

Table of Contents

S E C T I O N 1	Introduction	1-1
1.1	ESA Requirements.....	1-1
1.2	Background.....	1-2
1.3	Contents and Organization of the Biological Assessment	1-3

1 S E C T I O N 1

2 **Introduction**

3 This Biological Assessment (BA) evaluates the effects of implementing the 2-Gates Fish Protection
 4 Demonstration Project (2-Gates Project and/or the Project) in compliance with the federal Endangered
 5 Species Act (ESA). The 2-Gates Project will install and operate removable gates in two key channels in the
 6 central Delta (Old River and Connection Slough) in order to control flows and thereby provide equal or
 7 improved protection (reduced entrainment) to delta smelt (*Hypomesus transpacificus*) at the State Water
 8 Project (SWP) and Central Valley Project (CVP) export facilities while allowing higher than the minimum
 9 water exports described in the Operations Criteria and Plan (OCAP) Biological Opinions (BOs) Reasonable
 10 and Prudent Alternatives (RPAs) of the U.S. Fish and Wildlife Service (USFWS 2008) and National Marine
 11 Fisheries Service (NMFS 2009) and operating within other water management requirements (e.g. D-1641). A
 12 goal of the 2-Gates Project is also to minimize adverse affects to other federal or State listed species in the
 13 Delta, including Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawaytscha*), Central Valley
 14 spring-run Chinook salmon (*O. tshawaytscha*), Central Valley Steelhead (*O. mykiss*), North American green
 15 sturgeon (*Acipenser medirostris*), and longfin smelt (*Spirinchus thaleichthys*). In addition to federally or State
 16 listed threatened or endangered aquatic species, this BA addresses the anticipated effects of the Project on the
 17 following terrestrial species: giant garter snake (*Thamnophis gigas*), vernal pool fairy shrimp (*Branchinecta*
 18 *lynchi*), conservancy fairy shrimp (*B. conservatio*), vernal pool tadpole shrimp (*Lepidurus packardii*),
 19 Swainson’s hawk (*Buteo swainsoni*), and California black rail (*Laterallus jamaicensis coturniculus*). This BA
 20 also includes several State listed species of concern (see Section 3.3). The Project would be located in the
 21 Sacramento-San Joaquin River Delta (Delta), which is a vital diversion point to provide drinking water for
 22 over 23 million Californians and supports more than 1.3 million acres of irrigated agricultural lands.

23 The purpose of this BA is to review the 2-Gates Project in sufficient detail to determine to what extent it may
 24 affect any of the threatened, endangered, proposed, or sensitive species and designated or proposed critical
 25 habitats found in the Action Area. In addition, the following information is provided to comply with statutory
 26 requirements to use the best scientific and commercial information available when assessing the risks posed
 27 to listed and/or proposed species and designated and/or proposed critical habitat by federal actions. This BA
 28 is prepared in accordance with legal requirements set forth under regulations implementing ESA Section 7
 29 (50 CFR 402; 16 United States Code 1536 (c)).

30 **1.1 ESA REQUIREMENTS**

31 Federal Agencies have an obligation to ensure that any discretionary action they authorize, fund, or carry out
 32 is not likely to jeopardize the continued existence of any endangered or threatened species or destroy or
 33 adversely modify its critical habitat unless that activity is exempt pursuant to the Federal ESA 16 United
 34 States Code §(a)(2); 50 Code of Federal Regulations (CFR) § 402.03. Under Section 7(a)(2), a discretionary
 35 agency action jeopardizes the continued existence of a species if it “reasonably would be expected, directly or
 36 indirectly, to reduce appreciably the survival and recovery of a listed species in the wild by reducing the
 37 reproduction, numbers, or distribution of the species” 50 CFR 402.02.

38 The U.S. Bureau of Reclamation (Reclamation) will comply with its obligations under ESA, namely, to:
 39 (1) avoid any discretionary action that is likely to jeopardize continued existence of listed species or adversely
 40 affect designated critical habitat; (2) take listed species only as permitted by the relevant Service; (3) and use
 41 Reclamation’s authorities to conserve listed species. Through this BA, Reclamation will evaluate anticipated
 42 effects of the proposed 2-Gates Project and is proposing actions to minimize adverse effects to listed species,
 43 and designated critical habitat, under its existing authorities and consistent with its 7(a)(1) obligation to
 44 conserve and protect listed species. Section 7(a)(1) alone does not give Reclamation additional authority to
 45 undertake any particular action, regardless of its potential benefit for endangered species. The Project
 46 operations will be coordinated with SWP and CVP operations and as such, are consulted on as part of the
 47 proposed action described in this BA.

48 **1.2 BACKGROUND**

49 Through the CVP and SWP, Reclamation and DWR have collectively built water storage and conveyance
 50 facilities in the Central Valley in order to deliver water supplies to water rights holders as well as CVP and
 51 SWP water contractors throughout California. A substantial amount of the water exported from the Delta is
 52 conveyed by SWP and CVP facilities.

53 Both Reclamation’s and DWR’s water rights are conditioned by the California State Water Resources Control
 54 Board (SWRCB) to protect the beneficial uses¹ of water within each respective project and jointly for the
 55 protection of beneficial uses in the Sacramento Valley and the Sacramento-San Joaquin Delta Estuary. The
 56 Coordinated Operations Agreement (COA) was signed in 1986 and defines the project facilities and their
 57 water supplies, sets forth procedures for coordination of operations, identifies formulas for sharing joint
 58 responsibilities for meeting Delta standards, as the standards existed in the SWRCB Water Rights Decision
 59 1485 (D-1485), and other legal uses of water, identifies how unstored flow will be shared, sets up a
 60 framework for exchange of water and services between the two projects, and provides for periodic review of
 61 the Agreement. Additional water management restrictions are included in the SWRCB Water Rights Decision
 62 1641 (D-1641) and in other permits, decisions, and biological opinions (i.e. FWS 2008 and NMFS 2009).

63 The SWP is operated to provide flood control and water supply for agricultural, municipal, industrial,
 64 recreational, and environmental purposes. The DWR has SWRCB permits and licenses to appropriate and
 65 divert (or redivert) water for the SWP. Water is stored in Oroville Reservoir, on the Feather River, and
 66 released to three Upper Feather River area contractors, two contractors served by the North Bay Aqueduct,
 67 and the State’s Harvey O. Banks Pumping Plant in the south Delta, near Tracy, California, after which it is
 68 delivered to the remaining 24 contractors in the SWP service areas south of the Delta. In addition, the Banks
 69 Pumping Plant pumps water from other sources entering the Delta (i.e., the Sacramento River, San Joaquin
 70 River, and Mokelumne River). The current operations of SWP reservoirs, pumping plants, and aqueducts vary
 71 throughout the year based on changing hydrologic and environmental factors, as well as regulations and
 72 agreements governing the operation of the Project.

73 The CVP is operated by Reclamation and includes several large storage reservoirs, associated hydroelectric
 74 plants, and pumping plants, including the C. W. “Bill” Jones Pumping Plant in the south Delta near Tracy.
 75 The CVP’s major storage facilities are Shasta, Trinity, Whiskeytown, Folsom, New Melones, and Millerton.

¹ A water quality control plan must establish beneficial uses. (Wat. Code § 13050(j)) Beneficial uses serve as a basis for establishing water quality objectives. The beneficial uses to be protected were established in the 1978 Delta Plan and the 1991 Bay-Delta Plan and no subsequent requests were made to change the beneficial uses so these uses are carried over into the current plan. The beneficial uses protected by this plan are: Municipal and Domestic Supply; Industrial Service Supply; Industrial Process Supply; Agricultural Supply; Ground Water Recharge; Navigation; Water Contact and Non-Contact Water Recreation; Shellfish Harvesting; Commercial and Sportfishing; Warm Freshwater Habitat; Cold Freshwater Habitat; Migration of Aquatic Organisms; Spawning, Reproduction, and/or Early Development; Estuarine Habitat; Wildlife Habitat; and Rare, Threatened, or Endangered Species.

76 The upstream reservoirs release water to provide water for the Delta, of which a portion is exported through
 77 the Jones Pumping Plant for storage in San Luis Reservoir and its associated O'Neal Forebay, in the western
 78 San Joaquin Valley, or delivered down the Delta Mendota Canal to water contractors south of the Delta. Both
 79 the CVP and the SWP use the San Luis Reservoir, O'Neill Forebay, and more than 100 miles of the California
 80 Aqueduct and its related pumping and generating facilities to store and convey water to contractors south of
 81 the Delta.

82 Many factors individually or in combination influence the movement of delta smelt into the south Delta
 83 toward the State and federal water export pumps. This movement can be influenced by Delta inflow, tidal
 84 flows, pumping at the CVP and SWP south Delta facilities, channel geometry and connections of Franks
 85 Tract, Old River and Middle River, along with salinity, temperature, and turbidity gradients. The southward
 86 movement of water, influenced significantly by pumping at the CVP and SWP water export facilities, makes
 87 these sensitive fish more vulnerable to entrainment and increases the risk to the long term survival of the
 88 species. Delta smelt is currently a federally listed threatened species, although, the USFWS is considering a
 89 petition to change its status to endangered. The California Department of Fish and Game changed the status of
 90 delta smelt to 'endangered' on March 4, 2009.

91 1.3 CONTENTS AND ORGANIZATION OF THE BIOLOGICAL ASSESSMENT

92 Reclamation has the responsibility for the scope, content, and adequacy of this BA. The species addressed in
 93 the following sections were evaluated in accordance with the federal ESA guidelines. This BA follows a
 94 structure similar to a BO and includes appendices which provide more details on the models used to evaluate
 95 the effects as well as an operations plan that incorporates actions required through RPAs from the USFWS
 96 and NMFS OCAP BO's (USFWS 2008, NMFS 2009) and Conditions of Approval described in the CDFG
 97 Longfin smelt 2081 Incidental Take Permit (DFG 2009). The appendices also include the monitoring plan
 98 developed as part of the project to evaluate the effects of the 2-Gates Project on delta smelt and the other
 99 listed species.

100 This Biological Assessment is organized as follows:

- 101 • **Section 1.** Introduces the 2-Gates Project and the purpose of the BA.
- 102 • **Section 2.** Describes the purpose and need for the Project, its objectives, project description including the
 103 location and Action Area, construction details and schedule, operations and monitoring, protective
 104 measures for listed species, and mitigation measures incorporated as part of the Project.
- 105 • **Section 3.** Describes the covered species status in the ESU, the region, and in the Action Area.
- 106 • **Section 4.** Provides an environmental baseline identifying the regulatory (including constraints
 107 established by the recent USFWS and NMFS BO's) and environmental setting.
- 108 • **Section 5.** Effects Analysis - Describes the approach to the analysis, what models were used, and how
 109 models were used to evaluate the operation of the Project and describes methods used to make the effects
 110 determinations for each species.
- 111 • **Section 6.** Cumulative Effects Section - Lists other non-federal projects that may affect listed species in
 112 the Action Area.
- 113 • **Section 7.** Summary and Conclusion Section - Discusses the overall effects of cumulative effects and
 114 project actions.
- 115 • **Section 8.** Essential Fish Habitat - Provides an analysis of Essential Fish Habitat affected by the Project
- 116 • **Section 9.** References – Provides detailed references cited in this document.

- 117 • **Appendices.** Provides supporting materials for the BA including the operations plan, monitoring plan,
118 models used in the analysis, modeling results, and construction designs for the sites.