

Battle Creek Salmon and Steelhead Restoration Project

November 2020

Battle Creek has the unique geology, hydrology, and habitat suitability to support threatened and endangered Chinook salmon and Central Valley steelhead. The Battle Creek Salmon and Steelhead Restoration Project (Restoration Project), located in Shasta and Tehama Counties near Manton, California, is among the largest cold-water anadromous fish restoration efforts in North America. The project is restoring approximately 42 miles of habitat on Battle Creek and an additional 6 miles of habitat on tributaries to Battle Creek, while continuing hydroelectric power production at Pacific Gas and Electric Company's (PG&E's) Battle Creek Hydroelectric Project - Federal Energy Regulatory Commission (FERC) Project No. 1121.

In 1999, a Memorandum of Understanding (MOU) between PG&E, Bureau of Reclamation (Reclamation), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and California Department of Fish and Wildlife (CDFW, formerly Department of Fish and Game) was signed, committing each partner to the Restoration Project. In addition, numerous stakeholders, including the Battle Creek Watershed Conservancy and the Greater Battle Creek Watershed Working Group, as well as landowners and funders have made important contributions to this project.

Project implementation includes modification of Battle Creek Hydroelectric Project facilities located on North Fork Battle Creek, South Fork Battle Creek, and Baldwin Creek in three phases (Phases 1A, 1B and 2). By removing five diversion dams and constructing fish screens and ladders on three other diversion dams, the project is providing safe passage for anadromous fish to reach the cold water and habitat needed for them to successfully spawn and increase their populations. The project is also preventing the mixing of North Fork Battle Creek and South Fork Battle Creek waters, through the construction of powerhouse bypass and tailrace connectors; protecting a trout hatchery from diseases carried by anadromous fish, through the construction of a fish barrier weir; increasing instream flows; dedicating water rights for instream purposes at dam removal sites; and implementing adaptive management to ensure fisheries objectives are met.

RESTORATION PROJECT STATUS:

Phase 1A – This phase consists of removal of Wildcat Diversion Dam and Wildcat Canal; construction of fish screens and fish ladders on North Battle Creek Feeder and Eagle Canyon Diversion Dams; and, construction of a fish barrier weir on Baldwin Creek (that maintains 5 cfs of flow in Baldwin Creek for suitable salmon and steelhead habitat, and protects the upstream Darrah Springs State Trout Hatchery from being infected with diseases that anadromous fish could carry).

- In 2010, Wildcat Diversion Dam and Wildcat Canal were removed.
- In 2013, a fish barrier weir on Baldwin Creek was constructed.
- From 2010 – 2012, fish screens and fish ladders were constructed on North Battle Creek Feeder and Eagle Canyon Diversion Dams; and, follow-up work occurred through 2018. Facility testing occurred in 2018 and 2019. Minimum gate opening testing/data collection occurred in September 2019. Acceptance and transfer (to PG&E) is planned to be completed in January 2021, if the gate opening issue is resolved.

Phase 1B – This phase consists of construction of Inskip Powerhouse tailrace and an approximate mile-long bypass pipeline and chute system to Coleman Canal (to prevent mixing of North Fork Battle Creek waters with South Fork Battle Creek waters).

- In 2012, Inskip Powerhouse tailrace and bypass were constructed; and, follow-up work occurred through 2015. Facility testing occurred in 2016 and 2017, and facility acceptance and transfer (to PG&E) occurred in 2019.

Phase 2 – This phase consists of removal of South Diversion Dam, South Canal, Soap Creek Feeder Diversion Dam, Lower Ripley Creek Feeder Diversion Dam, and Coleman Diversion Dam; construction of a South Powerhouse tailrace tunnel connector to Inskip Canal; and, construction of a fish screen and fish ladder on Inskip Diversion Dam.

- South Dam and Canal Removal (+) Contract:
 - Removal of South Diversion Dam, South Canal, Soap Creek Feeder Diversion Dam and Lower Ripley Creek Feeder Diversion Dam
 - Final design was completed in 2018 and was updated in October 2020 to include Lower Ripley Creek Diversion Dam; contract award is planned for November 2022; and, construction completion is planned for November 2024.
- Coleman Dam Removal Contract:
 - Removal of Coleman Diversion Dam
 - Final design is planned to be completed in 2022; and, contract award may occur in 2023.
- Hydropower Facilities Modifications (HFM) - Stage 2, Part 1 Contract:
 - Construction of a South Powerhouse tailrace connector tunnel to Inskip Canal (including a mechanically stabilized earth dike), and an access road to Inskip Diversion Dam
 - Final design was completed in 2018; and, contract award is to be determined.
- HFM - Stage 2, Part 2 Contract:
 - Construction of fish screen and fish ladder on Inskip Diversion Dam
 - Draft design was completed in 2018; final design is to be determined; and, contract award is to be determined.

PG&E'S INTENT TO NOT RENEW FERC LICENSE IN 2026:

In late July 2018, PG&E informed the Restoration Project Partners that they do not intend to renew their Battle Creek Hydroelectric Project FERC License in 2026.

In January 2019, PG&E conveyed a Battle Creek Hydroelectric Project summary and decommissioning cost estimate to the Agency Partners for their review. Based on this information, the Agency Partners prepared an alternatives evaluation report to inform Agency management decision-makers about potential future Hydroelectric Project configurations, and estimated costs; generation impacts; and in-stream flows impacts for each configuration; and the Coleman National Fish Hatchery investment needs for each configuration.

During a March 19, 2019 Agency – PG&E Partnership Management Meeting, PG&E indicated that they 1) plan to repair or breach Inskip Diversion Dam; and, 2) will withdraw their 2015 Phase 2 FERC license amendment application and could submit a new Phase 2 license amendment application, consisting of removal work only.

On April 2, 2019, PG&E withdrew their 2015 Phase 2 license amendment application.

At a July 24, 2019 Agency – PG&E Partnership Management Meeting, the Agency Managers conveyed to PG&E that based on an alternatives evaluation, the Battle Creek Hydroelectric Project is not likely to be economically viable under any alternative; none of the Agencies can take over the hydroelectric project; and the Agencies think that the hydroelectric project is heading towards decommissioning. PG&E and the Agencies agreed to move forward with Phase 2 removal work only.

In November 2020, PG&E plans to complete a draft new Phase 2 FERC license amendment application for removal work only. A new Phase 2 license amendment application triggers the need for a new Phase 2 Water Quality Certification and a new Phase 2 Biological Opinion. The Phase 2 contract to remove South Diversion Dam, South Canal, Soap Creek Feeder Diversion Dam and Lower Ripley Creek Feeder Diversion Dam is planned to be awarded in November 2022.

ADAPTIVE MANAGEMENT: Adaptive management will be implemented beyond Restoration Project construction completion.

- **Restoration Project Adaptive Management:** The Restoration Project Adaptive Management Plan (AMP) was completed in 2004. It's goal is to implement specific actions to protect, restore, enhance and monitor salmonid habitat associated with the Battle Creek Hydroelectric Project within the Restoration Project area to guard against false attraction of adult migrants, and ensure that Chinook salmon and steelhead are able to fully access and utilize available habitat in a manner that benefits all life stages and thereby maximizes natural productions, fully utilizing ecosystem carrying capacity.
- **Coleman National Fish Hatchery (CNFH) Adaptive Management:** CNFH is located downstream of the Restoration Project area on the main stem of Battle Creek. CNFH is funded by Reclamation, owned and operated by the USFWS, and guided by USFWS policy and other state and federal laws. The CNFH AMP, completed in November 2016, includes solutions and processes to support CNFH programs, operations and infrastructure so that hatchery mitigation goals and objectives are achieved and there is compatibility with the Restoration Project.
- **Integrated Adaptive Management in Battle Creek:** The Restoration Project 1999 MOU Partners; Reclamation, USFWS, NMFS, CDFW, and PG&E are committed to coordinating CNFH and Restoration Project AMP efforts. This commitment is memorialized in the *Memorandum of Understanding Regarding Integrated Adaptive Management of the Battle Creek Salmon and Steelhead Restoration Project and Coleman National Fish Hatchery*, signed by the Project Partners in November 2016 and included (as an appendix) in the CNFH AMP.

PROJECT FUNDING:

Funding for the Restoration Project has been provided by federal and state agencies and through private donations. PG&E is contributing to the Restoration Project in the form of foregone energy generation, voluntarily pursuing amendments to the Battle Creek Hydroelectric Project's FERC license, and transferring water rights to CDFW for instream purposes.

As indicated in the following table, the total project funding to date is \$163.35 million, and Reclamation estimates that an additional \$2 million is needed to complete the project with Phase 2 removal work only.

Funding Type & Source	Funding in 1999	Funding to Date	Balance (Nov. 2020)
Total Federal Funding	\$28 million (total)	\$65.75 million (total)	\$1.5 million
<i>CALFED Early Ecosystem Restoration</i>	\$28 million (to Reclamation)	\$32 million (to Reclamation)	
<i>Federal Funds (Non – Restoration Project Funding for interim flow costs)</i>		\$2.6 million (to Reclamation)	
<i>American Recovery and Reinvestment Act</i>		\$12.8 million (to Reclamation)	
<i>FY 2015 Federal Funds</i>		\$2.3 million (to Reclamation)	
<i>FY 2016 Federal Funds</i>		\$6.5 million (to Reclamation)	
<i>FY 2017 Federal Funds</i>		\$3.1 million (to Reclamation)	
<i>FY 2018 Federal Funds</i>		\$1.3 million (to Reclamation)	
<i>FY 2019 Federal Funds</i>		\$1.3 million (to Reclamation)	
<i>FY 2020 Federal Funds</i>		\$2.35 million (to Reclamation)	
<i>FY 2021 Federal Funds</i>		\$1.5 million (to Reclamation)	
Total Federal & State Funding		\$6.5 million (total)	
<i>Iron Mountain Mine Trustee Council</i>		\$6.5 million (to Reclamation)	
Total State Funding		\$58.2 million (total)	\$11 million
<i>California Department of Fish & Wildlife (CDFW)</i>		\$3.4 million (to USFWS) \$26.8 million (to Reclamation)	
<i>California Wildlife Conservation Board</i>		\$10 million (to Reclamation)	
<i>Benicia Bridge Mitigation [via California Department of Transportation (CALTRANS)]</i>		\$4.5 million (to Reclamation)	
<i>Richmond San Rafael Bridge Mitigation (via CALTRANS)</i>		\$1.5 million (to Reclamation)	
<i>Delta Fish Agreement Amendment via Department of Water Resources</i>		\$5.3 million (to CDFW) \$6.7 million (to Reclamation)	
Total State and Federal Public Funding		\$130.45 million	\$12.5 million
Total Private Funding	\$23.6 million (total)	\$32.9 million (total)	\$23.6 million
<i>PG&E (Foregone Power from 1999 MOU)</i>	\$20.6 million	\$20.6 million	
<i>PG&E (Foregone power for interim flows)</i>		\$9.3 million	
<i>The Packard Foundation (via The Nature Conservancy)</i>	\$3.0 million	\$3 million	
Total Balance (Public and Private Funding)			\$36.1 million
Funding Totals: 1999 and to Date	\$51.6 million	\$163.35 million	
Estimated Additional Amount Needed		\$2 million	
Estimated Total Cost of Project (with Phase 2 Removal Work Only)		\$165.35 million	

**BATTLE CREEK SALMON & STEELHEAD RESTORATION
PROJECT**
'Working Draft' REMAINING CONSTRUCTION CONTRACTS SUMMARY
SCHEDULE
(November 2020)

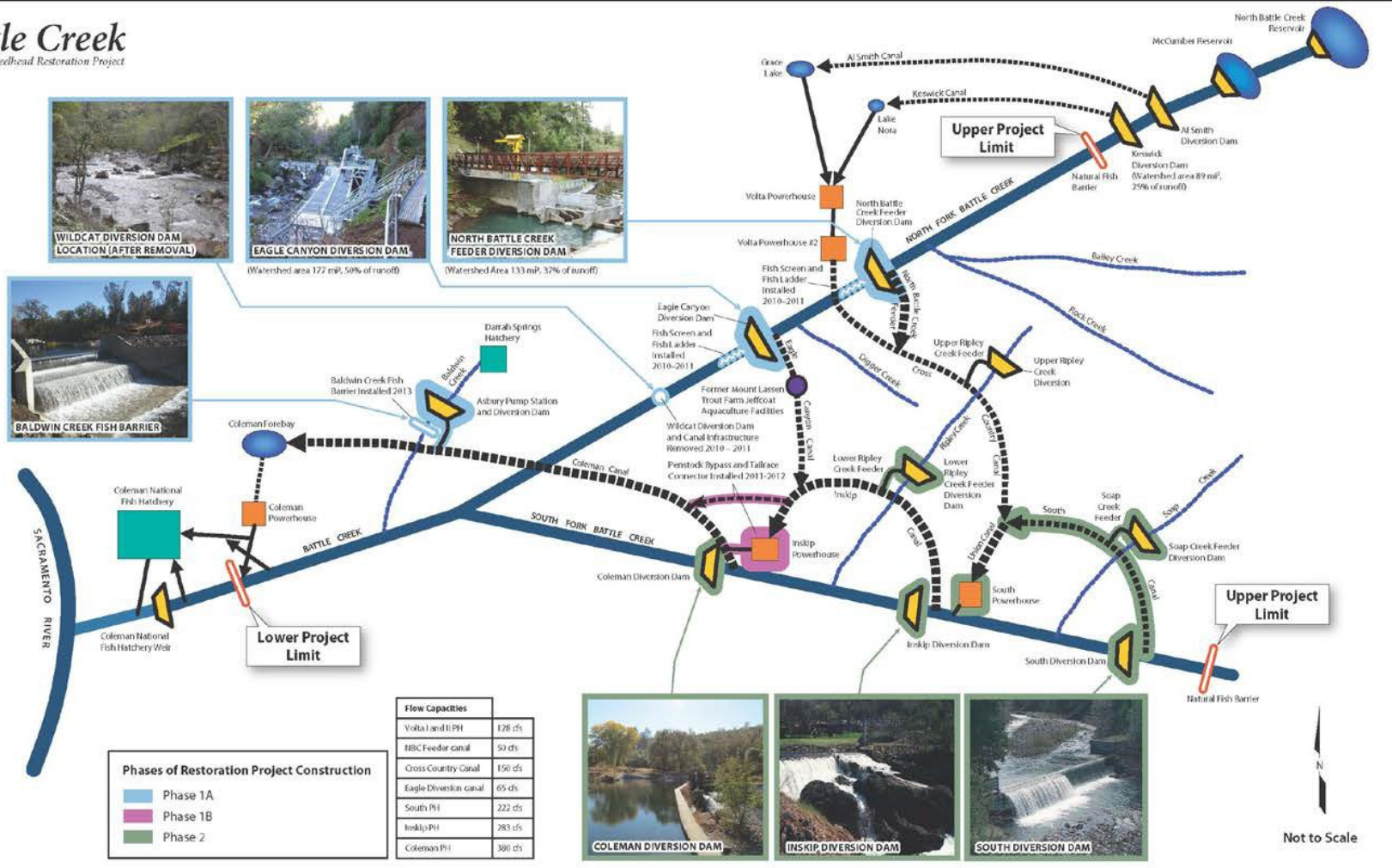
PHASE	CONSTRUCTION CONTRACT (OR ACTIVITY)	KEY PROJECT ELEMENT(S)	SPECB (FINAL DESIGN)	AWARD	ON-SITE CONSTRUCTION BEGINS	CONSTRUCTION COMPLETION (CONTRACT ENDS)	FACILITY TRANSFER	CONSTRUCTION CLOSE-OUT
1A	NFSL Completion Contract (Civil, Mechanical, and Electrical Design Changes)	<ul style="list-style-type: none"> Implementation of civil, mechanical & electrical related fish screen & ladder design changes, based on hydraulic evaluations and facility operation/functionality needs 	Aug. 2015	July 2016	April 2017	Dec. 2018	Jan. 2021	June 2021
2	South Dam and Canal Removal (including removal of Soap Creek and Lower Ripley Creek Dams)	<ul style="list-style-type: none"> South Diversion Dam and South Canal Removal Soap Creek Feeder Diversion Dam Removal Lower Ripley Creek Feeder Diversion Dam Removal 	SpecB – Feb. 2018 SpecB1 – Oct. 2020	Nov. 2022	Feb./Mar. 2023 (Clearing) May 2023 (Construction)	Nov. 2024	Feb. 2025	May 2025
2	Coleman Dam Removal	<ul style="list-style-type: none"> Coleman Dam Removal 	2022	2023	Late 2023/ Early 2024	2024	2025	2025
2	Hydropower Facility Modifications – Stage 2 (Part 1)	<ul style="list-style-type: none"> South PH Tailrace Connector Tunnel, including dike Inskip Diversion Dam Access Road 	Feb. 2018	TBD*	TBD	TBD	TBD	TBD
2	Hydropower Facility Modifications – Stage 2 (Part 2)	<ul style="list-style-type: none"> Inskip Screen and Ladder 	Draft Spec – 2018 SpecB – TBD	TBD	TBD	TBD	TBD	TBD

*TBD – To Be Determined

Environmental Work Windows	Timeframes
Migratory Bird Clearing (Vegetation Removal)	September 1/October 1 – January 31/ February 28 (Note: If vegetation cannot be cleared prior to this timeframe, additional mitigation measures will be implemented).
Salmon/Steelhead Instream Work	<ul style="list-style-type: none"> Beginning as early as May 1 (stream conditions permitting) until November 1: South Diversion/South Canal Site, Soap Creek Feeder Diversion Dam Site, Inskip Diversion Dam/South Powerhouse Site, Lower Ripley Creek Feeder Diversion Dam Site, North Battle Creek Feeder Diversion Dam Site and Asbury/Baldwin Creek. Beginning as early as May 1 (stream conditions permitting) until September 1: Wildcat Diversion Dam/Wildcat Canal Site and Coleman Diversion Dam/Inskip Powerhouse Site Beginning as early as May 1 (stream conditions permitting) until September 1: Eagle Canyon Diversion Dam, Work <i>inclusive</i> of percussion impacts (e.g., blasting) Beginning as early as May 1 (stream conditions permitting) until November 1: Eagle Canyon Diversion Dam/Eagle Canyon Canal, Work <i>exclusive</i> of percussion impacts (e.g., blasting)
Bat Gate Installation	September 1 – October 30 (To avoid bat maternity season and hibernation period)

Battle Creek

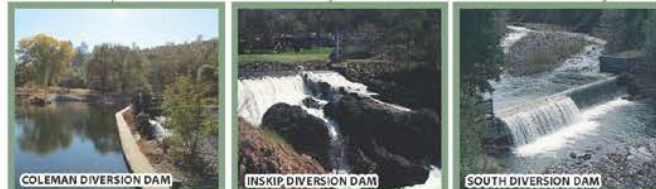
Salmon and Steelhead Restoration Project



Phases of Restoration Project Construction

- Phase 1A
- Phase 1B
- Phase 2

Flow Capacities	
Volta Landfill PH	128 cfs
NBC Feeder canal	50 cfs
Cross Country Canal	150 cfs
Eagle Diversion canal	65 cfs
South PH	222 cfs
Inskip PH	783 cfs
Coleman PH	390 cfs



Battle Creek Salmon and Steelhead Restoration Project

Battle Creek Salmon and Steelhead Restoration Project
 Post Construction

