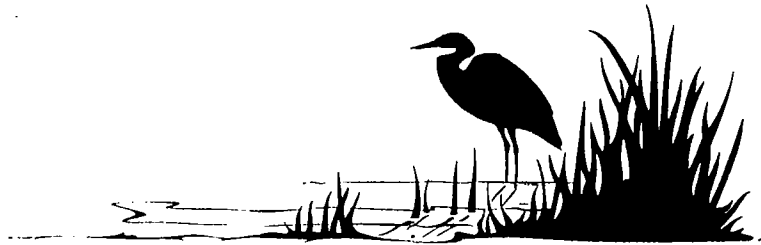


**Lower Stony Creek  
Fish, Wildlife and Water Use  
Management Plan**

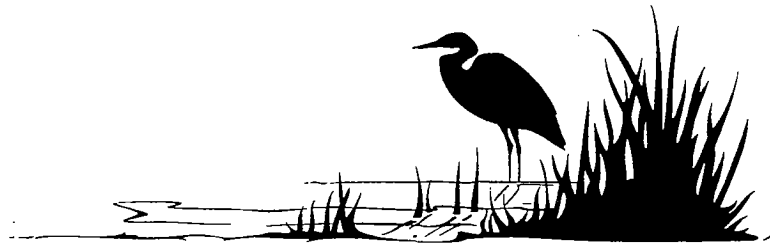


**Prepared by**

**U.S. Department of Interior  
Bureau of Reclamation Mid-Pacific Region  
Northern California Area Office  
Shasta Lake, California**

**November 13, 1998**

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Fish, Wildlife and Water Use  
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# **Lower Stony Creek Fish, Wildlife, and Water Use Management Plan**

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## List of Acronyms

AFRP	Anadromous Fish Restoration Program
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
cfs	cubic feet per second
CHO	Constant Head Orifice
COE	U.S. Army Corps of Engineers
COMR	California Office of Mine Reclamation
CSPA	California Sportfishing Protection Alliance
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
DFG	California Department of Fish and Game
DMG	California Division of Mines and Geology
DWR	California Department of Water Resources
EA	Environmental Assessment
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Federal Endangered Species Act
FONSI	Finding of No Significant Impacts
GCID	Glenn-Colusa Irrigation District
IFIM	Instream Flow Incremental Modeling
IS	Initial Study
MOU	Memorandum of Understanding
mph	miles per hour
msl	mean sea level
NDDDB	Natural Diversity Data Base
NEPA	National Environmental Protection Act
NMFS	National Marine and Fisheries Service
NRCS	U.S. Department of Agriculture, Natural Resources Conservation Service
OUWUA	Orland Unit Water Users Association
RBDD	Red Bluff Diversion Dam
RM	River Mile
RWQCB	Regional Water Quality Control Board
SMARA	U.S. Surface Mining and Reclamation Act of 1975
SWRCB	State Water Resources Control Board
TCC	Tehama-Colusa Canal
TCCA	Tehama-Colusa Canal Authority
TCD	Temperature Control Device
Reclamation	U.S. Bureau of Reclamation

USFWS  
USGS  
VELB

U.S. Fish and Wildlife Service  
U.S. Geological Survey  
Valley Elderberry Longhorn Beetle

## Executive Summary

The preparation of the Lower Stony Creek Fish, Wildlife and Water Use Management Plan (Plan) by the Bureau of Reclamation (Reclamation) is in response to a condition in a State Water Resource Control Board (SWRCB) Order dated April 1, 1996. The SWRCB issued the Order following Reclamation's petition to add a point of diversion to the Black Butte Reservoir diversion permit No. 13776.

Diversions from Stony Creek to storage at Black Butte Reservoir under Permit 13776 began in 1963. Under the SWRCB Order dated April 1, 1996, water released from storage at Black Butte Reservoir into lower Stony Creek could now be diverted into the Tehama Colusa Canal for irrigation deliveries.

In consideration of a protest by the California Sportfishing Protection Alliance (CSPA) to the addition of a point of diversion, the SWRCB issued the Order with a condition for Reclamation to submit a Plan which addresses the long-term management of lower Stony Creek including the restoration of fish and wildlife resources. The condition in the Order stated the Plan was to be submitted by December 15, 1998, and be prepared with the advice and assistance of a Task Force in order for the petition to be approved.

The Plan has two main goals:

- (1) To determine what actions can be taken by local initiative to protect, conserve and enhance important and sensitive resources in lower Stony Creek. These actions would be provided in the Plan as recommendations to the responsible entities for consideration and would attempt to address the Task Force comments, concerns and conflicts regarding operations of Black Butte Reservoir and conditions along lower Stony Creek. The recommendations would be provided as information to the SWRCB;
- (2) To determine what actions Reclamation can undertake from its current management and water operations below Black Butte Dam for the beneficial, efficient, and reasonable use of water to enhance fish and wildlife resources, in compliance with all applicable laws, with achievable implementation policies and programs.

Lower Stony Creek is a fluctuating, unpredictable waterway due to the natural hydrology of the stream. Black Butte Dam and Reservoir's primary authorization is for flood control, and releases which occur from approximately November through June are controlled by the Corps of Engineers (COE). Releases are determined by inflow conditions and COE's current flood control diagram. The flood control releases have contributed to channel pattern and resource changes in the creek from pre-dam times, especially in the upper reaches. (Reclamation manages) releases from Black Butte during the irrigation season.

Four main objectives emerged as a result of Task Force input. The objectives of the Plan are:

- (1) To eradicate tamarix and arundo (two invasive weed species) in the stream channel and adjacent areas. Eradication or control of these weeds would improve the stream bed by reducing side channeling and support a meandering stream system, thereby enhancing the riparian habitat for all resident native fish and wildlife species.
- (2) To stabilize the banks for erosion control and protection of desirable vegetation and to improve the stream channel for more desirable flow direction.
- (3) To reestablish riparian habitat through desirable vegetative plantings.
- (4) To assess the need and ability to modify current water releases in a reasonable, beneficial, and legal manner, for riparian habitat enhancement, and the benefit of associated fish and wildlife. This objective was expanded to include a 5th objective where Reclamation would determine available water on a yearly basis to aid in the assessment of water release modifications.

Reclamation supports, but lacks the authority to independently implement, the first three objectives, which address the first goal of the Plan. The first three objectives of the Plan require landowner consent and may be implemented consistent with the future Stony Creek Vision and Stewardship Plan sponsored by the Glenn County Planning Department, or by voluntary individual landowner effort. The Stony Creek Vision and Stewardship Plan, when developed, is expected to identify specific voluntary actions to be taken by various entities such as landowners and local and state agencies to address identified resource concerns in specific sections of lower Stony Creek. Implementation is expected to be initiated pending sufficient funding by grants, donations, cost-share sources, etc. Reclamation will contribute to enhancement efforts where appropriate, with the cooperation of landowners and other responsible parties.

Reclamation lacks the complete authority to independently implement the second goal, and the fourth objective, of the Plan. The Task Force did not reach agreement on what changes to flow releases should be made from existing conditions, to benefit native resident fish and wildlife. There was disagreement and speculation regarding the applicability and appropriateness of existing resource data. Before an informed decision can be made regarding a change to existing flow releases for the benefit of fish and wildlife resources, and to avoid any unnecessary negative impacts, a better understanding of the resource, and additional data, is needed.

In connection with objective #4, and in an attempt to promote learning and understanding, Reclamation proposes, within its authorization, to pursue the following independently of the Task Force process, providing funding is obtained and environmental compliance activities are completed:

To initiate a three-year monitoring study at legal access points on lower Stony Creek to



collect resource data, document changes in physical and biological processes to clarify disputed data, and to compare pre- and post-Plan success, when appropriate. Input from agencies such as National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS) and the Department of Fish and Game (DFG), as well as the stakeholders will be integrated into the objectives of the study to avoid duplication of effort and to maximize the credibility of the resulting data. The data from the study will be used to assess the need to modify current water releases for beneficial uses.

Reclamation will continue with current operational water releases until results of the study indicate a change could be made to benefit resident fish and wildlife resources. Should listed or other anadromous fish be found as a result of the study, Reclamation will support the Anadromous Fish Restoration Program by consulting with and obtaining input from NMFS, USFWS and DFG concerning fishery needs, and with the Orland Unit Water Users, the Tehama-Colusa Canal Authority, and the Federal Water Master concerning the logistics and impacts of meeting both fishery and agricultural needs. Pending consultation, Reclamation will manage, with the cooperation of the COE and the water users, available water in a manner which minimizes the risk of a taking of a listed species, if found, while maintaining managerial options for longer term actions. Pursuit of objective #4 may coincide, precede, or follow the first three objectives depending on the results of the monitoring study and the timeline developed for implementation of the voluntary riparian enhancement activities.

Monitoring fish and wildlife habitat and their populations, as the channel responds to changes in recommended flow releases, when they occur, would be the ultimate measure of the success of the recommendations contained in the Plan. It is hoped the locally initiated riparian habitat enhancement activities will be complemented by recommended flows, when made.

Current releases include a minimum of 30 cubic feet per second (cfs) at Black Butte Dam year-round, and passage of 40 cfs below the Constant Head Orifice at the Tehama Colusa Canal during rediversion. Consultations regarding recommended additional flows, if necessary, would take into account a yearly assessment of Central Valley Project water available at Black Butte Reservoir after satisfaction of contractual obligations. Any resulting releases would take an adaptive management approach based on annual conditions and would imitate historical flows as much as possible.

In addition to, and as a result of, the monitoring study Reclamation would assess the need for providing suitable substrate below Black Butte Dam, fish screening on the CHO structure and the North Canal, and a passage structure at the North Diversion Dam in consultation with NMFS, USFWS, DFG, and the appropriate stakeholders, and based on the Central Valley Project Improvement Act priorities for the Central Valley.

Riparian corridor enhancement activities initiated and implemented by local effort, combined with the monitoring study initiated by Reclamation would be the first step in the long-term management of lower Stony Creek. The stakeholders will be kept informed and coordination will

be maintained regarding any significant changes to operations or conditions which update the Plan and which reflect adaptive management modifications.

## Chapter 1

### Introduction

#### 1.1 Background

Stony Creek is the second largest tributary on the western side of the Sacramento Valley of Northern California, with seasonal flows at the confluence of the Sacramento River. It provides water for both the Orland Project and the Central Valley Project (CVP). The CVP water is stored in Black Butte Reservoir, a flood control facility controlled by the U.S. Army Corps of Engineers (COE), located 8 miles west of the city of Orland. Recently, CVP stored water in Black Butte Reservoir has been rediverted out of Stony Creek by the Bureau of Reclamation (Reclamation) for irrigation deliveries. In order to redivert water, Reclamation filed a (change petition) with the State Water Resource Control Board (SWRCB) to add a point of rediversion to their existing Black Butte Reservoir diversion permit, No. >13776 (Permit). The petition was protested by several groups, including the California Sportfishing Protection Alliance (CSPA), claiming environmental, fish, and wildlife resource concerns. After considering the protest by CSPA (other protests were resolved), the SWRCB issued an Order with a condition requiring Reclamation to submit “a long-term fish, wildlife, and water use management plan for the portion of Stony Creek from Black Butte Reservoir downstream to the confluence of Stony Creek with the Sacramento River, as prepared with the advice and assistance of the Stony Creek Task Force.” (Appendix A, April 1, 1996, SWRCB, Division of Water Rights Order, item number 10). This condition as stated in the Order was to “facilitate the long-term management of lower Stony Creek including the restoration of fish and wildlife resources...”

#### 1.2 Purpose of Plan

To address the condition of the Permit the Lower Stony Creek Fish, Wildlife, and Water Use Management Plan (Plan) was developed. The Plan describes existing conditions and current practices in lower Stony Creek and attempts to meet the intent of the condition of the Permit by determining the availability of water for resource enhancement purposes and by providing recommendations for habitat enhancement activities. This Plan is not intended to be a watershed management plan, but is limited in scope to address the condition of the Permit. This Plan replaces the Final Draft completed March 18, 1996, and subsequent revisions dated July 24, 1998, and September 15, 1998, updating data and encompassing comments received. The management objectives which Reclamation will undertake will be adaptive in nature and will address those issues within the scope of Reclamation’s authority. Additional objectives, provided as recommendations to local entities, which address other issues and concerns identified by the Task Force, are also included as information for the SWRCB. This information will demonstrate that any actions taken for the benefit of fish and

wildlife are in "accordance with the law and in the interest of the public welfare to protect public trust uses..." (Appendix A, item 17).

The Plan was developed by Reclamation in an effort to give consideration to the interests, issues and concerns submitted by the Task Force and other interested individuals. However, the recommendations of the Plan are not compulsory upon any members or nonmembers of the multi-entity Task Force that contributed to this Plan.

**The expected outcome (goals) of the Plan is to:**

**A. Determine what actions can be taken by local initiative to protect, conserve and enhance important and sensitive resources in lower Stony Creek. These actions would be provided as recommendations to the local entities for consideration and would attempt to address the Task Force comments, concerns, and conflicts regarding operations of Black Butte Reservoir and conditions along lower Stony Creek. The recommendations will be provided to the SWRCB as information.**

**B. Determine what actions Reclamation can undertake from its current management and water operations below Black Butte Dam for the beneficial, efficient, and reasonable use of water to enhance fish and wildlife resources, in compliance with all applicable laws, acts, and doctrines, with achievable implementation policies and programs;**

*once that's done, it can't be taken back*

### 1.3 Project History

The Stony Creek Watershed encompasses approximately 700 square miles from the Sacramento River near Hamilton City to near the crest of the Coastal Range, including portions of Tehama, Glenn, Lake, and Colusa Counties. Major tributaries in the watershed include Grindstone Creek and Little Stony Creek. Stony Creek, (an adjudicated stream) is impounded in two locations along its 56-mile length by Black Butte and Stony Gorge Dams. Little Stony Creek is impounded by East Park Dam. The operations of the three dams are interrelated. *Rainbow?*

Black Butte Reservoir was authorized as a Federal undertaking by Congress in the Flood Control Act of 1944 in accordance with House Document 649, 78th Congress, 2nd Session. Black Butte Reservoir was constructed by the COE in 1963, with a capacity of 160,000 acre-feet, to be used primarily for flood control purposes, and to the extent possible, for the storage of water for consumptive purposes.

The construction of the Tehama-Colusa Canal (TCC) began in 1965 for the distribution of water diverted from the Sacramento River at the Red Bluff Diversion Dam (RBDD). The TCC extends southerly from the RBDD and serves irrigation needs in Tehama, Glenn,

Colusa and northern Yolo Counties. The initial diversion capacity is approximately 2,530 cubic feet per second (cfs), diminishing to 1,700 cfs at the terminus. The TCC, which intersects with Stony Creek approximately 30 miles below RBDD and approximately 12 miles from the confluence of Stony Creek with the Sacramento River, is siphoned under Stony Creek. At this crossing, a CHO was constructed in 1974 to divert water from the TCC into Stony Creek for fishery enhancement purposes (to release 350 cfs of water from the TCC into Stony Creek to improve, as a goal, salmon habitat for approximately 15,000 restored salmon over a period of time, studied as a feature of the TCC construction project, U.S. Fish and Wildlife Service (USFWS), January 5, 1967), and for emergency overflow conditions in the canal. The fishery enhancement project was discontinued by agreement between the USFWS and Reclamation in 1975 (see Envisioned Salmonid Enhancement Project on Stony Creek, p.A-2-90, Appendix to Chapter 2).

Figure 1-1 shows the location of the CHO which can spill to Stony Creek, and the seasonal facilities, based on the fluctuating channel, which can redivert Black Butte water, via the CHO into the TCC.

Rediversions of CVP water stored in Black Butte Reservoir are currently critical for providing supplemental water during the planting and pre-harvest seasons (April 1 through May 15, and September 15 through October 29) when the RBDD is not operating. These re-diversions are accomplished by releasing water from Black Butte Reservoir into Stony Creek and then rediverting that water into the TCC through reverse operation of the CHO at the TCC's Stony Creek siphon.

For purposes of discussion in this Plan, the Stony Creek Watershed has been divided into the upper and lower sections. Descriptions of existing conditions in both the upper and lower watersheds are provided for reference, however this Plan will focus on the lower watershed which will be referred to as the "study area." The study area is defined as the portion of Stony Creek from below Black Butte Dam and Reservoir downstream to its confluence with the Sacramento River, a distance of 24.6 creek miles.

## **1.4 History of Rediversion Operations and Permit Process**

Since the listing of the Sacramento River winter-run chinook salmon under the Endangered Species Act in 1989, operations of the RBDD on the Sacramento River have been restricted such that gates are now raised between September 15 and May 15, precluding the ability to divert water by gravity into the TCC at the beginning and end of the irrigation season. Because irrigation waters are required in the early spring and late fall, Reclamation attempted to find an alternate water supply to the irrigated lands along the TCC. On December 24, 1992, Reclamation filed a petition with the SWRCB for an additional point of rediversion under Black Butte Reservoir Permit No. 13776, to redivert stored CVP water released from Black Butte Reservoir into Stony Creek and thence into the TCC at the CHO. Permit No. 13776 was originally issued to Reclamation on Nov 19, 1962, pursuant to

Application (18115 to divert and store water in Black Butte Reservoir.) The petition for change would enable Reclamation to use rediverted CVP water released from storage at Black Butte Reservoir as a supplement to water supplies from the Sacramento River when the gates at the RBDD are raised. CSPA filed a complaint with the SWRCB, protesting the approval of the petition claiming "the existing project and proposed diversion has the potential to have significant direct, indirect, and cumulative adverse impacts to the public trust resources..." of Stony Creek (Appendix B: Public Trust Protest....dated February 15, 1993, page 1 of 16).

*rediversion protest*

The rediversion as originally proposed would have occurred annually from April 1 through May 15, and September 15 through October 31. The ending operation date in October was adjusted in 1995 to October 29, to reflect the 45 day period limit as addressed in the Environmental Assessment. The proposed rediversion would assist in meeting Reclamation's contractual water obligations to TCC. Rediversion occurs by operating the CHO in reverse, placing a seasonal diversion dam in Stony Creek, which varies with the changes in the stream bed, to develop head, or enough water, to divert CVP stored water released from Black Butte Reservoir into the TCC.

In response to Reclamation's December 1992 petition, by an Order dated April 23, 1993, the SWRCB granted a Permit on a temporary basis for the period April 23, 1993, to April 23, 1994. However, the SWRCB advised that although the nature of the Stony Creek rediversion was thought to be temporary pending resolution of fish passage issues at the RBDD, a petition for a permanent point of rediversion would be the appropriate course of action for future requests. This advice was based on the uncertainty of timing of the RBDD fish passage solutions and subsequent uncertainty of rediversion requirements on Stony Creek. Reclamation and the USFWS were in agreement under the terms of the Fish and Wildlife Coordination Act process that the CHO was a temporary measure, the permanent point of rediversion would not serve to expand the use of water beyond current obligations, and the operation of the CHO would not be allowed to negatively impact the recreational fishery in Black Butte.

→ Reclamation filed a second petition, for a point of (rediversion, on January 6, 1994.) This second petition for change, to (extend the effective date) of the point of rediversion to correspond to the date for raising the RBDD gates, was protested again by the CSPA on January 31, 1994. To address the protest, Reclamation agreed to adhere to the Dismissal Terms and Conditions, dated April 19, 1994, (Appendix C, Dismissal Terms and Conditions with cover letter). In exchange for the dismissal conditions, which included the preparation of an environmental assessment (EA) addressing the impacts on the environment of the permanent addition of the CHO and the development of a "long-term fish, wildlife, and water use management plan," CSPA requested the CSPA's public trust complaint "be held in abeyance by the SWRCB pending the completion and submission of the ... plan." The Plan was to "address the operations of the Red Bluff Diversion Dam, the Tehama-Colusa Canal,

and the Glenn-Colusa Irrigation District Canal on the fish, wildlife, and waters of Stony Creek” (Appendix C).

The SWRCB approved the petition on April 22, 1994, granting rediversion rights for a period through May 31, 1995. ↙

Reclamation completed the EA and Finding of No Significant Impact (FONSI) in January of 1995, and on June 1, 1995, filed a third petition for a permanent point of rediversion. On July 11, 1995, the USFWS filed a protest with the SWRCB on the petition. The USFWS would not concur with Reclamation's FONSI if the permanent petition, as then noticed, was approved. The USFWS protested the Permit because conditions agreed to in the Fish and Wildlife Coordination Act report, mentioned previously, were not submitted by Reclamation to the SWRCB as part of the Permit application. Also, the USFWS believed the issuance of a permanent point of rediversion would preclude future enhancement efforts on Stony Creek. The USFWS believed that problems associated with the RBDD should not be spread to Stony Creek. The CSPA filed an additional protest on June 29, 1995, regarding the permanent point of rediversion. Their concern was over permanent use of the reverse operation of the CHO against the original intended use, which was to enhance the fishery.

Reclamation submitted, on September 1, 1995, a petition for temporary urgency change for the period of September 15, 1995, through October 31, 1995. The SWRCB did not act upon Reclamation's petition for temporary urgency change, choosing instead to temporarily extend the Permit to cover the September 15 through October 31, 1995, period.

Outstanding protests were discussed in a February 29, 1996, letter (Appendix D) drafted with CSPA's input, and the subsequent Order from the SWRCB, dated April 1, 1996, amending Permit No. 13776, under Item No.10, to require the permittee to “facilitate the long-term management of lower Stony Creek, including the restoration of fish and wildlife resources...and to submit ..a long-term fish, wildlife, and water use management plan,...as prepared with the advice and assistance of the Stony Creek Task Force...by December 15, 1998” (Appendix A). Condition #10 in the Order is the action upon which Reclamation is preparing the Plan. The Permit also called for the preparation of various other surveys, studies, reports, and conditions related to the purpose of use, including an “annual report of the Stony Creek Task Force and Stony Creek Fish and Wildlife Technical Group activities...” Item No. 2 of the Permit amended the existing purposes of use to add Fish and Wildlife Protection and Enhancement to the Domestic, Irrigation, Municipal, Industrial, and Recreational uses. The Permit is permanent, however, it is subject to modifications of the terms and conditions governing the rediversion of water at the TCC, under conditions listed under Item No. 11.

From the time the Task Force was assembled in July of 1994, work had continued on the Plan. Four draft plans were prepared between January and March 1996, with a final draft completed March 18, 1996. The final draft was rejected by various stakeholders. The

current document, dated November 13, 1998, is a reflection of Task Force input and revised information.

## **1.5 RBDD Operations**

Reclamation installed a 300 cfs (research pumping plant) in 1995 at the RBDD to test the feasibility of continuing to use the RBDD while limiting potential harm to salmon. Unfortunately, the pumping plant has had difficulties and significant delays have occurred. The pumping plant is a research facility that will be tested through 2001. As a research facility, the pumping plant has been shut down periodically and, therefore, is an unreliable source of water. As a result, the use of the CHO and the redirection of CVP water released from Black Butte Reservoir for diversion into the TCC through the CHO remains a critical issue in the near term for providing early spring and late fall water supply to TCC users. Even if the RBDD research pumping plant and screening of the temporary pumps proves adequate, the contractual need of the Tehama-Colusa Canal Authority (TCCA) water users exceeds the amount of pumping capabilities at the RBDD, continuing the critical need of the CHO redirection to meet those demands. Reclamation, therefore, plans to continue the present operations at the RBDD until a long term solution to fish passage and water delivery problems can be implemented. Reclamation has agreed, in consultation with other resource agencies, to await CALFED decisions on storage concepts, potentially linked to the RBDD, before proceeding with the very expensive solutions required to substantially improve operations beyond what has been achieved through implementation of the eight months of gates-up operation of the RBDD.

## **1.6 List of Cooperators/Public Involvement**





Development of this Plan began with Reclamation assembling the Task Force on July 11, 1994, and subsequently adding a Technical Team. The intent of working with a Task Force and Technical Team was to attempt to secure wider input into the Plan, and to attempt to ensure the Plan has broad support by all stakeholders and could, therefore, be successfully implemented. The Task Force is comprised of three water users and diverters, two gravel operators, one private property owner, two local county agencies, representatives of state and federal agencies and two fishing and recreation groups.\* The makeup of the Task Force was intended to represent the stakeholders or concerned publics with an interest in lower Stony Creek, and was determined in the Dismissal Terms and Conditions dated May 5, 1994. Based on the make up of the Task Force many bipolar concerns emerged, and with them differing opinions with little consensus on proposed solutions. The Task Force had been charged with providing advice and assistance in the development of the Plan, but as issues emerged, Reclamation contracted with CH2MHILL, a consultant from Redding, for additional assistance and support in the preparation of the March 18, 1996, final draft.





DATE OF PHOTOGRAPHY APRIL 1993

**LEGEND**

-  FLOW DIRECTION
-  SEASONAL WETLAND
-  STONY CREEK BANKS
-  UNDERGROUND SIPHON

**NOTE**  
 THE SEASONAL GRAVEL BERM IS MOVED AS NECESSARY TO ACCOMMODATE THE MOVEMENT OF THE CREEK AND BEST MANAGE THE FLOWS.

**FIGURE 1-1**  
**CONSTANT HEAD ORIFICE REDIVERSION AT TEHAMA-COLUSA CANAL**  
 U.S. BUREAU OF RECLAMATION  
 LOWER STONY CREEK FISH, WILDLIFE, AND WATER USE MANAGEMENT PLAN



The Technical Team's mission was to provide input on issues requiring technical expertise to the Task Force such as fisheries biology, hydrology, and reservoir operations. Up until January of 1997, the Technical Team consisted of representatives from Reclamation, COE, USFWS, CSPA, CalTrans, California Department of Fish and Game (DFG), California State University at Chico, Glenn-Colusa Irrigation District (GCID), and Tehama-Colusa Canal Authority (TCCA).\* The Technical Team met regularly during the first year of the planning process and provided valuable biological input. The Technical Team, as of March 1997, has not been assembled but can be used on an "as needed" basis for any specific technical need that arises from the Task Force.

\* There was a concern of under-representation by landowners and members of the general public.

The first Final Draft of the Plan was completed by Reclamation, through CH2MHILL, on March 18, 1996, and listed seven management options for consideration, rather than a preferred management alternative, as consensus on the options could not be reached. Comments to the Plan, drafted on April 24, 1996, and other stated oppositions to the Plan ultimately resulted in a revision of the first Final Draft into the current document, which was reviewed by the Task Force.

## **1.7 Issues/Concerns**

In an attempt to understand the issues in the study area and define the contents of this Plan, a series of questions was presented to participating stakeholders at a scoping meeting on January 3, 1996, and at a Task Force meeting on January 29, 1996. The concerns were listed, then grouped in four broad categories (Appendix E). The meetings were attended by members of the Technical Team and the Task Force. The participating stakeholders are listed alphabetically:

- Agencies (Federal, State, local)
- California Sportfishing Protection Alliance
- Glenn County Resources Conservation District
- Gravel Operators (within Stony Creek Watershed)
- Landowners (within Stony Creek Watershed)
- Sacramento River Preservation Trust
- Water Users (TCCA and GCID)

**The major issues include:**

- 1. Restoring, protecting, and enhancing riparian habitat.**
- 2. Modifying water releases in a reasonable, beneficial, and legal manner for fish and wildlife enhancement.**

### **3. Local autonomy, landowner's rights, and public trust interests.**

Those first two issues, with reference to the third issue, were further addressed in a September 3, 1998, Task Force meeting by four incremental objectives:

- 1) Eradicate and/or control invasive weeds such as arundo and tamarix to improve the stream channel for bank stabilization.
- 2) Stabilize and/or reconstruct the bank and channel for riparian habitat improvements.
- 3) Plant appropriate riparian vegetation such as willows and cottonwoods to improve and enhance the riparian corridor.
- 4) Consider what flows would be required to enhance the riparian habitat and consequently, the native resident fish and wildlife species.

These objectives are addressed by actions which can be implemented by Reclamation for the benefit of the resource, within its scope of authority and the limits of the Permit, and those which are outside Reclamation's authority and must be implemented by others. Those actions outside the scope of Reclamation's authority will be provided as recommendations to the stakeholders.

The third issue encompassed some of the concerns of the Task Force, but its applicability to the Plan and the condition of the Permit was debated and disputed. In attempting to define the intent of the Order, the items listed in this goal were not specifically addressed but inherently implied to in addressing the first two goals.

## **1.8 Development Process**

The process used to develop the current Plan is illustrated in Figure 1-2. Step 1 (Chapter 1) identifies the purpose for the Plan and defines the overall goals. This step has been completed, involving as many stakeholders as possible, represented by the Task Force and other individual comments from the public, as summarized in the previous section. It also includes identifying the needs and expectations, i.e., issues, of the various involved stakeholders.

Step 2 establishes a baseline for the Plan by defining the existing setting for lower Stony Creek in terms of operational and institutional issues as well as the biological and physical environment. The existing conditions and operations are described in Chapters 2 and 3 of this Plan.

Step 3 involves the development of constraints and evaluation criteria for the management recommendations. Constraints such as Permit conditions generally set the reservoir

operations, diversion amounts, and fisheries requirements which must be met by Reclamation. Constraints and evaluation criteria were used to develop reasonable and implementable management recommendations. The constraints are discussed in Chapters 4.

In Step 4, recommended actions are developed to meet the objectives of the Plan. The recommendations provided to the involved stakeholders for their implementation are those which are outside Reclamation's scope of authority.

Possible future actions by Reclamation to implement the Plan will be evaluated in an environmental document to be in compliance with the National Environmental Protection Act (NEPA) and other applicable laws and their guidelines. The environmental document(s) will provide environmental and socioeconomic effects of a project to decision makers, will describe additional data that may be required prior to the final document, and will allow interested parties, stakeholders, and responsible agencies to comment on the issues and the level of analysis required. These actions are discussed in Chapter 5, the Management Plan.

Technical Team and  
Task Force Input

**STEP 1**  
Identify purpose of plan  
Define goals  
(Chapter 1)

**STEP 2**  
Define existing conditions  
Define existing operations  
(Chapter 2 and 3)

**STEP 3**  
Develop constraints, evaluation criteria  
(Chapter 4)

**STEP 4**  
Develop objectives and  
recommendations  
(Chapter 5)

**STEP 5**  
Prepare Environmental Compliance for  
Plan Implementation

**FIGURE 1-2**  
**STONY CREEK WATER USE MANAGEMENT**  
**PLAN DEVELOPMENT PROCESS**  
U.S. BUREAU OF RECLAMATION  
LOWER STONY CREEK FISH, WILDLIFE,  
AND WATER USE MANAGEMENT PLAN

## Chapter 2

# Existing Conditions

### 2.1 Introduction of Study Area

This chapter provides a general description of the Stony Creek Watershed and study area. As mentioned in Chapter One, for discussion purposes, the Stony Creek Watershed is divided into upper and lower sections. The upper watershed consists of the area above Black Butte Dam; the lower watershed consists of the area below Black Butte Dam and is referred to as the "study area." The upper watershed is described in Appendix F, and will be discussed as it relates to the management of the study area. Operation of Black Butte has been coordinated with the upper watershed storage reservoirs, Stony Gorge and East Park, under an exchange agreement, and as indicated on the flood control diagram (COE, May, 1987). Historical conditions will be discussed as considered appropriate in comparison with existing conditions.

This Plan focuses on the study area, which is defined as the 24.6 miles of Stony Creek from Black Butte Dam to the confluence of Stony Creek with the Sacramento River. Figure 2-1 (page 2-5) presents an overview of the entire Stony Creek Watershed and surrounding area including general land ownership and geographic features.

### 2.2 Lower Stony Creek Watershed - General

#### Climate.

As a western Sacramento Valley foothill stream, Stony Creek is characterized by cool, wet winters with high flows, and hot dry summers with low summer and fall flows (June-October), with an average annual precipitation of 15 inches in the lower watershed. The upper watershed variable winter rains and snow (with an annual average precipitation of 32 inches) provide inflow into the reservoirs for storage, which affect water releases to the study area. Since 1921 estimated unimpaired flows have been virtually zero from approximately June through October in most years.

#### Flows.

Water is diverted from several locations along Stony Creek below Black Butte Dam. Summer and fall releases are higher than unimpaired flows as water is released from the dam for irrigation and other deliveries. Diversions for irrigation are into the North and South Canal, and the TCC. As of 1999, with the installation of a siphon at the GCID Main Canal, regular diversions into that canal will cease. Since the construction of Black Butte Dam in 1964 by the COE no flows have reached the Sacramento River in dry years. Although Black Butte operational objectives call for a minimum release of 30 cfs year-round, in average and wet

years no flows have reached the Sacramento River for approximately 8 months of the year (April-November). The installation of the GCID siphon may allow for more flows reaching the Sacramento River than have occurred in recent times.

Flow variations in the winter can be extreme, to accommodate the COE flood control diagram and the primary authorization of Black Butte Dam for flood control. Rain floods can occur from November through April. Floods are generally characterized by high peak flows of short duration, but when the ground is saturated or frozen, the volume of runoff is much greater and the flooding more severe.

### Vegetation.

Prior to construction of Black Butte Dam the reach of lower Stony Creek between the mouth and GCID Main Canal (Reach 4, River Mile (RM) 1-4) was a sparsely vegetated system with few mature riparian trees flanking the channel. In the area between GCID Main Canal and the TCC siphon/CHO (Reach 3, RM 4-13) vegetation was sparsely distributed with primarily shrubs and some larger trees on the outer banks. The channel floodplain was covered by deposits of bare gravel. Where woody vegetation was present it formed a dense cover with a diverse structure and composition. In Reach 2 (between the TCC siphon and the North Diversion Canal, RM 13-20) the lower sections were covered in well established stands of mature trees and other riparian vegetation. In the upper section of Reach 2 the channel was braided and supported less mature vegetation, but had narrow strips of mature riparian vegetation. Reach 1 (RM 20-24.6, from the North Canal to the dam) had similar vegetation to those in the upper sections of Reach 2.

Current riparian vegetation along lower Stony Creek extends intermittently along the creek from just below the south side outlet to the Sacramento River. The overall habitat quality of the riparian plant communities observed for lower Stony Creek is low with respect to species composition, extent and level of reestablishment, and stand maintenance. Some areas, primarily upstream of the TCC siphon, have moderate to high quality riparian habitat. Generally, the presence of mature riparian trees has decreased since dam construction and the abundance of invasive weed species such as giant reed and tamarix has increased, primarily in Reaches 2-4.

### Land Uses.

The majority of land (94 percent of 16,600 acres) within the study area is privately owned. Private land uses within the study area include grazing, gravel mining (currently six operations), agriculture, and rural residential uses. There are also two animal sanctuaries, a conservancy, and Southern Pacific Railroad lands (near the TCC siphon/CHO).

Public land uses within the study area include two closed Glenn County solid waste disposal areas, one at County Road 7 and one along the east side of County Road P adjacent to Stony Creek; one closed City of Orland solid waste disposal area at County Road 7; a 40-acre

U.S. Bureau of Land Management site adjacent to Interstate 5 (the California Department of Transportation has mineral extraction rights to this site which has been inactive since the mid-1960's); the TCC operated by the TCCA; the Glenn-Colusa Main Canal operated by the GCID; and the North and South Canals, although public facilities at present, are operated by the Orland Unit Water Users Association (OUWUA), a private corporation. A seasonal wetland on Reclamation land exists near the TCC siphon/CHO.

### Morphology.

Generally Stony Creek aggregates consist of stream channel deposits, including flood and overbank deposits in the upper reaches, and are classified as marginal reserves. Black Butte dam altered the flow and sediment transport to lower Stony Creek. The planform morphology of lower Stony Creek changed after dam construction from a predominantly braided channel to one that is more of a single, sinuous, meandering channel, especially near the dam. Pre-dam, the channel was a high-gradient, bedload dominated system with sharp fluctuations in discharge, where the channel carrying the main flow periodically shifted location. Post-dam the flood peaks were attenuated, and storm run-off releases were stored for planned release. Both the two-year and ten-year floods have decreased in magnitude since construction of the dam, but the duration of the flood flows have increased. Channel width and sediment transport have been reduced in the upper reaches and significant channel realignment has occurred. Most bedload and suspended load have been eliminated by the dam. With reservoir releases more abrupt, changes occur on downstream elevations, accelerating bank erosion, the only source of coarse bedload below the dam. The clear water being released from the dam maintains sufficient stream power to contribute to channel incision and lateral erosion as meanders develop (Mount, 1995).

Interactions of current trends on land use, vegetation, fisheries, channel morphology and hydrology can be found in Appendix G.

### Native Species.

Many native fish and wildlife species occupy the lower Stony Creek system. As water temperatures in the study area become warm in the summer months, suitable habitat conditions are provided for many native and introduced warm-water fish species. Flows can diminish to extremely low levels during the summer resulting in segmented stream habitats downstream of the Northside Diversion Dam. During periods of suitable flow and water temperatures, lower Stony Creek has also been used seasonally by salmonids, predominantly for non-natal rearing in the lowermost reaches.

Historical riparian forests along lower Stony Creek provided habitat for a variety of migratory and resident birds and mammals. Wildlife habitats currently correspond to the active zone of the creek channel, the border zone of riparian vegetation along the banks of the channel, and the outer zone of oaks and grasslands along the upper terraces of the floodplain. Some special-status species such as the Valley Elderberry Longhorn Beetle, Bald Eagle, Swainson's Hawk,



Western Yellow-Billed Cuckoo, Northwestern Pond Turtle, Osprey and Golden Eagle are known to occur in the study area.

The following ten elements are described in detail in the discussion of the study area, Appendix to Chapter 2:

- A. Geology (page A-2-1)
- B. Groundwater (page A-2-2)
- C. Land Uses-Public and Private (page A-2-13)
- D. Aggregate Resources (page A-2-18)
- E. Channel Geomorphology (page A-2-21)
- F. Riparian Habitats (page A-2-34)
- G. Fisheries Resources and Habitats (page A-2-49)
- H. Wildlife Resources (page A-2-92)
- I. Climate (page A-2-96)
- J. Applicable Statutes and Permits (page A-2-97)

(See also Table of Contents for specific subheadings, pages iv, v, and vi)