, showing dedication plaque; view facing south, 2018.



**Photograph 6.** Detail of plaque mounted on northern elevation of Gatehouse No. 1, 2018.

## CONTINUATION SHEET

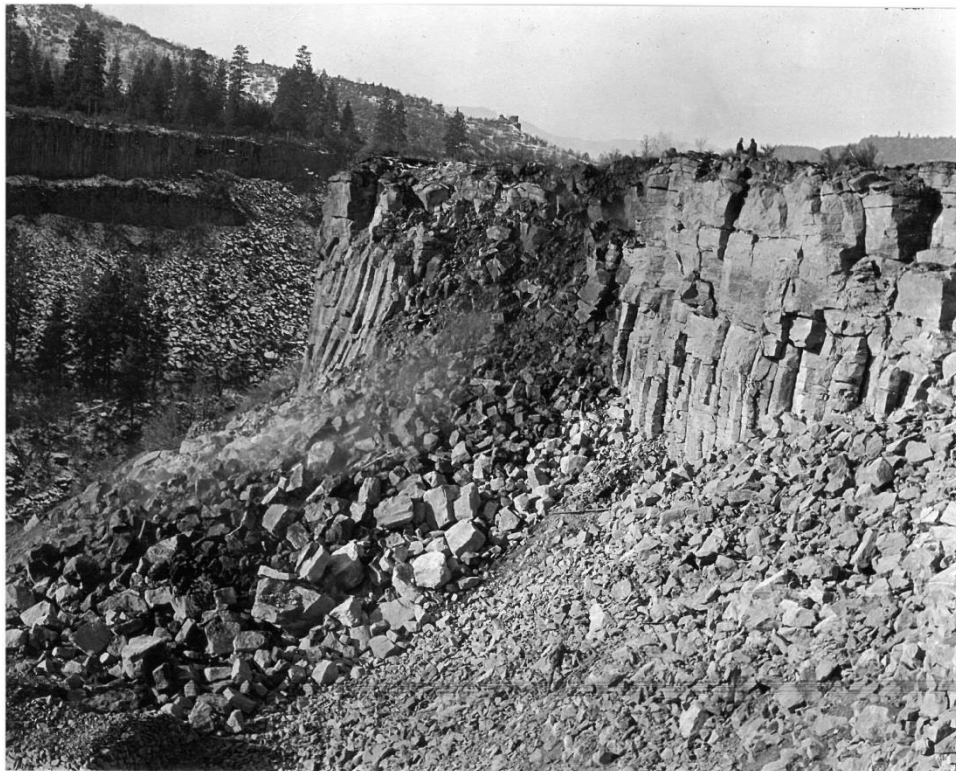
Property Name: Copco No. 1 Dam

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### Photographs (continued):



**Photograph 7.** Gatehouse No. 2; view facing west, 2018.



**Photograph 8.** Copco No. 1 dam site, April 1916 (PacifiCorp archive image CO1-8).

## CONTINUATION SHEET

Property Name: Copco No. 1 Dam  
Page 13 of 21

### Photographs (continued):



**Photograph 9.** Copco No. 1 dam site in September 1915. From left: John D. McKee (Copco officer), Donald McKee, Hermann Schussler (Copco No. 1 dam architect), A.C. Sprout (engineer), and John C. Boyle (construction supervisor) (courtesy of Southern Oregon Historical Society, John C. Boyle Collection).



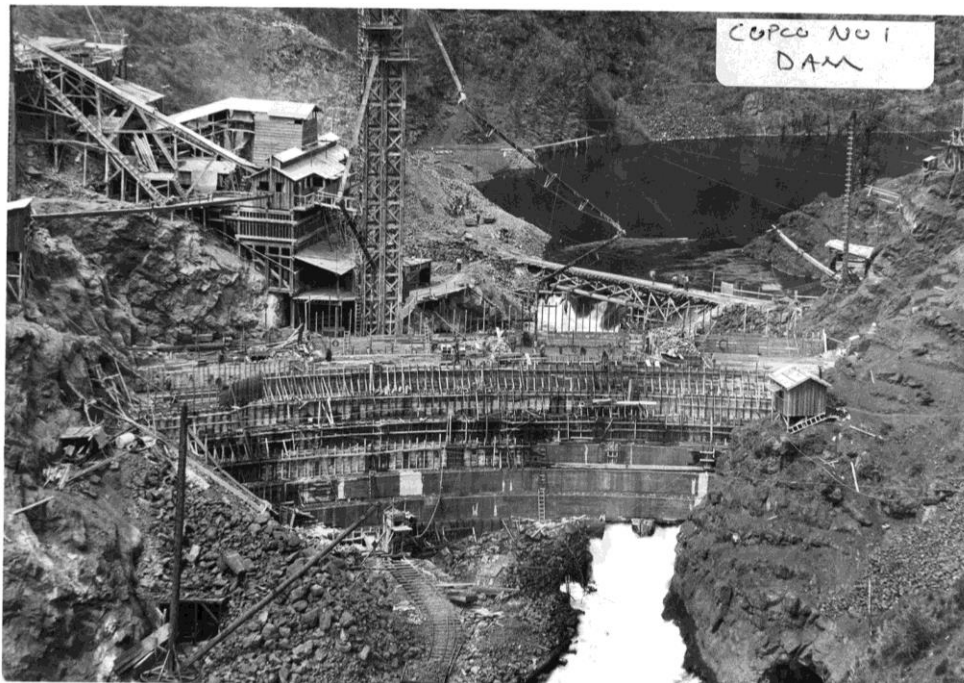
**Photograph 9.** Copco No. 1 Dam, showing the interlocking concrete block construction method, c.1916 (PacifiCorp archives image).

## CONTINUATION SHEET

Property Name: Copco No. 1 Dam

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### Photographs (continued):



**Photograph 10.** Copco No. 1 Dam construction, c.1916 (PacifiCorp archive image).

## CONTINUATION SHEET

Property Name: Copco No. 1 Dam

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### Plates:

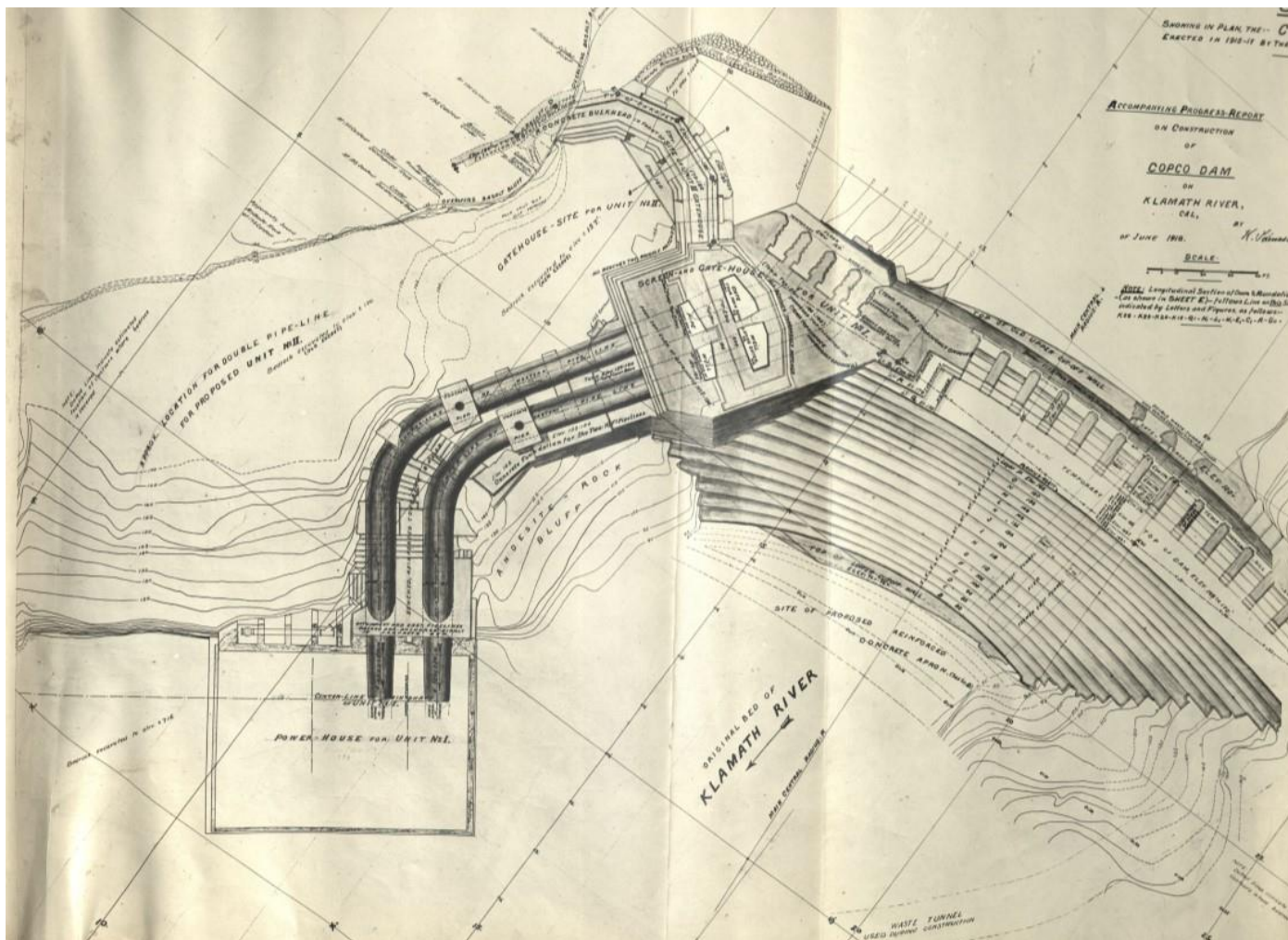


Plate 1. Copco No. 1 (Schussler 1918).

## CONTINUATION SHEET

Property Name: Copco No. 1 Dam

Page 16 of 21

Plates (continued):

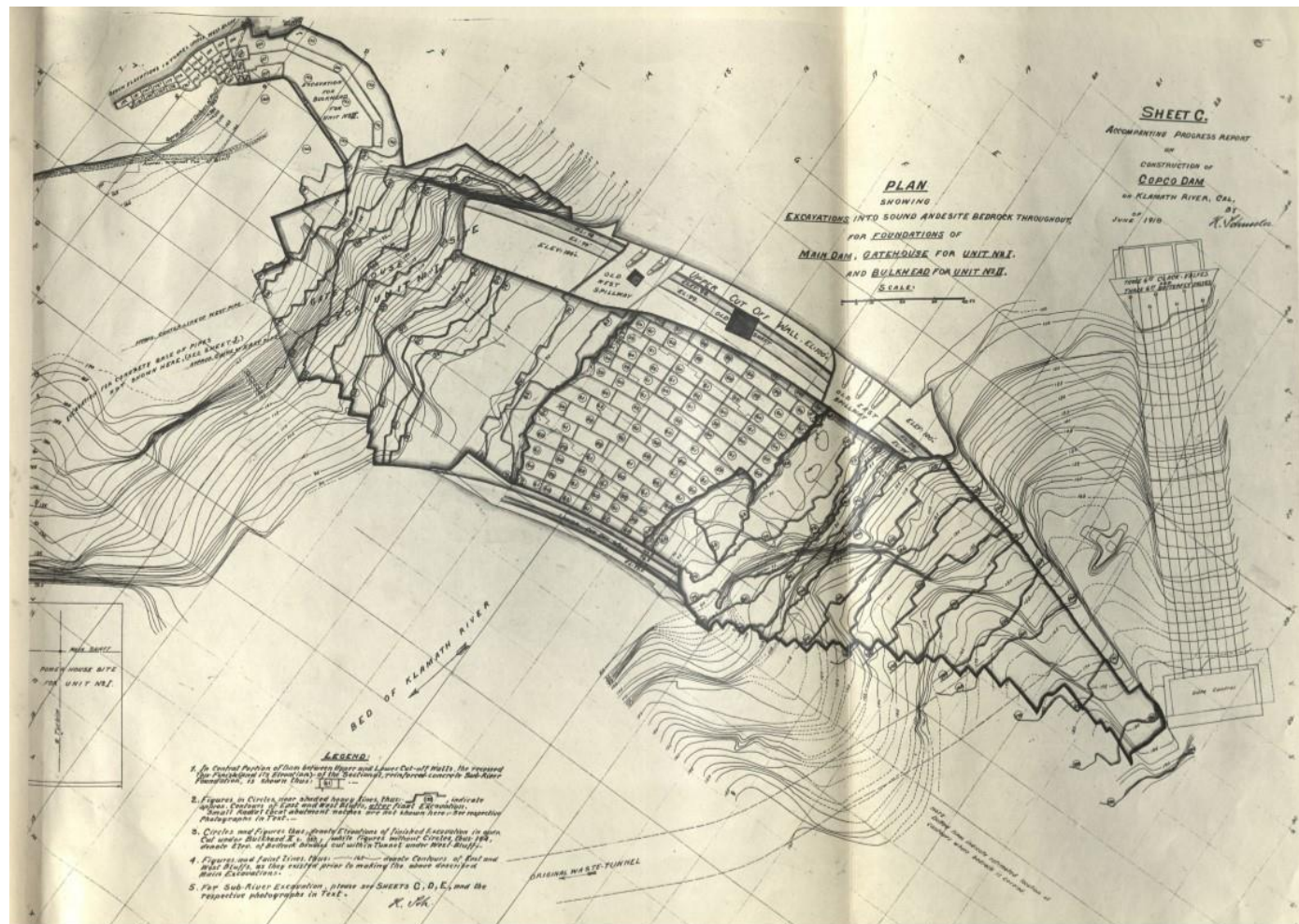


Plate 2. Copco No. 1 (Schussler 1918).

## CONTINUATION SHEET

Property Name: Copco No. 1 Dam

Page 17 of 21

Plates (continued):

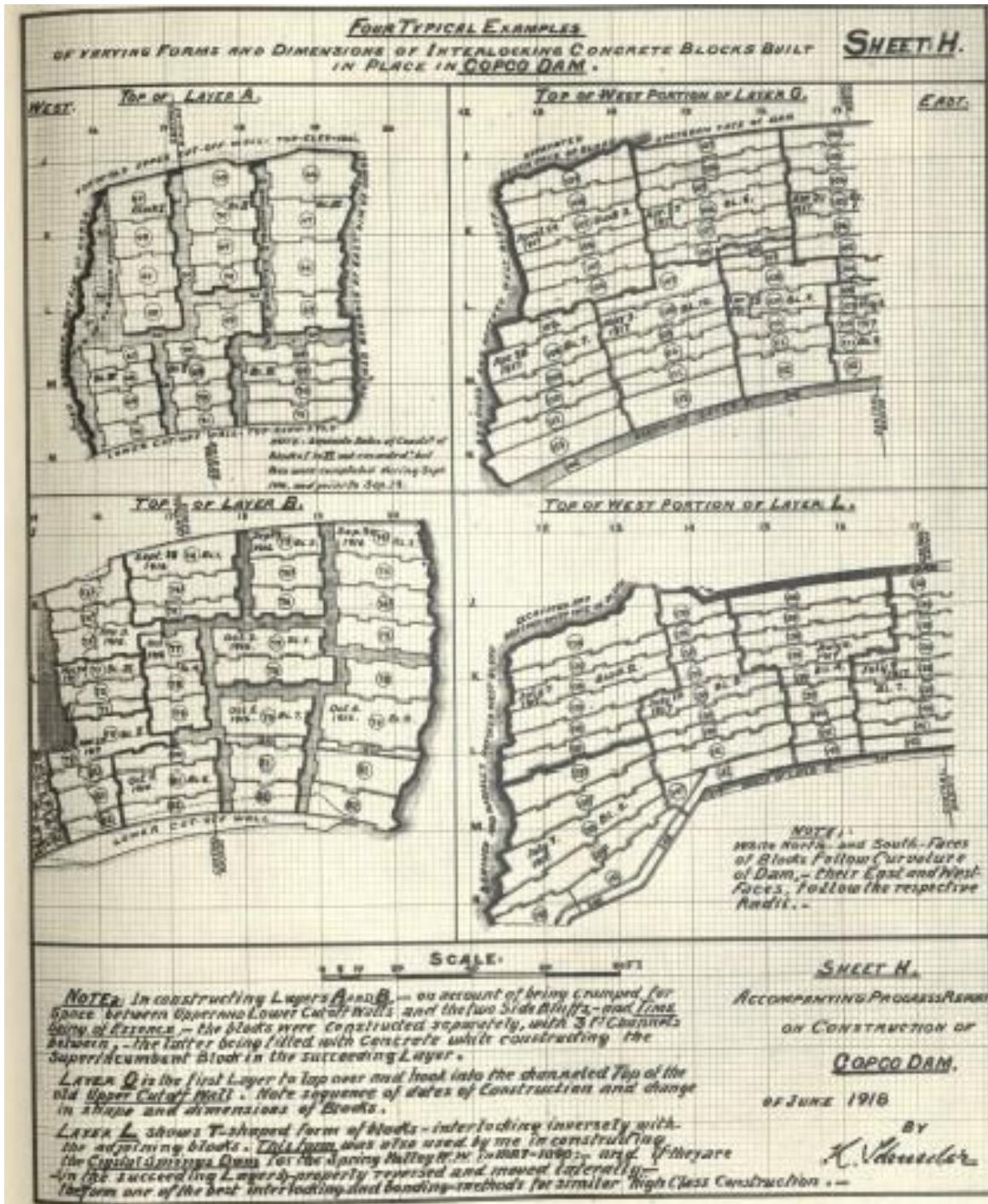


Plate 3. Copco No. 1 (Schussler 1918).

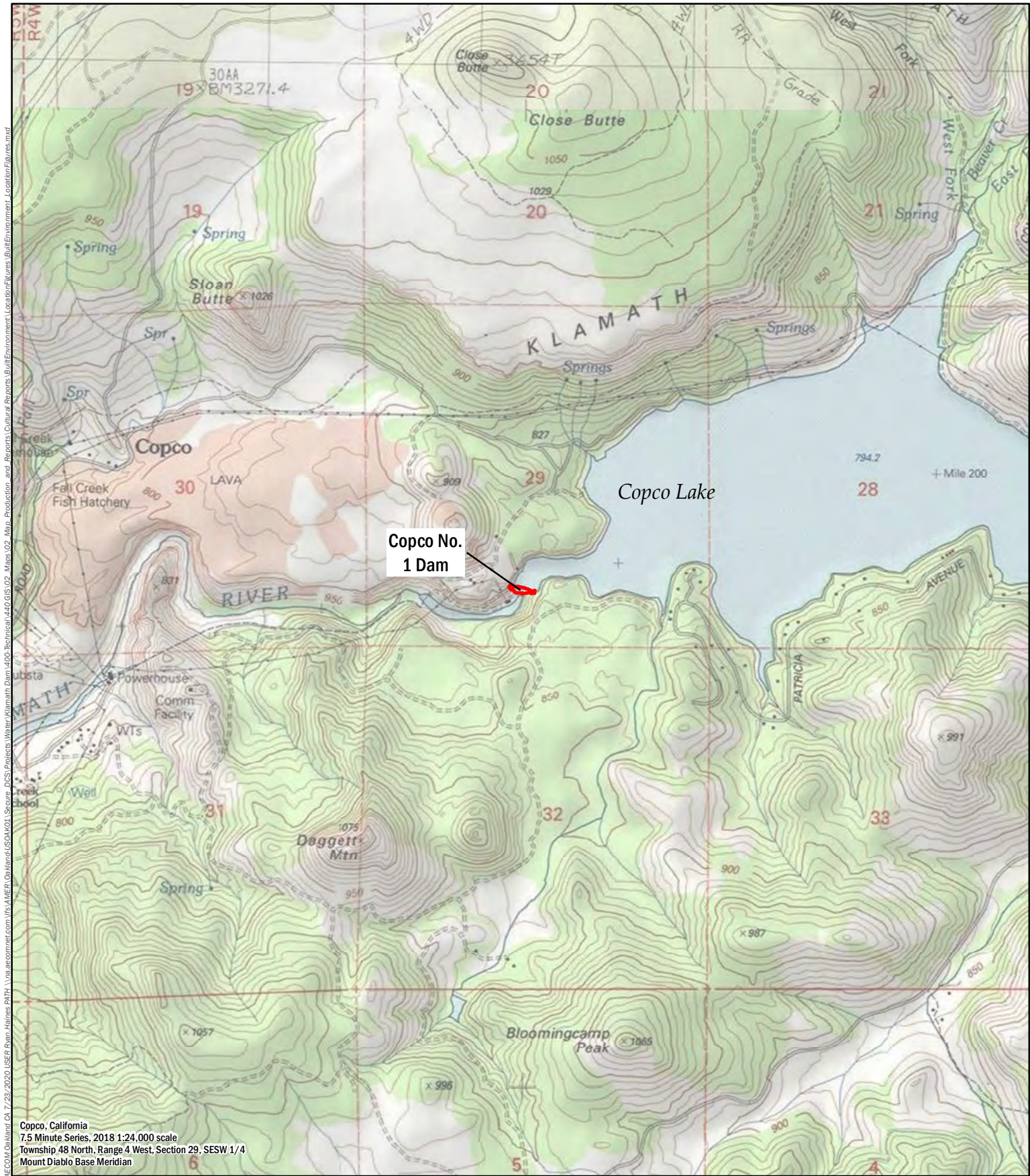
## LOCATION MAP

Property Name: Copco No. 1 Historic District

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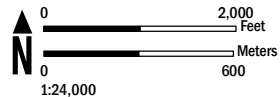
\*Map Name: \_\_\_\_\_ \*Scale: \_\_\_\_\_ \*Date of map: \_\_\_\_\_

See Location Map on next page.



Copco, California  
 7.5 Minute Series, 2018 1:24,000 scale  
 Township 48 North, Range 4 West, Section 29, SESW 1/4  
 Mount Diablo Base Meridian

 Copco No. 1 Dam



Copco No. 1 Dam

Klamath River Dam Removal  
 Copco Road  
 Copco, Siskiyou County, California

**AECOM**  
 July 2020

## SKETCH MAP

Property Name: Copco No. 1 Historic District

Page 20 of 21

\*Drawn by: \_\_\_\_\_

\*Date of map: \_\_\_\_\_

See Sketch/Site Map on next page.

AECOM Oakland CA 7/29/2020 USER Ryan.Haines PATH: \\va.alconet.com\Va\AMER Oakland\USO\K01 Secure\_DCS\Projects\Water\Klamath Dam\400 Technical\440 GIS\02 Maps\02 Map Production and Reports\Cultural Reports\BuiltEnvironment\LocationFigures\BuiltEnvironment\_SiteFigures.mxd



Gatehouse No. 2


Gatehouse No. 1

Copco No. 1 Dam

Gated  
Concrete  
Intake

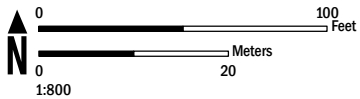
Image Source: GMA Hydrology Inc., 2018

Copco No. 1 Dam

 Copco No. 1 Dam



Klamath River Dam Removal  
Copco Road  
Copco, Siskiyou County, California



**AECOM**  
July 2020

State of California - The Resources Agency	Primary #47-004015 (Klamath River Hydroelectric Project) & #47-002267 (Copco No. 1 Powerhouse)	
DEPARTMENT OF PARKS AND RECREATION	HRI #	
<b>PRIMARY RECORD</b>	Trinomial	
	NRHP Status Code 3D	
Other Listings	Reviewer	Date
Review Code		

Page 1 of 3

Resource Name or #: Copco No. 1 Powerhouse

P1. Other Identifier: Primary #47-004015 (Klamath River Hydroelectric Project) and Primary #47-002267 (Copco No. 1 powerhouse)

\*P2. Location: ☒ Unrestricted

\*a. County: Siskiyou

\*b. USGS 7.5' Quad Copco, CA Date 2018 T 48N; R 4W; SE 1/4 of SW 1/4 of Sec 29; Mount Diablo B.M.

c. Address \_\_\_\_\_ City \_\_\_\_\_ Zip \_\_\_\_\_

d. UTM: Zone 10 T, 555063mE/4647650mN

e. Other Locational Data: N/A

\*P3a. Description:

The Copco No. 1 Powerhouse was completed in 1918 as a primary component of the Copco No. 1 hydroelectric development. Copco No. 1 Powerhouse was previously recorded in 2003 as part of the Klamath Hydroelectric Project (KHP) Historic District and was submitted to the California State Historic Preservation Officer (SHPO) (Durio 2003). Although the California SHPO never provided comments on eligibility, the KHP Historic District was assigned Primary Number 47-004015 and Copco No. 1 Powerhouse was assigned an individual Primary Number, 47-002267.

Designed by Copco engineer Perry O. Crawford, the powerhouse was placed into initial operation in 1917, when only the upstream half of the powerhouse structure had been completed (Fowler 1923:95). The powerhouse was enlarged in 1922 to accommodate a second generating unit; at that time, the powerhouse's length was nearly doubled, with a major addition at the downstream side. During this 1922 expansion, Copco also raised the dam by about 14 feet, built Gatehouse No. 2, and installed the single penstock.

The Copco No. 1 Powerhouse is a reinforced-concrete substructure with a concrete and steel superstructure at the base of Copco No. 1 Dam, on the right bank of the river (USBR 2012:20-21). The powerhouse was built on heavy concrete foundations that extend down to bedrock (Fowler 1923:95). The two turbines are horizontal-shaft, double-runner Francis-type units with a total rated discharge capacity of 2,360 cubic feet per second.

See Continuation Sheets.

\*P3b. Resource Attributes: (HP11) Engineering structure (powerhouse).

\*P4. Resources Present: ☒ Structure ☒ Element of District

P5a. Photograph:



P5b. Description of Photo: Copco No. 1 Powerhouse, facing northeast (June 11, 2018).

\*P6. Date Constructed/Age and Source: ☒ Historic, 1918, 1922 (PacifiCorp archive image CO1-1)

\*P7. Owner and Address:  
PacifiCorp  
825 NE Multnomah, Suite 1500  
Portland, OR 97232

\*P8. Recorded by:  
Shoshana Jones, AECOM  
111 SW Columbia Street, Suite 1500  
Portland, OR 97201

\*P9. Date Recorded: June 11, 2018

\*P10. Survey Type: Intensive Level

\*P11. Report Citation: Klamath River Renewal Corporation. 2021. Lower Klamath Project Built Environment Technical Report.

\*Attachments: ☒ Location Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record

**CONTINUATION SHEET**

Property Name: Copco No. 1 Powerhouse

Page 2 of 3

**P3a. Description (continued):**

Each turbine has a rated output of 18,600 horsepower, with a net head of 125 feet. No bypass capacity is provided. The generators are each rated at 12,500 kilovolt-amperes (kVA), with a 0.8 power factor (10 megawatts [MW]). Unit 1 has three indoor, single-phase, 5,000-kVA, 2,300/72,000-volt (V) transformers; Unit 2 has three indoor, single-phase, 4,165-kVA, 2,300/72,000-V transformers, to step up the generator voltage for transmission interconnection.

The Copco No. 1 Powerhouse has four associated 69-kV transmission lines. PacifiCorp Line Nos. 26-1 and 26-2 are each approximately 0.07- mile long and connect the Copco No. 1 Powerhouse to the Copco No. 1 switchyard, located on the western/right abutment above the powerhouse. PacifiCorp Line No. 15 is approximately 1.25 miles long and connects the Copco No. 1 switchyard to the Copco No. 2 powerhouse; Line No. 3 is approximately 1.65 miles long and connects the Copco No. 1 switchyard to the Fall Creek Powerhouse (USBR 2012:20-21).

The powerhouse generally operates as a load-factoring (peaking) facility. This enables the facility to generate when power demands peak (weekdays), and store water when power demands recede (weeknights and weekends). When river flows approach or exceed turbine hydraulic capacity, the powerhouse continuously generates while excess water is spilled (PacifiCorp 2004:5-2).

The powerhouse structure is oriented southwest and has a rectangular plan and gabled roof. The corrugated metal, clad roof features a central monitor with bands of awning windows and a small projecting shed extension to the river-side (the original roof was galvanized iron with "louver ventilator"; Fowler 1923:95). Except for the western (primary) elevation, exterior walls consist of poured concrete. Based on historic photographs, the western elevation was originally constructed as a wood-frame wall with galvanized metal siding, large steel-sash multi-pane windows, and an oversized metal double door. When the powerhouse was expanded, the western elevation appeared to retain the same window arrangement and materials. The original window glazing was later replaced with plexiglass, and eventually fiberglass. In 1994, as a result of weathering, the elevation was covered with R-panel metal siding. All wall openings were removed or infilled, except for a large roll-up door and a small, metal pedestrian door on the ground level (Durio 2003:7; Haney 2003).

The powerhouse's northern elevation, where the double and single penstocks enter the building, abuts the canyon's earthen and rock wall, and is not visible, except for the roof elements. The eastern elevation, facing the dam, has three levels of original multi-pane steel-sash industrial windows. The roof's monitor displays 16-pane industrial sash windows in the eastern gable end. Another set of three, 20-pane windows is centered below the monitor; and further below, another set of three, 20-pane windows is flanked by pairs of 20-pane windows. In 1965, the eastern elevation was re-bricked with concrete masonry units (CMUs) from bottom to midpoint after structural damage from the highly destructive Klamath River flooding in December 1964 (Haney 2003). The re-bricking infilled the eastern elevation's existing double door, a large multi-pane transom, and two other sets of multi-pane windows (Copco 1926a; Los Angeles Public Library). One metal pedestrian door centered along the exterior wall accesses a metal grate walkway over the river that extends the length of the eastern elevation. The southern elevation, where the turbines discharge flow into the Klamath River, is composed of a concrete wall with a row of steel multi-pane sash industrial windows. The elevation's lower section has a shed roof projection of poured concrete with smaller window openings. Exterior metal brackets accommodate power poles, lines, and transformers mounted on the shed roof.

In 1923, Fowler described the powerhouse interior as follows:

The total inside width of the power house is 57 feet 6 inches and is divided into a generator room 44 feet 6 inches and a series of bays 13 feet wide. The generator room is 26 feet high from floor to crane rail and 33 feet 1 inch from floor to the lower chord of the roof trusses. The generator room extends the entire length of the front of the building. There is a horizontal tunnel under the generator room and another under the transformer bays . . . Two 40-ton cranes command the generator floor (Fowler 1923:95).

The powerhouse generating units are two double-runner, horizontal-Francis turbine units and open-frame synchronous generator sets. According to the original data plates, still affixed to the units, Allis-Chalmers manufactured the turbines, and General Electric manufactured the generators. Generator #11 indicates "Copco No. 1, unit 1" and is supplied by the double penstock. Generator #12 indicates "Copco No. 1, unit 2" and is supplied by the single penstock. A row of six General Electric transformers on the powerhouse's main level are contained within individual, three-sided bays. The transformers are numbered as 2729, 2728, 2725, 3796, 3795, 3794, and 3781. A battery rack sits adjacent to transformer 3781. The original rails extend through the entire length of the powerhouse (Copco 1926b). Other mechanical and electrical equipment in the powerhouse includes four turbine-runner spiral casings and head covers/operating rings, two horizontal turbine shafts, two turbine governor hydraulic control systems with oil storage reservoir and pressure tank, two turbine draft tubes, vertical sump pump(s), bearing oil storage tank(s), two 40-ton and one 15-ton overhead traveling cranes and structural members, and other miscellaneous mechanical equipment piping, and valves; six plant transformers, distribution equipment, unit breakers, two 10-MW generators, conduit and cable, plant control equipment, and other miscellaneous electrical equipment (USBR 2012:47).

## CONTINUATION SHEET

Property Name: Copco No. 1 Powerhouse

Page 3 of 3

## P3a. Description (continued):

Later modifications to the powerhouse include a new water pipe installed in 1988, as well as electronic governors for both generator units and new static exciters in 1991. An emergency generator was installed in 1991, and brakes on the turbine generator were installed in 1992. In 1993, a new battery was installed; modifications to the syncro closer M-0193B were performed; and noise-lock panels were installed. A 15-ton steel overhead crane was assembled in 1994 for repair and maintenance. The powerhouse was reroofed in 1997 (PacifiCorp 2004:5-2). A small, modern emergency spill equipment shed sits adjacent to the powerhouse entrance.

The powerhouse connects to a substation on the bluff above the river. The substation was placed into operation circa 1912 to power construction of the hydroelectric development with electricity rather than steam. Engineer D.W. Cole of the Reclamation Service (later U.S. Bureau of Reclamation) noted that the electric operation at Copco No. 1 provided "a peculiarly modern appearance and advantage over the noisy, smoky, unsightly and comparatively inconvenient steam apparatus which ordinarily characterizes construction machinery on large works" (*The Evening Herald* 1916). The substation is enclosed by a chain-link metal fence topped with barbed wire in an area measuring approximately 90 square feet. The switchyard contains two 69-kilovolt (kV) circuit breakers, four 69-kV dead end structures, four 69-kV disconnect switches (on same structure as circuit breakers), and associated equipment, such as wooden buswork. The switchyard does not contain any power transformers, but instead operates in conjunction with the powerhouse transformers. Metal "Pacific Power" signs are affixed to the substation fencing. A small metal shed with a plywood door is at the switchyard's southeastern corner. Based on a review of historic photographs, it appears that the substation switchyard has maintained the same approximate footprint. Small, unidentified concrete foundations outside the substation fence's southeastern side may relate to early transmission equipment that has been removed.

Around the time of its completion, the Copco No. 1 Powerhouse was expected to "radiate power lines in four directions, east toward Klamath Falls, south to Weed, west to Yreka and north to Medford" (*Sacramento Union* 1917). Currently, PacifiCorp Lines 26-1 and 26-2, two parallel 69-kV lines, extend approximately 370 feet between the powerhouse and the substation (FERC 2007:2-11). Distribution lines are in place to supply power to the two nearby bungalows. Line No. 15, approximately 1.25 miles long, links the substation at Copco No. 1 to the Copco No. 2 Powerhouse. PacifiCorp Line No. 3, approximately 1.65 miles long, links the substation at Copco No. 1 to the Fall Creek powerhouse (USBR 2012:20).

The original Line No. 1, completed by a Copco predecessor in 1903, was known as Siskiyou County's "pioneer line." Between 1908 and 1911, SEP&L expanded its transmission system to include Line No. 1 to Yreka, Line No. 2 to Dunsmuir, Line No. 3 to Medford, and Line No. 4 to Klamath Falls. At that time, the lines originated from the Fall Creek Powerplant. When Copco No. 1 was built, Line No. 1 extended from there to Fall Creek powerplant for distribution. Line No. 1 was rebuilt and activated in November 1923 at a cost of \$100,000 (*San Francisco Chronicle* 1923). The line extended from the Copco No. 1 and Fall Creek Powerhouses to Montague, and continued on to Yreka, with a tap from Ager to Hornbrook (*News-Review* 1924).

The powerhouse appears to be in good condition.

**BUILDING, STRUCTURE, AND OBJECT RECORD**

\*Resource Name or #: Copco No. 1 Powerhouse

\*NRHP Status Code: 3D

Page 1 of 16

B1. Historic Name: Ward Canyon Powerhouse, Copco Powerhouse

B2. Common Name: Copco No. 1 Powerhouse

B3. Original Use: generate hydropower B4. Present Use: generate hydropower

B5. Architectural Style: monitor roof

B6. Construction History:

The Copco No. 1 Powerhouse was originally constructed in 1918 as a major component of the Copco No. 1 hydroelectric development. At that time, powerhouse designs routinely provided space at the foundation level for additional generating units. Temporary end-walls also enabled workers to extend the superstructure as needed (Hay 1991:92). Copco substantially expanded Copco No. 1 in 1922 to increase power output, which involved raising the dam height, erecting Gatehouse No. 2 at the dam's western abutment, installing the single penstock, enlarging the powerhouse structure, and activating a second generating unit. The enlarged powerhouse was nearly double the length of the original structure. Later modifications to the powerhouse include a new water pipe installed in 1988, as well as electronic governors for both generator units and new static exciters in 1991. An emergency generator was installed in 1991, and brakes on the turbine generator were installed in 1992. In 1993, a new battery was installed; modifications to the syncrocluser M-0193B were performed; and noise-lock panels were installed. A 15-ton steel overhead crane was assembled in 1994 for repair and maintenance. The powerhouse's west wall was re-sided in 1996 and the entire structure was reroofed in 1997 (PacifiCorp 1996; PacifiCorp 2004:5-2).

B7. Moved? No

B8. Related Features: The powerhouse is a contributing resource to the Copco No. 1 Historic District, which is within the larger Klamath Hydroelectric Project (KHP) Historic District. The KHP Historic District consists of seven hydroelectric developments, including Copco No. 1, in Southern Oregon and Northern California.

B9a. Architect: Perry O. Crawford

b. Builder: California Oregon Power Company (Copco)

B10. Significance:

Theme: Hydroelectric development

Area: Southern Oregon and Northern California

Period of Significance: 1918-1970 (Copco No. 1 Historic District)

Property Type: Powerhouse

Applicable Criteria: National Register of Historic Places (NRHP) Criterion A (contributing) and Criterion C (contributing).

See Continuation Sheets.

B11. Additional Resource Attributes:

B12. References:

See Continuation Sheet.

B13. Remarks: None

B14. Evaluator: Shoshana Jones, AECOM  
111 SW Columbia Street, Suite 1500  
Portland, OR 97201

Date of Evaluation: June 11, 2018

(This space reserved for official comments.)



## CONTINUATION SHEET

Property Name: Copco No. 1 Powerhouse

Page 2 of 16

B10. Significance (continued):

**Historic Context**

Perry O. Crawford (1885-1976), Copco's chief engineer, supervised construction of Copco No. 1 and designed the powerhouse. Crawford was born in Malvern, Ohio on November 11, 1885. He enrolled at Ohio State University in 1903 and transferred to Stanford University in 1904. After the 1906 San Francisco earthquake, Crawford began working for the Western Electric Company in the San Francisco Bay Area. He graduated from Stanford with an electrical engineering degree in 1908 and began working as a construction engineer for Northern California Power Company. Around 1910, he designed two hydroelectric facilities—the South and Inskip powerhouses—and also supervised construction of the South Powerhouse. He worked on another powerhouse along Battle Creek, a tributary of the Sacramento River, which was completed in late 1911. Following construction of the three powerhouses, Crawford traveled to Kabul, Afghanistan, in 1912 to help build the country's first hydroelectric development (Downs 1938:83-85). After returning to the United States, Crawford enrolled in Stanford University for postgraduate study. He left Stanford after a year to work as construction engineer for the Copco No. 1 hydroelectric development. Crawford also supervised construction of Copco No. 2 in 1923-1924. He later served as Copco's vice-president, as well as chief engineer. In 1926, Crawford replaced Paul B. McKee as Copco's chief executive officer (Evening Herald 1926). Crawford resigned from Copco in 1929 to become president of the Federal Public Service Corporation (Downs 1938:83-85).

**Evaluation (Contributes to Copco No. 1 Historic District)****Criteria Analysis****NRHP Criterion A**

The Copco No. 1 Historic District contributes to the larger KRHP Historic District, both of which are significant under NRHP Criterion A in the areas of Commerce and Industry. The Copco No. 1 powerhouse adds to the significance of the Copco No. 1 Historic District by housing the massive machinery that generates the facility's power.

**NRHP Criterion B**

Research does not indicate that the powerhouse is associated with any historically significant individuals under NRHP Criterion B.

**NRHP Criterion C**

The dam, water conveyance system, and powerhouse are collectively significant under NRHP Criterion C in the area of Engineering for embodying the distinctive characteristics of an early-twentieth-century hydroelectric development that implemented technological advances in its conception, design, and construction.

**NRHP Criterion D**

The Copco No. 1 powerhouse is not significant as a source (or likely source) of important information regarding history or prehistory. It does not appear likely to yield important information about historic construction materials or technologies and is not significant under NRHP Criterion D.

**Integrity Analysis**

The powerhouse retains integrity of location, design, setting, feeling, and association; and continues to convey its historic identity as an early-twentieth-century hydroelectric powerhouse.

**Location** is the place where the historic property was constructed or the place where the historic event took place. The powerhouse retains integrity of location, because it remains in its original location in Ward's Canyon.

**Design** is the composition of elements that constitute the form, plan, space, structure, and style of a property. The powerhouse retains integrity of design with respect to the structure's plan and monitor roof form, a key characteristic of the design. The structure's plan and large interior volume have also survived. Although Copco lengthened the powerhouse and added a second generating unit in 1922, these historic alterations occurred only four years after the powerhouse was built. As part of the original plan to generate additional power at Copco No. 1, these early alterations are historic in their own right. Alterations such as rebuilding the eastern elevation and re-siding of the western elevation windows (which covered the original windows), have not obscured the building's original form and distinctive monitor roof. The powerhouse retains sufficient integrity of design to express its original function.

**Setting** is the physical environment of a historic property that illustrates the character of the place. The powerhouse retains integrity of setting. The Copco No. 1 hydroelectric development was constructed in Ward's Canyon, a remote, undeveloped area of the Klamath River basin in Siskiyou County, California. The setting is characterized by the Klamath River, Copco Lake, and a landscape of basaltic rock formation, pine trees, and other vegetation. The unimproved roads that provide access to the dam and powerhouse follow the alignment of the former Klamath Lake Railroad spur, used during construction.

## CONTINUATION SHEET

Property Name: Copco No. 1 Powerhouse

Page 3 of 16

## B10. Significance (continued):

**Materials** are the physical elements combined in a particular pattern or configuration to form the historic property and **Workmanship** is the physical evidence of the crafts of a particular culture or people during any given period of history. The powerhouse's integrity of materials and workmanship has been diminished by alterations to the façade's original doors, windows, and siding, as well as reconstruction at the eastern elevation. The western elevation was originally constructed as a wood-frame wall with galvanized metal siding, large steel-sash multi-pane windows, and an oversized metal double door. The 1922 powerhouse expansion recreated the western elevation's original appearance. Subsequently, the original window glazing was replaced with plexiglass, and later fiberglass. In 1996, as a result of weathering, the elevation was covered with R-panel metal siding. All openings were removed or infilled, except for a large roll up door and a small, metal pedestrian door on the ground level. At the eastern elevation, a 1965 reconstruction involved re-bricking with concrete masonry units from bottom to midpoint after structural damage from a highly destructive December 1964 flood. These alterations have diminished the integrity of materials and workmanship.

**Feeling** is the quality that a historic property has in evoking the aesthetic or historic sense of a past period of time. The powerhouse's remote setting, industrial monitor roof design, and historic-era generating units convey the historic character of an early-twentieth-century hydroelectric powerhouse, which contributes to integrity of feeling.

**Association** is the direct link between a property and the event or person for which the property is significant. The powerhouse is physically interconnected with the dam and water conveyance system, which directly links the property with early power development in the Southern Oregon-Northern California region, contributing to integrity of association.

**Copco No. 1 Powerhouse retains integrity and is eligible as a contributing resource to the Copco No. 1 Historic District.**

Resource(s)	Construction/ Major Alterations	Applicable NRHP Criteria	Area(s) of Significance	Contributing/ Individually Eligible
Powerhouse	1918 (built) 1922 (expanded)	A	Commerce and Industry	Contributing
Dam, powerhouse, and water conveyance system (collectively)	1918 (built) 1922 (expanded)	C	Engineering	Contributing

## B12. References (continued):

## Copco (California Oregon Power Company)

1922. "Dedicated to Public Service." The Volt 3, no. 5. December (J.C. Boyle Collection, Southern Oregon Historical Society).

1926a. "Copco: A Brief History of Its Beginnings." The Volt 7, no. 4. December. December (J.C. Boyle Collection, "Volt 1920-1926" folder in Box 15/16, Southern Oregon Historical Society).

1926b. "Before the Indians' Time." The Volt 7, no. 1. September (J.C. Boyle Collection, Southern Oregon Historical Society).

Downs, Winfield Scott (ed.). 1938. Encyclopedia of American Biography 9. New York: American Historical Society, Inc.

Durio, Lori. 2003. Klamath River Hydroelectric Project District. State of California Department of Parks and Recreation. Primary Record #47-004015. Recorded July 2003 by L. Durio, CH2M Hill, New Orleans, LA. September.

## Evening Herald [Klamath Falls, Oregon]

-----1916. "Engineer Cole Discusses Power Plant on Klamath." October 11.

-----1926. "P.O. Crawford Here." October 19.

FERC (Federal Energy Regulatory Commission). 2007. Final Environmental Impact Statement For Hydropower License. Volume I. Klamath Hydroelectric Project. FERC Project No. 2082-027. Oregon and California. Office of Energy Projects. November.

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## CONTINUATION SHEET

Property Name: Copco No. 1 Powerhouse

Page 4 of 16

Primary # 47-004015 (Klamath River Hydroelectric Project) & #47-002267 (Copco No. 1 Powerhouse)

HRI #

Trinomial

### B12. References (continued):

Hay, Duncan. 1991. Hydroelectric Development in the United States, 1880 – 1940. Prepared for the Task Force on Cultural Resource Management, Edison Electric Institute, Washington D.C.

LAPL (Los Angeles Public Library). Copco Reservoir and vicinity [digital photograph archives].  
<http://photos.lapl.org/carlweb/jsp/DoSearch?index=z&databaseID=968&terms=0000011535> (accessed June 10, 2018).

Myrtle, Frederick S. 1919. "From the Mountains of Oregon to the Bay of San Francisco: By Interconnection of Three High-Tension Transmission Systems." Pacific Service Magazine. Pacific Gas and Electric Company. Reprinted and distributed by The California – Oregon Power Company (J.C. Boyle Collection, Box 5/16, Southern Oregon Historical Society).

*News-Review* [Roseburg, Oregon]. 1924. "Power Company Has Big Year." January 1.

#### PacifiCorp

-----1996. "Copco 1 – Reside West Wall of Powerhouse" (Project Plan Document). Project Number 23811. PacifiCorp Archive, PDX.037417 (box), Copco 1 Betterment Projects, Powerhouse Access, Miscellaneous 207.8, #18014 (folder).

-----2004. Klamath Hydroelectric Project. FERC No. 2082. Cultural Resources Final Technical Report and Associated Confidential Documents. Exhibit C. Construction History and Proposed Construction. February.

Pacific Power. 1953. Copco No. 1 powerhouse [photograph]. PacifiCorp Archive, PDX.026971 (box), CA-Power, Klamath River Projects – Copco #1 Power Plant (folder).

*Sacramento Union* [Sacramento, California]. 1917. "Will Rush Work On Copco Plant: California-Oregon Company to Put Force of 300 Men to Work in Near Future." March 8 [California Digital Newspaper Collection].

*San Francisco Chronicle*. 1923. "Power Line Has Capacity 66,000 Volts: Industrial Expansion Program in Siskiyou County Is Being Planned." November 11.

SOHS (Southern Oregon Historical Society). 1917. J.C. Boyle Collection, photograph.

USBR (United State Bureau of Reclamation). 2012. Reclamation: Managing Water in the West. Detailed Plan for Dam Removal – Klamath River Dams. Klamath Hydroelectric Project. FERC License No. 2082, Oregon – California. USBR, U.S. Department of the Interior. Technical Service Center, Denver, Colorado. July.

## CONTINUATION SHEET

Property Name: Copco No. 1 Powerhouse

Page 5 of 16

### Photographs:



**Photograph 1.** Powerhouse, showing penstocks, dam, and Gatehouse No. 1; view facing southwest, 2018.



**Photograph 2.** Powerhouse; view facing northeast, 2018.

## CONTINUATION SHEET

Property Name: Copco No. 1 Powerhouse

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### Photographs (continued):



**Photograph 3.** Powerhouse interior, showing General Electric Generator Unit 2 and Allis-Chalmers turbines; view facing west, 2018.



**Photograph 4.** Double penstock entering powerhouse interior; view facing northwest, 2018.

## CONTINUATION SHEET

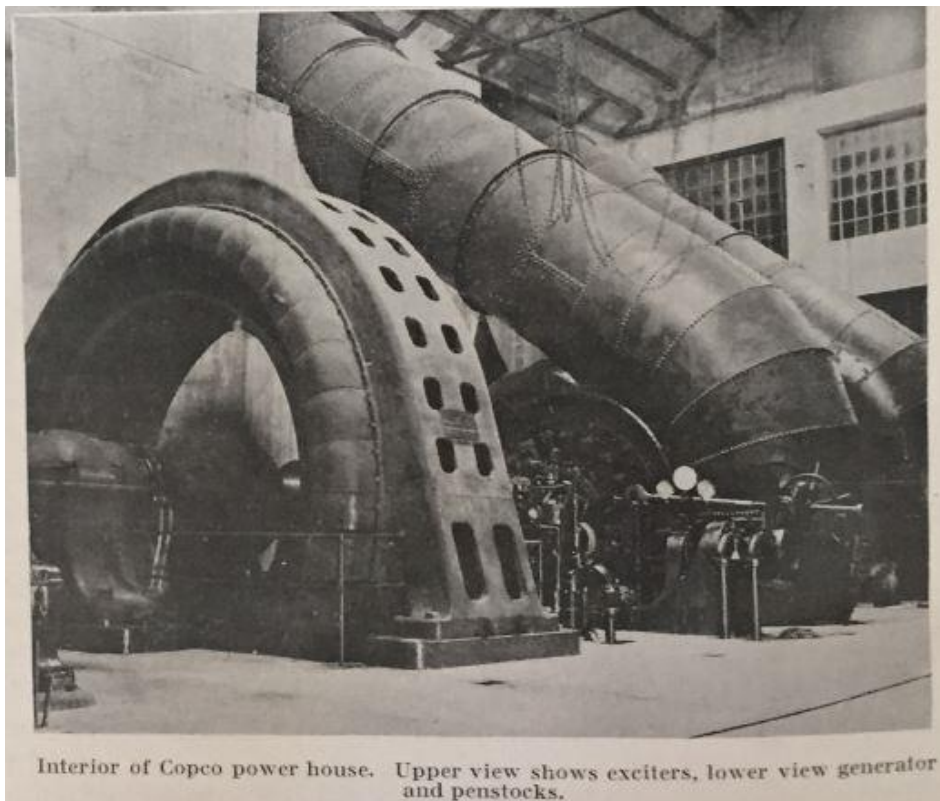
Property Name: Copco No. 1 Powerhouse

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### Photographs (continued):



**Photograph 5.** Powerhouse, showing General Electric Generator Unit 1 and double penstock; view facing north, 2018.



**Photograph 6.** Powerhouse, showing General Electric Generator Unit 1 and double penstock in 1919 (Myrtle 1919).

## CONTINUATION SHEET

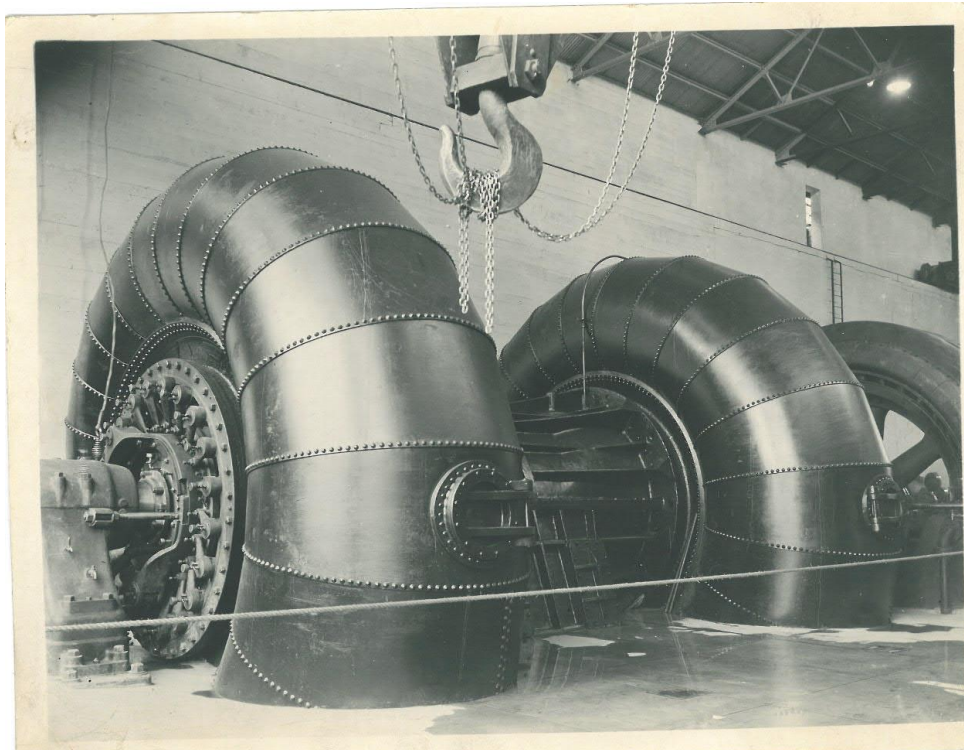
Property Name: Copco No. 1 Powerhouse

Page 8 of 16

### Photographs (continued):



Photograph 7. Generator unit 1 data plate, 2018.



Photograph 8. Powerhouse, showing Allis-Chalmers turbines, 1918 (PacifiCorp archive image CO1-4).

## CONTINUATION SHEET

Property Name: Copco No. 1 Powerhouse

Page 9 of 16

### Photographs (continued):



**Photograph 9.** Powerhouse excavation, showing Klamath River in background, 1916 (PacifiCorp archive image CO1-9).



**Photograph 10.** Copco No. 1 construction, around 1916, showing Powerhouse (PacifiCorp archive image CO1-17).

## CONTINUATION SHEET

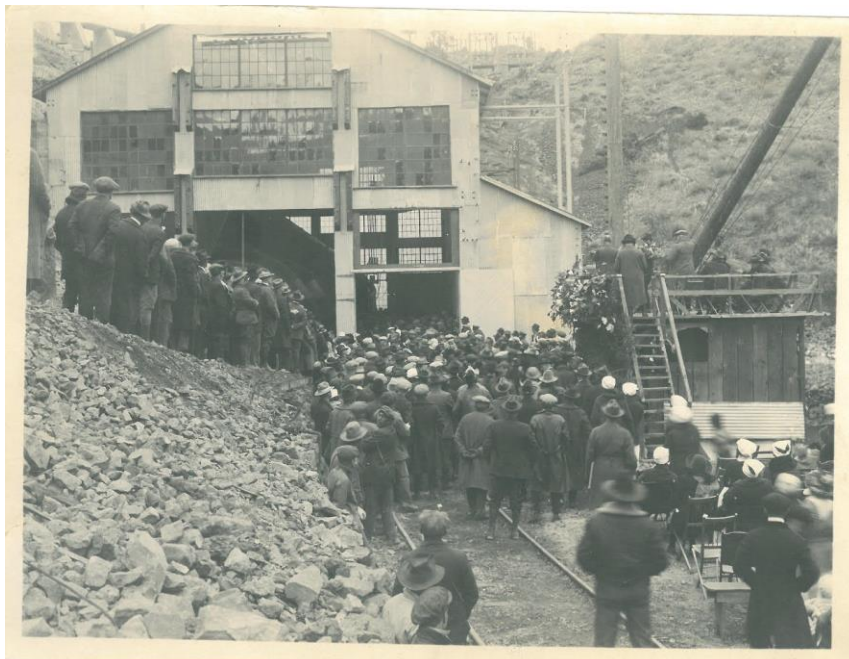
Property Name: Copco No. 1 Powerhouse

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### Photographs (continued):



**Photograph 11.** The original appearance of the powerhouse, dam, and Gatehouse No. 1 in 1917, before the 1922 Copco No. 1 expansion (SOHS 1917). Note that dam had not yet been raised, Gatehouse No. 1 had not yet been rebuilt, Gatehouse No. 2 had not yet been built, and the powerhouse still had only eight windows on its river-facing elevation.



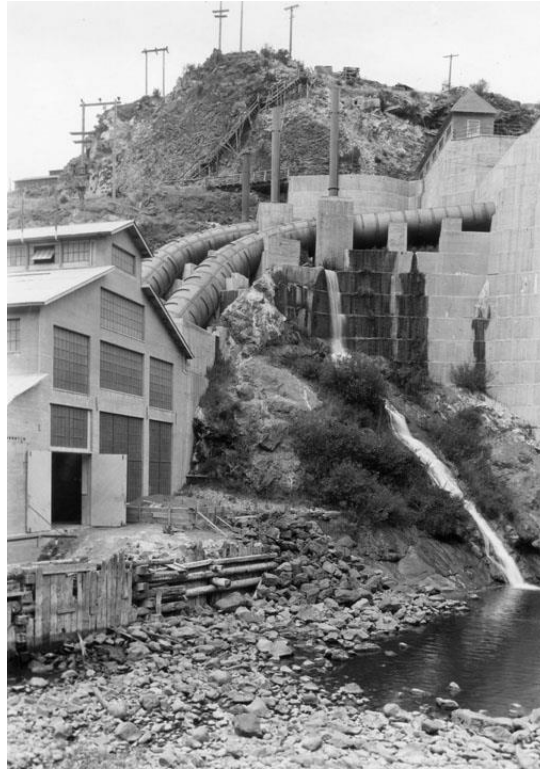
**Photograph 12.** Copco No. 1 dedication, 1918 (PacifiCorp archive image CO1-3).

## CONTINUATION SHEET

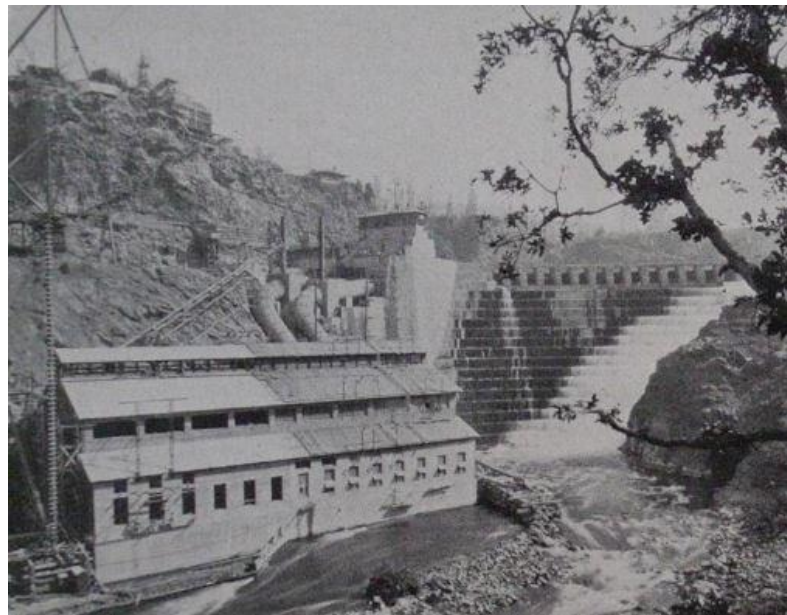
Property Name: Copco No. 1 Powerhouse

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### Photographs (continued):



**Photograph 13.** Original eastern elevation of powerhouse, circa 1922, before December 1964 flood damage to the elevation required extensive repairs and alterations (undated photograph courtesy of the LAPL).



**Photograph 14.** During the 1922 Copco No. 1 expansion phase, Copco nearly doubled the length of the powerhouse on the downstream side to accommodate installation of Generating Unit No. 2 (after expansion, 14 windows extend along the powerhouse's river-facing elevation). At the time of this photograph, the dam had not been raised, Gatehouse No. 1 had not been rebuilt, Gatehouse No. 2 had not been built, and the single penstock has not been installed (Copco 1922).

## CONTINUATION SHEET

Property Name: Copco No. 1 Powerhouse

Page 12 of 16

### Photographs (continued):



**Photograph 15.** Copco No. 1 in 1926, after the powerhouse was expanded, the dam was raised, Gatehouse No. 1 was rebuilt, Gatehouse No. 2 was built, and the single penstock was installed (Copco 1926b).



**Photograph 16.** Copco No. 1 Powerhouse in October 1953 (Pacific Power 1953)

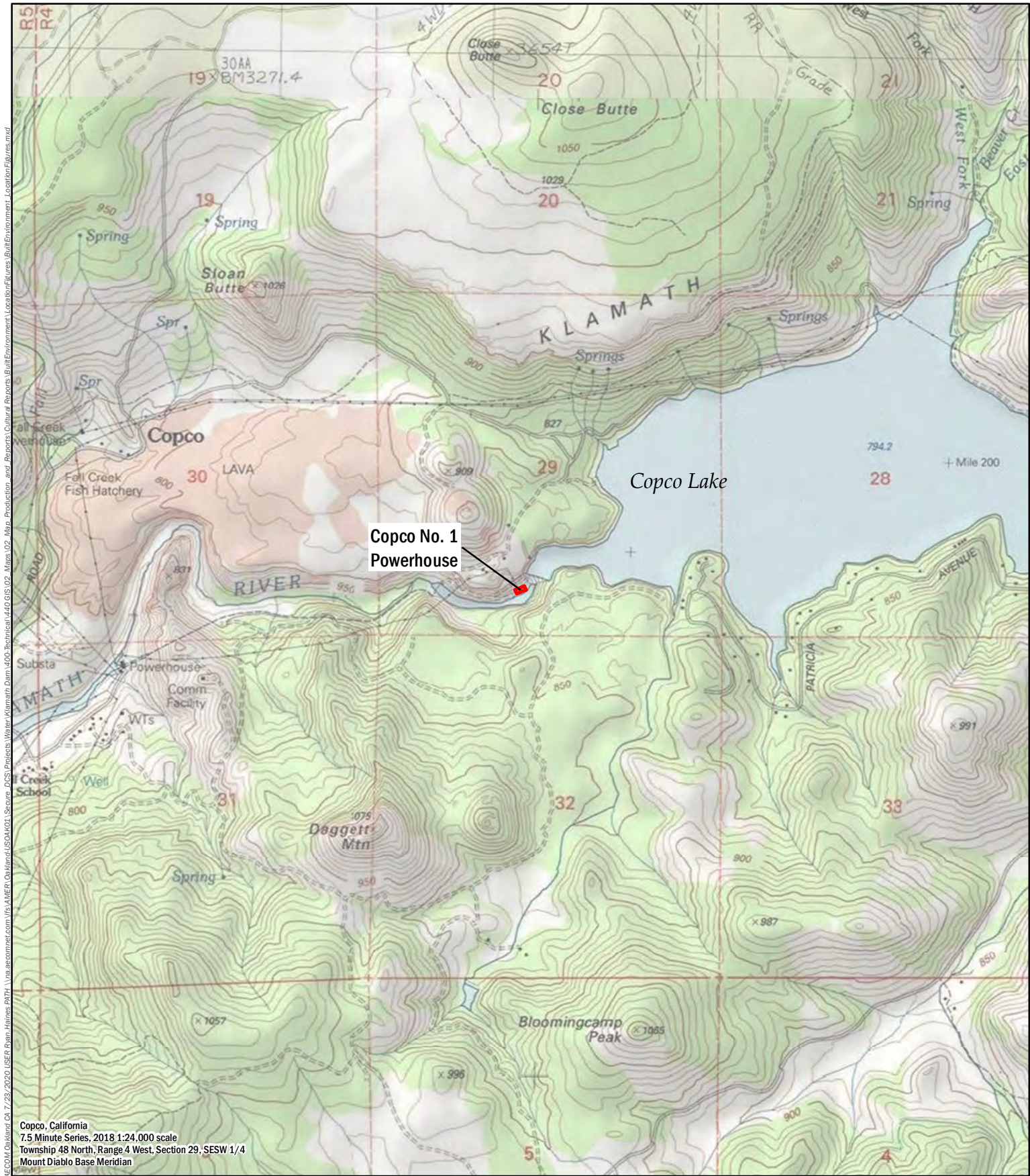
## LOCATION MAP

Property Name: Copco No. 1 Historic District

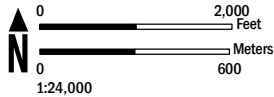
Page 13 of 16

\*Map Name: \_\_\_\_\_ \*Scale: \_\_\_\_\_ \*Date of map: \_\_\_\_\_

See Location Map on next page.



Copco No. 1 Powerhouse



Copco No. 1 Powerhouse

Klamath River Dam Removal  
 Copco Road  
 Copco, Siskiyou County, California

**AECOM**  
 July 2020

## SKETCH MAP

Property Name: Copco No. 1 Historic District

Page 15 of 16

\*Drawn by: \_\_\_\_\_

\*Date of map: \_\_\_\_\_


See Sketch/Site Map on next page.

AECOM Oakland CA 7/29/2020 USER:Ryan.Haines PATH: \\va.aecomnet.com\Va\AMER\_Oakland\USDA\K01 Secure\_DCS\Projects\Water\Klamath Dam\400-Technical\440 GIS\02 Maps\02 Map\_Production\_and\_Reports\Cultural Reports\BuiltEnvironment\LocationFigures\BuiltEnvironment\_SiteFigures.mxd



Copco No. 1  
Powerhouse

Image Source: GMA Hydrology Inc., 2018

 Copco No. 1 Powerhouse



Copco No. 1 Powerhouse

Klamath River Dam Removal  
Copco Road  
Copco, Siskiyou County, California

## PRIMARY RECORD

Primary #47-004015

HRI #

Trinomial

NRHP Status Code 3D

Other Listings  
Review Code

Reviewer

Date

Page 1 of 2

Resource Name or #: Warehouse 1112

P1. Other Identifier:

\*P2. Location: ☒ Unrestricted

\*a. County: Siskiyou

\*b. USGS 7.5' Quad Copco, CA Date 2018 T 48N; R 4W; SE 1/4 of SW 1/4 of Sec 29; Mount Diablo B.M.

c. Address \_\_\_\_\_ City \_\_\_\_\_ Zip \_\_\_\_\_

d. UTM: Zone 10 T, 554976mE/4647802mN

e. Other Locational Data: N/A

\*P3a. Description:

Warehouse 1112, built circa 1913, is one of the few remaining resources within the former town of Copco, a company town established during construction of the Copco No. 1 hydroelectric development. The other surviving town buildings are Bungalow 1107, Bungalow 1108, and guesthouse remains (CA-SIS-2824H), as well as ancillary structures such as pump houses. In summer 1911, while Copco engineers were surveying Ward's Canyon, a camp developed on the bluff above the proposed Copco No. 1 Dam site. Once dam construction began, the camp quickly grew into a company town called "Copco," where hundreds of Copco employees lived and worked (the town is referenced herein as "The town of Copco" to avoid confusion with the company itself). During the peak of Copco No. 1 construction, from about 1916 to 1922, the town was a hub of activity, with a cluster of interrelated buildings and structures. The town remained active through the 1924-1925 construction period for the Copco No. 2 Dam, which was built about 0.25 mile downstream from the Copco No. 1 Dam. Many of the town facilities were designed for temporary use, such as construction crew bunkhouses, and likely removed within a few years after completion of Copco No. 2.

See Continuation Sheets.

\*P3b. Resource Attributes: (HP4) Ancillary building

\*P4. Resources Present: ☒ Building ☒ Element of District

P5a. Photograph:



P5b. Description of Photo:  
Warehouse 1112, facing south (June 11, 2018).

\*P6. Date Constructed/Age and Source:

☒ Historic, circa 1913 (Boyle 1976: 15; Sprout et al. 1912-1913:30; Kramer 2003:9)

\*P7. Owner and Address:

PacifiCorp  
825 NE Multnomah, Suite 1500  
Portland, OR 97232

\*P8. Recorded by:  
Shoshana Jones, AECOM  
111 SW Columbia Street, Suite 1500  
Portland, OR 97201

\*P9. Date Recorded: June 11, 2018

\*P10. Survey Type: Intensive Level

\*P11. Report Citation: Klamath River  
Renewal Corporation. 2021. Lower  
Klamath Project Built Environment  
Technical Report.

\*Attachments: ☒ Location Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record

## CONTINUATION SHEET

Property Name: \_\_\_\_\_  
Page 2 of 2

### P3a. Description (continued):

The warehouse, built circa 1913, is located on the south side of Copco Road, approximately 115 feet north of the power substation, and is no longer in use. The estimated construction date is based on a March 20, 1913 photograph showing a structure similar in design and orientation at the same location (Sprout et al. 1912-1913:30). The framework of the original structure appears to have been present since circa 1913, but heavily modified or reconstructed during the historic period. In the 1913 photograph, a similar structure is adjacent to one of the equipment platforms and was likely used for storing and maintaining machinery delivered to the site by the Klamath Lake Railroad (KLRR) spur. This is consistent with Kramer's assertion that the warehouse "is believed to date from the 1922 expansion of Copco No. 1 *or, perhaps, earlier* [emphasis added]" (Kramer 2003:9). It is unknown when the building number "1112" was assigned, although the number appears on the backside of a warehouse photograph from the 1960s (Pacific Power 1964).

The existing one-story, wood-frame building is oriented northeast and has a rectangular plan. The medium-pitch side-gable roof displays shallow eaves and exposed rafter tails. The roofing consists of corrugated metal over wood board, while siding is historic 8-inch lapped wood. A metal chimney that appears in a circa 1964 photograph of the warehouse (**Photograph 2**) is no longer present. The eastern (primary) and southern elevations have been built into the ground's exposed basalt formations, while the rest of the building sits atop an open wood post and pier foundation cantilevered over a small sloped area. The slope may have resulted from erosion, with the wood post and pier foundation installed in response.

The eastern (primary) elevation has a wood-panel overhead garage door with a band of four inset panes. This garage door replaced a sliding top-rail door, which is depicted in the circa 1964 photograph of the warehouse (Pacific Power 1964; Durio 2003:8). The eastern elevation also features a four-panel wood pedestrian door and four 4-pane wood slider windows with simple wood surrounds. The southern elevation's three large, symmetrically spaced double doors consist of lap wood and side hinges. The doors, which extend the entire length of the elevation, bespeak the building's function as a storage space. The western (rear) elevation's only fenestration is a small single-pane window centered just beneath the eaves, with an unknown installation date. This elevation extends over a small slope and is supported by wood posts. The northern elevation's only fenestration is a single, off-center aluminum frame sliding window. This window replaced a smaller four-pane window in the same location.

In 2003, Durio recorded an "ancillary structure" described as situated:

Between the road and the [warehouse] building . . . a separate, detached, vehicle platform built out over the slope and supported on large, approximately 6-inch X 6-inch timbers. The platform allows workmen to work on the underside of automobiles and/or machinery atop the platform. The ground underneath the platform has ample evidence of oil and other fluids, suggesting that it was used as a work area to change the oil and perform other related tasks (Durio 2003:8).

This platform is partially visible in the circa 1964 photograph of the warehouse. During 2018 fieldwork, this ancillary structure was no longer present.

The warehouse appears to be in fair condition.

## BUILDING, STRUCTURE, AND OBJECT RECORD

\*Resource Name or #: Warehouse 1112

\*NRHP Status Code: 3D

Page 1 of 9

B1. Historic Name: Warehouse 1112  
B2. Common Name: garage/warehouse  
B3. Original Use: warehouse  
B4. Present Use: vacant  
B5. Architectural Style: Vernacular/Utilitarian

B6. Construction History:

Non-historic alterations to the warehouse include addition of windows at the northern elevation (aluminum frame sliding) and western (rear) elevation, and removal of an adjacent vehicle platform. The garage door at the eastern (primary) elevation replaced a sliding top-rail door.

B7. Moved? No

B8. Related Features: The warehouse is a contributing resource to the Copco No. 1 Historic District, which is within the larger Klamath Hydroelectric Project (KHP) Historic District. The KHP Historic District consists of seven hydroelectric developments, including Copco No. 1, in Southern Oregon and Northern California.

B9a. Architect: Unknown

b. Builder: California Oregon Power Company (Copco)

B10. Significance:

Theme: hydroelectric development

Area: Southern Oregon and Northern California

Period of Significance: 1918-1970 (Copco No. 1 Historic District)

Property Type: warehouse

Applicable Criteria: National Register of Historic Places (NRHP) Criterion A (contributing)

See Continuation Sheets.

B11. Additional Resource Attributes:

B12. References:

Boyle, John C. 1976. *50 Years On The Klamath*. Klocker Printery, Medford, Oregon. First printing 1976, second printing 1982.

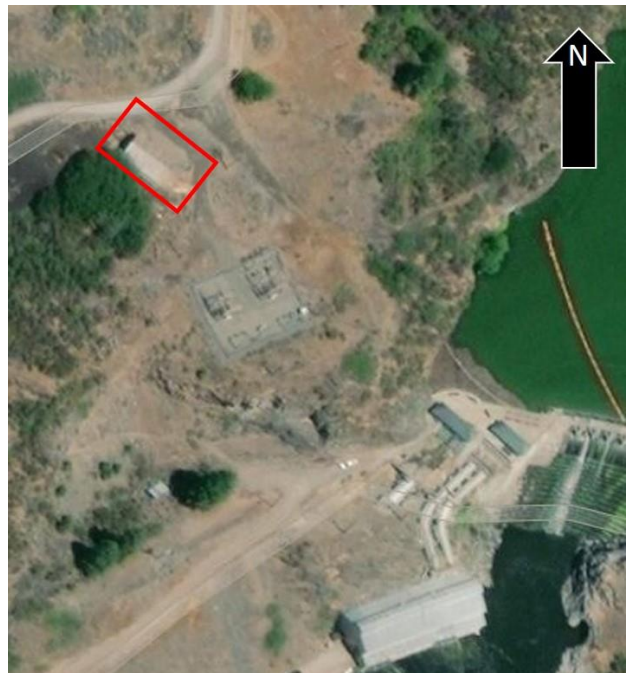
See Continuation Sheet.

B13. Remarks: None

B14. Evaluator: Shoshana Jones, AECOM  
111 SW Columbia Street, Suite 1500  
Portland, OR 97201

Date of Evaluation: June 11, 2018

(This space reserved for official comments.)



## CONTINUATION SHEET

Property Name: Warehouse 1112  
Page 2 of 9

B10. Significance (continued):

### **Historic Context**

Warehouse 1112 is in the former town of Copco, an outgrowth of Camp Ward, the survey and construction camp built on the bluff above the Copco No. 1 dam site. What is left of the town is now known as Copco No. 1 Village. The original camp buildings were located on both sides of the river above the site, but the majority were clustered on the bluff above the river's north bank. In spring 1911, construction began on the Ward Canyon (Copco No. 1) project. By summer, the construction camp on the bluff above the dam site contained a "large board and batten building, serving as a cook house and mess hall; an office building, a long bunk house, woodshed and several other small buildings" [all no longer extant] (Rippon 1985:41). During peak construction for Copco No. 1 and Copco No. 2 (1912-1925), the camp evolved into a bustling "power town" named Copco. The word "Copco" was officially recognized on July 30, 1914, when U.S. Postmaster General Albert S. Burleson appointed John C. Boyle, Copco's construction supervisor, as Copco postmaster (Boyle 1976:18). [The post office was relocated to the Fall Creek power plant site in 1920 and then to Hornbrook in 1954 (Rippon 1985:54-55).]

By November 1916, 360 men were working on Copco No. 1, and 560 persons were living in the town of Copco (*Oregon Daily Journal* 1916). The town contained numerous buildings and structures related to dam construction and worker accommodations. The *Evening Herald*, a local newspaper, described the new town in a November 1916 article:

The town is situated entirely on the [Copco] power company's property, has a population of about five hundred and sixty persons, as a result of the employment of three hundred and sixty men by the company many of whom have located at Copco with their families. The little school house [Fall Creek School] nearby which was formerly occupied by two or three pupils from the ranches along the river, is now filled with the children of the new residents and the genial office-seeker always makes it a point to drop in at the little burg as he realises [sic] that this little new town consists in the most part of a voting population (Evening Herald 1916).

Other newspaper reports publicized the town of Copco as having "all the conveniences of a modern village, including the ubiquitous moving picture show" (*Oregonian* 1917). The children of Copco workers attended the nearby Fall Creek School. At that time, Fall Creek School was in its original location near the Fall Creek Powerhouse, about 1.5 miles from town along Copco Road. (In 1965, Pacific Power built the third and final Fall Creek School at Copco Village near the Copco No. 2 powerhouse.) The *Sacramento Bee* described the town of Copco as occupying both sides of the river with tents and cabins where workers and their families lived. A *Bee* reporter remarked on the abundance of automobiles parked around the "tent city," stating that "[i]t looks as if at least half of the [worker] population drove to the job in their own cars, and the majority are not low priced vehicle[s]" (*Sacramento Bee* 1922). A one-story guesthouse on the bluff overlooking the dam and Copco Lake was completed around 1917. The guesthouse hosted corporate officers and other important guests at the dam site. The guesthouse also served as the residence for John C. Boyle during his tenure as Copco No. 1 construction supervisor.

In the center of town, construction workers lived in communal tents and bunkhouses, while administrative employees enjoyed separate living quarters. A 1926 photograph from Copco's newsletter *The Volt* depicts a dense cluster of buildings, including a tight row of four large, two-story bunkhouses immediately west of the guesthouse (Copco 1926). The cook's quarters adjoined the cookhouse. Administrative facilities included an engineering office with a dark room/drawing room. Equipment was delivered to the site's large machinery platforms via the Klamath Lake Railroad (KLRR spur), discussed below. Near the platforms were a machine shop, tool house, dynamite powder house, and blacksmith shop (Sprout et al. 1912-1913). A gravity tramway originated at the cinder cone and carried cinder and rock to the electrically operated sand machines and rock crushers. After processing, the materials were used to form a cement mixture. The resulting concrete was discharged through spouts and moved by gravity in open troughs across Ward's Canyon for use in dam construction (Copco n.d.: 4; Sprout et al. 1912-1913).

Copco transported construction equipment and materials to the project site. Construction of "Road #6" began on June 7, 1912 and was completed the following day. The road extended from the town to the mixing plant via the lava flat east of the cinder cone. This allowed all freight to be unloaded at the spur track and taken to camp, bypassing the Klamath Springs Station (Sprout et al. 1912-1913:200-201). The KLRR spur, built around 1912, delivered equipment to freight platforms for unloading. The 1-mile spur connected the KLRR mainline and the Copco No. 1 construction site for "a conveyance for all machinery and material on the original cars to the immediate locality of the dam and powerhouse" (Sprout et al. 1912-1913:31). The KLRR, a standard-gauge logging and passenger railroad, was completed in 1903 to connect Thrall, at the junction with the Southern Pacific Railroad line, to Old Pokegama, about 25 rail miles away. In 1910, Copco predecessor SEP&L leased the railroad's remaining section from the Weyerhaeuser logging company for use in constructing Copco No. 1. After assuming the project from SEP&L, Copco constructed the spur (Stephens 1964:3; Beckham 2006:131). The KLRR and spur were critical to facilitate transportation of supplies, materials and heavy machinery to the construction site. The spur branched out from the KLRR main line at Lava Switch, a location just west of the Klamath Springs Station, near the Picard and Sloan Ranches. The spur then traversed a "lava hump, around an ancient cinder cone," arriving to a level area at the construction site (Rippon 1985:22-23; Sprout et al. 1912-1913:123). As the spur traversed the town of Copco, it ran parallel and adjacent to large equipment platforms. The spur reached the Copco No. 1 Powerhouse via three switchbacks. When Copco's KLRR lease ended in 1914, the company purchased the remaining 14-mile section for \$35,000 (Stephens 1964:3; Bennett 1922).

## CONTINUATION SHEET

Property Name: Warehouse 1112  
Page 3 of 9

### B10. Significance (continued):

A November 12, 1922 issue of the *Oregonian* explained how Copco used the KLRR during the Copco No. 1 expansion phase:

It is a rather good road, with good 60-pound steel, standard gauge, but the grades reach as high as 5 per cent. The present electrical company [Copco] bought this road, and built switch-backs from the main line down to the site of the new [Copco No. 1] dam, and all of the material used from outside has been hauled over it by a big "galloping goose" truck or car, using gasoline for motive power . . . One item of the hauling was 70 carloads, Southern Pacific cars, and all of the steel use for reinforcing (Bennett 1922).

Copco also used the KLRR during Copco No. 2 construction in 1924 to 1925. In order to do, Copco built a second spur, at near river level, leading to the Copco No. 2 project site (Bullis 1964:2). Copco maintained the KLRR track between Thrall and the Copco powerhouses until 1942, when improved automobile roads rendered the rail spurs obsolete (Beckham 2006:131; Bullis 1964:2). The Copco access road, built circa 1942 after the tracks were removed, is a vehicle road that appears to have been constructed atop the former KLRR spur's alignment. It consists of a 1-mile road section between Iron Gate Lake Road/Copco Road, a county road, and the Copco No. 1 powerhouse. From the county road fork, the Copco access road winds mostly southwest, then turns sharply to descend the river canyon to the powerhouse. The road passes through the town of Copco and past the driveways of the town's two remaining bungalows and the garage/warehouse.

At its peak, the dynamic the town of Copco housed hundreds of workers and their families, and contained interrelated buildings, equipment, and operations dedicated to Copco No. 1 construction. Out of dozens of original buildings and structures, only four resources from the town have survived: the guesthouse remains, Bungalows 1107 and 1108, and Warehouse 1112. During the 1960s, Pacific Power demolished at least four other bungalows at Copco No. 1: 1102, 1103, 1105, and 1106. Bungalows 1102 and 1103 were on the river's south side, while 1105 and 1106 were on the north side, on the bluff above the powerhouse. The guesthouse remains consist of a foundation and chimney and are no longer easily accessible. Scattered concrete foundations hint at the extent of the town's historic equipment and operations. The KLRR railroad spur, which transported materials and equipment to the site, has been removed before the 1940s.

### Evaluation (Contributes to Copco No. 1 Historic District)

#### Criteria Analysis

##### NRHP Criterion A

The Copco No. 1 Historic District contributes to the larger KHP Historic District, both of which are significant under NRHP Criterion A in the areas of Commerce and Industry. The warehouse adds to the significance of the Copco No. 1 Historic District as one of the earliest support facilities for construction and operations.

##### NRHP Criterion B

Research does not indicate that the warehouse is associated with any historically significant individuals under NRHP Criterion B.

##### NRHP Criterion C

The warehouse does not embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, and is therefore not significant under NRHP Criterion C.

##### NRHP Criterion D

The warehouse is not significant as a source (or likely source) of important information regarding history or prehistory. It does not appear likely to yield important information about historic construction materials or technologies and is not significant under NRHP Criterion D.

#### Integrity Analysis

As a contributing resource, the warehouse retains sufficient integrity of location, design, feeling, and association.

**Location** is the place where the historic property was constructed or the place where the historic event took place. The warehouse remains at its original building site in the former town of Copco and retains integrity of location.

**Design** is the composition of elements that constitute the form, plan, space, structure, and style of a property. The warehouse retains integrity of design as a simple, side-gable structure with rectangular plan used for equipment storage and maintenance. Although a nearby vehicle platform was recorded by Durio (2003), the platform was not attached to the warehouse, and its removal has not diminished the building's integrity of design.

**Setting** is the physical environment of a historic property that illustrates the character of the place. The immediate setting, originally the bustling town of Copco, has been substantially diminished by loss of nearly all the town's buildings and structures; however, the

## CONTINUATION SHEET

Property Name: Warehouse 1112  
Page 4 of 9

larger setting characterized by the remote and undeveloped river canyon remains intact.

B10. Significance (continued):

**Materials** are the physical elements combined in a particular pattern or configuration to form the historic property and **Workmanship** is the physical evidence of the crafts of a particular culture or people during any given period of history. The warehouse was altered through construction of a new garage door and new windows; however, the historic materials and workmanship have been largely retained.

**Feeling** is the quality that a historic property has in evoking the aesthetic or historic sense of a past period of time. The warehouse's proximity to the dam and powerhouse supports integrity of feeling with the Copco No. 1 hydroelectric development.

**Association** is the direct link between a property and the event or person for which the property is significant. The intact physical features and location within the town of Copco directly link the warehouse with the historic construction and operations at Copco No. 1, contributing to integrity of association. The warehouse still conveys its historic character as the only surviving, representative example of a support facility from the town of Copco's heyday.

**The warehouse retains integrity and is eligible as contributing resources to the Copco No. 1 Historic District.**

B12. References (continued):

Bullis, Seth M. 1964. Letter to Mr. Kent Stephens. October 6 (J.C. Boyle Collection, Folder 11.25.199 in Box 15/16, Southern Oregon Historical Society).

Beckham, Stephen Dow. 2006. Historical Landscape Overview of the Upper Klamath River Canyon of Oregon and California. Cultural Resource Series No. 13. Bureau of Land Management. U.S. Department of the Interior.

Bennett, Addison. 1922. "Portlanders Attend Big Dam Opening At Copco, Cal." *Sunday Oregonian* [Portland, Oregon]. November 12.

Copco (California Oregon Power Company).

n.d. Project No. 2082. Copco No. 1 and 1-A Development. Schedule No. 2 (J.C. Boyle Collection, Box 5/16, Southern Oregon Historical Society).

1926. "Copco: A Brief History of Its Beginnings." *The Volt* 7, no. 4. December. December (J.C. Boyle Collection, folder "Volt 1920-1926," in Box 15/16, Southern Oregon Historical Society).

Durio, Lori. 2003. Klamath River Hydroelectric Project District. State of California Department of Parks and Recreation. Primary Record #47-004015. Recorded July 2003 by L. Durio, CH2M Hill, New Orleans, LA. September.

*Evening Herald* [Klamath Falls, Oregon]. 1916. "Power Plant Makes Town." November 21.

Kramer, George. 2003. Klamath Hydroelectric Project. FERC No. 2082. Request For Determination of Eligibility. Prepared for PacifiCorp, Portland, Oregon. October.

*Oregon Daily Journal* [Portland, Oregon]. 1916. "New Power Town Just Over The Line." November 23.

*Oregonian* [Portland, Oregon]. 1917. "Big Power Plant Near Completion." October 8.

Rippon, Cy and Sally (eds). 1985. Early Twentieth Century Hydro-Power Plants and High Voltage Lines in Siskiyou County: Continuing the Saga of Pioneering with Electricity to Beginnings of High Technology in the Electrical Field. Compiled and Printed by Cy and Sally Rippon. Weed, California.

*Sacramento Bee* [Sacramento, California]. 1922. "Work of Enlarging Copco Power Plant is Rushed." September 9.

Snyder, J.O. 1921. "Three California Marked Salmon Recovery." Sacramento, California: *California Fish and Game* 7, No. 1. January.

Sprout, Sidney, John C. Boyle, and A.C. Sprout. 1912-1913. California – Oregon Power Company. Klamath River Projects 1 & 2 Progressive Reports 1912-1913 (J.C. Boyle Collection, Box 1/16, Southern Oregon Historical Society).

Stephens, Kent. 1964. "Part Two of the Klamath Lake Railroad." *The Western Railroader* 27, No. 12, issue No. 299. December.

## CONTINUATION SHEET

Property Name: Warehouse 1112  
Page 5 of 9

Photographs:



**Photograph 1.** Warehouse 1112, with substation in background; view facing south, 2018.



**Photograph 2.** Warehouse 1112, circa 1964, with substation in background; view facing south. Notice separate platform adjacent to building (courtesy of PacifiCorp Archives).

## CONTINUATION SHEET

Property Name: Warehouse 1112  
Page 6 of 9

### Photographs (continued):



**Photograph 3.** This photograph, taken by Durio in 2003, shows a separate platform structure at the far left that has been subsequently removed, 2018.



**Photograph 4.** Warehouse 1112 with cinder cone excavation in background; view facing north, 2018.

## CONTINUATION SHEET

Property Name: Warehouse 1112

Page 7 of 9

### Photographs (continued):



**Photograph 5.** The town of Copco, also known as Ward's Camp, in August 1911 (J.C. Boyle Collection, Southern Oregon Historical Society).



**Photograph 6.** The town of Copco in November 1912, showing cinder cone tramway and railroad spur; view facing south towards the river canyon. The eventual Warehouse 1112 site was near a small oil building (white arrow added by AECOM) (J.C. Boyle Collection, Southern Oregon Historical Society).

## CONTINUATION SHEET

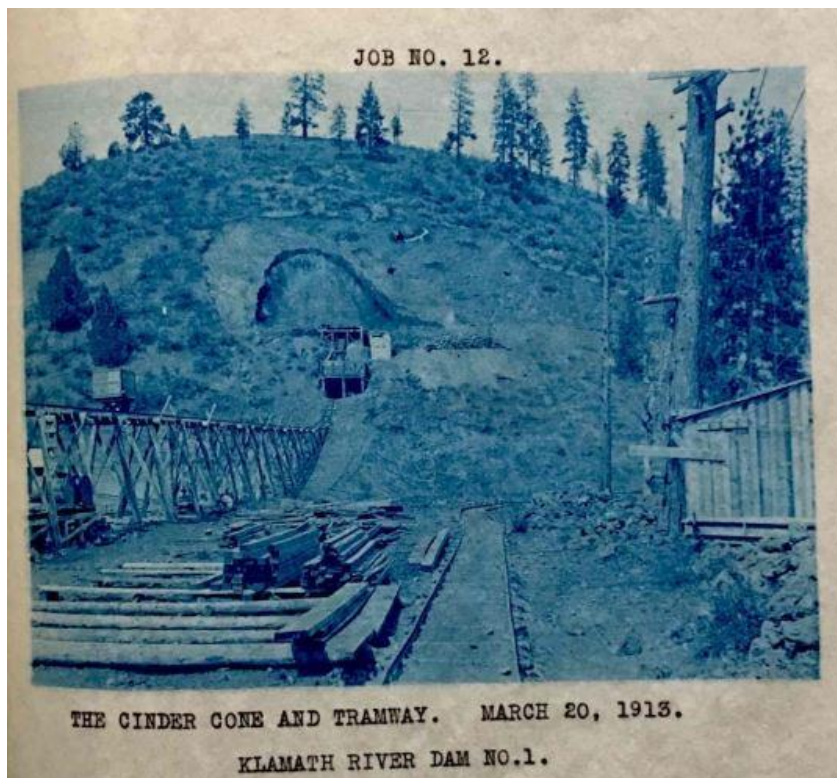
Property Name: Warehouse 1112

Page 8 of 9

### Photographs (continued):



**Photograph 7.** Copco No. 1 railroad spur with SEP&L engine, October 1912  
(J.C. Boyle Collection, Southern Oregon Historical Society).



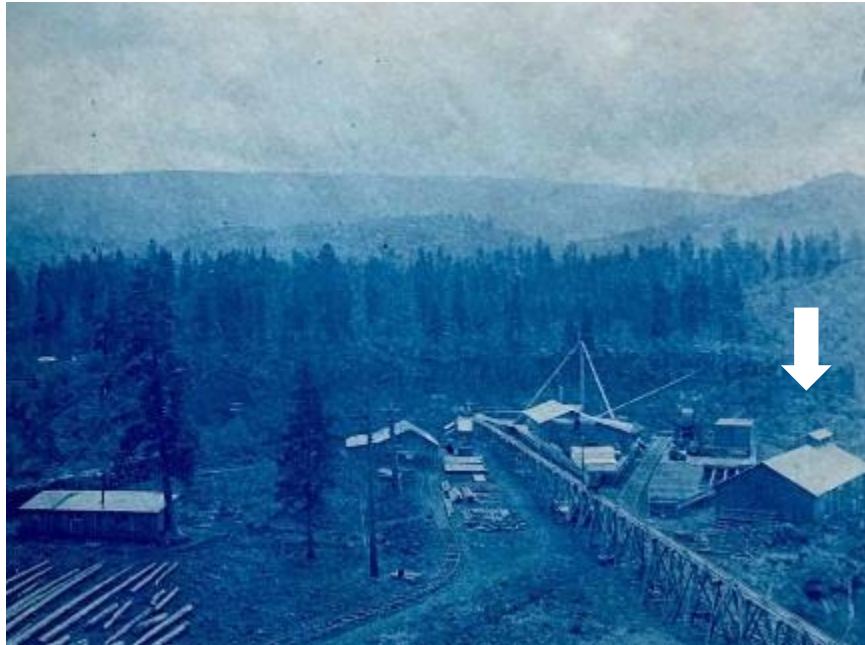
**Photograph 8.** View of cinder cone from Copco construction area, March 20, 1915  
(Sprout et al. 1912-1913:86).

## CONTINUATION SHEET

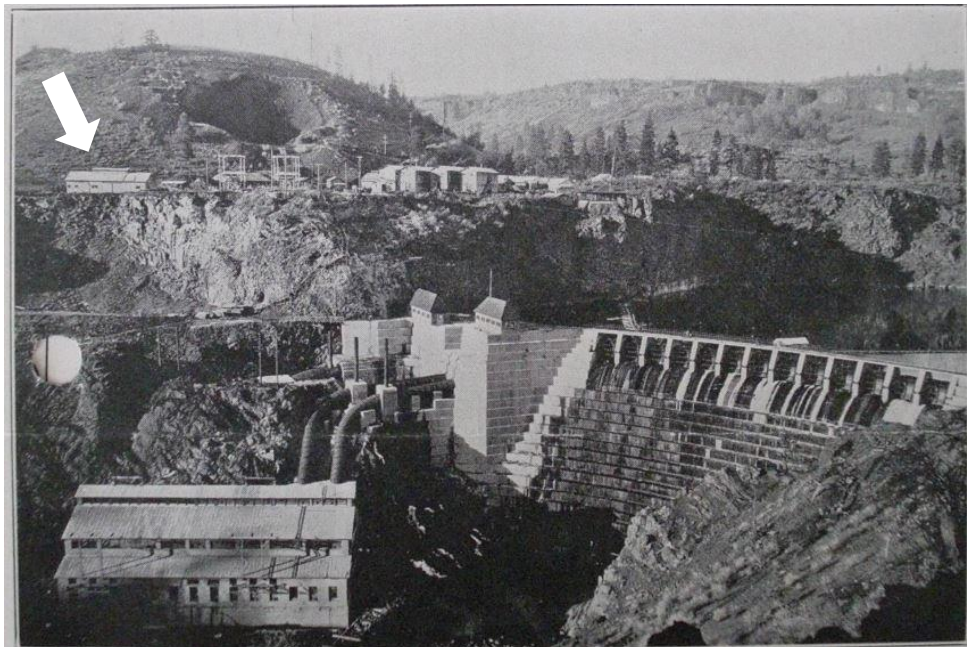
Property Name: Warehouse 1112

Page 9 of 9

### Photographs (continued):



**Photograph 9.** The town of Copco on March 20, 1913; view facing east towards Ward's Canyon, with a similar, preexisting building shown at the Warehouse 1112 site (white arrow added by AECOM) (Sprout et al. 1912-1913:30).



**Photograph 10.** Copco No. 1, showing powerhouse, dam, and the town of Copco on bluff, with excavated cinder cone in hillside to left. The Warehouse 1112 site is visible at upper left corner (white arrow added by AECOM) (Copco 1926).

## PRIMARY RECORD

Primary #47-040015

HRI #

Trinomial

NRHP Status Code 3D

Other Listings  
Review Code

Reviewer

Date

Page 1 of 2

Resource Name or #: Copco No. 1 Water Conveyance System

P1. Other Identifier: Copco No. 1 Water Conveyance System

\*P2. Location: ☒ Unrestricted

\*a. County: Siskiyou

\*b. USGS 7.5' Quad Copco, CA Date 2018 T 48N; R 4W; SE 1/4 of SW 1/4 of Sec 29; Mount Diablo B.M.

c. Address \_\_\_\_\_ City \_\_\_\_\_ Zip \_\_\_\_\_

d. UTM: Zone 10 T, 555075mE/4647686mN

e. Other Locational Data: N/A

\*P3a. Description:

The Copco No. 1 water conveyance system is a major component of the Copco No. 1 hydroelectric development. The system was built in two phases: the first in 1918 (double penstock), and the second in 1922 (single penstock). In 1918, Copco completed the double penstock at the same time that the dam and powerhouse were erected. When Copco expanded the hydroelectric development in 1922, the single penstock was added, the dam height was raised, and a second generating unit was installed in the powerhouse. The penstock intakes are in the dam's western abutment section. Each penstock uses two cast-iron slide gates with electric motor hoists in the gatehouses. In front of each intake are metal trash racks with 3-inch bar spacings (USBR 2012:19-20). No bypass capacity is provided to allow flow when the penstocks are closed (AECOM 2017:2-13).

The double penstock, completed in 1918, is an enclosed, bifurcated steel pipeline with an eastern leg measuring 172 feet long; and a western leg measuring 194 feet long. The pipe diameter decreases from 10 feet at the inlet to 8 feet before entering the powerhouse, where it supplies Generating Unit No. 1 (Kramer 2003:8; FERC 2007:2-11). The section of double penstock not encased in concrete is mounted on concrete anchor blocks and secured by ring girder supports; it then passes through thrust blocks as it angles toward the powerhouse. The thrust blocks help control the force of the flowing water through the penstocks. Steel vent pipes project from the top of the thrust blocks.

See Continuation Sheet.

\*P3b. Resource Attributes: (HP11) Engineering structure (hydropower water conveyance system)

\*P4. Resources Present: ☒ Structure ☒ Element of District

P5a. Photograph:



P5b. Description of Photo: Copco No. 1 penstocks, viewing east (June 11, 2018)

\*P6. Date Constructed/Age and Source:

☒ Historic, 1918, 1922 (PacifiCorp archive image CO1-1)

**\*P7. Owner and Address:**

PacifiCorp  
825 NE Multnomah, Suite 1500  
Portland, OR 97232

\*P8. Recorded by:  
Shoshana Jones, AECOM  
111 SW Columbia Street, Suite 1500  
Portland, OR 97201

\*P9. Date Recorded: June 11, 2018

\*P10. Survey Type: Intensive Level

\*P11. Report Citation: Klamath River  
Renewal Corporation. 2021. Lower  
Klamath Project Built Environment  
Technical Report.

\*Attachments: ☒ Location Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record

## CONTINUATION SHEET

Property Name: Copco No. 1 Water Conveyance System  
Page 2 of 2

### P3a. Description (continued):

In 1923, U.S. Forest Service engineer Frederick Hall Fowler described the double penstock as:

[T]wo riveted-steel pressure pipes, 10 feet in diameter and about 200 feet long, supported on masonry piers. These pipes, leaving the gatehouse of the dam, run nearly horizontal for a short distance, then bend downward and laterally through an angle of nearly 90 [degrees] to the back wall of the powerhouse, where they are tapered to a diameter of 8 feet for connection with the turbine casings. Water is admitted to the pipes through trash racks and sliding gates in the gatehouse at the north abutment of the dam, and immediately below the gatehouse there is a 30-foot standpipe in each line (Fowler 1923:95).

The single penstock, built during the 1922 expansion, is a steel pipeline that measures 228 feet long and 14 feet in diameter at the inlet, narrowing to 8 feet in diameter before entering the powerhouse, where it supplies Generating Unit No. 2 (Kramer 2003:8). A steel vent pipe emerges from the top of the penstock. In anticipation of further powerhouse expansion, two slide gates and a short penstock section were built near the existing penstocks to accommodate a third unit, which was never constructed (USBR 2012:19-20; AECOM 2017:2-12).

The water conveyance system components appear to be in good condition.

## BUILDING, STRUCTURE, AND OBJECT RECORD

\*Resource Name or #: Copco No. 1 Water Conveyance System

\*NRHP Status Code: 3D

Page 1 of 10

B1. Historic Name: N/A

B2. Common Name: Copco No. 1 water conveyance system

B3. Original Use: water conveyance

B4. Present Use: water conveyance

B5. Architectural Style: N/A

B6. Construction History:

The Copco No. 1 water conveyance system's double penstock was constructed in 1918 as a major component of the Copco No. 1 hydroelectric development. Copco substantially expanded Copco No. 1 in 1922 to increase power output, which involved raising the dam height; enlarging the powerhouse structure; and installing a single penstock to supply a second generating unit. No alterations to the double or single penstock were apparent during fieldwork in 2018.

B7. Moved? No

B8. Related Features: The water conveyance system is a contributing resource in the Copco No. 1 Historic District, which is within the larger Klamath Hydroelectric Project (KHP) Historic District. The KHP Historic District consists of seven hydroelectric developments, including Copco No. 1, in Southern Oregon and Northern California.

B9a. Architect: Unknown

b. **Builder:** California Oregon Power Company (Copco)

B10. Significance:

Theme: hydroelectric development

Area: Southern Oregon and Northern California

Period of Significance: 1918-1970 (Copco No. 1 Historic District)

Property Type: Water Conveyance System

Applicable Criteria: National Register of Historic Places (NRHP) Criterion A (contributing) and Criterion C (contributing)

See Continuation Sheet.

B11. Additional Resource Attributes: (HP11)—hydropower water conveyance system

B12. References:

AECOM. 2017. Klamath River Renewal Project. California Environmental Quality Act (CEQA) and California and Oregon 401 Water Quality Certifications Technical Support Document. Submitted to: California State Water Resource Control Board and Oregon Department of Environmental Quality. Submitted by Klamath River Renewal Corporation. September.

FERC (Federal Energy Regulatory Commission). 2007. Final Environmental Impact Statement For Hydropower License. Volume I. Klamath Hydroelectric Project. FERC Project No. 2082-027. Oregon and California. Office of Energy Projects. November.

Fowler, Frederick Hall. 1923. Hydroelectric Power Systems of California and Their Extensions Into Oregon and Nevada. Prepared in Cooperation with the United States Forest Service. Washington: Government Printing Office. Available at Google Books.

Kramer, George. 2003. Klamath Hydroelectric Project. FERC No. 2082. Request For Determination of Eligibility. Prepared for PacifiCorp, Portland, Oregon. October.

B13. Remarks: None

B14. Evaluator: Shoshana Jones, AECOM  
111 SW Columbia Street, Suite 1500  
Portland, OR 97201

Date of Evaluation: June 11, 2018

(This space reserved for official comments.)



## CONTINUATION SHEET

Property Name: Copco No. 1 Water Conveyance System  
Page 2 of 10

### B10. Significance (continued):

#### Evaluation (Contributes to Copco No. 1 Historic District)

##### Criteria Analysis

###### NRHP Criterion A

The Copco No. 1 Historic District contributes to the larger KHP Historic District, both of which are significant under NRHP Criterion A in the areas of Commerce and Industry. The Copco No. 1 water conveyance system adds to the significance of the Copco No. 1 Historic District by conveying water impounded by Copco Lake through the dam and into the powerhouse, where hydroelectric power is generated.

###### NRHP Criterion B

Research does not indicate that the water conveyance system is associated with any historically significant individuals under NRHP Criterion B.

###### NRHP Criterion C

The dam, water conveyance system, and powerhouse are collectively significant under NRHP Criterion C in the area of Engineering for embodying the distinctive characteristics of an early-twentieth-century hydroelectric development that implemented technological advances in its conception, design, and construction.

###### NRHP Criterion D

The water conveyance system is not significant as a source (or likely source) of important information regarding history or prehistory. It does not appear likely to yield important information about historic construction materials or technologies and is not significant under NRHP Criterion D.

##### Integrity Analysis

The water conveyance system retains integrity of location, design, setting, materials, workmanship, feeling, and association, and continues to convey its historic identity as a key component of an early-twentieth-century hydroelectric development.

**Location** is the place where the historic property was constructed or the place where the historic event took place. The system retains integrity of location, because it remains in its original location in Ward's Canyon.

**Design** is the composition of elements that constitute the form, plan, space, structure, and style of a property. The system retains integrity of design despite certain alterations that have occurred over time. Although Copco installed the single penstock in 1922, this addition occurred only four years after the double penstock was built, was part of the original plan to generate additional power at Copco No. 1, and is historic in its own right. There do not appear to be any other substantial alterations.

**Setting** is the physical environment of a historic property that illustrates the character of the place. The water conveyance system retains integrity of setting. The Copco No. 1 hydroelectric development was constructed in Ward's Canyon, a remote, undeveloped area of the Klamath River basin in Siskiyou County, California. The setting is characterized by the Klamath River, Copco Lake, and a landscape of basaltic rock formation, pine trees, and other vegetation. The unimproved roads that provide access to the dam and powerhouse follow the alignment of the former Klamath Lake Railroad spur, used during dam construction.

**Materials** are the physical elements combined in a particular pattern or configuration to form the historic property. The system retains integrity of materials, particularly the penstocks' massive steel form and the concrete thrust blocks.

**Workmanship** is the physical evidence of the crafts of a particular culture or people during any given period of history. The system retains integrity of workmanship demonstrated by the designed interconnection between the water conveyance system, dam, and powerhouse.

**Feeling** is the quality that a historic property has in evoking the aesthetic or historic sense of a past period of time. The system's remote setting and intensive use of industrial construction materials convey the historic character of an early-twentieth-century hydroelectric water conveyance system, thereby retaining integrity of feeling.

## CONTINUATION SHEET

Property Name: Copco No. 1 Water Conveyance System

Page 3 of 10

### B10. Significance (continued):

**Association** is the direct link between a property and the event or person for which the property is significant. The presence of the intact water conveyance system at this location directly links the property with early power development in the Southern Oregon-Northern California region, contributing to integrity of association.

**The Copco No. 1 water conveyance system retains integrity and is eligible as a contributing resource to the Copco No. 1 Historic District.**

Resource(s)	Construction/ Major Alterations	Applicable NRHP Criteria	Area(s) of Significance	Contributing/ Individually Eligible
Water conveyance system	1918 (built) 1922 (expanded)	A	Commerce and Industry	Contributing
Dam, powerhouse, and water conveyance system (collectively)	1918 (built) 1922 (expanded)	C	Engineering	Contributing

### B12. References (continued):

Myrtle, Frederick S. 1919. "From the Mountains of Oregon to the Bay of San Francisco: By Interconnection of Three High-Tension Transmission Systems." Pacific Service Magazine. Pacific Gas and Electric Company. Reprinted and distributed by The California – Oregon Power Company (John C. Boyle Collection, Box 5/16, Southern Oregon Historical Society).

USBR (United State Bureau of Reclamation). 2012. Reclamation: Managing Water in the West. Detailed Plan for Dam Removal – Klamath River Dams. Klamath Hydroelectric Project. FERC License No. 2082, Oregon – California. USBR, U.S. Department of the Interior. Technical Service Center, Denver, Colorado. July.

## CONTINUATION SHEET

Property Name: Copco No. 1 Water Conveyance System  
Page 4 of 10

Photographs:



**Photograph 1.** Single penstock (foreground) and double penstock; view facing east, 2018.



**Photograph 2.** Double penstock entering powerhouse, with single penstock at right; view facing southwest, 2018.

## CONTINUATION SHEET

Property Name: Copco No. 1 Water Conveyance System  
Page 5 of 10

### Photographs (continued):



**Photograph 3.** Single penstock with powerhouse and Klamath River visible in background; view facing south, 2018.



**Photograph 4.** Penstock section adjacent to the single penstock. This section would have accommodated an additional penstock to supply flow to a third generating unit. The additional penstock and third generating unit were never installed, 2018.

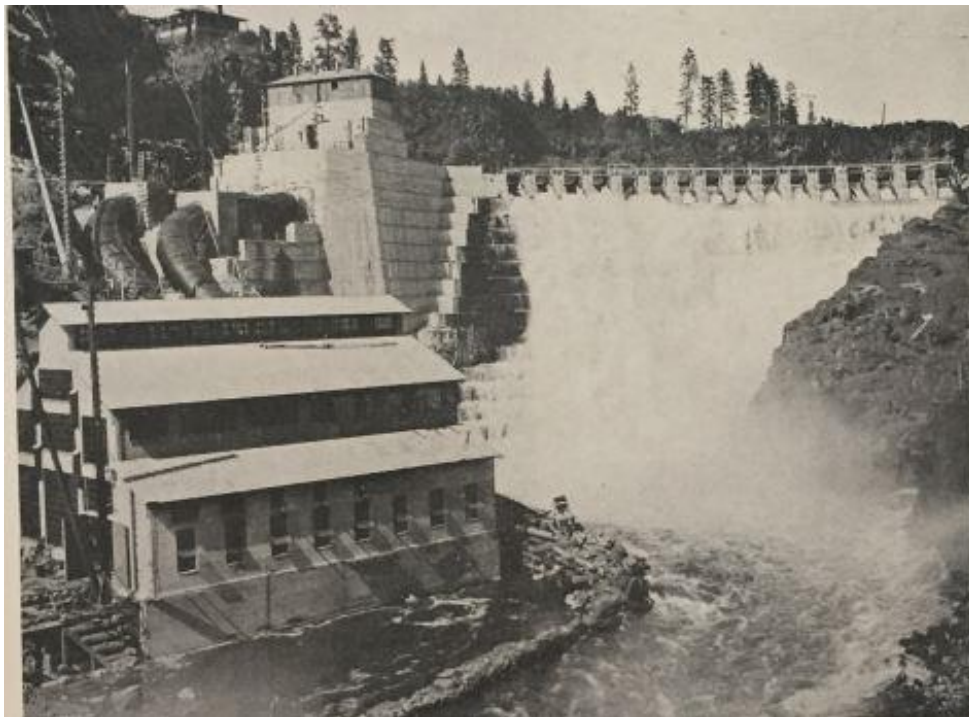
## CONTINUATION SHEET

Property Name: Copco No. 1 Water Conveyance System  
Page 6 of 10

### Photographs (continued):



**Photograph 5.** Powerhouse interior, showing Generating Unit No. 1 and double penstock; view facing north, 2018.



**Photograph 6.** Double penstock entering the powerhouse in 1917 (Myrtle 1919). In this photograph, the dam had not yet been raised, the powerhouse had not been expanded, and the single penstock had not been installed.

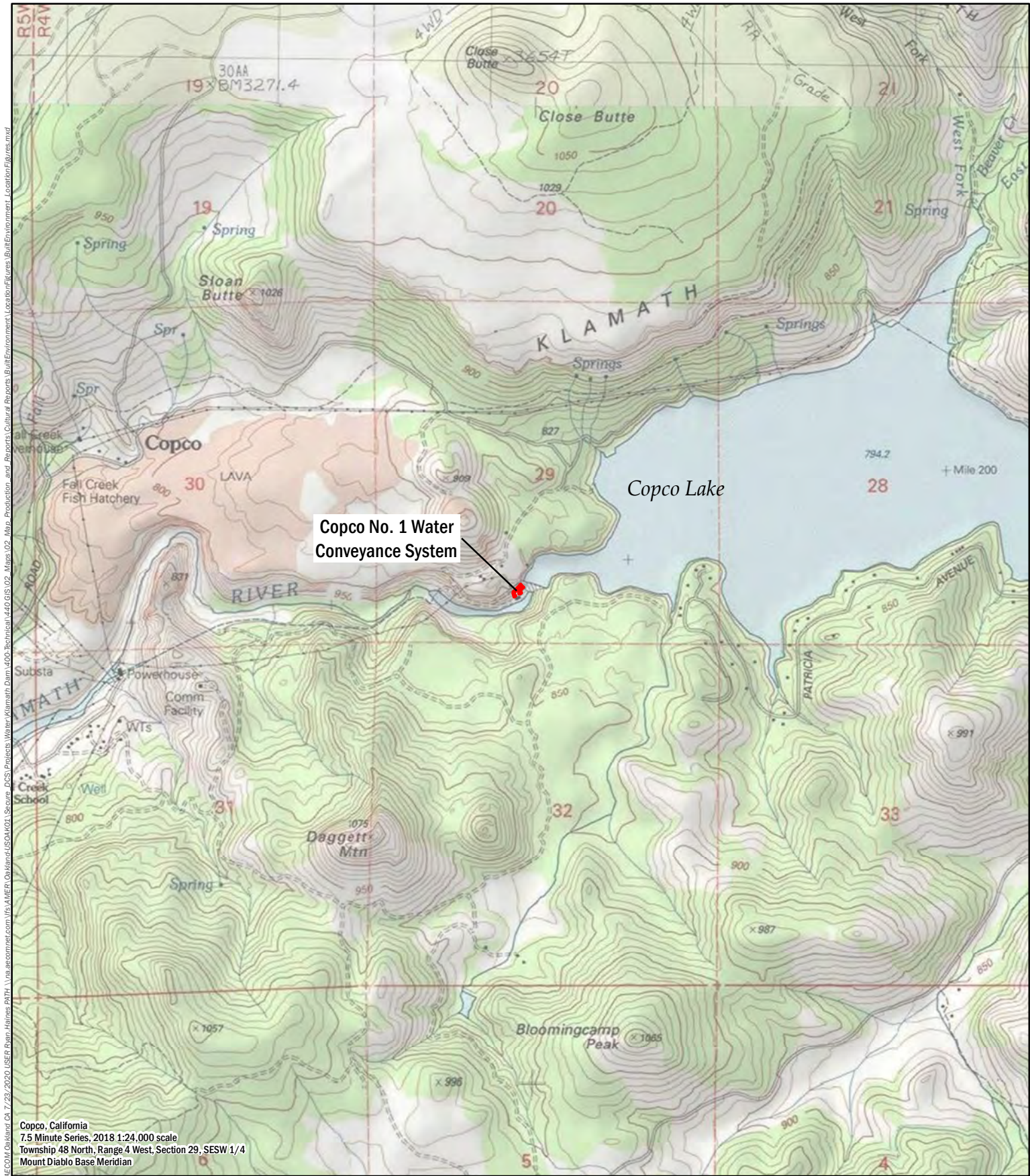
## LOCATION MAP


Property Name: Copco No. 1 Historic District

Page 7 of 10

\*Map Name: \_\_\_\_\_ \*Scale: \_\_\_\_\_ \*Date of map: \_\_\_\_\_

See Location Map on next page.

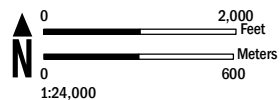


 Copco No. 1 Water Conveyance System



**Copco No. 1 Water Conveyance System**

**Klamath River Dam Removal  
 Copco Road  
 Copco, Siskiyou County, California**



**AECOM**  
 July 2020

## SKETCH MAP

Property Name: Copco No. 1 Historic District

Page 9 of 10

\*Drawn by: \_\_\_\_\_


\*Date of map: \_\_\_\_\_

See Sketch/Site Map on next page.

AECOM Oakland CA 7/29/2020 USER:Ryan.Haines PATH: \\va.aecomnet.com\Va\AWER\_Oakland\USD\K01\_Secure\_DCS\Projects\Water\Klamath Dam\400\_Technical\440 GIS\02\_Maps\02\_Map\_Production\_and\_Reports\Cultural Reports\BuiltEnvironment\LocationFigures\BuiltEnvironment\_SiteFigures.mxd



Image Source: GMA Hydrology Inc., 2018

 Copco No. 1 Water Conveyance System



Copco No. 1 Water Conveyance System

Klamath River Dam Removal  
Copco Road  
Copco, Siskiyou County, California

## PRIMARY RECORD

Primary #47-004015

HRI #

Trinomial

NRHP Status Code 3D

Other Listings  
Review Code

Reviewer

Date

Page 1 of 2

Resource Name or #: Bungalow 1107

P1. Other Identifier: Bungalow 1107

\*P2. Location: ☒ Unrestricted

\*a. County: Siskiyou

\*b. USGS 7.5' Quad Copco, CA Date 2018 T 48N; R 4W; SE 1/4 of SW 1/4 of Sec 29; Mount Diablo B.M.

c. Address: 21601 Copco Road City: Hornbrook Zip: 96044

d. UTM: Zone 10 T, 554879mE/4647744mN

e. Other Locational Data: N/A

\*P3a. Description:

Bungalow 1107, built circa 1925, is one of the few remaining resources within the former town of Copco, a company town established during construction of the Copco No. 1 hydroelectric development. The other surviving town buildings are Bungalow 1108, Warehouse 1112, and guesthouse remains (CA-SIS-2824H), as well as ancillary structures such as pump houses. In summer 1911, while Copco engineers were surveying Ward's Canyon, a camp developed on the bluff above the proposed Copco No. 1 Dam site. Once dam construction began, the camp quickly grew into a company town called "Copco," where hundreds of Copco employees lived and worked (the town is referenced herein as "The town of Copco" to avoid confusion with the company itself). During the peak of Copco No. 1 construction, from about 1916 to 1922, the town was a hub of activity, with a cluster of interrelated buildings and structures. The town remained active through the 1924-1925 construction period for the Copco No. 2 Dam, which was built about 0.25 mile downstream from the Copco No. 1 Dam. Many of the town facilities were designed for temporary use, such as construction crew bunkhouses, and likely removed within a few years after completion of Copco No. 2.

See Continuation Sheets.

\*P3b. Resource Attributes: (HP2) Single-family property

\*P4. Resources Present: ☒ Building ☒ Element of District

P5a. Photograph:



P5b. Description of Photo: Bungalow 1107 and detached one-car garage, viewing south (June 11, 2018).

\*P6. Date Constructed/Age and Source:

☒ Historic, circa 1925 (Kramer 2003:9)

\*P7. Owner and Address:

PacifiCorp  
825 NE Multnomah, Suite 1500  
Portland, OR 97232

\*P8. Recorded by:

Shoshana Jones, AECOM  
111 SW Columbia Street, Suite 1500  
Portland, OR 97201

\*P9. Date Recorded: June 11, 2018

\*P10. Survey Type: Intensive Level

\*P11. Report Citation: Klamath River  
Renewal Corporation. 2021. Lower  
Klamath Project Built Environment  
Technical Report.

\*Attachments: ☒ Location Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record

## CONTINUATION SHEET

Property Name: Bungalow 1107

Page 2 of 2

### P3a. Description (continued):

Bungalows 1107 and 1108, built circa 1925, are presently vacant and were likely built to house dam operators and their families after completion of Copco No. 1. The modern replacement roofing, siding, and window materials suggest that the bungalows were in use throughout much of the twentieth century. Bungalow 1107, with an address of 21601 Copco Road, has a driveway approximately 560 feet east of the sharp curve where Copco Road begins the steep descent to the powerhouse. The small one-story, wood-frame residence, oriented facing north, has a rectangular plan, symmetrical façade, board-form concrete foundation, and crawl spaces at both side elevations. The medium-pitch front-gable roof is clad in standing-seam sheet metal, and displays shallow eaves enclosed in vinyl. The newer metal roofing was installed over original wood shingles, which are still visible in sections. A red-brick chimney is located along the ridgeline, and a metal vent is centered in the front gable apex. The bungalow's vinyl siding may have been installed over the original horizontal wood board. The windows are primarily replacement aluminum sash and sliders, all with simple wooden surrounds.

The centered front entry along the northern elevation consists of a wooden porch and front-gable porch roof supported by two battered wood columns. The metal numbers "21601" are mounted on the porch's west-side column. The single panel, single-light wooden front door has a metal storm cover. The entry is flanked by two pairs of aluminum sash windows. The porch roof has standing-seam sheet-metal cladding, while the porch deck has a tongue-and-groove surface. The eastern elevation's fenestration consists of an aluminum slider and single aluminum sash windows that flank a small slider window somewhat obscured by the eave overhang. The western elevation's fenestration consists of two pairs of aluminum sash windows, one with an external air conditioning unit, and an aluminum sliding window.

The rear elevation contains pairs of aluminum sliding windows in various sizes flanking a slightly off-center single-panel, single-light wooden door with metal storm cover. The canopy sheltering the rear door has a shed, rather than gable, design. A metal vent is centered in the gable apex. A modern wooden deck addition set on timber and concrete footings was built against the rear elevation. The railings are vertical wood, and the space below the deck is partially concealed by wood lattice. The kitchen and family room appear to have been renovated circa 1960.

The detached garage at the bungalow's southeastern elevation has vinyl siding and a side-gable roof topped with asphalt shingles. The garage's northern (primary) elevation has a modern overhead door and adjacent wood panel pedestrian door. Along the garage's western elevation, there is another wood-panel pedestrian door sheltered by a modern aluminum canopy. An original multi-pane wood window and small attached shed are on the garage's southern (rear) elevation. The eastern elevation was not observable during 2018 fieldwork due to overgrown vegetation. The entire site, enclosed by a wire fence, contains three large cedar trees, two large fir trees, and the remnants of a raspberry garden with small citrus trees (Durio 2003:8).

A small, circa-1920s pump house with a gable roof, horizontal wood-board siding, and corrugated metal roofing is situated about 50 feet east of the detached garage. The pump house appears to be out of service, and access is limited by overgrown vegetation.

Bungalow 1107 appears to be in good condition.

## BUILDING, STRUCTURE, AND OBJECT RECORD

\*Resource Name or #: Bungalow 1107

\*NRHP Status Code: 3D

Page 1 of 8

B1. Historic Name: Bungalow 1107

B2. Common Name: Bungalow

B3. Original Use: worker housing

B4. Present Use: vacant

B5. Architectural Style: Bungalow

B6. Construction History:

Alterations to Bungalow 1107 include installation of standing-seam sheet-metal roofing, vinyl siding, aluminum sash and slider windows, and a rear deck addition. Alterations to the bungalow's detached garage include installation of composition roof shingles, vinyl siding, and modern garage doors.

B7. Moved? No

B8. Related Features: Bungalow 1107 is a contributing resource to the Copco No. 1 Historic District, which is within the larger Klamath Hydroelectric Project (KHP) Historic District. The KHP Historic District consists of seven hydroelectric developments, including Copco No. 1, in Southern Oregon and Northern California.

B9a. Architect: Unknown

b. Builder: California Oregon Power Company (Copco)

B10. Significance:

Theme: hydroelectric development

Area: Southern Oregon and Northern California

Period of Significance: 1918-1970 (Copco No. 1 Historic District)

Property Type: bungalow

Applicable Criteria: National Register of Historic Places (NRHP) Criterion A (contributing)

See Continuation Sheets.

B11. Additional Resource Attributes:

B12. References:

Boyle, John C. 1976. *50 Years On The Klamath*. Klocker Printery, Medford, Oregon. First printing 1976, second printing 1982.

See Continuation Sheet.

B13. Remarks: None

B14. Evaluator: Shoshana Jones, AECOM

111 SW Columbia Street, Suite 1500

Portland, OR 97201

Date of Evaluation: June 11, 2018

(This space reserved for official comments.)



## CONTINUATION SHEET

Property Name: Bungalow 1107  
Page 2 of 8

B10. Significance (continued):

### Historic Context

Bungalow 1107 is within the former town of Copco, an outgrowth of Camp Ward, the survey and construction camp built on the bluff above the dam site. What is left of the town is now known as Copco No. 1 village. The original camp buildings were located on both sides of the river above the site, but the majority were clustered on the bluff above the river's north bank. In spring 1911, construction began on the Ward Canyon (Copco No. 1) project. By summer, the construction camp on the bluff above the dam site contained a "large board and batten building, serving as a cook house and mess hall; an office building, a long bunk house, woodshed and several other small buildings" [all no longer extant] (Rippon 1985:41). During the peak construction for Copco No. 1 and Copco No. 2 (1912-1925), the construction camp evolved into a bustling "power town" named Copco. The word "Copco" was officially recognized on July 30, 1914, when U.S. Postmaster General Albert S. Burleson appointed John C. Boyle, Copco's construction supervisor, as Copco postmaster (Boyle 1976:18). [The post office was relocated to the Fall Creek power plant site in 1920 and then to Hornbrook in 1954 (Rippon 1985:54-55).]

By November 1916, 360 men were working on Copco No. 1. Including their family members, 560 persons were living in town (*Oregon Daily Journal* 1916). The town contained numerous buildings and structures for dam construction and worker accommodations. The local *Evening Herald* described the new town in a November 1916 article:

The town is situated entirely on the [Copco] power company's property, has a population of about five hundred and sixty persons, as a result of the employment of three hundred and sixty men by the company many of whom have located at Copco with their families. The little school house [Fall Creek School] nearby which was formerly occupied by two or three pupils from the ranches along the river, is now filled with the children of the new residents and the genial office-seeker always makes it a point to drop in at the little burg as he realises [sic] that this little new town consists in the most part of a voting population (*Evening Herald* 1916).

Other newspaper reports publicized the town of Copco as having "all the conveniences of a modern village, including the ubiquitous moving picture show" (*Oregonian* 1917). As noted above, children of Copco workers attended the nearby Fall Creek School. At that time, Fall Creek School was in its original location near the Fall Creek powerhouse, about 1.5 miles along Copco Road from the town of Copco. (In 1965, Pacific Power built the third and final Fall Creek School at Copco Village near the Copco No. 2 powerhouse.) The *Sacramento Bee* described the town of Copco as occupying both sides of the river with tents and cabins where workers and their families lived. A *Bee* reporter remarked on the abundance of automobiles parked around the "tent city," stating that "[i]t looks as if at least half of the [worker] population drove to the job in their own cars, and the majority are not low priced vehicle[s]" (*Sacramento Bee* 1922). A one-story guesthouse on the bluff overlooking the dam and Copco Lake was completed around 1917. The guesthouse hosted corporate officers and other important guests at the dam site. The guesthouse also served as the residence for John C. Boyle during his tenure as Copco No. 1 construction supervisor.

In the center of town, construction workers lived in communal tents and bunkhouses, while administrative employees enjoyed separate living quarters. A 1926 photograph from Copco's newsletter *The Volt* depicts a dense cluster of buildings, including a tight row of four large, two-story bunkhouses immediately west of the guesthouse (Copco 1926). The cook's quarters adjoined the cookhouse. Administrative facilities included an engineering office with a dark room/drawing room. Equipment was delivered to the site's large machinery platforms via the Klamath Lake Railroad (KLRR spur), discussed below. Near the platforms were a machine shop, tool house, dynamite powder house, and blacksmith shop (Sprout et al. 1912-1913). A gravity tramway originated at the cinder cone and carried cinder and rock to the electrically operated sand machines and rock crushers. After processing, the materials were used to form a cement mixture. The resulting concrete was discharged through spouts and moved by gravity in open troughs across Ward's Canyon for use in dam construction (Copco n.d.: 4; Sprout et al. 1912-1913).

Copco transported construction equipment and materials to the project site. Construction on "Road #6" began on June 7, 1912 and was completed the following day. The road extended from the town to the mixing plant via the lava flat east of the cinder cone. This allowed all freight to be unloaded at the spur track and taken to camp, bypassing the Klamath Springs Station (Sprout et al. 1912-1913:200-201). The KLRR spur, built around 1912, delivered equipment to freight platforms for unloading. The 1-mile spur connected the KLRR mainline and the Copco No. 1 construction site for "a conveyance for all machinery and material on the original cars to the immediate locality of the dam and powerhouse" (Sprout et al. 1912-1913:31). The KLRR, a standard-gauge logging and passenger railroad, was completed in 1903 to connect Thrall, at the junction with the Southern Pacific Railroad line, to Old Pokegama, about 25 rail miles away. In 1910, Copco predecessor SEP&L leased the railroad's remaining section from the Weyerhaeuser logging company for use in constructing Copco No. 1. After assuming the project from SEP&L, Copco constructed the spur (Stephens 1964:3; Beckham 2006:131). The KLRR and spur were critical to facilitate transportation of supplies, materials and heavy machinery to the construction site. The spur branched out from the KLRR main line at Lava Switch, a location just west of the Klamath Springs Station, near the Picard and Sloan Ranches. The spur then traversed a "lava hump, around an ancient cinder cone," arriving to a level area at the construction site (Rippon 1985:22-23; Sprout et al. 1912-1913:123). As the spur traversed the town of Copco, it ran parallel and adjacent to large equipment platforms. The spur reached the Copco No. 1 powerhouse via three switchbacks. When Copco's KLRR lease ended in 1914, the company purchased the remaining 14-mile section for \$35,000 (Stephens 1964:3; Bennett 1922).

## CONTINUATION SHEET

Property Name: Bungalow 1107  
Page 3 of 8

### B10. Significance (continued):

A November 12, 1922 issue of the *Oregonian* explained how Copco used the KLRR during the Copco No. 1 expansion phase:

It is a rather good road, with good 60-pound steel, standard gauge, but the grades reach as high as 5 per cent. The present electrical company [Copco] bought this road, and built switch-backs from the main line down to the site of the new [Copco No. 1] dam, and all of the material used from outside has been hauled over it by a big "galloping goose" truck or car, using gasoline for motive power . . . One item of the hauling was 70 carloads, Southern Pacific cars, and all of the steel use for reinforcing (Bennett 1922).

Copco also used the KLRR during Copco No. 2 construction in 1924 to 1925. Copco built a second spur, at near river level, leading to the Copco No. 2 project site (Bullis 1964:2). Copco maintained the KLRR track between Thrall and the Copco powerhouses until 1942, when improved automobile roads rendered the rail spurs obsolete (Beckham 2006:131; Bullis 1964:2). The Copco access road, built circa 1942, is a vehicle road that appears to have been constructed atop the former KLRR spur's alignment. It consists of a 1-mile road section between Iron Gate Lake Road/Copco Road, a county road, and the Copco No. 1 powerhouse. From the county road fork, the Copco access road winds mostly southwest, then turns sharply to descend the river canyon to the powerhouse. The road passes through the town of Copco and past the driveways of the town's two remaining bungalows and the garage/warehouse.

At its peak, the dynamic the town of Copco housed hundreds of workers and their families, and contained interrelated buildings, equipment, and operations dedicated to Copco No. 1 construction. Out of dozens of original buildings and structures, only four resources from the town have survived: the guesthouse remains, Bungalows 1107 and 1108, and Warehouse 1112. During the 1960s, Pacific Power demolished at least four other bungalows at Copco No. 1: 1102, 1103, 1105, and 1106. Bungalows 1102 and 1103 were on the river's south side, while 1105 and 1106 were on the north side, on the bluff above the powerhouse. The guesthouse remains consist of a foundation and chimney and are no longer easily accessible. Scattered concrete foundations hint at the extent of the town's historic equipment and operations. The KLRR railroad spur, which transported materials and equipment to the site, has been removed.

### **Evaluation (Contributes to Copco No. 1 Historic District)**

#### **Criteria Analysis**

##### NRHP Criterion A

The Copco No. 1 Historic District contributes to the larger KHP Historic District, both of which are significant under NRHP Criterion A in the areas of Commerce and Industry. Bungalow 1107, built circa 1925, adds to the significance of the Copco No. 1 Historic District by representing worker housing built around Copco No. 1's original construction phase. The bungalow is one of only two remaining worker residences from that early period; all similarly-constructed bungalows at Copco No. 1 were removed and not replaced.

##### NRHP Criterion B

Research does not indicate that Bungalow 1107 is associated with any historically significant individuals under NRHP Criterion B.

##### NRHP Criterion C

Bungalow 1107 does not embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, and is therefore not significant under NRHP Criterion C.

##### NRHP Criterion D

Bungalow 1107 is not significant as a source (or likely source) of important information regarding history or prehistory. It does not appear likely to yield important information about historic construction materials or technologies and is not significant under NRHP Criterion D.

#### **Integrity Analysis**

Bungalow 1107 retains sufficient integrity of location, design, feeling, and association; and continues to convey its historic identity as a worker bungalow associated with early Copco No. 1 operations.

**Location** is the place where the historic property was constructed or the place where the historic event took place. The bungalow remains at its original building site in the town of Copco, the former company construction town, and thus retains integrity of location.

**Design** is the composition of elements that constitute the form, plan, space, structure, and style of a property. The bungalow retains integrity of design as a modest residence with features of the Colonial Revival style, particularly the rectangular, symmetrical appearance and gable roof.

## CONTINUATION SHEET

Property Name: Bungalow 1107  
Page 4 of 8

### B10. Significance (continued):

**Setting** is the physical environment of a historic property that illustrates the character of the place. The bungalow's immediate setting has been substantially diminished by loss of nearly all of the town's buildings and structures; however, the larger setting characterized by the remote and undeveloped river canyon remains intact.

**Materials** are the physical elements combined in a particular pattern or configuration to form the historic property and **Workmanship** is the physical evidence of the crafts of a particular culture or people during any given period of history. The bungalow's integrity of materials and workmanship has been diminished by the installation of new siding, roofing, windows, and doors.

**Feeling** is the quality that a historic property has in evoking the aesthetic or historic sense of a past period of time. The building's proximity to the dam, water conveyance system, and powerhouse support integrity of feeling.

**Association** is the direct link between a property and the event or person for which the property is significant. The bungalow's intact physical features and location within the town of Copco directly link the building with the historic construction and operations at Copco No. 1, contributing to integrity of association. Despite substantial changes to immediate setting and materials, the bungalow retains sufficient overall integrity to convey its original character as one of only two surviving examples of the town's operator residences.

**Bungalow 1107 retains overall integrity and is eligible as contributing resources to the Copco No. 1 Historic District.**

### B12. References (continued):

Bullis, Seth M. 1964. Letter to Mr. Kent Stephens. October 6 (J.C. Boyle Collection, Folder 11.25.199 in Box 15/16, Southern Oregon Historical Society). Beckham, Stephen Dow. 2006. Historical Landscape Overview of the Upper Klamath River Canyon of Oregon and California. Cultural Resource Series No. 13. Bureau of Land Management. U.S. Department of the Interior.

Bennett, Addison. 1922. "Portlanders Attend Big Dam Opening At Copco, Cal." *Sunday Oregonian* [Portland, Oregon]. November 12.

Copco (California Oregon Power Company).

n.d. Project No. 2082. Copco No. 1 and 1-A Development. Schedule No. 2 (J.C. Boyle Collection, Box 5/16, Southern Oregon Historical Society).

1926. "Copco: A Brief History of Its Beginnings." *The Volt* 7, no. 4. December. December (J.C. Boyle Collection, folder "Volt 1920-1926," in Box 15/16, Southern Oregon Historical Society).

Durio, Lori. 2003. Klamath River Hydroelectric Project District. State of California Department of Parks and Recreation. Primary Record #47-004015. Recorded July 2003 by L. Durio, CH2M Hill, New Orleans, LA. September.

*Evening Herald* [Klamath Falls, Oregon]. 1916. "Power Plant Makes Town." November 21.

Kramer, George. 2003. Klamath Hydroelectric Project. FERC No. 2082. Request For Determination of Eligibility. Prepared for PacifiCorp, Portland, Oregon. October.

*Oregon Daily Journal* [Portland, Oregon]. 1916. "New Power Town Just Over The Line." November 23.

*Oregonian* [Portland, Oregon]. 1917. "Big Power Plant Near Completion." October 8.

Pacific Power and Light Company (Pacific Power). 1964. Bungalow 1107, Copco No. 1 [photograph]. PacifiCorp Archives, PDX.026971 (box), CA – Power, Klamath River Projects – Copco #1 Power Plant (folder).

Rippon, Cy and Sally (eds). 1985. Early Twentieth Century Hydro-Power Plants and High Voltage Lines in Siskiyou County: Continuing the Saga of Pioneering with Electricity to Beginnings of High Technology in the Electrical Field. Compiled and Printed by Cy and Sally Rippon. Weed, California.

*Sacramento Bee* [Sacramento, California]. 1922. "Work of Enlarging Copco Power Plant is Rushed." September 9.

Snyder, J.O. 1921. "Three California Marked Salmon Recovery." *Sacramento, California: California Fish and Game* 7, No. 1. January.

## CONTINUATION SHEET

Property Name: Bungalow 1107  
Page 5 of 8

### B12. References (continued):

Sprout, Sidney, John C. Boyle, and A.C. Sprout. 1912-1913. California – Oregon Power Company. Klamath River Projects 1 & 2 Progressive Reports 1912-1913 (J.C. Boyle Collection, Box 1/16, Southern Oregon Historical Society).

Stephens, Kent. 1964. "Part Two of the Klamath Lake Railroad." *The Western Railroader* 27, No. 12, Issue No. 299. December.

### Photographs:



**Photograph 1.** Bungalow 1107; view facing southwest (garage at left), 2018.

## CONTINUATION SHEET

Property Name: Bungalow 1107  
Page 6 of 8

### Photographs (continued):



**Photograph 2.** Bungalow 1107; view facing east, 2018.



**Photograph 3.** Bungalow 1107; view facing north-northwest (garage at right), 2018.

## CONTINUATION SHEET

Property Name: Bungalow 1107  
Page 7 of 8

### Photographs (continued):



**Photograph 4.** Detached one-car garage; view facing south-southeast, 2018.



**Photograph 5.** Pump house near Bungalow 1107; view facing east-northeast, 2018.  
Accessibility limited by overgrown vegetation.

## CONTINUATION SHEET

Property Name: Bungalow 1107

Page 8 of 8

### Photographs (continued):



**Photograph 6.** Bungalow 1107, circa 1964; view facing southeast (Pacific Power 1964).

## PRIMARY RECORD

Primary #47-004015

HRI #

Trinomial

NRHP Status Code 3D

Other Listings  
Review Code

Reviewer

Date

Page 1 of 2

Resource Name or #: Bungalow 1108

P1. Other Identifier: Bungalow 1108

\*P2. Location: ☒ Unrestricted

\*a. County: Siskiyou

\*b. USGS 7.5' Quad Copco, CA Date 2018 T 48N; R 4W; SE 1/4 of SW 1/4 of Sec 29; Mount Diablo B.M.

c. Address: 21600 Copco Road City: Hornbrook Zip: 96044

d. UTM: Zone 10 T, 555008mE/4647959mN

e. Other Locational Data: N/A

\*P3a. Description:

Bungalow 1108, built circa 1925, is one of the few remaining resources within the former town of Copco, a company town established during construction of the Copco No. 1 hydroelectric development. The other surviving town buildings are Bungalow 1107, Warehouse 1112, and guesthouse remains (CA-SIS-2824H), as well as ancillary structures such as pump houses. In summer 1911, while Copco engineers were surveying Ward's Canyon, a camp developed on the bluff above the proposed Copco No. 1 Dam site. Once dam construction began, the camp quickly grew into a company town called "Copco," where hundreds of Copco employees lived and worked (the town is referenced herein as "The town of Copco" to avoid confusion with the company itself). During the peak of Copco No. 1 construction, from about 1916 to 1922, the town was a hub of activity, with a cluster of interrelated buildings and structures. The town remained active through the 1924-1925 construction period for the Copco No. 2 Dam, which was built about 0.25 mile downstream from the Copco No. 1 Dam. Many of the town facilities were designed for temporary use, such as construction crew bunkhouses, and likely removed within a few years after completion of Copco No. 2.

See Continuation Sheet.

\*P3b. Resource Attributes: (HP2) Single-family property

\*P4. Resources Present: ☒ Building ☒ Element of District

P5a. Photograph:



P5b. Description of Photo: Bungalow 1108 and detached one-car garage, facing southwest (June 11, 2018).

\*P6. Date Constructed/Age and Source:

☒ Historic, circa 1925 (Kramer 2003:9)

\*P7. Owner and Address:

PacifiCorp  
825 NE Multnomah, Suite 1500  
Portland, OR 97232

\*P8. Recorded by:

Shoshana Jones, AECOM  
111 SW Columbia Street, Suite 1500  
Portland, OR 97201

\*P9. Date Recorded: June 11, 2018

\*P10. Survey Type: Intensive Level

\*P11. Report Citation: Klamath River  
Renewal Corporation. 2021. Lower  
Klamath Project Built Environment  
Technical Report.

\*Attachments: ☒ Location Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record

## CONTINUATION SHEET

Property Name: Bungalow 1108

Page 2 of 2

### P3a. Description (continued):

Bungalows 1108 and 1107, built circa 1925, are presently vacant and were likely built to house dam operators and their families after completion of Copco No. 1. Modern replacement roofing, siding, and window materials suggest that the bungalows were in use throughout much of the twentieth century. Bungalow 1108 is located at 21600 Copco Road, near the gated entrance to the former town of Copco. Oriented facing south, the small one-story, wood-frame residence has a rectangular plan, symmetrical façade, and concrete foundation. The medium-pitch front-gable roof is clad in standing-seam sheet metal, and displays shallow eaves enclosed in vinyl. The metal roofing was likely installed over original wood shingles like those still visible on Bungalow 1107. A metal chimney is located along the ridgeline, and a metal vent is centered in the front and rear gable apexes. The bungalow's vinyl siding was likely installed over the original horizontal wood board.

The centered front entry along the southern (primary) elevation faces the side yard instead of the road. A single concrete step leads to the entry: a wooden porch with a front gable porch roof supported by two battered wood columns. The original wood front door has two large inset panes and a metal storm cover. The entry is flanked by two pairs of aluminum sash windows. The porch roof has standing-seam sheet-metal cladding and a vinyl ceiling, while the porch deck has a tongue-and-groove surface. The windows along the eastern elevation, facing the road, consist of two pairs of original aluminum-sash windows and a smaller single aluminum-sash bathroom window. The wood surrounds have been covered in vinyl. The northern (rear) elevation contains the original three-panel, single-light door behind a modern aluminum screen door. A shed roof canopy, clad in vinyl, shelters the centered northern entry, which is accessed by three concrete steps. Four replacement aluminum slider windows flank the rear door. The western elevation, which abuts the hillside, contains two aluminum-sash windows and two aluminum sliding windows.

The detached one-car garage at the bungalow's northern (rear) elevation has a front-gable roof topped with asphalt shingles, vinyl siding, and an off-center modern overhead garage door. The south elevation, facing the house, has a metal pedestrian door. The bungalow is surrounded by a planted lawn and mature trees, all contained within a wire fence. A sign posted on the fence reads "21600 Copco Road." A dry-laid stone retaining wall extends between the road bed and the site. The yard and residence sit above the road grade and are accessed by six concrete steps at the front walkway.

A structure associated with Bungalow 1108 is a water pump house, built circa 1925. Located across Copco Road, it is approximately 125 feet south of the bungalow, and is oriented facing southwest. The small structure has a medium-pitch side-gable roof, off-center five-panel wood door, corrugated metal roofing and siding, and a concrete foundation. The wood-panel door, the structure's only fenestration, faces southwest. The wood roof structure displays rafter tails. A metal vent is located in each gable apex. An iron pipe measuring approximately 6.5 inches in diameter runs underground into the pump house's northeastern (rear) elevation, then emerges above-ground from the pump house's western elevation.

Bungalow 1108 appears to be in good condition.

## BUILDING, STRUCTURE, AND OBJECT RECORD

\*Resource Name or #: Bungalow 1108

\*NRHP Status Code: 3D

Page 1 of 7

B1. Historic Name: Bungalow 1108

B2. Common Name: Bungalow

B3. Original Use: worker housing

B4. Present Use: vacant

B5. Architectural Style: Bungalow

B6. Construction History:

Alterations to Bungalow 1108 include installation of standing-seam sheet-metal roofing, vinyl siding, and aluminum sash and slider windows. alterations to the bungalow's detached garage include installation of composition roof shingles, vinyl siding, and modern garage doors.

B7. Moved? No

B8. Related Features: Bungalow 1108 is a contributing resource to the Copco No. 1 Historic District, which is within the larger Klamath Hydroelectric Project (KHP) Historic District. The KHP Historic District consists of seven hydroelectric developments, including Copco No. 1, in Southern Oregon and Northern California.

B9a. Architect: Unknown

b. Builder: California Oregon Power Company (Copco)

B10. Significance:

Theme: hydroelectric development

Area: Southern Oregon and Northern California

Period of Significance: 1918-1970 (Copco No. 1 Historic District)

Property Type: bungalow

Applicable Criteria: National Register of Historic Places (NRHP) Criterion A (contributing)

See Continuation Sheets.

B11. Additional Resource Attributes: (HP2)—bungalow

B12. References:

Beckham, Stephen Dow. 2006. Historical Landscape Overview of the Upper Klamath River Canyon of Oregon and California. Cultural Resource Series No. 13. Bureau of Land Management. U.S. Department of the Interior.

See Continuation Sheet.

B13. Remarks: None

B14. Evaluator: Shoshana Jones, AECOM  
111 SW Columbia Street, Suite 1500  
Portland, OR 97201

Date of Evaluation: June 11, 2018

(This space reserved for official comments.)



## CONTINUATION SHEET

Property Name: Bungalow 1108  
Page 2 of 7

B10. Significance (continued):

### **Historic Context**

Bungalow 1108 is in the former town of Copco, an outgrowth of Camp Ward, the survey and construction camp built on the bluff above the Copco No. 1 dam site. What is left of the town is now known as Copco No. 1 Village. The original camp buildings were located on both sides of the river above the site, but the majority were clustered on the bluff above the river's north bank. In spring 1911, construction began on the Ward Canyon (Copco No. 1) project. By summer, the construction camp on the bluff above the dam site contained a "large board and batten building, serving as a cook house and mess hall; an office building, a long bunk house, woodshed and several other small buildings" [all no longer extant] (Rippon 1985:41). During the peak construction for Copco No. 1 and Copco No. 2 (1912-1925), the camp evolved into a bustling "power town" named Copco. The word "Copco" was officially recognized on July 30, 1914, when U.S. Postmaster General Albert S. Burleson appointed John C. Boyle, Copco's construction supervisor, as Copco postmaster (Boyle 1976:18). [The post office was relocated to the Fall Creek power plant site in 1920 and then to Hornbrook in 1954 (Rippon 1985:54-55).]

By November 1916, 360 men were working on Copco No. 1, and 560 persons were living in the town of Copco (*Oregon Daily Journal* 1916). The town contained numerous buildings and structures related to dam construction and worker accommodations. The *Evening Herald*, a local newspaper, described the new town in a November 1916 article:

The town is situated entirely on the [Copco] power company's property, has a population of about five hundred and sixty persons, as a result of the employment of three hundred and sixty men by the company many of whom have located at Copco with their families. The little school house [Fall Creek School] nearby which was formerly occupied by two or three pupils from the ranches along the river, is now filled with the children of the new residents and the genial office-seeker always makes it a point to drop in at the little burg as he realises [sic] that this little new town consists in the most part of a voting population (Evening Herald 1916).

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## CONTINUATION SHEET

Property Name: Bungalow 1108  
Page 3 of 7

### B10. Significance (continued):

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Copco also used the KLRR during Copco No. 2 construction in 1924 to 1925. By then, Copco had built a second spur, at near river level, leading to the Copco No. 2 project site (Bullis 1964:2). Copco maintained the KLRR track between Thrall and the Copco powerhouses until 1942, when improved automobile roads rendered the rail spurs obsolete (Beckham 2006:131; Bullis 1964:2). The Copco access road, built circa 1942, is a vehicle road that appears to have been constructed atop the former KLRR spur's alignment. It consists of a 1-mile road section between Iron Gate Lake Road/Copco Road, a county road, and the Copco No. 1 powerhouse. From the county road fork, the Copco access road winds mostly southwest, then turns sharply to descend the river canyon to the powerhouse. The road passes through the town of Copco and past the driveways of the town's two remaining bungalows and the garage/warehouse.

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### **Evaluation (Contributes to Copco No. 1 Historic District)**

#### **Criteria Analysis**

##### NRHP Criterion A

The Copco No. 1 Historic District contributes to the larger KRHP Historic District, both of which are significant under NRHP Criterion A in the areas of Commerce and Industry. Bungalow 1108, built circa 1925, adds to the significance of the Copco No. 1 Historic District by representing worker housing built around Copco No. 1's original construction phase. The bungalow is one of only two remaining worker residences from that early period; all similarly-constructed bungalows at Copco No. 1 were removed and not replaced.

##### NRHP Criterion B

Research does not indicate that Bungalow 1108 is associated with any historically significant individuals under NRHP Criterion B.

##### NRHP Criterion C

Bungalow 1108 does not embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, and is therefore not significant under NRHP Criterion C.

##### NRHP Criterion D

Bungalow 1108 is not significant as a source (or likely source) of important information regarding history or prehistory. It does not appear likely to yield important information about historic construction materials or technologies and is not significant under NRHP Criterion D.

#### **Integrity Analysis**

Bungalow 1108 retains sufficient integrity of location, design, feeling, and association; and continues to convey its historic identity as a worker bungalow associated with early Copco No. 1 operations.

**Location** is the place where the historic property was constructed or the place where the historic event took place. The bungalow remains at its original building site in the town of Copco, the former company construction town, and thus retains integrity of location.

**Design** is the composition of elements that constitute the form, plan, space, structure, and style of a property. The bungalow retains integrity of design as a modest residence.

## CONTINUATION SHEET

Property Name: Bungalow 1108  
Page 4 of 7

### B10. Significance (continued):

**Setting** is the physical environment of a historic property that illustrates the character of the place. The bungalow's immediate setting has been substantially diminished by loss of nearly all of the town's buildings and structures; however, the larger setting characterized by the remote and undeveloped river canyon remains intact.

**Materials** are the physical elements combined in a particular pattern or configuration to form the historic property and **Workmanship** is the physical evidence of the crafts of a particular culture or people during any given period of history. The bungalow's integrity of materials and workmanship has been diminished by the installation of new siding, roofing, windows, and doors.

**Feeling** is the quality that a historic property has in evoking the aesthetic or historic sense of a past period of time. The building's proximity to the dam, water conveyance system, and powerhouse support integrity of feeling.

**Association** is the direct link between a property and the event or person for which the property is significant. The bungalow's intact physical features and location within the town of Copco directly link the building with the historic construction and operations at Copco No. 1, contributing to integrity of association. Despite substantial changes to immediate setting and materials, the bungalow retains sufficient overall integrity to convey its original character as one of only two surviving examples of the town's operator residences.

**Bungalow 1108 retains overall integrity and is eligible as contributing resources to the Copco No. 1 Historic District.**

### B12. References (continued):

Bennett, Addison. 1922. "Portlanders Attend Big Dam Opening At Copco, Cal." *Sunday Oregonian* [Portland, Oregon]. November 12.

Boyle, John C. 1976. *50 Years On The Klamath*. Klocker Printery, Medford, Oregon. First printing 1976, second printing 1982.

Bullis, Seth M. 1964. Letter to Mr. Kent Stephens. October 6 (J.C. Boyle Collection, Folder 11.25.199 in Box 15/16, Southern Oregon Historical Society).

Copco (California Oregon Power Company).

n.d. Project No. 2082. Copco No. 1 and 1-A Development. Schedule No. 2 (J.C. Boyle Collection, Box 5/16, Southern Oregon Historical Society).

1926. "Copco: A Brief History of Its Beginnings." *The Volt* 7, no. 4. December. December (J.C. Boyle Collection, folder "Volt 1920-1926," in Box 15/16, Southern Oregon Historical Society).

Durio, Lori. 2003. Klamath River Hydroelectric Project District. State of California Department of Parks and Recreation. Primary Record #47-004015. Recorded July 2003 by L. Durio, CH2M Hill, New Orleans, LA. September.

*Evening Herald* [Klamath Falls, Oregon]. 1916. "Power Plant Makes Town." November 21.

Kramer, George. 2003. Klamath Hydroelectric Project. FERC No. 2082. Request For Determination of Eligibility. Prepared for PacifiCorp, Portland, Oregon. October.

*Oregon Daily Journal* [Portland, Oregon]. 1916. "New Power Town Just Over The Line." November 23.

*Oregonian* [Portland, Oregon]. 1917. "Big Power Plant Near Completion." October 8.

Pacific Power and Light Company (Pacific Power). 1964. Bungalow 1108, Copco No. 1 [photograph]. PacifiCorp Archives, PDX.026971 (box), CA – Power, Klamath River Projects – Copco #1 Power Plant (folder).

Rippon, Cy and Sally (eds). 1985. *Early Twentieth Century Hydro-Power Plants and High Voltage Lines in Siskiyou County: Continuing the Saga of Pioneering with Electricity to Beginnings of High Technology in the Electrical Field*. Compiled and Printed by Cy and Sally Rippon. Weed, California.

*Sacramento Bee* [Sacramento, California]. 1922. "Work of Enlarging Copco Power Plant is Rushed." September 9.

Snyder, J.O. 1921. "Three California Marked Salmon Recovery." *Sacramento, California: California Fish and Game* 7, No. 1. January.

## CONTINUATION SHEET

Property Name: Bungalow 1108  
Page 5 of 7

B10. Significance (continued):

Sprout, Sidney, John C. Boyle, and A.C. Sprout. 1912-1913. California – Oregon Power Company. Klamath River Projects 1 & 2 Progressive Reports 1912-1913 (J.C. Boyle Collection, Box 1/16, Southern Oregon Historical Society).

Stephens, Kent. 1964. "Part Two of the Klamath Lake Railroad." *The Western Railroader* 27, No. 12, issue No. 299. December.

### Photographs:



**Photograph 1.** Bungalow 1108 with detached garage; view facing southwest, 2018.



**Photograph 2.** Bungalow 1108; view facing north, 2018.

## CONTINUATION SHEET

Property Name: Bungalow 1108  
Page 6 of 7

### Photographs (continued):



**Photograph 3.** Bungalow 1108; view facing east, 2018.



**Photograph 4.** Detached garage; view facing north, 2018.

## CONTINUATION SHEET

Property Name: Bungalow 1108

Page 7 of 7

### Photographs (continued):



**Photograph 5.** Bungalow 1108; view facing northwest, 2018.



**Photograph 6.** Bungalow 1108, circa 1964; view facing northwest (Pacific Power 1964).

## PRIMARY RECORD

Primary #47-004015

HRI #

Trinomial CA-SIS-2428

NRHP Status Code 3D

Other Listings  
Review Code

Reviewer

Date

Page 1 of 2

Resource Name or #: Guesthouse Remains

P1. Other Identifier: Guesthouse Remains

\*P2. Location: ☐ Unrestricted

\*a. County: Siskiyou

\*b. USGS 7.5' Quad Copco, CA Date 2018 T 48N; R 4W; SE 1/4 of SW 1/4 of Sec 29; Mount Diablo B.M.

c. Address \_\_\_\_\_ City \_\_\_\_\_ Zip \_\_\_\_\_

d. UTM: Zone 10 T, 555097mE/4647801mN

e. Other Locational Data: N/A

\*P3a. Description:

The remains of the Copco guesthouse, completed around 1916, is one of the few remaining resources within the town of Copco, a company town established during construction of the Copco No. 1 hydroelectric development. The Copco No. 1 guest house remains were previously recorded in 2003 as part of the Klamath River Hydroelectric Project (KRHP) Historic District and was submitted to the California State Historic Preservation Officer (SHPO) (Durio 2003). Although the California SHPO never provided comments on eligibility, the KRHP Historic District was assigned Primary Number 47-004015 and Copco No. 1 guest house remains were assigned an individual Trinomial, CA-SIS-2428.

The other surviving town buildings are Bungalow 1107, Bungalow 1108, and Warehouse 1112, as well as ancillary structures such as pump houses. In summer 1911, while Copco engineers were surveying Ward's Canyon, a camp developed on the bluff above the proposed Copco No. 1 Dam site. Once dam construction began, the camp quickly grew into a company town called "Copco," where hundreds of Copco employees lived and worked (the town is referenced herein as "The town of Copco" to avoid confusion with the company itself). During the peak of Copco No. 1 construction, from about 1916 to 1922, the town was a hub of activity, with a cluster of interrelated buildings and structures. The town remained active through the 1924-1925 construction period for the Copco No. 2 Dam, which was built about 0.25 mile downstream from the Copco No. 1 Dam. Many of the town facilities were designed for temporary use, such as construction crew bunkhouses, and likely removed within a few years after completion of Copco No. 2.

See Continuation Sheet.

\*P3b. Resource Attributes: (AH2) Foundations/structure pads

\*P4. Resources Present: ☒ Site ☒ Element of District

P5a. Photograph:



P5b. Description of Photo:  
Guesthouse remains, viewing  
northeast (June 11, 2018).

\*P6. Date Constructed/Age and  
Source:

☒ Historic, circa 1916 (PacifiCorp  
archive image CO1-5)

\*P7. Owner and Address:

PacifiCorp  
825 NE Multnomah, Suite 1500  
Portland, OR 97232

\*P8. Recorded by:  
Shoshana Jones, AECOM  
111 SW Columbia Street, Suite 1500  
Portland, OR 97201

\*P9. Date Recorded: June 11, 2018

\*P10. Survey Type: Intensive Level

\*P11. Report Citation: N/A

\*Attachments: ☒ Location Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record

## CONTINUATION SHEET

Property Name: Copco No. 1 Guesthouse Remains  
Page 2 of 2

### \*P3a. Description (continued)

The guesthouse had one story and a rectangular plan measuring about 1600 square feet. It consisted of wood-frame construction atop a stone and concrete foundation (Durio 2003:7). The broad, hipped roof displayed wide overhanging eaves, exposed rafter tails, and hipped dormer vents. The engaged, three-sided, wraparound porch was lined by a wooden balustrade (PacifiCorp archive images CO1-5 and CO1-10). Copco demolished the guesthouse in the 1980s or later, leaving only the concrete/stone foundation and stone fireplace/chimney (Kramer 2003:9). Historic photographs depict pedestrian access from the western side via a wooden footbridge, which has also been demolished.

## BUILDING, STRUCTURE, AND OBJECT RECORD

\*Resource Name or #: Guesthouse Remains

\*NRHP Status Code: 3D

Page 1 of 10

- B1. Historic Name: Copco Guesthouse  
B2. Common Name: Guesthouse remains  
B3. Original Use: guesthouse, supervisor housing  
B4. Present Use: none (mostly demolished)  
B5. Architectural Style: N/A

B6. Construction History:

The Copco guesthouse was completed circa 1916 and demolished after falling into disrepair, likely in the mid-1980s. The wooden footbridge connecting the guesthouse site to the rest of the former construction village (town of Copco) has also been removed. The remains consist of the stone fireplace and chimney and the concrete and stone foundation.

B7. Moved? No

B8. Related Features: The guesthouse remains are a contributing resource to the Copco No. 1 Historic District, which is within the larger Klamath Hydroelectric Project (KHP) Historic District. The KHP Historic District consists of seven hydroelectric developments, including Copco No. 1, in Southern Oregon and Northern California.

B9a. Architect: Unknown

b. Builder: California Oregon Power Company (Copco)

B10. Significance:

Theme: hydroelectric development

Area: Southern Oregon and Northern California

Period of Significance: 1911-1970 (Copco No. 1 Historic District)

Property Type: guest housing (remains)

Applicable Criteria: National Register of Historic Places (NRHP) Criterion A

See Continuation Sheets.

B11. Additional Resource Attributes:

B12. References:

Boyle, John C. 1976. *50 Years On The Klamath*. Klocker Printery, Medford, Oregon. First printing 1976, second printing 1982.

See Continuation Sheet.

B13. Remarks: None

B14. Evaluator: Shoshana Jones, AECOM  
111 SW Columbia Street, Suite 1500  
Portland, OR 97201

Date of Evaluation: June 11, 2018

(This space reserved for official comments.)



## CONTINUATION SHEET

Property Name: Guesthouse Remains  
Page 2 of 10

B10. Significance (continued):

### **Historic Context**

The guesthouse remains are within the former town of Copco, an outgrowth of Camp Ward, the survey and construction camp built on the bluff above the dam site. What is left of the town is now known as Copco No. 1 Village. The original camp buildings were located on both sides of the river above the site, but the majority were clustered on the bluff above the river's north bank. In spring 1911, construction began on the Ward Canyon (Copco No. 1) project. By summer, the construction camp on the bluff above the dam site contained a "large board and batten building, serving as a cook house and mess hall; an office building, a long bunk house, woodshed and several other small buildings" [all no longer extant] (Rippon 1985:41). During the peak construction for Copco No. 1 and Copco No. 2 (1912-1925), the construction camp evolved into a bustling "power town" named Copco. The word "Copco" was officially recognized on July 30, 1914, when U.S. Postmaster General Albert S. Burleson appointed John C. Boyle, Copco's construction supervisor, as Copco postmaster (Boyle 1976:18). [The post office was relocated to the Fall Creek power plant site in 1920 and then to Hornbrook in 1954 (Rippon 1985:54-55).]

By November 1916, 360 men were working on Copco No. 1. Including their family members, 560 persons were living in town (*Oregon Daily Journal* 1916). The town contained numerous buildings and structures for dam construction and worker accommodations. The local *Evening Herald* described the new town in a November 1916 article:

The town is situated entirely on the [Copco] power company's property, has a population of about five hundred and sixty persons, as a result of the employment of three hundred and sixty men by the company many of whom have located at Copco with their families. The little school house [Fall Creek School] nearby which was formerly occupied by two or three pupils from the ranches along the river, is now filled with the children of the new residents and the genial office-seeker always makes it a point to drop in at the little burg as he realises [sic] that this little new town consists in the most part of a voting population (*Evening Herald* 1916).

Other newspaper reports publicized the town of Copco as having "all the conveniences of a modern village, including the ubiquitous moving picture show" (*Oregonian* 1917). As noted above, children of Copco workers attended the nearby Fall Creek School. At that time, Fall Creek School was in its original location near the Fall Creek powerhouse, about 1.5 miles along Copco Road from the town of Copco. (In 1965, Pacific Power built the third and final Fall Creek School at Copco Village near the Copco No. 2 powerhouse.) The *Sacramento Bee* described the town of Copco as occupying both sides of the river with tents and cabins where workers and their families lived. A *Bee* reporter remarked on the abundance of automobiles parked around the "tent city," stating that "[i]t looks as if at least half of the [worker] population drove to the job in their own cars, and the majority are not low priced vehicle[s]" (*Sacramento Bee* 1922). A one-story guesthouse on the bluff overlooking the dam and Copco Lake was completed around 1916. The guesthouse hosted corporate officers and other important guests at the dam site. The guesthouse also served as the residence for John C. Boyle during his tenure as Copco No. 1 construction supervisor.

In the center of town, construction workers lived in communal tents and bunkhouses, while administrative employees enjoyed separate living quarters. A 1926 photograph from Copco's newsletter *The Volt* depicts a dense cluster of buildings, including a tight row of four large, two-story bunkhouses immediately west of the guesthouse (Copco 1926). The cook's quarters adjoined the cookhouse. Administrative facilities included an engineering office with a dark room/drawing room. Equipment was delivered to the site's large machinery platforms via the Klamath Lake Railroad (KLRR spur), discussed below. Near the platforms were a machine shop, tool house, dynamite powder house, and blacksmith shop (Sprout et al. 1912-1913). A gravity tramway originated at the cinder cone and carried cinder and rock to the electrically operated sand machines and rock crushers. After processing, the materials were used to form a cement mixture. The resulting concrete was discharged through spouts and moved by gravity in open troughs across Ward's Canyon for use in dam construction (Copco n.d.: 4; Sprout et al. 1912-1913).

Copco transported construction equipment and materials to the project site. Construction on "Road #6" began on June 7, 1912 and was completed the following day. The road extended from the town to the mixing plant via the lava flat east of the cinder cone. This allowed all freight to be unloaded at the spur track and taken to camp, bypassing the Klamath Springs Station (Sprout et al. 1912-1913:200-201). The KLRR spur, built around 1912, delivered equipment to freight platforms for unloading. The 1-mile spur connected the KLRR mainline and the Copco No. 1 construction site for "a conveyance for all machinery and material on the original cars to the immediate locality of the dam and powerhouse" (Sprout et al. 1912-1913:31). The KLRR, a standard-gauge logging and passenger railroad, was completed in 1903 to connect Thrall, at the junction with the Southern Pacific Railroad line, to Old Pokegama, about 25 rail miles away. In 1910, Copco predecessor SEP&L leased the railroad's remaining section from the Weyerhaeuser logging company for use in constructing Copco No. 1. After assuming the project from SEP&L, Copco constructed the spur (Stephens 1964:3; Beckham 2006:131). The KLRR and spur were critical to facilitate transportation of supplies, materials and heavy machinery to the construction site.

## CONTINUATION SHEET

Property Name: Guesthouse Remains  
Page 3 of 10

### B10. Significance (continued):

The spur branched out from the KLRR main line at Lava Switch, a location just west of the Klamath Springs Station, near the Picard and Sloan Ranches. The spur then traversed a "lava hump, around an ancient cinder cone," arriving to a level area at the construction site (Rippon 1985:22-23; Sprout et al. 1912-1913:123). As the spur traversed the town of Copco, it ran parallel and adjacent to large equipment platforms. According to *The Volt*, Copco's newsletter, the spur reached the Copco No. 1 powerhouse below the bluff via three switchbacks. When Copco's KLRR lease ended in 1914, the company purchased the remaining 14-mile section for \$35,000 (Stephens 1964:3; Bennett 1922).

A November 12, 1922 issue of the *Oregonian* explained how Copco used the KLRR during the Copco No. 1 expansion phase:

It is a rather good road, with good 60-pound steel, standard gauge, but the grades reach as high as 5 per cent. The present electrical company [Copco] bought this road, and built switch-backs from the main line down to the site of the new [Copco No. 1] dam, and all of the material used from outside has been hauled over it by a big "galloping goose" truck or car, using gasoline for motive power . . . One item of the hauling was 70 carloads, Southern Pacific cars, and all of the steel use for reinforcing (Bennett 1922).

Copco also used the KLRR during Copco No. 2 construction in 1924 to 1925. Copco built a second spur, at near river level, leading to the Copco No. 2 project site (Bullis 1964:2). Copco maintained the KLRR track between Thrall and the Copco powerhouses until 1942, when improved automobile roads rendered the rail spurs obsolete (Beckham 2006:131; Bullis 1964:2). The Copco access road, built circa 1942, is a vehicle road that appears to have been constructed atop the former KLRR spur's alignment. It consists of a 1-mile road section between Iron Gate Lake Road/Copco Road, a county road, and the Copco No. 1 powerhouse. From the county road fork, the Copco access road winds mostly southwest, then turns sharply to descend the river canyon to the powerhouse. The road passes through the town of Copco and past the driveways of the town's two remaining bungalows and the garage/warehouse.

At its peak, the dynamic the town of Copco housed hundreds of workers and their families, and contained interrelated buildings, equipment, and operations dedicated to Copco No. 1 construction. Out of dozens of original buildings and structures, only four resources from the town have survived: the guesthouse remains, Bungalows 1107 and 1108, and Warehouse 1112. During the 1960s, Pacific Power demolished at least four other bungalows at Copco No. 1: 1102, 1103, 1105, and 1106. Bungalows 1102 and 1103 were on the river's south side, while 1105 and 1106 were on the north side, on the bluff above the powerhouse. The guesthouse remains consist of a foundation and chimney and are no longer easily accessible. Scattered concrete foundations hint at the extent of the town's historic equipment and operations. The KLRR railroad spur, which transported materials and equipment to the site, has been removed.

Copco built the guesthouse circa 1916 at the edge of town for use by company officials, guests, and managers. Construction supervisor John C. Boyle resided there for much of the Copco No. 1 construction period. The guesthouse's location near the edge of the bluff provided expansive views of Ward's Canyon and the surrounding landscape. Historic photographs indicate that the guesthouse was completed and in use around 1916. In spring 1918, after Copco No. 1's first generating unit was activated, Copco directors and officers attended a party at the guesthouse. Boyle recalled that the attendees "toasted and complimented each other, looked down upon the water flowing quietly over the dam, proclaiming the dam each one felt he had built. And they were entitled to do so, as they had provided much of the money" (Boyle 1976:15).

Another early visitor to the guesthouse was Frederick S. Myrtle, publicity manager for Pacific Gas and Electric Company (PGE). Several months before Myrtle's visit to Copco No. 1 in fall 1918, PGE had announced a contact to interconnect its system with Copco and the Northern California power company systems to create a "Pacific Service." Following this announcement, Copco's commercial manager W.M. Shephard accompanied Myrtle and Major George F. Sever of the War Industries Board on a tour of northern California power facilities. After viewing the Copco No. 1 Powerhouse with its architect Perry O. Crawford, Myrtle wrote that, "We were comfortably entertained at the guesthouse," before returning to San Francisco via Hornbrook (Myrtle 1919).

## CONTINUATION SHEET

Property Name: Guesthouse Remains  
Page 4 of 10

### B10. Significance (continued):

#### Evaluation (Contributes to Copco No. 1 Historic District)

##### Criteria Analysis

###### NRHP Criterion A

The Copco No. 1 Historic District contributes to the larger KHP Historic District, both of which are significant under NRHP Criterion A in the areas of Commerce and Industry. The guesthouse remains adds to the significance of the Copco No. 1 Historic District by representing the distinctive guest housing for corporate officers and other important guests at the dam site. The guesthouse was also John C. Boyle's residence during his tenure as Copco No. 1 construction supervisor.

###### NRHP Criterion B

Research does not indicate that the guesthouse remains are associated with any historically significant individuals under NRHP Criterion B.

###### NRHP Criterion C

The buildings do not embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, and are therefore not significant under NRHP Criterion C.

###### NRHP Criterion D

The buildings are not significant as sources (or likely sources) of important information regarding history or prehistory. They do not appear likely to yield important information about historic construction materials or technologies and is not significant under NRHP Criterion D.

##### Integrity Analysis (Guesthouse Remains)

Although the guesthouse was mostly demolished in the 1980s, its remains are a contributing resource to the Copco No. 1 hydroelectric development; the remains retains integrity of location and association, and sufficient integrity of materials and workmanship with respect to the surviving stone and concrete features.

**Location** is the place where the historic property was constructed or the place where the historic event took place. The guesthouse remains retain integrity of location and association, because it remains in its original location at the edge of the bluff above Copco No. 1.

**Design** is the composition of elements that constitute the form, plan, space, structure, and style of a property. Most of the original design evident in historic photographs of the guesthouse was lost when the building was taken down to its foundation in the 1980s.

**Setting** is the physical environment of a historic property that illustrates the character of the place. The resource retains integrity of setting, with the same sweeping view of Copco Lake and the surrounding landscape enjoyed by guesthouse visitors throughout the twentieth century.

**Materials** are the physical elements combined in a particular pattern or configuration to form the historic property. The guesthouse has lost much of its integrity of materials, although the concrete and distinctive stone elements of the fireplace, chimney, and foundation remain.

**Workmanship** is the physical evidence of the crafts of a particular culture or people during any given period of history. Most of the original workmanship evident in historic photographs of the guesthouse was lost when the building was demolished.

**Feeling** is the quality that a historic property has in evoking the aesthetic or historic sense of a past period of time. The substantial loss in the integrity of materials, design, and workmanship has resulted in the diminished integrity of feeling.

**Association** is the direct link between a property and the event or person for which the property is significant. The resource's lack of intact physical features obscures the direct link with the historic construction and operations at Copco No. 1, diminishing integrity of association.

**The guesthouse retains integrity as a site and is eligible as a contributing resource to the Copco No. 1 Historic District.**

## CONTINUATION SHEET

Property Name: Guesthouse Remains  
Page 5 of 10

### B12. References (continued):

- Bullis, Seth M. 1964. Letter to Mr. Kent Stephens. October 6 (J.C. Boyle Collection, Folder 11.25.199 in Box 15/16, Southern Oregon Historical Society).
- Beckham, Stephen Dow. 2006. Historical Landscape Overview of the Upper Klamath River Canyon of Oregon and California. Cultural Resource Series No. 13. Bureau of Land Management. U.S. Department of the Interior.
- Bennett, Addison. 1922. "Portlanders Attend Big Dam Opening At Copco, Cal." *Sunday Oregonian* [Portland, Oregon]. November 12.
- Copco (California Oregon Power Company).  
n.d. Project No. 2082. Copco No. 1 and 1-A Development. Schedule No. 2 (J.C. Boyle Collection, Box 5/16, Southern Oregon Historical Society).  
1926. "Copco: A Brief History of Its Beginnings." *The Volt* 7, no. 4. December. December (J.C. Boyle Collection, folder "Volt 1920-1926," in Box 15/16, Southern Oregon Historical Society).
- Durio, Lori. 2003. Klamath River Hydroelectric Project District. State of California Department of Parks and Recreation. Primary Record #47-004015. Recorded July 2003 by L. Durio, CH2M Hill, New Orleans, LA. September.
- Evening Herald* [Klamath Falls, Oregon]. 1916. "Power Plant Makes Town." November 21.
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- Myrtle, Frederick S. 1919. "From the Mountains of Oregon to the Bay of San Francisco: By Interconnection of Three High-Tension Transmission Systems." *Pacific Service Magazine*. Pacific Gas and Electric Company. Reprinted and distributed by The California-Oregon Power Company (J.C. Boyle Collection, Box 5/16, Southern Oregon Historical Society).
- Oregon Daily Journal* [Portland, Oregon]. 1916. "New Power Town Just Over The Line." November 23.
- Oregonian* [Portland, Oregon]. 1917. "Big Power Plant Near Completion." October 8.
- Pacific Power and Light Company (Pacific Power). 1964. Copco No. 1 guesthouse [photographs, dated Nov. 1963]. PacifiCorp Archive, PDX.026971 (box), CA-Power, Klamath River Projects – Copco #1 Power Plant (folder).
- Rippon, Cy and Sally (eds). 1985. Early Twentieth Century Hydro-Power Plants and High Voltage Lines in Siskiyou County: Continuing the Saga of Pioneering with Electricity to Beginnings of High Technology in the Electrical Field. Compiled and Printed by Cy and Sally Rippon. Weed, California.
- Sacramento Bee* [Sacramento, California]. 1922. "Work of Enlarging Copco Power Plant is Rushed." September 9.
- Snyder, J.O. 1921. "Three California Marked Salmon Recovery." *Sacramento, California: California Fish and Game* 7, No. 1. January.
- Sprout, Sidney, John C. Boyle, and A.C. Sprout. 1912-1913. California – Oregon Power Company. Klamath River Projects 1 & 2 Progressive Reports 1912-1913 (J.C. Boyle Collection, Box 1/16, Southern Oregon Historical Society).
- Stephens, Kent. 1964. "Part Two of the Klamath Lake Railroad." *The Western Railroader* 27, No. 12, issue No. 299. December.

## CONTINUATION SHEET

Property Name: Guesthouse Remains  
Page 6 of 10

Photographs:



**Photograph 1.** Guesthouse remains, showing stone fireplace and chimney, concrete and stone foundation, with Copco Lake below; facing northeast, 2018.



**Photograph 2.** Guesthouse remains; view facing north from crest of Copco No. 1 Dam, 2018.

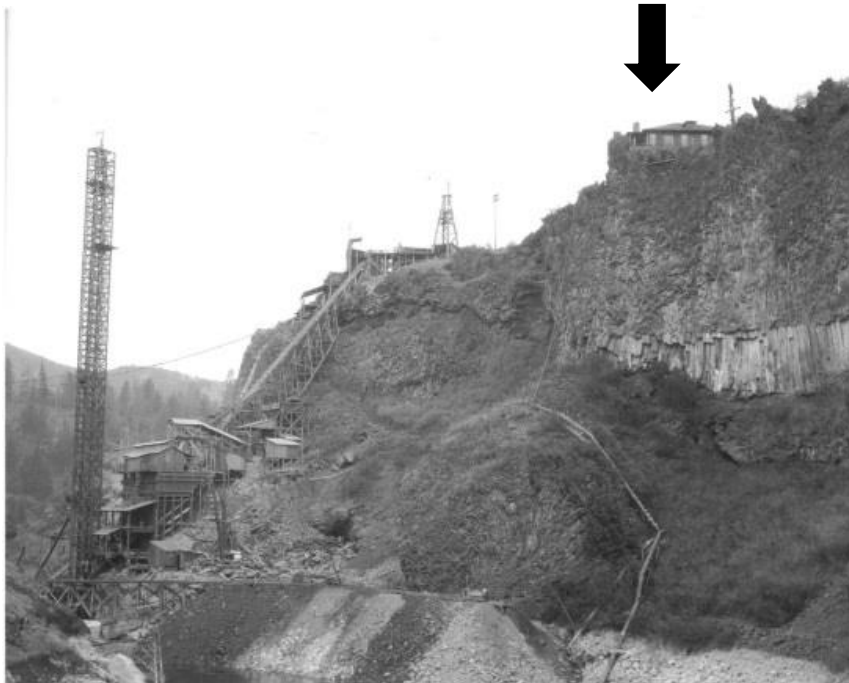
## CONTINUATION SHEET

Property Name: Guesthouse Remains  
Page 7 of 10

### Photographs (continued):



**Photograph 3.** Guesthouse remains, with detail of stone fireplace and chimney; facing northeast, 2018.



**Photograph 4.** Copco No. 1 construction, with guesthouse atop bluff, September 1916 (black arrow added by AECOM) (PacifiCorp archive image CO1-5).

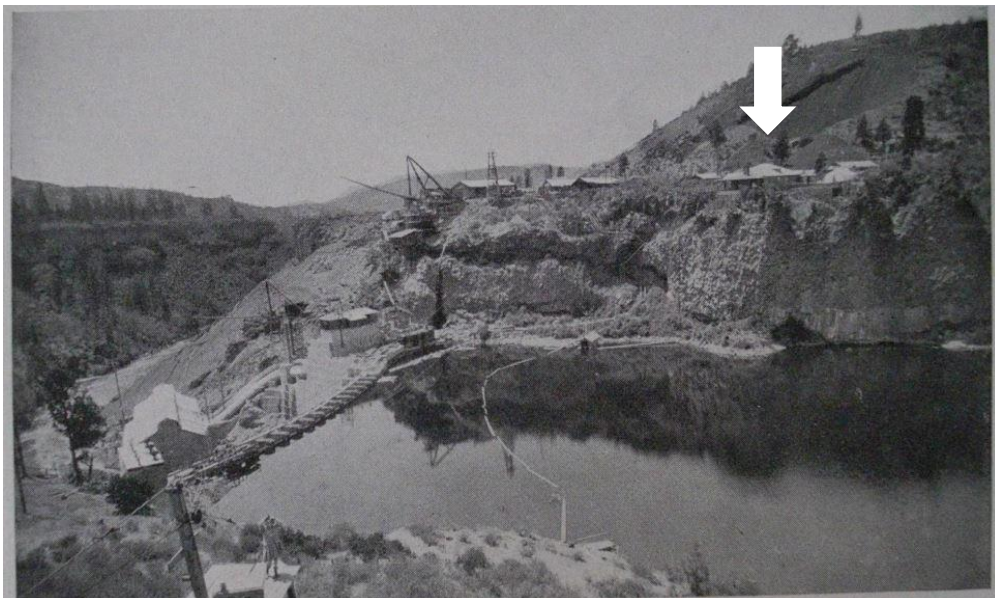
## CONTINUATION SHEET

Property Name: Guesthouse Remains  
Page 8 of 10

### Photographs (continued):



**Photograph 5.** Guesthouse, showing wooden footbridge and guests, circa 1920 (PacifiCorp archive image CO1-10).



**Photograph 6.** Copco No. 1, showing reservoir, dam, powerhouse, and the town of Copco above around 1926 (Copco 1926).  
The guesthouse is visible atop the bluff (white arrow added by AECOM).

## CONTINUATION SHEET

Property Name: Guesthouse Remains  
Page 9 of 10

### Photographs (continued):



**Photograph 7.** Guesthouse, November 1963 (Pacific Power 1964).

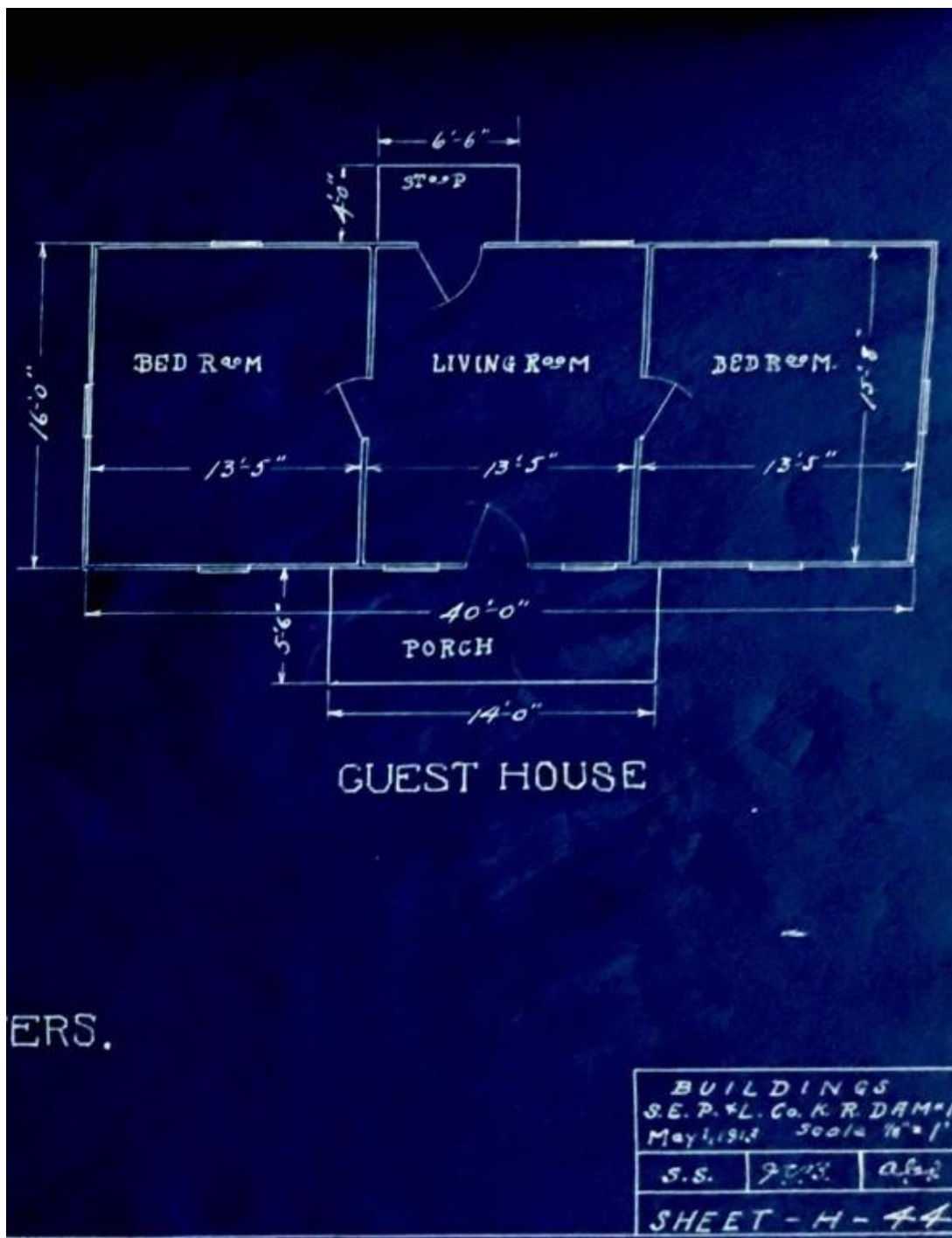


**Photograph 8.** Guesthouse, November 1963 (Pacific Power 1964).

### Plate:

## CONTINUATION SHEET

Property Name: Guesthouse Remains  
Page 10 of 10



**Figure 1.** Drawing of proposed Copco No. 1 guesthouse, dated May 1, 1913 (Sprout et al. 1912-1913).