UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Klamath River Renewal Corporation	**Project Nos. 14803-001;**
PacifiCorp	**2082-063**

AMENDED APPLICATION FOR SURRENDER OF LICENSE FOR MAJOR PROJECT AND REMOVAL OF PROJECT WORKS

EXHIBIT I
Remaining Facilities Plan

KLAMATH RIVER RENEWAL CORPORATION

Lower Klamath Project
FERC Project no. 14803

Remaining Facilities Plan

Klamath River Renewal Corporation
2001 Addison Street, Suite 317
Berkeley, CA 94704

February 2021

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1.0 Introduction

The Lower Klamath Project (Project) (FERC No. 14803) consists of four hydroelectric developments on the Klamath River: J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate (Figure 1-1). Specifically, the reach between J.C. Boyle dam and Iron Gate dam is known as the Hydroelectric Reach. In September of 2016, the Renewal Corporation filed an *Application for Surrender of License for Major Project and Removal of Project Works,* FERC Project Nos. 2082-063 & 14803-001 (License Surrender). The Renewal Corporation filed the License Surrender application as the dam removal entity for the purpose of implementing the Klamath River Hydroelectric Settlement (KHSA). In November of 2020, the Renewal Corporation filed its Definite Decommissioning Plan (DDP) as Exhibits A-1 and A-2 to its amended License Surrender application. The DDP is the Renewal Corporation's comprehensive plan to physically remove the Lower Klamath Project and achieve a free-flowing condition and volitional fish passage, site remediation and restoration, and avoidance of adverse downstream impacts (Proposed Action). The Limits of Work is a geographic area that encompasses dam removal related activities in the Proposed Action and may or may not expand beyond the FERC boundary associated with the Lower Klamath Project.

The Proposed Action includes the deconstruction of the J.C. Boyle Dam and Powerhouse (Figure 1-2), Copco No. 1 Dam and Powerhouse (Figure 1-3), Copco No. 2 Dam and Powerhouse (Figure 1-4), and Iron Gate Dam and Powerhouse (Figure 1-5), 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. Facility removal will be completed within an approximately 20-month period.

This Remaining Facilities Plan identifies measures that the Renewal Corporation will implement to protect water quality conditions associated with non-operational structures that will remain on-site following completion of the Proposed Action. The Renewal Corporation has prepared 16 Management Plans for FERC's review and approval as conditions of a license surrender order. These Management Plans were developed in consultation with federal, state and county governments and tribes.

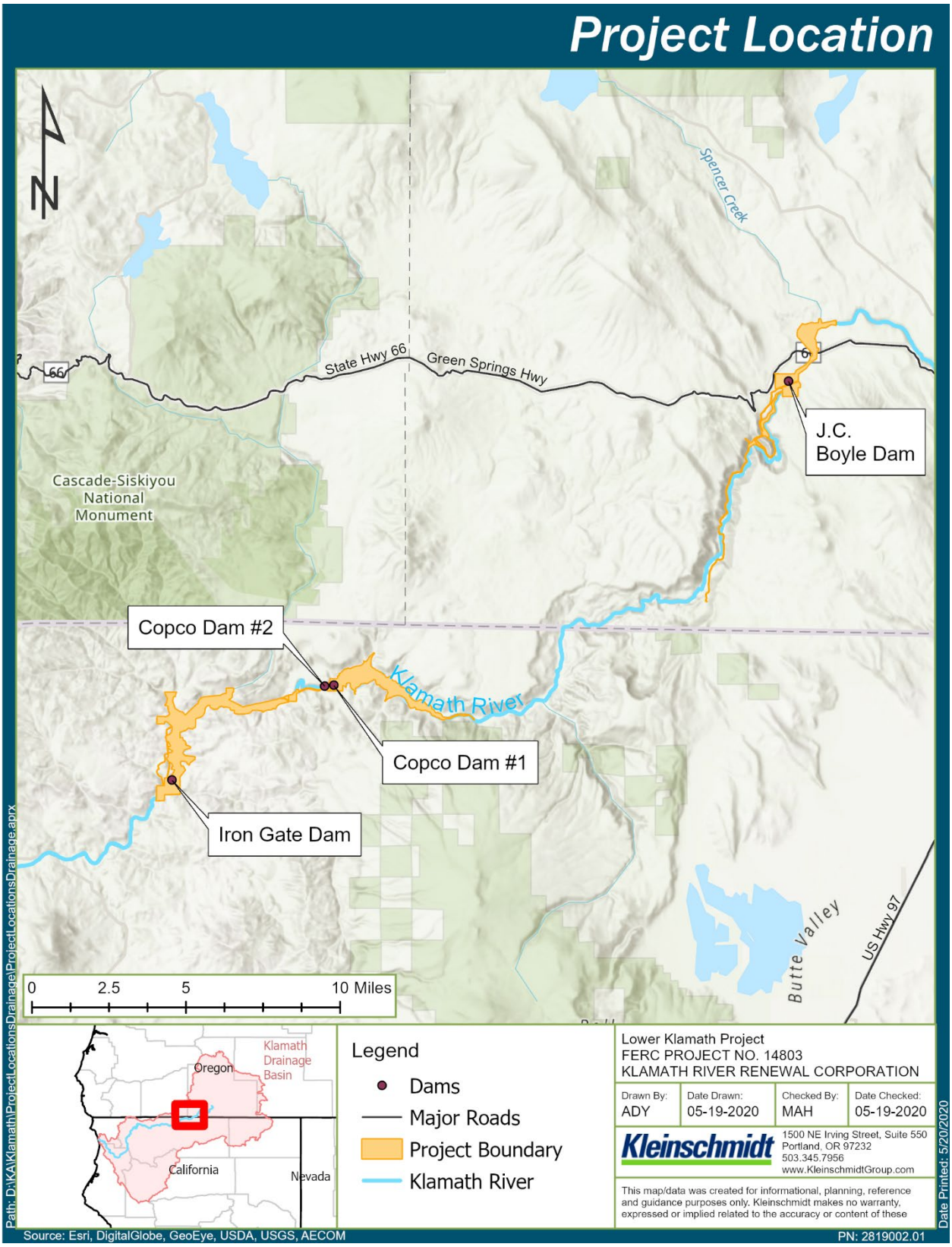

Figure 1-1. Lower Klamath Project Location

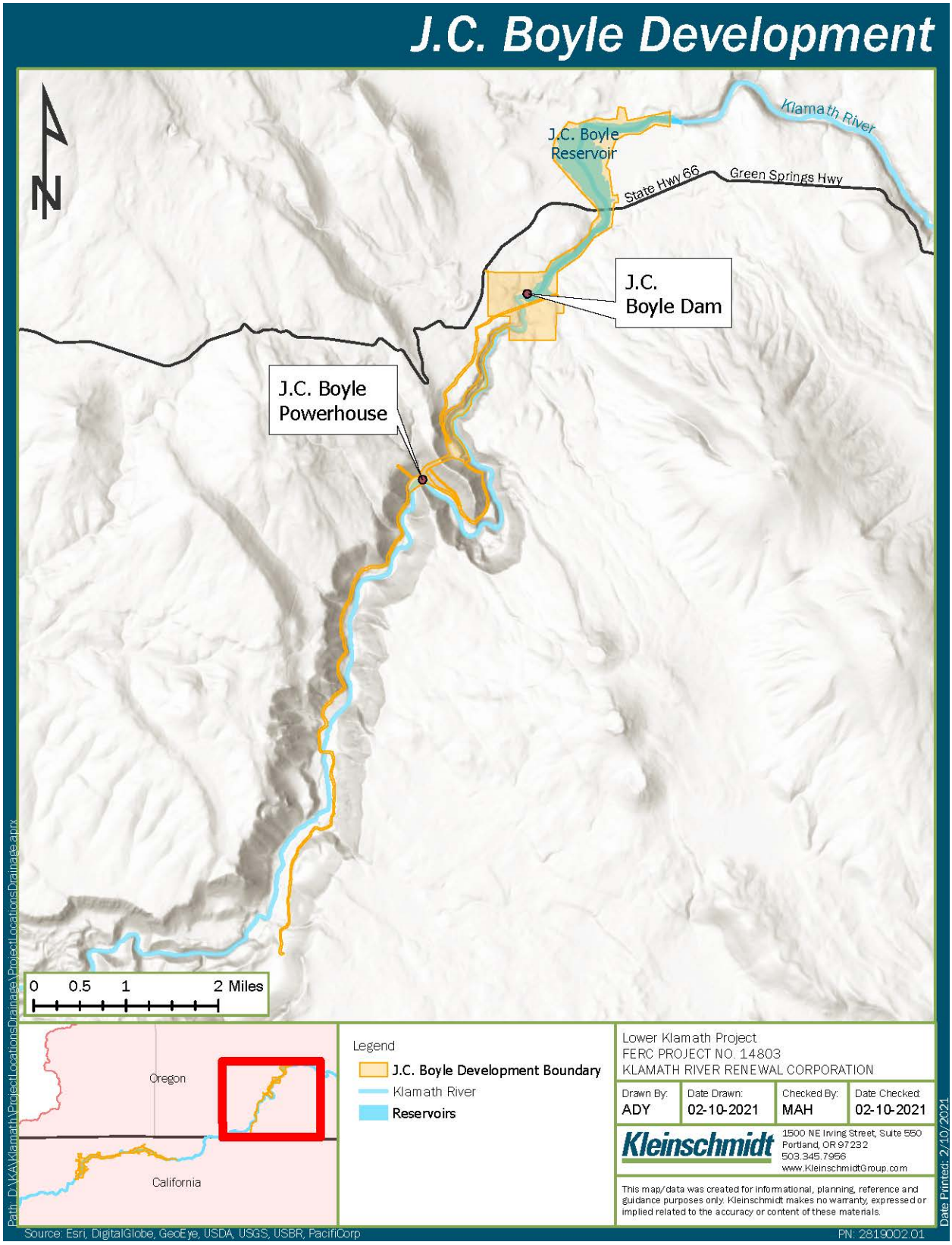

Figure 1-2. J.C. Boyle Development Facility Details

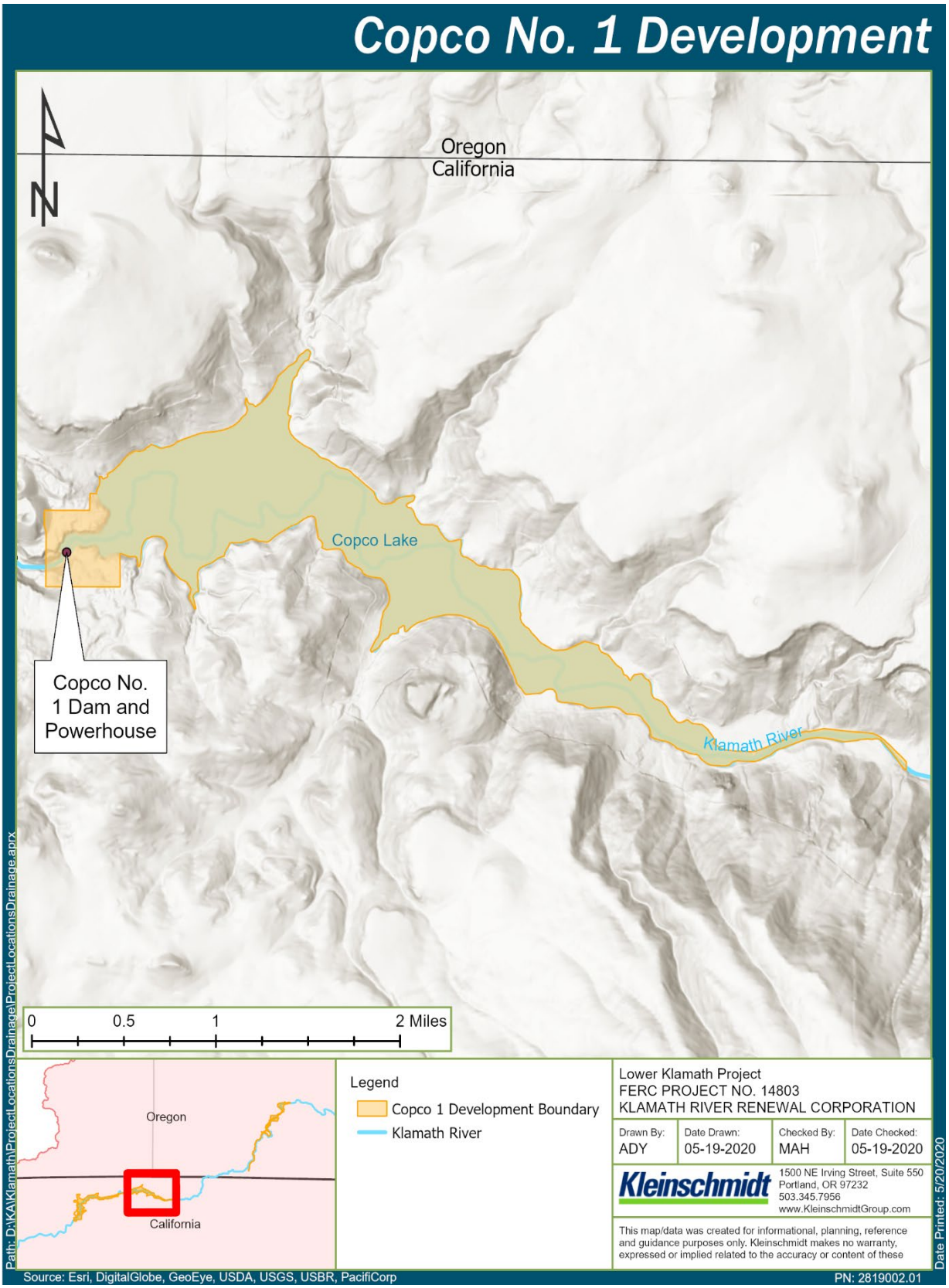

Figure 1-3. Copco No.1 Development Facility Details

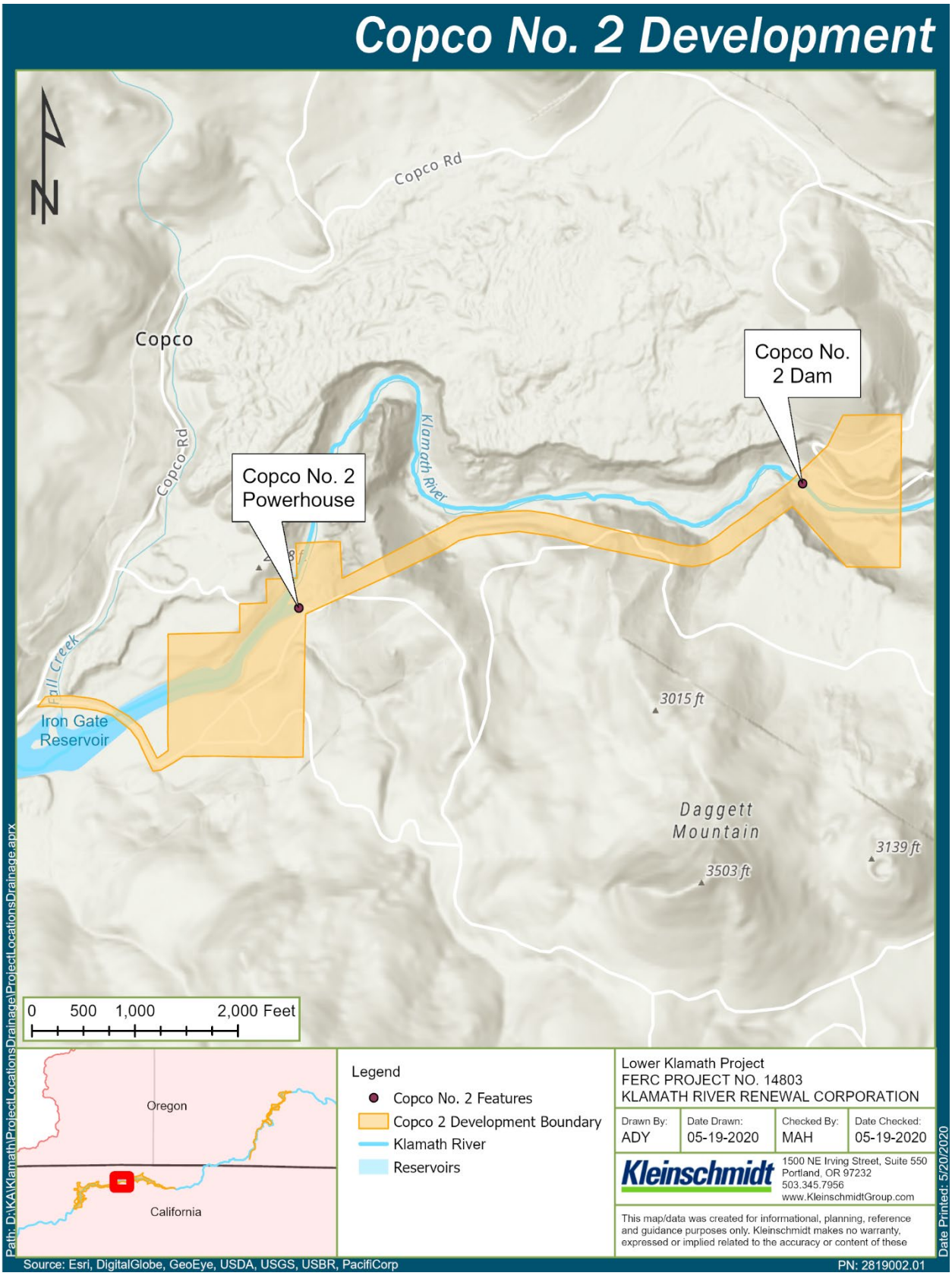

Figure 1-4. Copco No.2 Development Facility Details

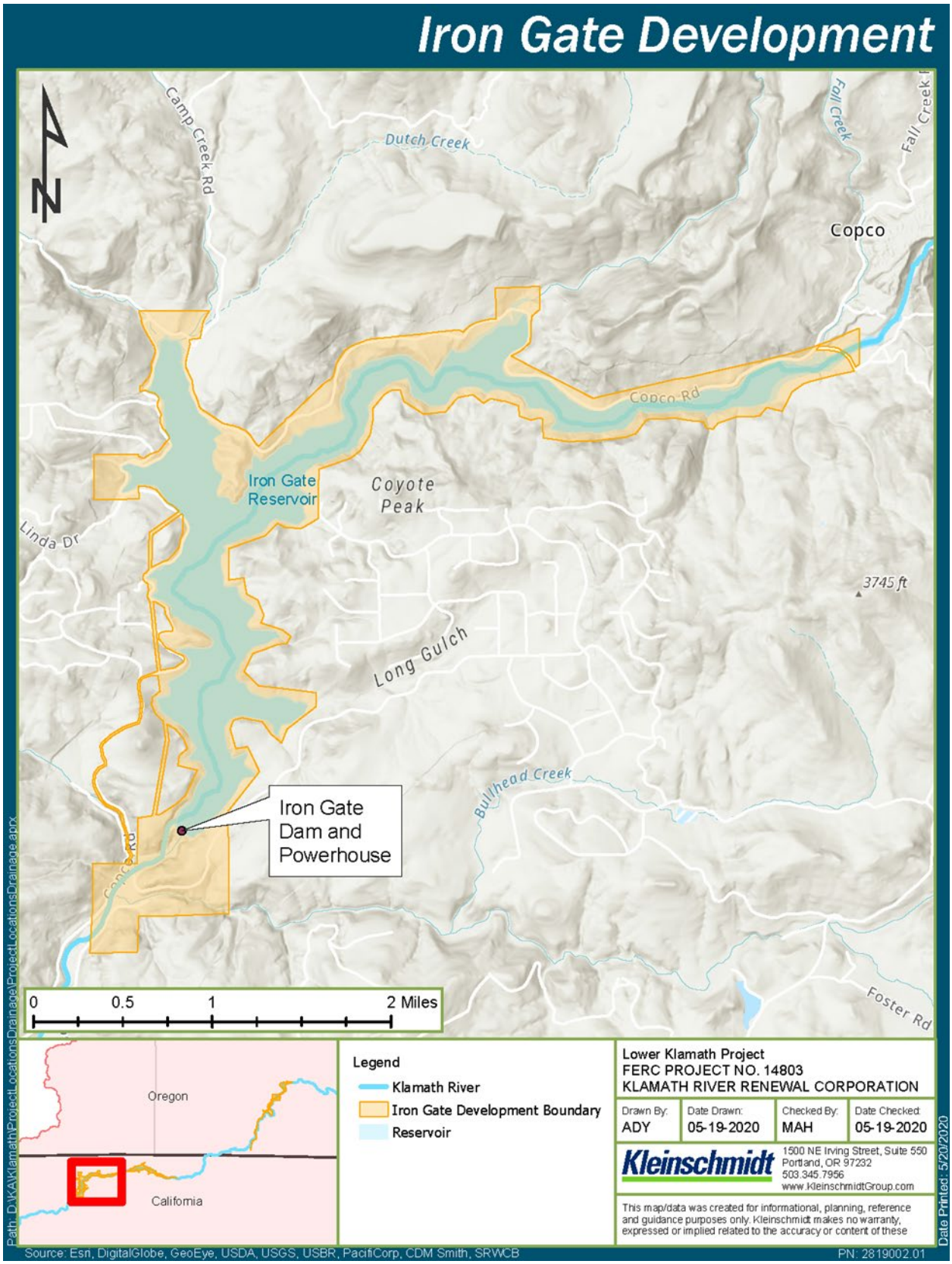

Figure 1-5. Iron Gate Development Facility Details

2.0 Regulatory Context

The Remaining Facilities Plan is one of 16 Management Plans implementing the DDP.

Table 2-1. Lower Klamath River Management Plans

1. Aquatic Resources Management Plan	9. Remaining Facilities Plan
2. Construction Management Plan	10. Reservoir Area Management Plan
3. Erosion and Sediment Control Plan	11. Reservoir Drawdown and Diversion Plan
4. Hatcheries Management and Operations Plan	12. Sediment Deposit Remediation Plan
5. Health and Safety Plan	13. Terrestrial and Wildlife Management Plan
6. Historic Properties Management Plan	14. Waste Disposal and Hazardous Materials Plan
7. Interim Hydropower Operations Plan	15. Water Quality Monitoring Management Plan
8. Recreation Facilities Plan	16. Water Supply Management Plan

2.1 Organizational Structure

The Remaining Facilities Plan identifies non-operational remaining structures and the measures the Renewal Corporation will implement to protect water quality conditions associated with these structures. These proposed measures are part of the Proposed Action. The Remaining Facilities Plan includes the following sub-plans

- Appendix A: California Remaining Facilities Plan
- Appendix B: Oregon Remaining Facilities and Operations Plan

2.2 Specific Regulatory Interests

The Renewal Corporation considered the following regulatory interests in the development of the Remaining Facilities Plan:

- California Section 401 Water Quality Certification
- Oregon Section 401 Water Quality Certification
- California Department of Fish and Wildlife MOU
- California Environmental Quality Act, Final Environmental Impact Report
- Oregon MOU

2.3 Regulatory Review Process

The Renewal Corporation will implement the Remaining Facilities Plan upon FERC approval, including any changes required in the FERC License Surrender Order. A consultation record for the Remaining Facilities Plan is included as Appendix C.

2.4 Reporting

The Renewal Corporation will prepare and submit an Annual Report by February 15th of each year which will include information pertaining to implementation of the Remaining Facilities Plan.

Appendix A

California Remaining Facilities Plan

KLAMATH RIVER RENEWAL CORPORATION

Lower Klamath Project
FERC Project No. 14803

California Remaining Facilities Plan

Klamath River Renewal Corporation
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February 2021

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Appendix A: Figures

1.0 Introduction

The California Remaining Facilities Plan described herein is a subplan of the Remaining Facilities Plan that will be implemented as part of the Proposed Action for the Lower Klamath Project (Project).

1.1 Purpose of Management Plan

The purpose of the California Remaining Facilities Plan is to identify the non-operational structures that will remain on-site following completion of the Proposed Action, identify potential water quality impacts associated with the presence of these structures, and state the measures the Renewal Corporation will implement to protect water quality from potential impacts associated with structures that will remain on-site following completion of the Proposed Action.

1.2 Relationship to Other Management Plans

The California Remaining Facilities Plan is supported by elements of the following management plan for effective implementation: Erosion and Sediment Control Plan and the Waste Disposal and Hazardous Materials Management Plan. So as to not duplicate information, elements from these other management plans are not repeated herein but are, where appropriate, referred to in this California Remaining Facilities Plan.

2.0 Potential Water Quality Impact and Proposed Measures

2.1 Identification of Remaining Facilities

For the purposes of this plan, remaining structures are defined as structures remaining that are located within the Limits of Work of the Project and will be non-operational following completion of the Proposed Action. These structures may consist of buildings, utilities, portions of foundations, and other non-operational structural components associated with the dams. This plan discusses waste disposal sites only to the extent they overlap with remaining structures (e.g., spillways, tailrace); all other waste disposal sites are discussed in the Waste Disposal and Hazardous Materials Management Plan.

2.1.1 Structures

The structures to remain on-site following completion of the Proposed Action at Copco No. 1, Copco No. 2, and Iron Gate Developments are presented in Tables 2.2, 2.3, and 2.4. The tables include the following information pertaining to the structures that will remain on-site: project structure name, type of material to be left on-site, and the permanent measures that will be taken to reduce water quality impacts based on the condition in which it will be left (buried, capped, graded, etc.). Overview maps of Copco No. 1, Copco No. 2, and Iron Gate developments are included as Figures A-1, A-7, and A-16, respectively.

2.2 Measures to Protect Water Quality Impacts

The Renewal Corporation evaluated the potential for erosion or sediment runoff to surface waters and identified the presence of hazardous materials associated with structures to remain on-site.

2.2.1 Erosion and Sediment Control Protection

Erosion and sediment control temporary best management practices (BMPs) installed during construction are presented in the site-specific Stormwater Pollution Prevention Plan required as part of the National Pollutant Discharge Elimination System California State Water Board Construction General Permit.

Following demolition and the final placement of material within remaining facilities (if applicable), permanent BMPs will be installed for final stabilization. Final stabilization will be completed in accordance with the Stormwater Pollution Prevention Plan and the design package and consists of capping by placing native rock and soil as a final cover material. For areas where the fines content of the surface material is greater than 30%, the area will be hydroseeded by distributing a mulch tackifier and native seed mix. Monitoring and reporting required as part of the Stormwater Pollution Prevention Plan will be conducted to achieve final stabilization.

As part of the permanent BMPs, drainage swales may be constructed. Swales will be lined with Type E8 Bedding Material and/or Type E7a Erosion Protection in areas where the slope is greater than 5% and will be unlined and hydroseeded in areas where the slope is less than or equal to 5% (Knight Piésold and Kiewit 2020).

2.2.1.1 Fill Materials Definitions

Table 2.1 contains definitions of the material types used by the Renewal Corporation throughout the Project as fill and cap materials.

Table 2.1. Definitions of Construction Fill Materials.

TYPE	DESCRIPTION	DEFINITION
E4	Select Fill	Cobbles, Gravel, and Sand, particles ranging from 4 in. to the #200 Sieve (0.0030 in.), low to no fines content, sourced from offsite.
E6	Bedding	Cobbles and Gravel, particles ranging from 3 in. to 3/8 in., low to no fines content, sourced from offsite.
E7	Erosion Protection	Boulders and Cobbles, particles ranging from +50 in. to 3 in., material subdivided into three classifications E7a/b/c, each with minimum D85, D50 and D15 values, sourced from existing erosion protection at the dam sites, or talus material from nearby borrow areas within limits of work.
E8	Bedding Material	Cobbles and Gravel, particles ranging from 12 in. to 1 in., low to no fines content, sourced from offsite.

TYPE	DESCRIPTION	DEFINITION
E9	General Fill	Boulders, Cobbles, Gravel, Sand and Fines, particles ranging from 20 in. to the #200 Sieve (0.0030 in.), up to 30% fines content, sourced from on-site excavations or nearby borrow areas within limits of work.
E9a	General Fill	Boulders, Cobbles, Gravel, Sand and Fines, particles ranging from 20 in. to the #200 Sieve (0.0030 in.), up to 40% fines content, sourced from excavations or nearby borrow areas within limits of work.
E10	Random Fill	Overburden, Rocks or Organics, no gradation requirements, sourced from on-site excavations.
CR1	Concrete Rubble	Particles ranging from 36 in. to the #200 Sieve (0.0030 in.), with up to 30% fines content, steel reinforcement to remain in concrete, sourced from demolition of on-site concrete structures.
CR2	Concrete Rubble	Particles ranging from 24 in. to the #200 Sieve (0.0030 in.), with up to 30% fines content, steel reinforcement to remain in concrete, sourced from demolition of on-site concrete structures.

Notes:
- The proposed offsite source is the Knife River Corporation.
- Definitions provided by Cory Vos of Knight Piésold on December 4, 2020.

2.2.2 Hazardous Material Survey

In April 2019, Hazardous Material Building Surveys (HMBS) were conducted for the Copco No. 1 (AECOM 2019a), Copco No. 2 (AECOM 2019b), and Iron Gate Developments (AECOM 2019c). Surveys were also conducted in October 2020 (Entek 2020a, 2020b, 2020c) to supplement and confirm the April 2019 HMBS, and are included in the Waste Disposal and Hazardous Materials Management Plan. All hazardous materials, including but not limited to asbestos, lead-based paint, fuel, lubricating oil, and batteries, identified as part of these evaluations will be removed by the Renewal Corporation from structures that will remain on-site. Non-hazardous and hazardous materials will be disposed of in accordance with the Waste Disposal and Hazardous Materials Plan, following the abatement specifications as presented by Entek (Entek 2020a, 2020b, 2020c).

Table 2.2. Copco No. 1 Remaining Structures

PROJECT STRUCTURE	MATERIAL TO REMAIN	PERMANENT MEASURES TO REDUCE WATER QUALITY IMPACTS	FIGURES
Administrative and Residential Structures			
• House near the access gate	• Complete structure	This structure, if not entirely removed, will be transferred to the State of California for active usage and maintenance.	Figure A-2
• Historic operator building foundation	• Concrete foundation	This concrete foundation has no negative impact on water quality and no further measures are proposed.	Figure A-2
Diversion Tunnel			
• Diversion tunnel	• Concrete and embedded steel	The diversion intake approach tunnel will be removed to the level of the adjacent bedrock. The diversion intake and outlet portals will be filled and sealed with Type E7a Erosion Protection and armored with 10 ft of Type E7b Erosion Protection. The intake portal will have an additional layer of impermeable concrete material surrounded by 1 ft of Type E6 bedding.	Figure A-3
Dam Structure			
• Copco No. 1 Dam	• Concrete and embedded steel below El. 2,472.1 ft • Concrete attached to bedrock on west canyon wall	All remaining concrete or concrete rubble below the 100-year flood level will be covered with a minimum of 10 ft of riverbed material with an upper particle size of 36 in and a 15% maximum of material smaller than 6 in, graded to the riverbed slope. Where concrete is keyed into the bedrock on slopes, the concrete will be removed to match the adjacent bedrock surface.	Figure A-4

PROJECT STRUCTURE	MATERIAL TO REMAIN	PERMANENT MEASURES TO REDUCE WATER QUALITY IMPACTS	FIGURES
Penstock No. 3			
• Penstock No. 3	• Underground portion of existing steel penstock	This portion of the penstock will be filled with Type E6 Bedding and the entrance will be blocked with Type E9 General Fill. All disturbed areas will be graded and will undergo Final Stabilization.	Figure A-5
Powerhouse and Tailrace			
• Powerhouse • Tailrace	• Concrete north wall • Concrete and embedded steel below El. 2,488 ft	All void spaces within the powerhouse basement will be filled to the extent possible with Type E9 General Fill and Type CR2 Concrete Rubble. The fill material will be capped with 4 ft of Type E4 Select Fill. The area adjacent to the river channel will be armored with Type E7 Erosion Protection, 60" rock, class 10 ton. A Type I drainage swale will be constructed on the uphill side of the powerhouse area. Disposal site details are further elaborated in the California Waste Disposal Plan. The tailrace will be filled with Type CR2 Concrete Rubble from Copco No. 2 powerhouse and penstock anchors and Type E9 General Fill and capped with 2 ft of Type E8 Bedding Material graded to 2.5H:1V with benching. The river channel will be armored with Type E7 Erosion Protection. Disposal site details are further elaborated in the California Waste Disposal Plan.	Figure A-6

Source: Knight Piésold and Kiewit 2020

Table 2.3. Copco No. 2 Remaining Structures

PROJECT STRUCTURE	MATERIAL TO REMAIN	PERMANENT MEASURES TO REDUCE WATER QUALITY IMPACTS	FIGURES
Copco Village			
• Residential houses • Asphalt roadway	• Complete structures • Asphalt	These structures, if not entirely removed, will be transferred to the State of California for active usage and maintenance. The asphalt roadway will remain in place.	Figure A-8
Diversion Dam			
• Diversion dam	• Concrete and embedded steel	The diversion dam will be removed to approximately El. 2453.5 ft. to be flush with the remaining bedrock. Remaining concrete will be covered with a minimum of 3.5 ft of Type E7b and E7c Erosion Protection.	Figure A-9
Wood Stave Penstock			
• Wood stave penstock and conveyance tunnels	• Concrete footings • Conveyance tunnels	The wood-stave penstock between Copco No. 2 dam and powerhouse will be deconstructed and the timber planks will be removed. The concrete footings will be buried in place by a minimum of 2 ft of Type E9 General Fill, and the slope will be graded to 0.5%. The tunnel portals connecting to the wood-stave penstock will be plugged by backfilling with Type E9 General Fill. A drain will be installed in the upstream conveyance tunnel (tunnel #1) by placing a non-woven geotextile wrapped drain in the bottom of the tunnel prior to backfilling, which will allow tunnel seepage without eroding the backfill material. The final grading of the tunnel portals will be 2.5H:1V. A Type I drainage swale will be installed at each tunnel portal and in two locations along the former penstock span, each leading to an energy dissipater. The disturbed area will undergo Final Stabilization.	Figures A-10

PROJECT STRUCTURE	MATERIAL TO REMAIN	PERMANENT MEASURES TO REDUCE WATER QUALITY IMPACTS	FIGURES
Powerhouse Penstock Surge Tank			
• Powerhouse penstock surge tank	• Below ground steel surge tank • Steel plate barricades	The surge vent will be barricaded with 8 ft x 8 ft steel plates to prevent human access and water ingress.	Figure A-11
Overflow Spillway			
• Overflow spillway	• Steel plate barricades • Concrete spillway	The overflow spillway tunnel will be barricaded with steel plates cut to fit the opening and all remaining openings larger than 6” will be filled with grout or a concrete curb. The concrete spillway will remain in place.	Figure A-12
Powerhouse Penstock			
• Powerhouse penstock	• Concrete anchor blocks	All remaining concrete will be covered by a minimum of 2 ft of Type E9 General Fill. The outlet of the conveyance tunnel (discussed above) will be backfilled with Type E9 General Fill and covered with gravel mulch which is comprised of the courser limit of Type E4 Select Fill and washed of fines to qualify as a non-vegetative stabilization method allowing seepage through the barrier without eroding the backfill. The area will be graded to 2.5H:1V, and Type I drainage swales will be constructed along the penstock area parallel to the slope and along the uphill side of the disturbed area perpendicular to the slope. All disturbed areas will undergo Final Stabilization.	Figure A-13

PROJECT STRUCTURE	MATERIAL TO REMAIN	PERMANENT MEASURES TO REDUCE WATER QUALITY IMPACTS	FIGURES
Powerhouse			
• Powerhouse	• Powerhouse concrete, embedded steel, and attached steel (conduit, trays, etc.) below El. 2,344.5 ft	Void spaces in the concrete powerhouse basement areas will be filled to the extent possible with Type E7 Erosion Protection and CR1 Concrete Rubble and mixed with Type E9a General Fill to reduce interstitial spaces. The remaining materials will be covered by a minimum of 2 ft of Type E9 General Fill and graded to 0.5% toward the tailrace area. The tailrace will be partially filled with Type CR2 Concrete Rubble and/or Type E9a General Fill and protected from river erosion with Type E8 Bedding Material.	Figure A-14
Intake Structure Disposal Site			
• Intake Structure	• Concrete from intake • Caterpillar gate	The caterpillar gate will be lowered, and a concrete plug will be poured against it. The concrete will then be covered by a minimum of 2 ft of Type E9 General Fill and graded to 1.5H:1V (temporary), 2H:1V (permanent) slope to match final channel grade.	Figure A-15

Source: Knight Piésold and Kiewit 2020

Table 2.4. Iron Gate Remaining Structures

PROJECT STRUCTURE	MATERIAL TO REMAIN	PERMANENT MEASURES TO REDUCE WATER QUALITY IMPACTS	FIGURES
Gate Shaft			
• Gate shaft	• Concrete and embedded steel	The gate controlling the diversion tunnel will be removed to the level of the natural bedrock. All concrete and embedded steel below El. 2,254.3 ft will remain in place. The gate shaft will be filled with Type E10 Random Fill or CR1 Concrete Rubble and then buried under a minimum of 3 ft of Type E9 General Fill.	Figure A-17
Diversion Tunnel Intake Structure			
• Diversion tunnel intake structure	• Concrete base slab of the intake structure	The tunnel inlet will be plugged with Type E9a General Fill and/or CR1 Concrete Rubble to permanently block the tunnel opening. The fill will be covered with a minimum of 3 ft of cover material consisting of washed Type E9 General Fill.	Figure A-18a
Diversion Tunnel Outlet Structure			
• Diversion tunnel outlet structure	• Concrete apron of diversion tunnel	The diversion tunnel outlet will be plugged with Type E9a General Fill and/or CR1 Concrete Rubble to permanently block the tunnel opening. The concrete apron of the diversion tunnel outlet structure will be left in place but will be modified as necessary to appear natural during the final grading activities. Any concrete portions of the outlet structure will be covered by a minimum of 3 ft of Type E9 General Fill to match the final grading of the former dam area.	Figure A-18b
Powerhouse Penstock			
• Powerhouse penstock	• Concrete anchor block #3 • Penstock between anchor block #3 and powerhouse	All concrete will be below the final grade and will be covered with Type E9 General Fill.	Figure A-19

PROJECT STRUCTURE	MATERIAL TO REMAIN	PERMANENT MEASURES TO REDUCE WATER QUALITY IMPACTS	FIGURES
Powerhouse and Tailrace Disposal Site			
• Powerhouse and Tailrace	• Concrete and embedded steel	Concrete and embedded steel below El. 2186.33 ft will be backfilled using Type E9 General Fill, Type CR1 Concrete Rubble, and/or Type CR2 Concrete Rubble. The powerhouse area and tailrace will be graded to 2.5H:1V and covered with Type E9 General Fill or E7 Erosion Protection, depending on erosion potential. Riprap from the downstream face of the dam will be used to armor the areas within the river channel. Disposal site details are further elaborated in the California Waste Disposal Plan.	Figure A-20
Spillway Disposal Site			
• Spillway	• Earthen material from dam structure	The spillway will be backfilled with earthen material generated from the dam structure removal. The spillway area will be graded to a slope range of 2.5H:1V to 5H:1V. The earthen material will be covered by Type E9 General Fill and E7 Erosion Protection will be placed on the downstream toe of the spillway. Disposal site details are further elaborated in the California Waste Disposal Plan.	Figure A-21

Source: Knight Piésold and Kiewit 2020

3.0 References

AECOM. 2019a. Copco No. 1 Development, Hazardous Building Materials Survey. April.

AECOM. 2019b. Copco No. 2 Development, Hazardous Building Materials Survey. April.

AECOM. 2019c. Iron Gate Development, Hazardous Building Materials Survey. April.

Entek. 2020a. Hazardous Materials Survey Final Report for Copco No. 1 Development. October.

Entek. 2020b. Hazardous Materials Survey Final Report for Copco No. 2 Development. October.

Entek. 2020c. Hazardous Materials Survey Final Report for Iron Gate Development. October.

Knight Piésold and Kiewit. 2020. Klamath River Renewal Project Kiewit Contract #104168 100% Design Completion Drawings. November 13, 2020.

Appendix A

Figures

KLAMATH RIVER RENEWAL CORPORATION

Lower Klamath Project

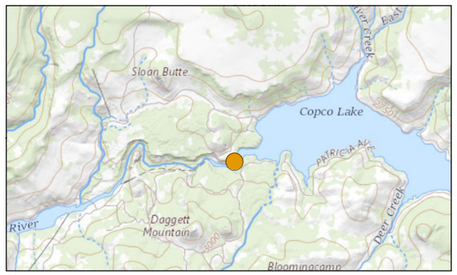
Figure A-1
Overview Map of the Copco No. 1 Development

December 2020

N

0 50 100 200 300 Feet

PRELIMINARY DESIGN
(NOT FOR CONSTRUCTION)



Notes

1. Coordinate System: NAD 1983 2011 StatePlane California I FIPS 0401 Ft US

2. Background: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed May, 2020.

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KLAMATH
RIVER RENEWAL
CORPORATION

Lower Klamath Project

Figure A-2

Copco No. 1 Administrative and Residential Structures

December 2020

N

0 37.5 75 150 225 Feet

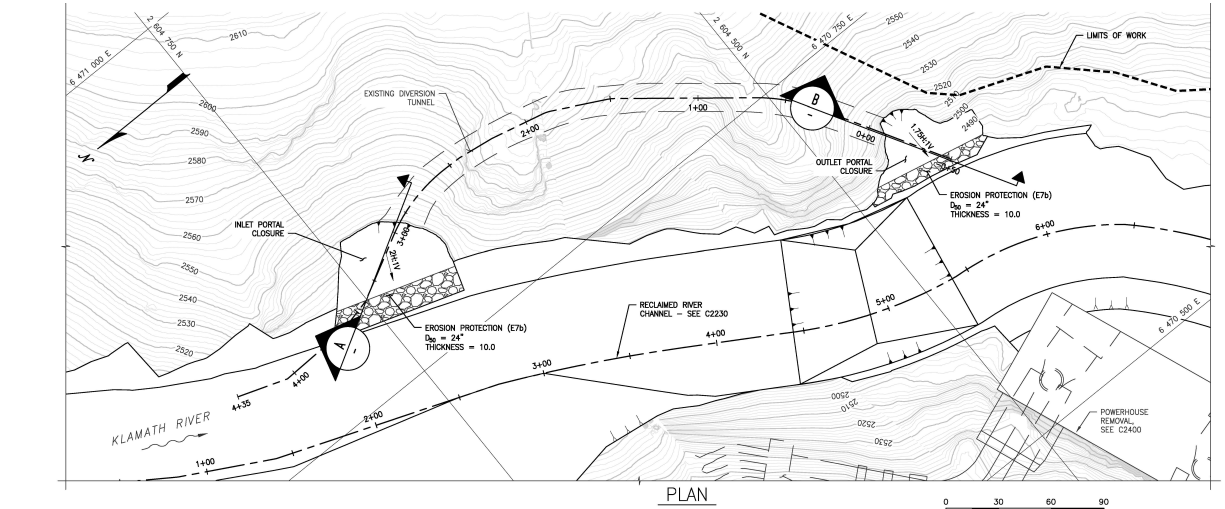
PRELIMINARY DESIGN
(NOT FOR CONSTRUCTION)

Notes

1. Coordinate System: NAD 1983 2011 StatePlane California I FIPS 0401 Ft US

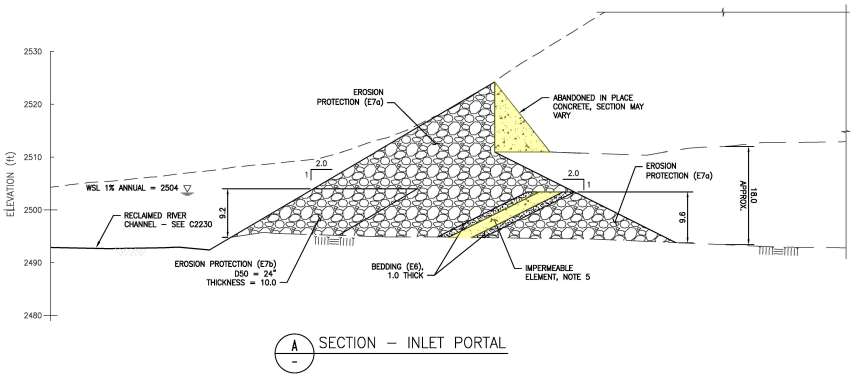
2. Data Sources: Main Drawing: Knight Piesold 100 Design

3. Main Map Imagery: GMA Hydrology Inc.; Inset Background: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed May, 2020.

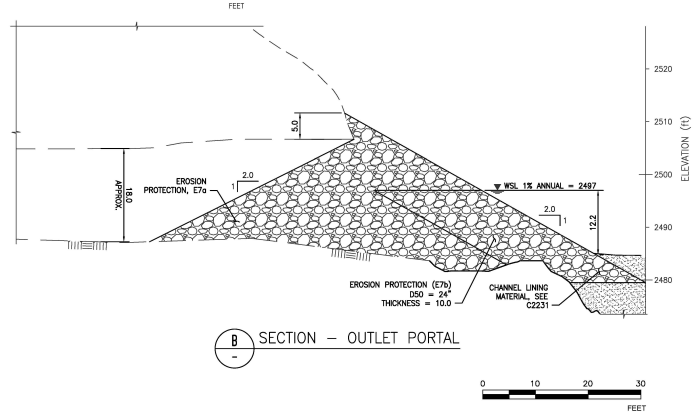


NOTES:

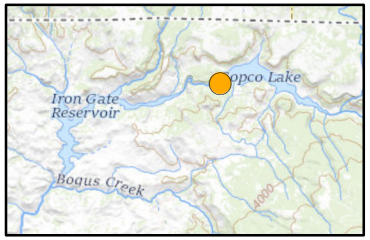
1. REFER TO GENERAL NOTES ON DRAWING G0006 FOR INFORMATION REGARDING TOPOGRAPHIC AND BATHYMETRIC DATA SOURCES.
2. THE PROFILE OF THE TUNNEL IS APPROXIMATE.
3. EROSION PROTECTION STONE SIZE TO MEET OR EXCEED THE INDICATED D50 DIMENSIONS/WEIGHT CLASS. STONE SIZE SPECIFIED ON THE STONE INTERMEDIATE DIMENSIONS (SECONDARY AXIS), I.E. EROSION PROTECTION SPECIFIED WITH A D50 OF 12 in WILL MEASURE NO LESS THAN 12 in ON THE SECOND AXIS OF THE STONE THREE PRIMARY AXIS, WITH 50 PERCENT OF THE EROSION PROTECTION GRADATION MEASURING NO SMALLER THAN THE SPECIFIED D50 STONE SIZE.
4. EROSION PROTECTION TO BE PLACED ON STABLE AND NON ERODIBLE FOUNDATION. DOWNSTREAM PORTAL CLOSURE TO ALLOW UNOBSTRUCTED DRAINAGE OF DIVERSION TUNNEL TO RIVER CHANNEL.
5. IMPERMEABLE ELEMENT TO PROVIDE HYDRAULIC CUTOFF FROM NORMAL RIVER WATER LEVEL AND EXTEND TO THE 1% ANNUAL FLOOD WATER LEVEL. MATERIAL TO BE PLACED ON CLEANED AND SUITABLE FOUNDATION SURFACE.
   - 5.1. PRE-MIXED CONCRETE BAG LINING IS ACCEPTABLE.
   - 5.2. ALTERNATIVE IMPERMEABLE MEMBRANE MAY BE ACCEPTABLE, SUBMIT FOR REVIEW AND APPROVAL BY THE ENGINEER.
   - 5.2. ALTERNATIVE PORTAL CLOSURE ARRANGEMENT INCLUDING REINFORCED CONCRETE CUTOFF MAY BE ACCEPTABLE, SUBMIT FOR REVIEW AND APPROVAL BY THE ENGINEER.
   - 5.3. LOCATION OF IMPERMEABLE ELEMENT TO BE SELECTED IN THE FIELD AFTER DRAWDOWN IS COMPLETED. SUITABLE INTERFACE WITH IMPERMEABLE ELEMENT AND GROUND SURFACE SHALL BE SELECTED TO PROVIDE ADEQUATE SURFACE FOR OVERLAP OF THE IMPERMEABLE ELEMENT.



A – SECTION – INLET PORTAL



B – SECTION – OUTLET PORTAL



Notes

1. Coordinate System: NAD83 HARN StatePlane California I FIPS 0401 Feet
2.Data Sources: Main Drawing: Knight Piesold 100 Design
3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

LEGEND:

- LIMITS OF WORK
- GENERAL FILL (E9a)
- EROSION PROTECTION (E7a/E7b)
- BEDDING (E6)
- CONCRETE TO REMAIN

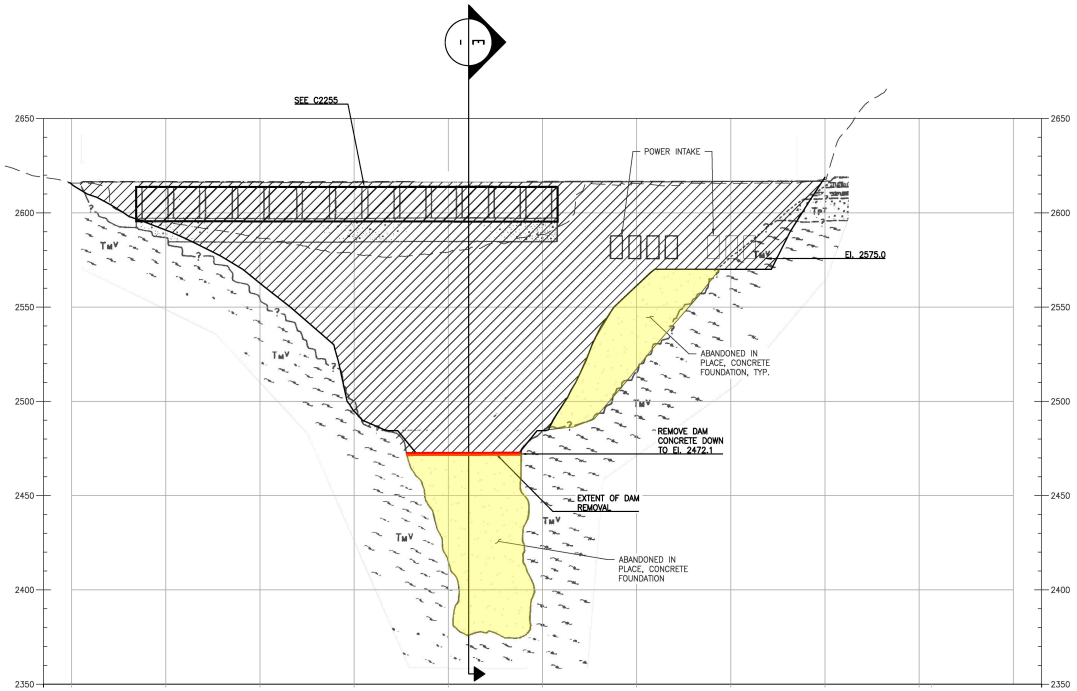
Lower Klamath Project

Figure A-3
Copco No. 1 Diversion Tunnel

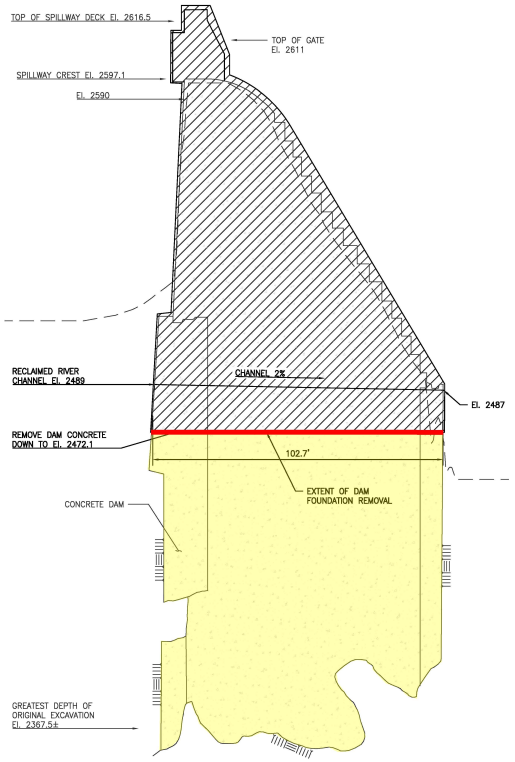
February, 2021

KLAMATH RIVER RENEWAL CORPORATION

PRELIMINARY DESIGN (NOT FOR CONSTRUCTION)

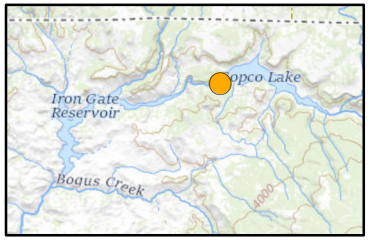


UPSTREAM ELEVATION



NOTES:

1. FOR DAM REMOVAL NOTES SEE DRAWING C2250.
2. REMOVE CONCRETE DAM TO NATURAL BEDROCK CONTOUR LINE.
3. REMOVE CONCRETE DAM FOUNDATION WITHIN THE RIVER CHANNEL WITH FINISHED SURFACE FREE OF SHARP EDGES.
4. FOR RESERVOIR WATER LEVELS DURING REMOVAL SEE DRAWING C2055.
5. OPERATION OF DIVERSION TUNNEL OR DEWATERING IS REQUIRED TO REMOVE THE DAM FOUNDATION BELOW ELEVATION 2525 ft.
6. WATER SURFACE ELEVATION UPSTREAM OF DAM ARE SHOWN ON DRAWING C2057.



Notes

1. Coordinate System: NAD83 HARN StatePlane California I FIPS 0401 Feet
2.Data Sources: Main Drawing: Knight Piesold 100 Design
3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

LEGEND:

- DEMOLITION / REMOVAL
- CONCRETE TO REMAIN
- Elev. 2472.1 ft

Lower Klamath Project

Figure A-4
Copco No. 1 Dam Structure

February, 2021

KLAMATH RIVER RENEWAL CORPORATION

PRELIMINARY DESIGN (NOT FOR CONSTRUCTION)

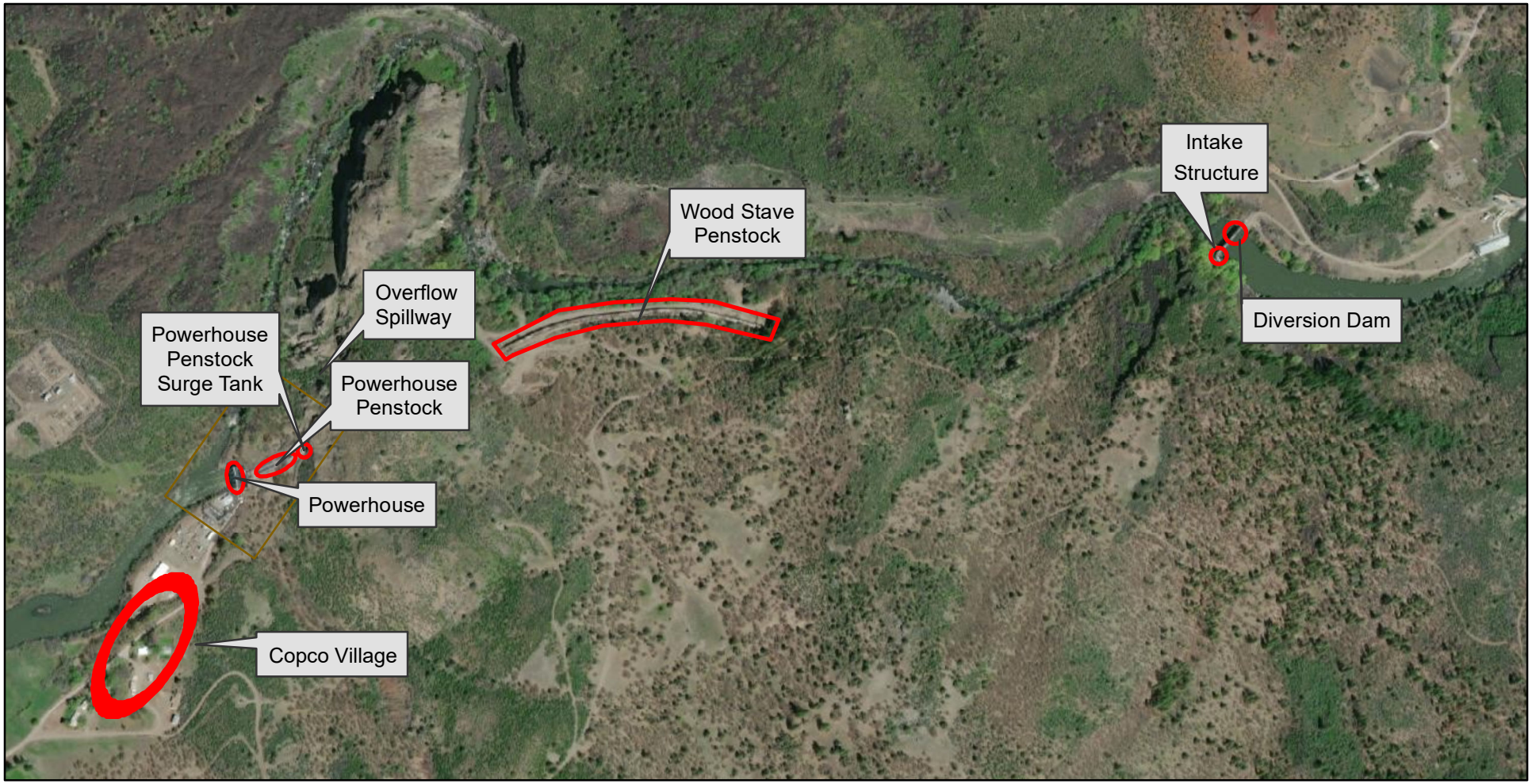
CRITICAL ENERGY/ELECTRIC INFRASTRUCTURE INFORMATION

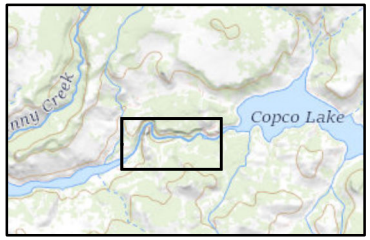
(CEII)

REDACTED

APPENDIX A: FIGURE A-5 COPCO NO. 1 PENSTOCK NO. 3

FIGURE A-6 COPCO NO. 1 POWERHOUSE AND TAILRACE





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(At original document size of 8.5x11)
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Notes

1. Coordinate System: NAD83 HARN StatePlane California I FIPS 0401 Feet

2. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

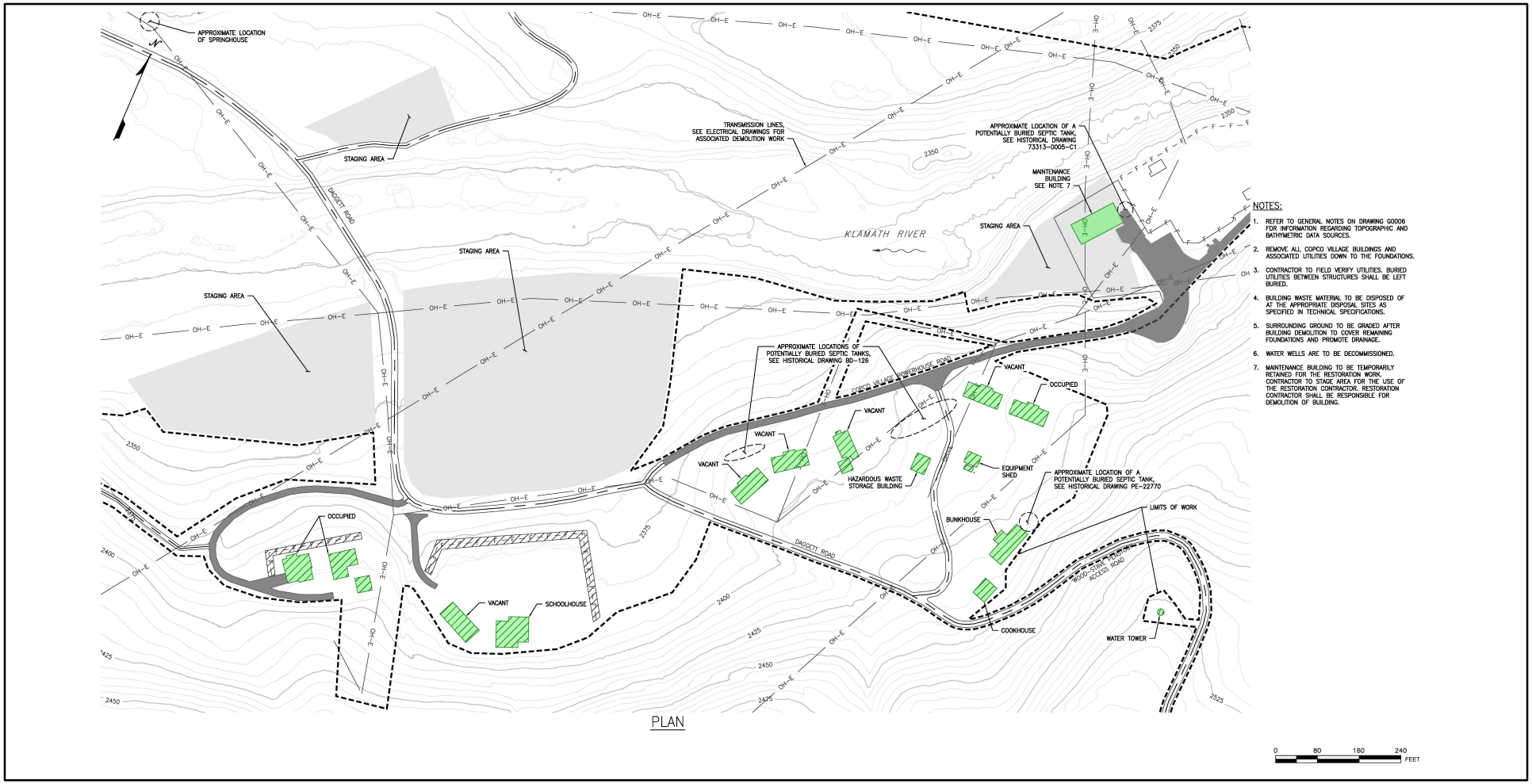
Lower Klamath Project

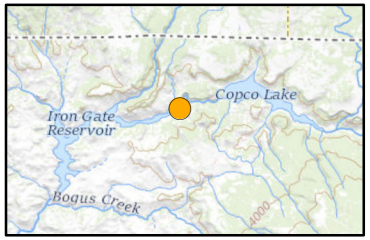
Figure A-7
Overview Map of the Copco No. 2 Development

December, 2020

KLAMATH RIVER RENEWAL CORPORATION

PRELIMINARY DESIGN (NOT FOR CONSTRUCTION)





Notes

1. Coordinate System: NAD83 HARN StatePlane California I FIPS 0401 Feet

2.Data Sources: Main Drawing: Knight Piesold 100 Design

3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

LEGEND:

- STAGING AREA
- DEMOLITION / REMOVAL
- Asphalt to Remain
- LIMITS OF WORK
- Structures

Lower Klamath Project

Figure A-8
Copco Village

February, 2021

KLAMATH RIVER RENEWAL CORPORATION

PRELIMINARY DESIGN (NOT FOR CONSTRUCTION)

CRITICAL ENERGY/ELECTRIC INFRASTRUCTURE INFORMATION

(CEII)

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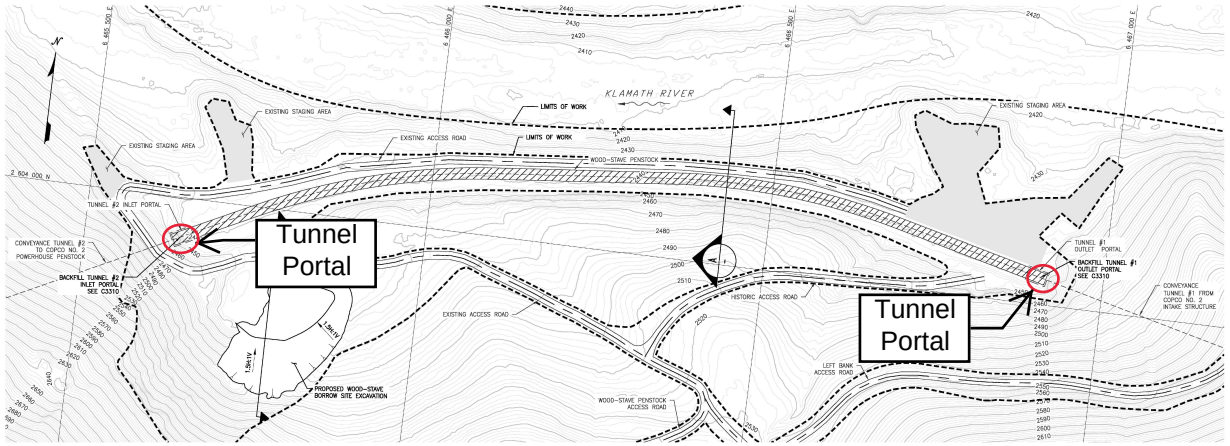
APPENDIX A: FIGURE A-9 COPCO NO.2 DIVERSION DAM

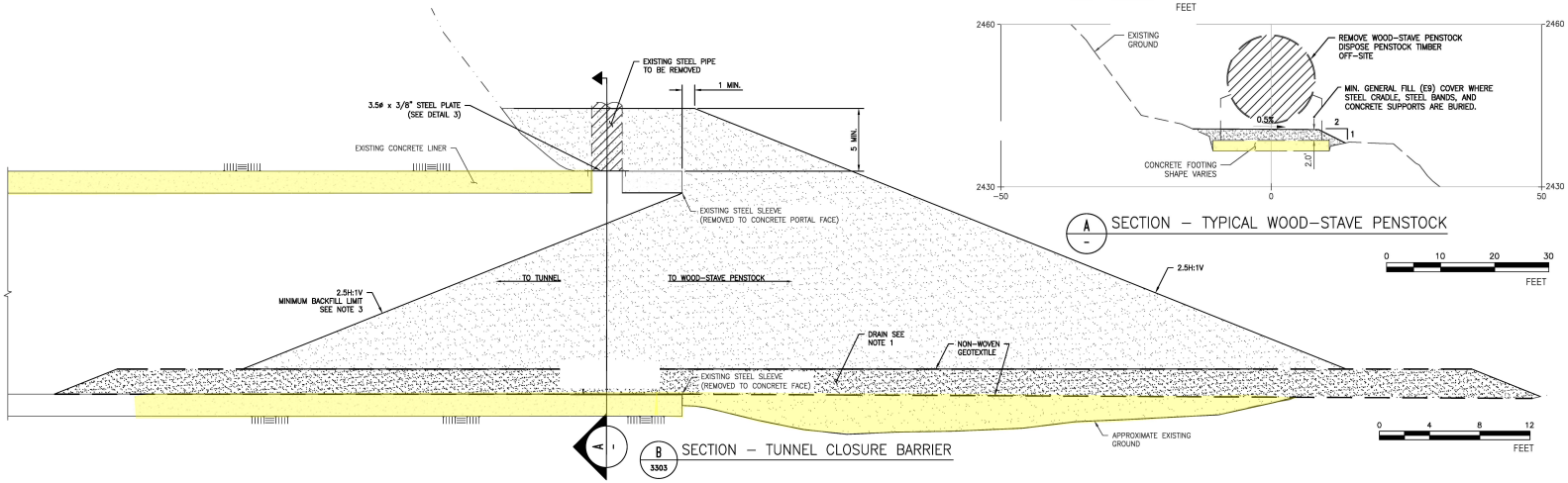


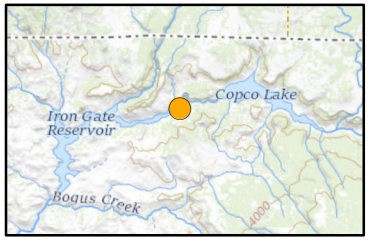
NOTES: PLAN AND SECTION A

1. REFER TO GENERAL NOTES ON DRAWING G0006 FOR INFORMATION REGARDING TOPOGRAPHIC AND BATHYMETRIC DATA SOURCES.
2. BACKFILL TUNNEL PORTAL AT EACH END OF WOOD-STAVE PENSTOCK, SEE DRAWING C3310.
3. STEEL CRADLES, STEEL BANDS, AND CONCRETE FOOTINGS TO BE LAID DOWN AND BURIED ON SITE. CONTRACTOR MAY OPT TO DISPOSE OF STEEL CRADLES AND BANDS OFFSITE.
4. EXCAVATION SLOPES TO BE VERIFIED BY THE ENGINEER. EXCAVATION IN AREAS WITH SATURATED SOILS OR WITH SIGNIFICANT SEEPAGE MAY REQUIRE REDUCED SLOPE ANGLES AND/OR DEWATERING.
5. SEE CALIFORNIA OREGON POWER COMPANY COPCO NO. 2 DEVELOPMENT HISTORIC DRAWING F-3719 AND F-3753 FOR WOOD-STAVE PENSTOCK DETAILS.
6. APPROXIMATE VOLUME OF BORROW SOURCE: 7,030 CY. MATERIAL TO BE SOURCED AS REQUIRED.

NOTES SECTION B:

1. BARRIER DESIGN SAME FOR BOTH PORTALS WITH THE EXCEPTION OF THE DRAIN. DRAIN IS ONLY REQUIRED AT THE TUNNEL #1 OUTLET. DRAIN SIZE TO BE ADJUSTED BASED ON OBSERVED FLOWS FROM TUNNEL.
2. BLOCK PIPE OUTLET WITH STEEL PLATE PRIOR TO BACKFILLING. CONTRACTOR MAY OPTION TO REMOVE TOP SLAB OF CONCRETE PORTAL INSTEAD OF BARRICADING PIPE OUTLET WITH STEEL PLATE.
3. MATERIAL PLACED INSIDE OF TUNNEL SHALL BE PLACED AND COMPACTED FOLLOWING THE RELEVANT CRITERIA IN THE TECHNICAL SPECIFICATIONS UNTIL HEIGHT RESTRICTIONS LIMIT THE ABILITY OF THE SMALLEST AVAILABLE EQUIPMENT TO MANEUVER WITHIN THE TUNNEL. ENOUGH MATERIAL SHALL THEN BE PUSHED INTO THE PORTAL THAT WILL SATISFY THE VOLUME OF MATERIAL REQUIRED TO MEET THE MINIMUM BACKFILL LIMIT BASED ON THE ELEVATION REACHED USING CONVENTIONAL PLACEMENT TECHNIQUES.
4. ALL STEEL BOLTS AND FASTENERS SHALL BE CARBON STEEL PER ASTM A36.





Notes

1. Coordinate System: NAD83 HARN StatePlane California I FIPS 0401 Feet
2.Data Sources: Main Drawing: Knight Piesold 100 Design
3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

LEGEND:

- DEMOLITION / REMOVAL
- STAGING AREA
- CONCRETE TO REMAIN
- GENERAL FILL (E9)
- LIMITS OF WORK
- (E) EARTHFILL

Lower Klamath Project

Figure A-10
Copco No. 2 Wood Stave Penstock and Conveyance Tunnels

February, 2021

KLAMATH RIVER RENEWAL CORPORATION

PRELIMINARY DESIGN (NOT FOR CONSTRUCTION)

CRITICAL ENERGY/ELECTRIC INFRASTRUCTURE INFORMATION

(CEII)

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APPENDIX A: FIGURE A-11 COPCO NO.2 POWERHOUSE PENSTOCK SURGE TANK

Notes

1. Coordinate System: NAD83 HARN StatePlane California I FIPS 0401 Feet

2. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

Legend

CONCRETE TO REMAIN

Lower Klamath Project

Figure A-12

Copco No. 2 Overflow Spillway

February, 2021

KLAMATH RIVER RENEWAL CORPORATION

PRELIMINARY DESIGN (NOT FOR CONSTRUCTION)

CRITICAL ENERGY/ELECTRIC INFRASTRUCTURE INFORMATION

(CEII)

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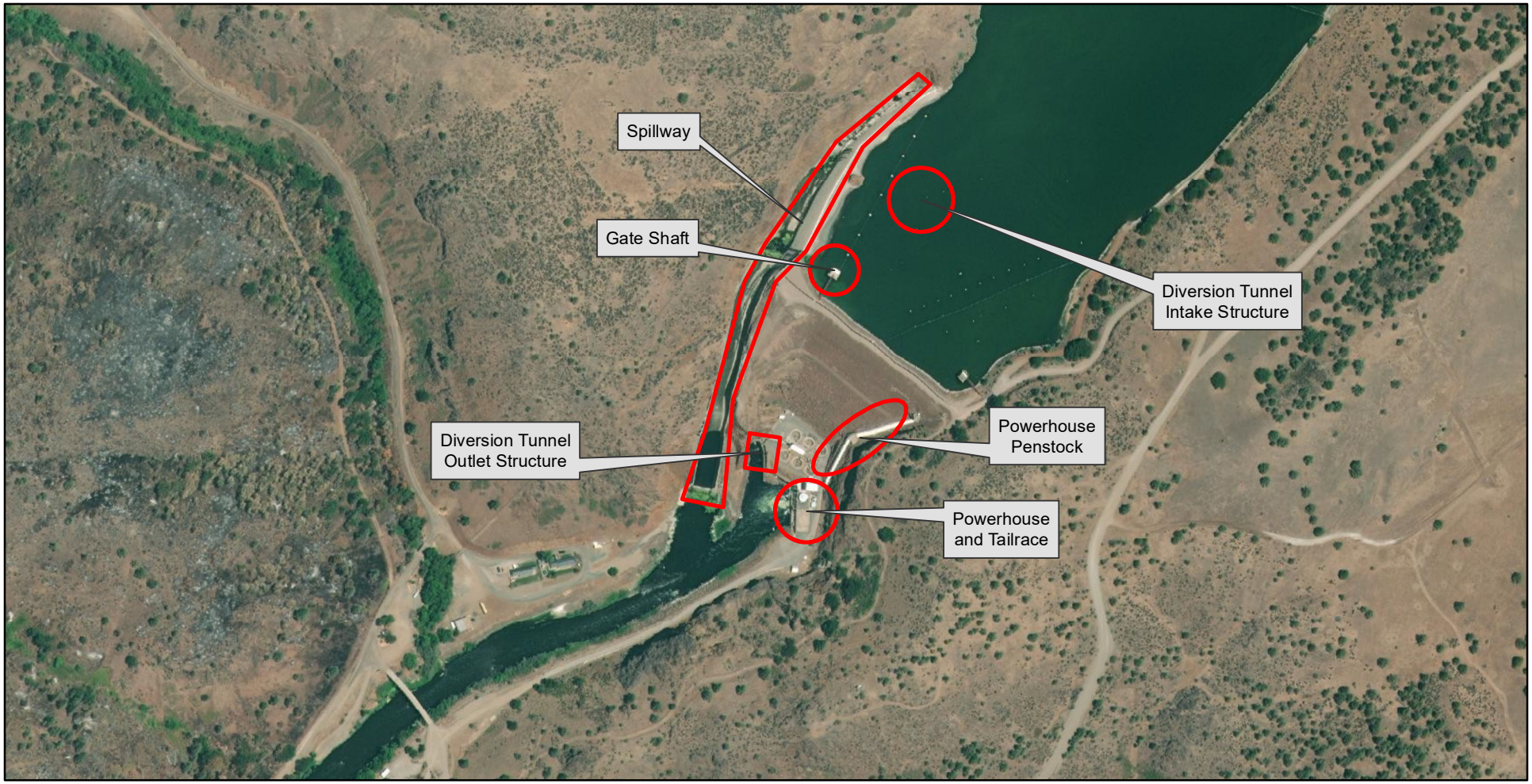
APPENDIX A: FIGURE A-13 COPCO NO.2 POWERHOUSE PENSTOCK

FIGURE A-14 COPCO NO.2 POWERHOUSE

FIGURE A-15 COPCO NO. 2 INTAKE STRUCTURE DISPOSAL SITE



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1:6,000

Notes

1. Coordinate System: NAD83 HARN StatePlane California I FIPS 0401 Feet

2. Main Figure Imagery: GMA Hydrology; Inset Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

Lower Klamath Project

Figure A-16
Overview Map of the Iron Gate Development

December, 2020

KLAMATH RIVER RENEWAL CORPORATION

PRELIMINARY DESIGN (NOT FOR CONSTRUCTION)

CRITICAL ENERGY/ELECTRIC INFRASTRUCTURE INFORMATION

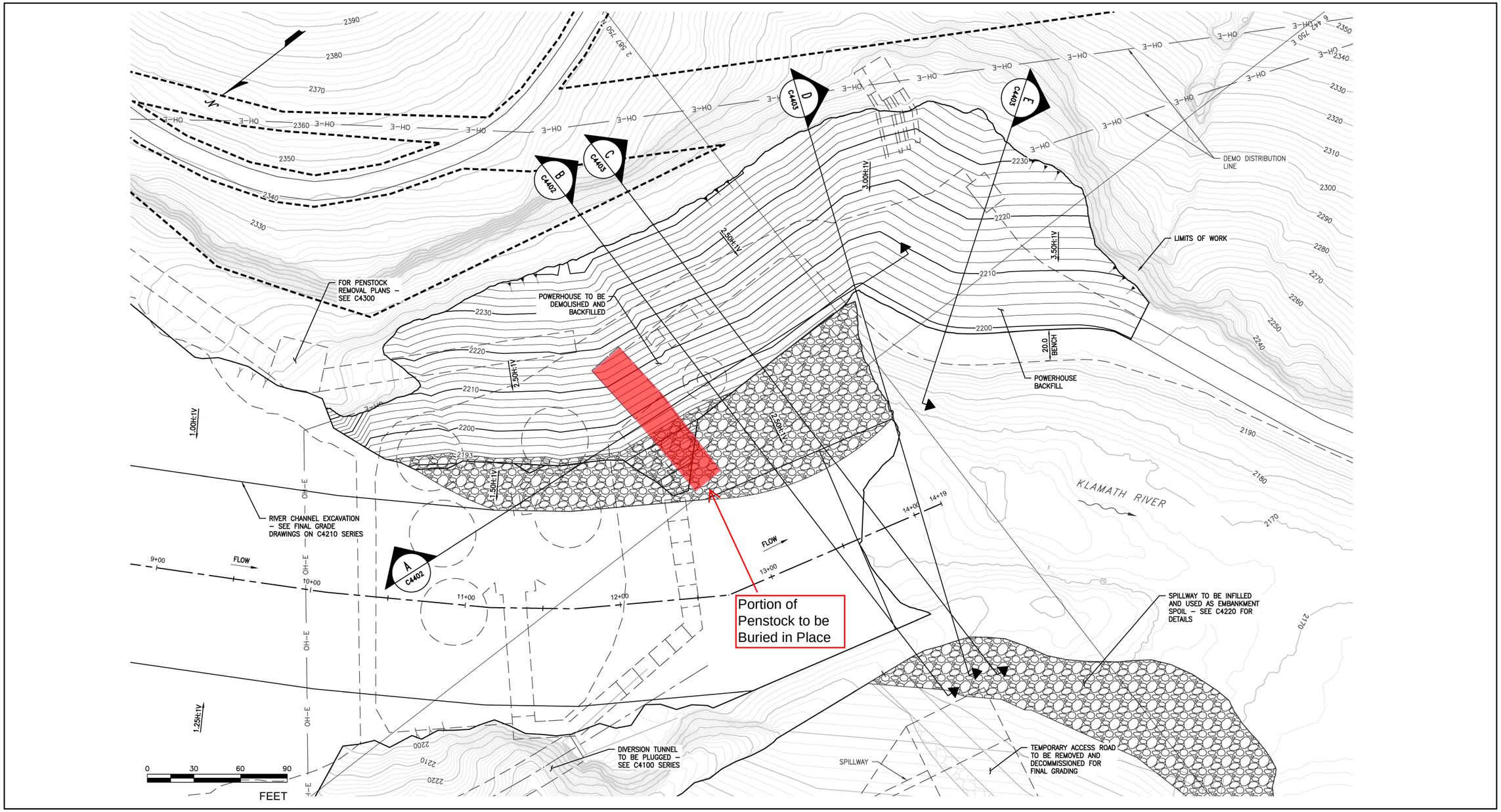
(CEII)

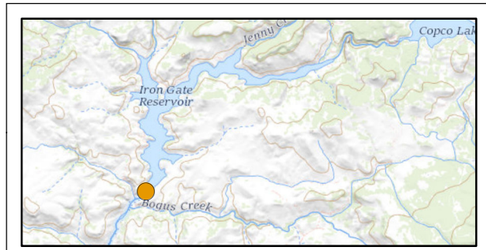
REDACTED

APPENDIX A: FIGURE A-17 IRON GATE DIVERSION TUNNEL AND GATE SHAFT

FIGURE A-18A IRON GATE DIVERSION TUNNEL INTAKE STRUCTURE

FIGURE A-18B IRON GATE DIVERSION TUNNEL INTAKE STRUCTURE





Notes

1. Coordinate System: NAD83 HARN StatePlane California I FIPS 0401 Feet
2.Data Sources: Main Drawing: Knight Piesold 100 Design
3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

LEGEND:

EROSION PROTECTION (E7b)

Lower Klamath Project
FIGURE A-19
Iron Gate Powerhouse Penstock
December, 2020

KLAMATH RIVER RENEWAL CORPORATION

PRELIMINARY DESIGN (NOT FOR CONSTRUCTION)

CRITICAL ENERGY/ELECTRIC INFRASTRUCTURE INFORMATION

(CEII)

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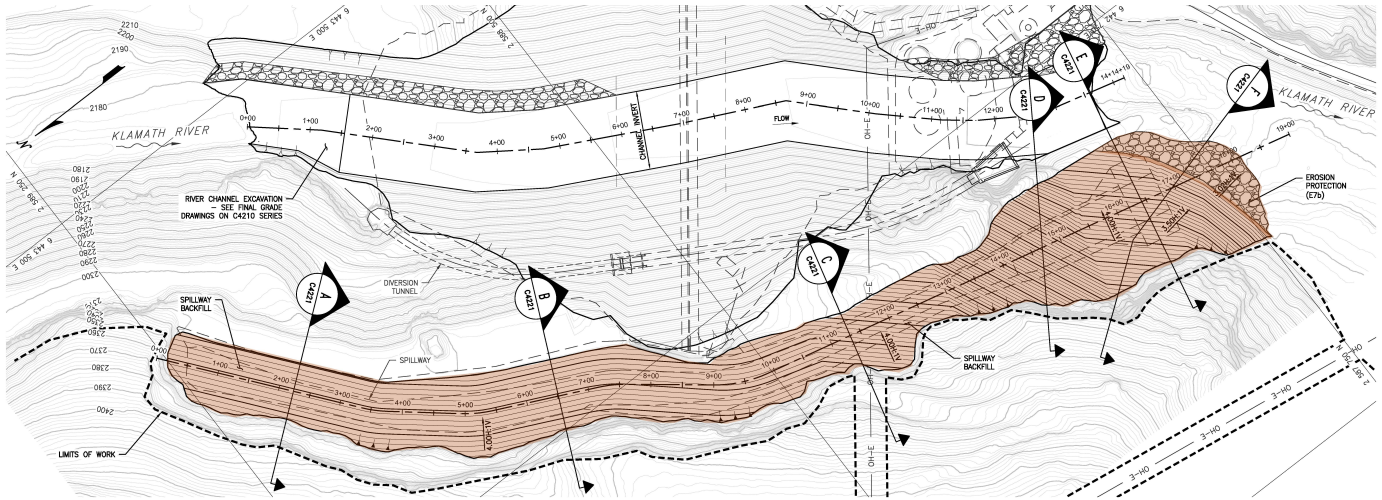
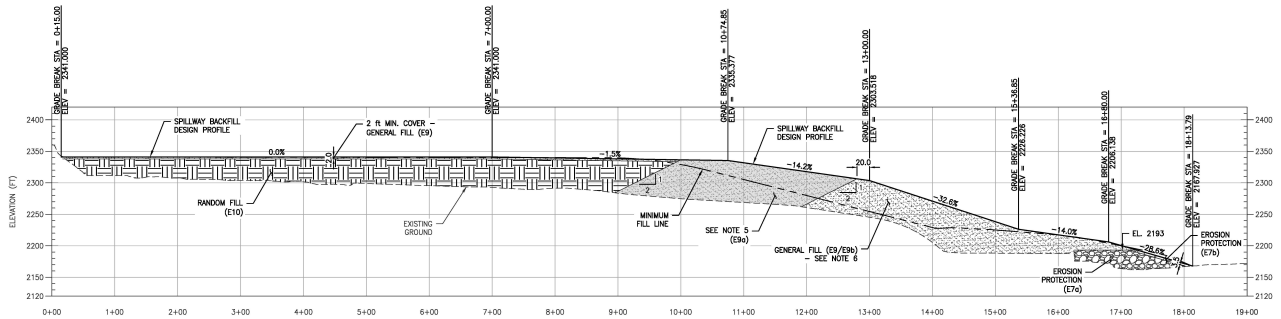
APPENDIX A: FIGURE A-20 IRON GATE POWERHOUSE AND TAILRACE



PLAN

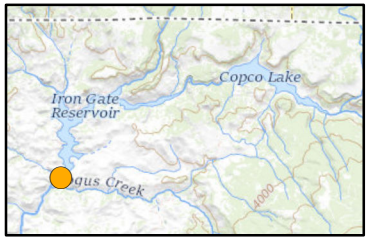
NOTES:

1. SPILLWAY INFILL MATERIALS SHALL BE COMPRISED OF REMOVED EMBANKMENT MATERIALS.
2. SPILLWAY INFILL SHALL BE INITIAL EMBANKMENT MATERIAL SPOIL AREA FOR THE UPPER PORTIONS OF THE EMBANKMENT REMOVAL.
3. PLACE EROSION PROTECTION ON DOWNSTREAM TOE OF SPILLWAY FILL ONCE COMPLETE, UPON FINAL GRADING, OR USE RIPRAP REMOVED FROM DOWNSTREAM FACE OF DAM DURING STAGE 1 FOR THE LOWER SPILLWAY LIFTS TO ESTABLISH RIPRAPPED TOE.
4. FOR EROSION AND SEDIMENT CONTROL DETAILS SEE DRAWING SERIES C4215 TO C4219.
5. WHERE E9a IS PLACED IN THE SPILLWAY DISPOSAL SITE, IT SHALL BE PLACED IN ACCORDANCE WITH THE LIFT THICKNESS AND COMPACTION REQUIREMENTS OF E9.
6. OPTION TO UTILIZE GENERAL FILL (E9) OR (E9b) AS COVER MATERIAL FINAL STABILIZATION TREATMENTS DIFFER AS PER TECHNICAL SPECIFICATION 31 25 00.



PROFILE

0 80 160 240 FEET



Notes

1. Coordinate System: NAD83 HARN StatePlane California I FIPS 0401 Feet
2.Data Sources: Main Drawing: Knight Piesold 100 Design
3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

LEGEND:

- GENERAL FILL (E9/E9a/E9b)
- RANDOM FILL (E10)
- EROSION PROTECTION (E7a/E7b)
- SPILLWAY AREA

Lower Klamath Project

Figure A-21
Iron Gate Spillway Disposal Site

February, 2021

KLAMATH RIVER RENEWAL CORPORATION

PRELIMINARY DESIGN (NOT FOR CONSTRUCTION)

Appendix B

Oregon Remaining Facilities and Operations Plan

KLAMATH RIVER RENEWAL CORPORATION

Lower Klamath Project
FERC Project No. 14803

Oregon Remaining Facilities and Operations Plan

Klamath River Renewal Corporation
2001 Addison Street, Suite 317
Berkeley, CA 94704

Prepared by:
Camas LLC
680 G Street, Suite C
Jacksonville, OR 97530

February 2021

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1.2 Relationship to Other Management Plans 1

2.0 Potential Water Quality Impact and Proposed Measures 1

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Table 2.2. J.C. Boyle Remaining Structures 4

Appendices

Appendix A: Figures

1.0 Introduction

The Oregon Remaining Facilities and Operations Plan described herein is a subplan of the Remaining Facilities Plan that will be implemented as part of the Proposed Action for the Lower Klamath Project (Project).

1.1 Purpose of Management Plan

The purpose of the Oregon Remaining Facilities and Operations Plan is to identify the non-operational structures that will remain on-site following completion of the Proposed Action, identify potential water quality impacts associated with the presence of these structures, and state the measures the Renewal Corporation will implement to protect water quality from potential impacts associated with structures that will remain on-site following completion of the Proposed Action.

1.2 Relationship to Other Management Plans

The Oregon Remaining Facilities and Operations Plan is supported by elements of the following management plans for effective implementation: Recreation Facilities Plan, Erosion and Sediment Control Plan, Waste Disposal and Hazardous Materials Management Plan. So as to not duplicate information, elements from these other management plans are not repeated herein but are, where appropriate, referred to in this Oregon Remaining Facilities and Operations Plan.

2.0 Potential Water Quality Impact and Proposed Measures

2.1 Identification of Remaining Facilities

For the purposes of this plan, remaining structures are defined as structures remaining that are located within the Limits of Work of the Project and will be non-operational following completion of the Proposed Action. These structures may consist of buildings, utilities, portions of foundations, and other non-operational structural components associated with the dams. This plan discusses waste disposal sites only to the extent they overlap with remaining structures (e.g., spillways, tailrace); all other waste disposal sites are discussed in the Waste Disposal and Hazardous Materials Management Plan.

2.1.1 Structures

The structures to remain on-site following completion of the Proposed Action at the J.C. Boyle Development are presented in Table 2.2. The table includes the following information pertaining to the structures to remain on-site: project structure name, type of material left on-site, and the permanent measures taken by the Renewal Corporation to reduce water quality impacts based on the condition it was left in (buried, capped, graded, etc.). An overview map of the J.C. Boyle development is included in Figure A-1.

2.1.2 Recreation Facilities

A detailed description of all recreation facilities is included in the Recreation Facilities Plan. Topsy Campground is the only existing recreation facility that will remain within the J.C. Boyle Development.

2.2 Measures to Protect Water Quality Impacts

The Renewal Corporation evaluated the potential for erosion or sediment runoff to surface waters and identified the presence of hazardous materials associated with structures to remain on-site.

2.2.1 Erosion and Sediment Control Protection

Erosion and sediment control temporary best management practices (BMPs) installed during construction are presented in the site-specific Erosion and Sediment Control Plan required as part of the National Pollutant Discharge Elimination System Oregon Department of Environmental Quality (National Pollutant Discharge Elimination System Stormwater Construction General Permit No. 1200-C.

Following demolition and the final placement of material with remaining facilities (if applicable), permanent BMPs will be installed for final stabilization. Final stabilization will be completed in accordance with the Erosion and Sediment Control Plan and the design package and consists of capping by placing native rock and soil as a final cover material. Areas where the fines content of the surface material is greater than 30%, the area will be hydroseeded by distributing a mulch tackifier and native seed mix. Monitoring and reporting required as part of the Erosion and Sediment Control Plan will be conducted to achieve final stabilization.

As part of the permanent BMPs, drainage swales may be constructed. Swales will be lined with Type E8 Bedding Material and/or Type E7a Erosion Protection in areas where the slope is greater than 5% and will be unlined and hydroseeded in areas where the slope is less than or equal to 5% (Knight Piésold and Kiewit 2020).

2.2.1.1 Fill Materials Definitions

Table 2.1 contains definitions of the material types used throughout the Project as fill and cap materials.

Table 2.1. Definitions of Construction Fill Materials.

TYPE	DESCRIPTION	DEFINITION
E2	Pipe Zone	Gravel and sand, particles ranging from 1.5 in. to the #200 Sieve (0.0030 in.), low to no fines content, sourced offsite.
E4	Select Fill	Cobbles, Gravel, and Sand, particles ranging from 4 in. to the #200 Sieve (0.0030 in.), low to no fines content, sourced offsite.

TYPE	DESCRIPTION	DEFINITION
E7	Erosion Protection	Boulders and Cobbles, particles ranging from +50 in. to 3 in., material subdivided into three classifications E7a/b/c, each with minimum D85, D50 and D15 values, sourced from existing erosion protection at the dam sites, or talus material from nearby borrow areas within limits of work.
E8	Bedding Material	Cobbles and Gravel, particles ranging from 12 in. to 1 in., low to no fines content, sourced from offsite.
E9	General Fill	Boulders, Cobbles, Gravel, Sand and Fines, particles ranging from 20 in. to silt and clay, up to 30% fines content, sourced from on-site excavations or nearby borrow areas within limits of work.
E10	Random Fill	Overburden, Rocks or Organics, no gradation requirements, sourced from on-site excavations.
CR1	Concrete Rubble	Particles ranging from 36 in. to the #200 Sieve (0.0030 in.), with up to 30% fines content, steel reinforcement to remain concrete, sourced from demolition of onsite concrete structures.

Notes:

The proposed offsite source is the Knife River Corporation.
Definitions provided by Cory Vos of Knight Piesold on December 4, 2020.

2.2.2 Hazardous Material Survey

In April 2019, a Hazardous Material Building Survey (HMBS) were conducted for the J.C. Boyle Development (AECOM 2019). Surveys were also conducted in October 2020 (Entek 2020) to supplement and confirm the April 2019 HMBS and is included in the Waste Disposal and Hazardous Materials Management Plan. All hazardous materials, including but not limited to asbestos, lead-based paint, fuel, lubricating oil, and batteries, identified as part of these evaluations will be removed by the Renewal Corporation from structures that will remain on-site. Non-hazardous and hazardous materials will be disposed of by the Renewal Corporation in accordance with the Waste Disposal and Hazardous Materials Plan, following the abatement specifications as presented by Entek (2020).

Table 2.2. J.C. Boyle Remaining Structures

PROJECT STRUCTURE	MATERIAL TO REMAIN	PERMANENT MEASURES TO REDUCE WATER QUALITY IMPACTS	FIGURES
Administrative and Residential Structures			
• Maintenance shed • Red barn • Residential houses	• Complete structures • Asphalt road surface	These structures, if not entirely removed, will be transferred to the State of Oregon for active usage and maintenance.	Figure A-2
Dam Spillway and Intake Structure			
• Dam spillway and intake	• Concrete and embedded steel below El. 3,785.2 ft	All concrete and embedded steel below El. 3785.2 ft will be buried using Type E9 General Fill and E10 Random Fill. The surrounding area will be graded at 3.5H:1V toward the river to the northeast and to 4H:1V toward the river to the northwest. Type II and Type II drainage swales will be used at the top of the slope and mid-slope to divert drainage off the graded slope. Drainage swales will have energy dissipaters on the ends to prevent erosion, and all disturbed areas will undergo Final Stabilization.	Figure A-3
Timber Bridge			
• Timber bridge	• Steel sheet piles	The timber bridge will be removed, and the sheet piles in the abutments will be cut to a minimum of 2 ft below grade and covered with local fill.	Figure A-4

PROJECT STRUCTURE	MATERIAL TO REMAIN	PERMANENT MEASURES TO REDUCE WATER QUALITY IMPACTS	FIGURES
Power Canal Headgate Structure			
• Power canal headgate	• Concrete and embedded steel below El. 3,772 ft	All concrete and embedded steel as well as the siphon pipe below El. 3,772 ft will be buried by at least 2 ft using Type E9 General Fill. The drainage ditch below the spillway siphon leading to the Klamath River will be filled with Type E9 General Fill, and the hillslope below the headgate will be graded to 3H:1V and will undergo Final Stabilization.	Figure A-5
Power Canal			
• Power canal	• Concrete canal walls and floor	Free-standing concrete walls on the uphill side of the power canal will be laid down and covered with a minimum of 2 ft of Type E9 General Fill. The free-standing concrete walls on the downhill side will be removed. Shotcrete concrete walls will be left in place. Small (1.5 ft diameter) and large (3 ft diameter) culverts will be placed at topographic low points for drainage, with energy dissipators on the downhill (outlet) end of each culvert. Energy dissipators will be made of Type E8 Bedding Material for small culverts and Type E7a Erosion Protection for large culverts. The canal area will be graded to a 2% slope and will undergo Final Stabilization.	Figure A-6

PROJECT STRUCTURE	MATERIAL TO REMAIN	PERMANENT MEASURES TO REDUCE WATER QUALITY IMPACTS	FIGURES
Forebay			
• Forebay	• Concrete and embedded steel below El. 3,777 ft	All concrete and attached steel below El. 3,778 ft will be buried with at least 3 ft of Type E9 General Fill, which will block the tunnel entrance on the inlet (forebay) side. The area will be graded to create a final surface that will drain away from the upstream power canal area and downstream powerhouse tunnel to the forebay spillway, to direct surface drainage to the backfilled spillway scour hole (see *Oregon Waste Disposal and Management Plan* for scour hole details). All graded areas will undergo Final Stabilization.	Figure A-7
Powerhouse Penstocks			
• Powerhouse penstocks	• Concrete footings of the penstocks below the penstock spring line	The outlet of the tunnel leading to the powerhouse penstocks will be blocked with Type CR1 Concrete Rubble and capped with Type E9 General Fill. All concrete below the penstock spring line will be buried using local fill material to meet the Type E4 Select Fill material specifications. Each footing area will be graded to the natural slope and will undergo Final Stabilization.	Figure A-8a Figure A-8b

PROJECT STRUCTURE	MATERIAL TO REMAIN	PERMANENT MEASURES TO REDUCE WATER QUALITY IMPACTS	FIGURES
Powerhouse and Tailrace			
• Powerhouse • Tailrace	• Powerhouse concrete, embedded steel, and attached steel (conduit, trays, etc.) below El. 3,340 ft • Concrete of lowest penstock anchor below El. 3,450 ft • Penstock access roads • Asphalt road surface	All concrete below El. 3,340 ft will be left in place, filled to the extent possible with Type E9 General Fill and covered with a minimum of 2 ft of Type E9/E9b General Fill. Disturbed areas will be graded with a 0.5% slope toward the Klamath River and will undergo Final Stabilization. Existing access road swales will be inspected and rehabilitated to convey runoff to the existing culverts.	Figure A-9

Source: Knight Piésold and Kiewit 2020

3.0 References

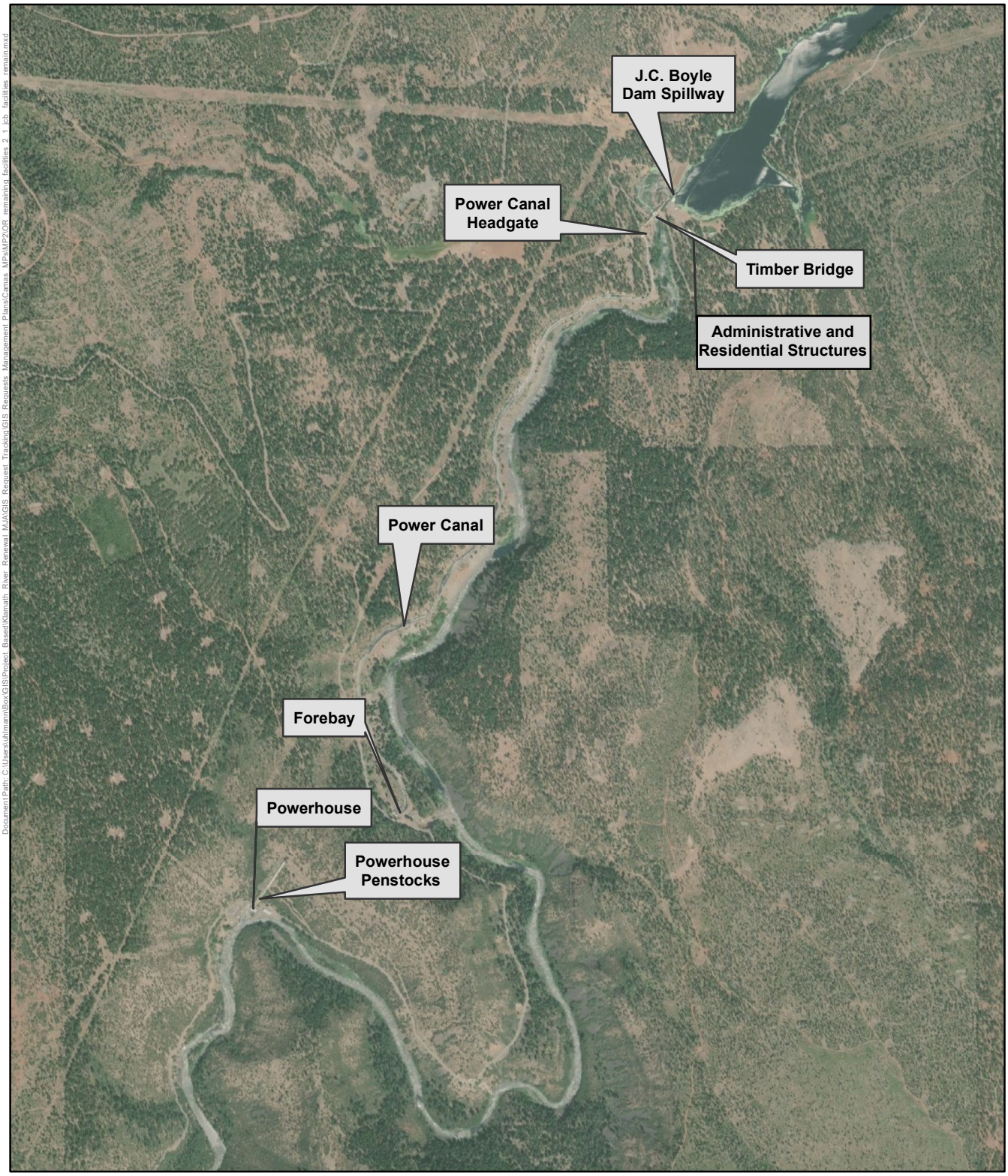
AECOM. 2019. J.C. Boyle Development, Hazardous Building Materials Survey. April.

Entek. 2020. Hazardous Materials Survey Final Report for J.C. Boyle Development. October.

Knight Piésold and Kiewit. 2020. Klamath River Renewal Project Kiewit Contract #104168 100% Design Completion Drawings. November 13, 2020.

Appendix A

Figures



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(At original document size of 8.5x11)
1:25,000

Notes

1. Coordinate System: NAD83 HARN StatePlane California I FIPS 0401 Feet

2. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

Lower Klamath Project

Figure A-1
Overview Map of the J.C. Boyle Development

KLAMATH RIVER RENEWAL CORPORATION

PRELIMINARY DESIGN (NOT FOR CONSTRUCTION)

December 2020

KLAMATH RIVER RENEWAL CORPORATION

Lower Klamath Project

Figure A-2
J.C. Boyle Administrative and Residential Structures

Asphalt to Remain

December 2020

PRELIMINARY DESIGN (NOT FOR CONSTRUCTION)

Notes

1. Coordinate System: NAD 1983 2011 StatePlane California I FIPS 0401 Ft US
2. Data Sources: Main Drawing: Knight Piesold 100 Design
3. Main Map Imagery: GMA Hydrology Inc.; Inset Background: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed May, 2020.

CRITICAL ENERGY/ELECTRIC INFRASTRUCTURE INFORMATION

(CEII)

REDACTED

APPENDIX A: FIGURE A-3 J.C. BOYLE DAM SPILLWAY AND INTAKE STRUCTURE

KLAMATH RIVER RENEWAL CORPORATION

Lower Klamath Project

Figure A-4
J.C. Boyle Timber Bridge
December 2020

N

0 20 40 80 Feet

Legend

J.C. Boyle Timber Bridge

PRELIMINARY DESIGN (NOT FOR CONSTRUCTION)

Notes

1. Coordinate System: NAD 1983 2011 StatePlane California I FIPS 0401 Ft US

2. Main Map Imagery: GMA Hydrology Inc.; Inset Background: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed May, 2020.

Document Path: C:\Users\uhlmann\Box\GIS\Project_Based\Klamath_River_Renewal_MJA\GIS_Request_Tracking\GIS_Requests_Management_Plans\Camas_MPs\MP2\OR_remaining_facilities_4_9_timber_bridge.mxd

CRITICAL ENERGY/ELECTRIC INFRASTRUCTURE INFORMATION

(CEII)

REDACTED

APPENDIX A: FIGURE A-5: J.C. BOYLE POWER CANAL HEADGATE STRUCTURE

FIGURE A-6: J.C. BOYLE POWER CANAL

FIGURE A-7: J.C. BOYLE FOREBAY

FIGURE A-8A: J.C BOYLE POWERHOUSE PENSTOCKS

FIGURE A-8B: J.C BOYLE POWERHOUSE PENSTOCKS

FIGURE A-9: J.C. BOYLE POWERHOUSE AND TAILRACE

Appendix C

Consultation Record

Consultation Record

Remaining Facilities Plan				
Sub-Plan	**Agency**	**Date of Agency Plan Submittal**	**Agency Comments Received Date**	**Date of Call to Resolve Agency Comments**
California Remaining Facilities Plan	California Department of Fish and Wildlife	January 14, 2021	January 28, 2021	February 2, 2021
	California State Water Resources Control Board	January 14, 2021	Pending	February 2, 2021
Oregon Remaining Facilities Plan	Oregon Department of Fish and Wildlife	January 14, 2021	February 3, 2021	February 2, 2021
	Oregon Department of Environmental Quality	January 14, 2021	February 3, 2021	February 2, 2021
	Bureau of Land Management (Klamath County)	January 15, 2021	Pending	February 2, 2021