

Battle Creek Salmon and Steelhead Restoration Project

November 2022

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 diversions 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 to 2012, fish screen and fish ladder facilities were constructed on North Battle Creek Feeder Diversion Dam and Eagle Canyon Diversion Dam; and modifications to the facilities (to add automation, and to improve canal diversions, fish screening, fish passage, safety, and access) were completed in 2018. The facilities were tested from 2018 to 2019, and in 2019, newer fish criteria was brought forth regarding a minimum canal gate opening height. In 2020, the Restoration Project partners began developing feasible options to incorporate the criteria, and in February 2021, the partners agreed to explore an option to achieve a 6-inch canal gate opening height. Since then, technical efforts have been ongoing to address this issue. In April 2022, NMFS signed a memo indicating that incidental take for a 6-inch gate opening height operating scenario is covered under the Phase 1A Biological Opinion and Incidental Take Statement. The goal is to have the facilities accepted and transferred to PG&E by early 2023.

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 May 2024; construction completion is planned for May 2026.
- Coleman Dam Removal Contract:
 - Removal of Coleman Diversion Dam and Coleman Canal Diversion Closure
 - Final design is planned to be completed in 2023; contract award is planned for 2025; and construction completion is planned for 2027.
- 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 on hold.
- HFM - Stage 2, Part 2 Contract:
 - Construction of fish screen and fish ladder on Inskip Diversion Dam
 - Draft design was completed in 2018 and updated in October 2020; final design is on hold; and contract award is on hold. Note: Due to ongoing erosion issues, PG&E now plans to remove Inskip Diversion Dam around 2023.

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 March 2021, PG&E completed a draft new Phase 2 FERC license amendment application for removal work only and the agencies reviewed the draft. On Sept 9, 2022, PG&E filed the application with FERC. On Oct. 3, 2022, FERC issued a notice of the application and requested comments, protests, and motions to intervene by Nov. 2, 2022. 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 currently planned to be awarded in May 2024.

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.

| Funding Type & Source | Funding in 1999 | Funding to Date | Balance (Nov. 2022) |
|---|--------------------------------------|---|--------------------------------|
| Total Federal Funding | \$28 million (total) | \$68.75 million (total) | \$1.4 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) | |
| <i>FY 2022 Federal Funds</i> | | \$1.5 million (to Reclamation) | |
| <i>FY 2023 Federal</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) | \$12.4 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 | | \$133.45 million | \$13.8 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) | | | \$37.4 million |
| Funding Totals: 1999 and to Date | \$51.6 million | \$166.35 million | |
| Estimated Additional Amount Needed | | \$ 0 million | |

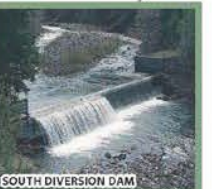
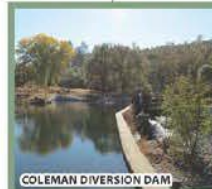
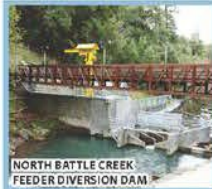
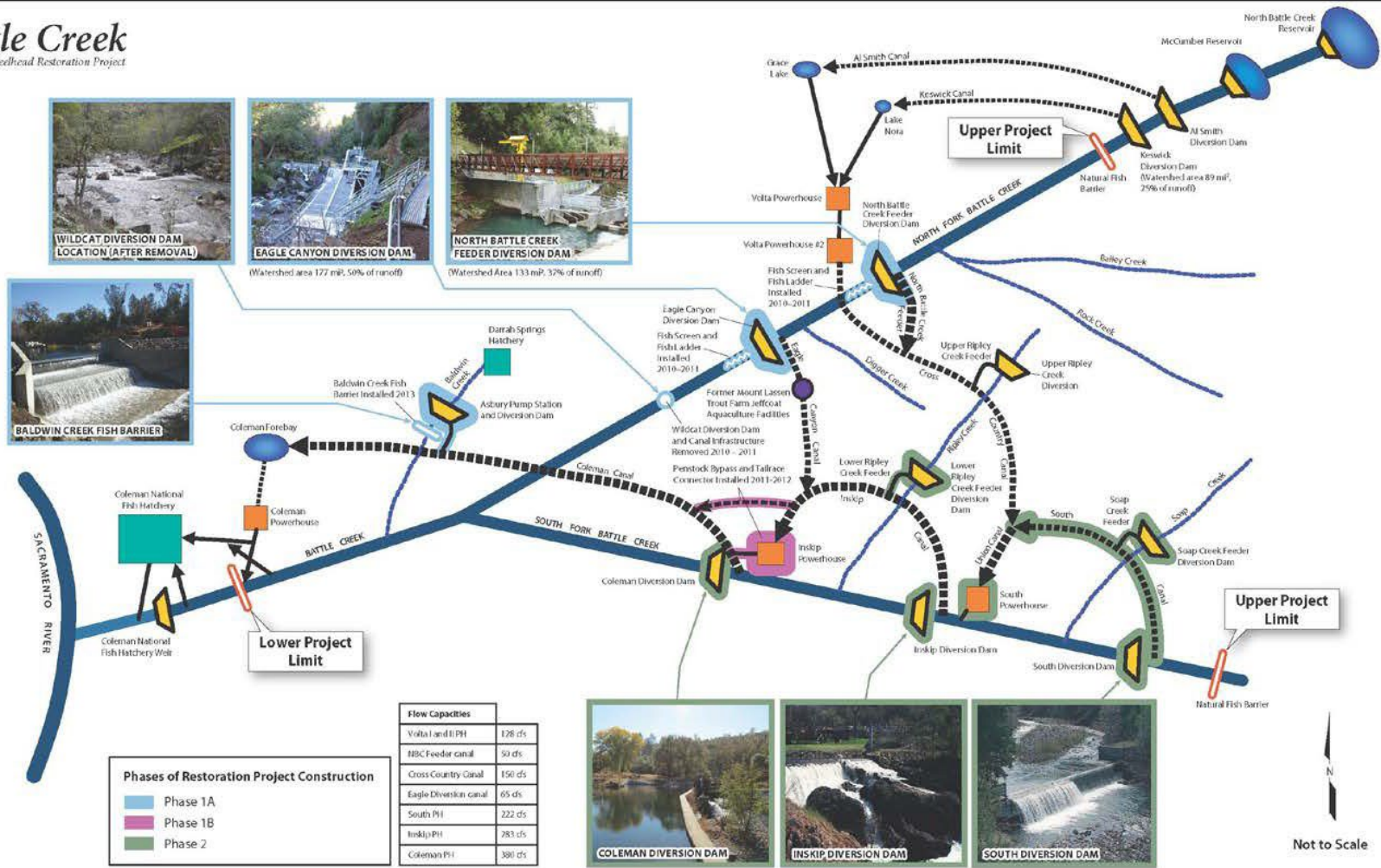
**BATTLE CREEK SALMON & STEELHEAD RESTORATION
PROJECT**
**'Working Draft' REMAINING CONSTRUCTION CONTRACTS SUMMARY
SCHEDULE**
(November 2022)

| 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 | Early 2023 | June 2023 |
| 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 | SpecB2 – Oct. 2020 | May 2024 | Jan. 2025 | May 2026 | N/A | Sept. 2026 |
| 2 | Coleman Dam Removal | <ul style="list-style-type: none"> Coleman Diversion Dam Removal Coleman Canal Diversion Closure | 2023 | 2025 | 2026 | 2027 | N/A | 2027 |
| 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 | On Hold | On Hold | On Hold | On Hold | On Hold |
| 2 | Hydropower Facility Modifications – Stage 2 (Part 2) | <ul style="list-style-type: none"> Inskip Screen and Ladder | Draft Spec 2 – Oct. 2020 SpecB - On Hold | On Hold | On Hold | On Hold | On Hold | On Hold |

| 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 Land I/PI | 128 cfs |
| NBC Feeder canal | 97 cfs |
| Cross Country Canal | 150 cfs |
| Eagle Diversion canal | 65 cfs |
| South PI | 222 cfs |
| Inskip PI | 783 cfs |
| Coleman PI | 390 cfs |

Battle Creek Salmon and Steelhead Restoration Project

Battle Creek Salmon and Steelhead Restoration Project
Post Construction

