TECHNICAL SERVICE CENTER
Denver, Colorado

Battle Creek Dam Removals
Reconnaissance Report

Battle Creek Project, California

Prepared by
Technical Service Center

U.S. Department of the Interior
Bureau of Reclamation

January 1999

RECLAMATION'S MISSION

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

DEPARTMENT OF THE INTERIOR'S MISSION

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally-owned public lands and natural resources. This includes fostering wise use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. Administration.

APPROVAL SIGNATURES

This reconnaissance-level report was prepared by the following persons in the Technical Service Center (TSC) of the Bureau of Reclamation:

_____
Thomas E. Hepler, Waterways and Concrete Dams Group

_____
Blair P. Greimann, Sedimentation and River Hydraulics Group

_____
William Holbert, Construction Management Group

_____
Daniel Maag, Engineering Services Group

Peer review was performed by the following TSC personnel:

_____
John LaBoon, Waterways and Concrete Dams Group

_____
Cassie Klumpp, Sedimentation and River Hydraulics Group

_____
Mike Rasmussen, Construction Management Group

ACKNOWLEDGMENTS

The following persons contributed information for this report:

U.S. Bureau of Reclamation

Ed Solbos (Sacramento, CA)	(916) 978-5302
Jim Goodwin (Sacramento, CA)	(916) 978-5316

U.S. Fish and Wildlife Service

Steve Hirsch (Sacramento, CA)	(916) 650-2622

Federal Energy Regulatory Commission

Gilbert Avila (San Francisco, CA)	(415) 356-5333
Kirk Cover (Washington, D.C.)	(202) 219-2664

California Department of Water Resources

Brian Stewart (Red Bluff, CA)	(530) 529-7340

California Department of Fish and Game

Harry Rectenwald (Red Bluff, CA)	(530) 225-2368
Phil Warner (Red Bluff, CA)	(530) 225-2307

Pacific Gas and Electric Company

Jean Oscamou (Red Bluff, CA)	(530) 896-4405
Gene Terry (Manton, CA)	(530) 347-7559

Resources Management International

Kreg McCollum (Orem, UT)	(801) 226-2811

Battle Creek Dam Removals
Reconnaissance Report

TABLE OF CONTENTS

Page

Approval Signatures

Acknowledgments

A. Introduction 1

B. Project Objectives 1

C. Existing Project Features 2

1. Eagle Canyon Diversion Dam 2

2. Wildcat Diversion Dam 4

3. Coleman Diversion Dam 5

D. Streamflow Diversion Requirements and Construction Sequence 7

E. Proposed Plans for Dam Removal 10

1. Wildcat Diversion Dam 10
a. Site access and mobilization 10
b. Streamflow diversion 11
c. Structure removal 11
d. Site restoration 12

2. Eagle Canyon Diversion Dam 13
a. Site access and mobilization 13
b. Streamflow diversion 13
c. Structure removal 13
d. Site restoration 15

3. Coleman Diversion Dam 15
a. Site access and mobilization 15
b. Streamflow diversion 15
c. Structure removal 16
d. Site restoration 17

F. Waste Disposal 17

1. Construction Debris 17

2. Hazardous Waste 18

G. Sediment Management 18

1. General 18

Page

2. River Reach Descriptions 18

3. Analysis 19

4. Conclusions 23

H. Other Environmental Considerations 23

1. Noise Abatement 23

2. Air Quality 23

3. Water Quality 23

4. Public Health and Safety 24

5. Traffic 24

6. Species of Special Concern 24

7. Cultural Resources 25

8. Socioeconomics 25

I. Project Schedule and Estimated Costs 25

1. Development of Construction Logic and Durations 25

2. Field Cost Estimates for Dam Removal 28
   a. Wildcat Diversion Dam 28
   b. Eagle Canyon Diversion Dam 28
   c. Coleman Diversion Dam 28

3. Design and Construction Management Costs 29

J. Conclusions 29

K. Additional Investigations for Future Studies 30

References 31

Appendix A - Project Drawings

1. Project Location Map (from Rand McNally Road Atlas)
2. Project Vicinity Map (from USGS Map - Shingletown, California)
3. Battle Creek Project Schematic
4. Exhibit L-18, Eagle Canyon Diversion Dam
5. Exhibit L-19, Wildcat and Coleman Diversion Dams (1968)
6. Exhibit L-20, Wildcat and Coleman Diversion Dams (1989)

Appendix B - Project Photographs

Eagle Canyon Diversion Dam and Canal

1. Existing dam and associated facilities
2. 4- by 10-foot radial gate sluiceway
3. 3.5- by 6-foot canal slide gate
4. Canal wall and gate winch block
5. Channel section at dam
6. Metal flume section and stairway
7. Metal flume section side view
8. Small flume section for spring flows

Wildcat Diversion Dam and Canal

9. Existing dam and associated facilities
10. Right abutment canal intake and access footbridge in foreground
11. Pipeline and handrails
12. Nonoverflow section and fish ladder structure
13. Pipeline crossing North Fork
14. Pipeline with handrails, along North Fork

Coleman Diversion Dam and Canal

15. Existing dam and associated facilities
16. Diversion dam from right abutment
17. Left abutment head wall, training wall, and original fish ladder
18. 14- by 8-foot radial gate sluiceway and fish ladder
19. Masonry wall, looking upstream
20. Masonry wall, looking downstream
21. Gravel bar in Coleman reservoir

Appendix C - Construction Schedules

Appendix D - Cost Estimates

1. Reconnaissance Estimates - Wildcat Dam Removal

2. Reconnaissance Estimates - Eagle Canyon Dam Removal

3. Reconnaissance Estimates - Coleman Dam Removal

Appendix E - Conceptual Photographs With Dams Removed

1. Wildcat Dam (existing conditions)
2. Wildcat damsite after dam removal.
3. Eagle Canyon Dam (existing conditions)
4. Eagle Canyon damsite after dam removal
5. Coleman Dam (existing conditions)
6. Coleman damsite after dam removal