

## 18.0 Summary Comparison of Alternatives

A summary comparison of a number of important cultural impacts is provided in Figure 18-0. This figure provides information on the magnitude of the most pertinent and quantifiable cultural impacts, both adverse and beneficial, that are expected to result from all alternatives. Important impacts to consider include effects on known and as-yet unknown buried archaeological sites, known archeological sites, and impacts on historic structures. As depicted in Figure 18-0, each alternative would affect known archaeological sites. Alternative 1B would result in the most known archaeological sites impacted, 17 sites, whereas Alternative 9 would result in the fewest known archaeological sites impacted, 4 sites. Alternatives 4, 4A, and 2D would affect 10 known sites while Alternative 5A would affect 7 known sites.

Each alternative, including the No Action Alternative, would result in effects on historic structures during construction of the water conveyance facilities. Alternatives 1A, 1B, 2A, 2B, and 6A–C would result in effects on the greatest number of historic structures (24 structures), whereas Alternatives 4, 4A, 2D, and 5A would result in the fewest effects (10 structures). Alternative 9 would fall in the middle, affecting 13 structures.

Table ES-8 in the Executive Summary provides a summary of all impacts disclosed in this chapter. *Cultural Resources* are defined in this chapter as prehistoric and historic archaeological resources, architectural/built-environment resources, places important to Native Americans and other ethnic groups, prehistoric and historic traditional cultural properties, and human remains. This chapter assesses potential effects of the action alternatives on cultural resources and identifies mitigation measures to reduce or eliminate effects on those resources in the study area (the area in which impacts may occur), which is limited to the Plan Area (the area covered by the BDCP). This includes portions of the Sacramento-San Joaquin Delta (Delta), Suisun Marsh, and Yolo Bypass. As necessary, additional site-specific studies and analyses will be conducted pursuant to CEQA, NEPA, and Section 106 of the National Historic Preservation Act (NHPA) as part of the second tier environmental review for the program-level components of the selected alternative pursuant to mitigation measures identified in this chapter.

This chapter first provides an overview of the methods used to identify the kind and density of cultural resources in the Plan Area (i.e., the statutory Delta, the Suisun Marsh, and the Yolo Bypass). Following the methods discussion is a description of the environmental setting/affected environment as it pertains to the types of cultural resources that occur in the Delta region, including a subsection that describes sensitivity for previously unidentified archaeological resources in the Plan Area. The chapter then describes the regulatory framework that governs cultural resources in the context of project implementation and the analysis of effects, and describes the anticipated effects of the project alternatives. Where specific effects associated with alternatives are analyzed in detail, the chapter refers to the “study area;” i.e., the area in which discrete effects on cultural resources associated with the alternatives may occur.

## 18.1 Environmental Setting/Affected Environment

### 18.1.1 Methods for Resource Identification

A number of standard methods such as record searches and site visits were used to determine the types and location of known cultural resources that could be affected by project alternatives. Record searches were conducted and aerial photography was used for the entire study area. In addition, surveys were conducted in accessible areas. More specifically, the following methods were used to assess the kind and number of cultural resources that could be affected by the action alternatives and conservation measures:

- Archival map research to identify overall sensitivity for historic-era resources as well as locations of built resources of at least 45 years of age (resources 45-years old are being identified to avoid duplicative efforts if some project elements are not implemented within the next 5 years).
- Field surveys for built-environment resources that were accessible from the public right of way (approximately 67% of the right of way was covered), designed to evaluate identified and previously unidentified built-environment resources.
- Records searches to identify recorded cultural resources (including searches of National Register of Historic Places [NRHP] and California Register of Historic Resources [CRHR] eligibility).
- A sensitivity analysis for unidentified resources historic-era and prehistoric archaeological resources (based on the density of recorded resources, geology and geological processes, and historic activity, included in Appendix 18A, *Archaeological Resources Sensitivity Assessment*).
- Archaeological surveys designed to confirm known resource locations for parcels that were legally accessible (approximately 5 percent of the right-of-way was covered—less than the percentage of the footprint covered in the built environment field studies because in some instances, visible built-environment resources such as structures and residences can be photographed from public roads or viewed from aerial sources).
- Review of built-environment resources using aerial photography sources such as Google Earth and Google Maps.
- Correspondence with Native American contacts provided by the Native American Heritage Commission (NAHC) and a search of the sacred lands database maintained by the NAHC.
- Southern Regional Tribal Consultation Meeting was held by the California Department of Water Resources (DWR) on October 7, 2014. Project information was presented by DWR and information was requested from tribal representatives regarding known resources.
- South Central Regional Tribal Consultation Meeting was held on June 17, 2014. Project information was presented by DWR and information was requested from tribal representatives regarding known resources.
- Correspondence with potentially interested parties, such as local historical interest groups, and local agencies.

These data were compiled to provide an overview of the potential for the alternatives to result in significant effects on cultural resources. These data, as well as the prehistoric, ethnographic, and

Chapter 18 – Cultural Resources		Alternative																			
		Existing Condition	No Action	1A	1B	1C	2A	2B	2C	3	4	5	6A	6B	6C	7	8	9	4A	2D	5A
CUL-1: Effects on Known Archaeological Sites	Number of sites affected	0	--	7	17	12	6	16	12	6	10	5	7	17	12	6	6	4	10	10	7
	Total acreage of each alternative with high potential for buried archaeological sites (acres)	0	--	9,176	22,163	18,482	9,947	23,007	18,487	8,483	10,865	8,274	9,176	22,163	18,482	8,699	8,699	4,875	10,865	10,010	8,829
		n/a	A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A
CUL-5: Effects on Historic Structures (Number of structures affected)		0	--	24	24	22	24	24	22	20	10	17	24	24	24	19	19	13	10	10	10
		n/a	A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A	S/A

  

**Key**

Quantifiable impact (number of sites, structures, acres, etc. affected)  n/a not applicable  
> greater than  
< less than  
≈ about equal to

Increasing level of quantifiable impacts 

Level of significance or effect <b>after</b> mitigation (CEQA Finding / NEPA Finding)	<b>CEQA Finding</b>	<b>NEPA Finding</b>
	NI No Impact	B Beneficial
	LTS Less than significant	NE No Effect
	S Significant	NA Not Adverse
	SU Significant and unavoidable	A Adverse

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**Figure 18-0**  
**Comparison of Impacts on Cultural Resources**

1 historic setting for the region, were used to identify the suite of cultural resource property types  
 2 that may be affected by the alternatives. Specific effects associated with the alternatives and  
 3 conservation measures are described below under Section 18.3.5, *Effects and Mitigation Approaches*.

4 For numerous practical reasons, however, not all potential cultural resources in the study area could  
 5 be identified. A primary reason is the fact that, in order to evaluate whether particular sites were  
 6 “historical resources” for “unique archeological resources,” invasive and even destructive  
 7 techniques would have had to be used. Another factor was the sheer size of the study area, which  
 8 made it impossible to evaluate every potential resource within any reasonable timeframe and at any  
 9 reasonable cost. Moreover, the professional cultural resource specialists concluded that reasonable  
 10 samples, combined with record searches and analyses of aerial photographs, would allow them to  
 11 sufficiently characterize the nature of the resources and the likely effect within the footprint of the  
 12 alternatives. In addition, every effort is made to avoid and minimize effects on significant cultural  
 13 resources, including historic properties and historical resources. Finally, much of the Plan Area—  
 14 particularly portions that could be affected by the alternatives—was not legally accessible.<sup>1</sup> (For a  
 15 detailed discussion of DWR’s efforts to obtain legal access to inaccessible portions of the Plan Area,  
 16 see Appendix 4A, *Summary of Survey Data Collection by Department of Water Resources to Obtain*  
 17 *Information Regarding Baseline Conditions in Areas That Could Be Affected by BDCP*).

#### 18 **18.1.1.1 Archival and Map Research**

19 Historic map research was conducted at the Earth Sciences and Map Library at the University of  
 20 California, Berkeley, October 10–12, 2011, and copies of all historic topographic maps within the  
 21 boundaries of the Plan Area were obtained. Features identified on these maps have been compared  
 22 with the footprint of action alternatives to identify the sensitivity of each alignment for historic-era  
 23 cultural resources.

24 In addition, the records of identified shipwrecks retained by the California State Lands Commission  
 25 were compared with the footprint of all alternatives. Two plotted shipwrecks coincide with  
 26 proposed project features. The latitude and longitude on record place the resources on dry land  
 27 rather than within water features, therefore the locations of these resources are likely incorrect and  
 28 it is not likely that the action alternatives will affect these resources.

#### 29 **18.1.1.2 Records Searches**

30 Records searches were conducted through the relevant information centers of the California  
 31 Historical Resources Information System (CHRIS). These searches revealed that a wide variety of  
 32 prehistoric- and historic-era sites, features, and artifacts have been documented in the Plan Area.  
 33 These cultural resources include early Native American burial, habitation, and mound sites; gold  
 34 rush-era residences; ranches; agricultural work camps and landscapes; railroads; water conveyance  
 35 systems; levees; rural residences; rural communities; small and medium cities; rural historic  
 36 landscapes; and bridges.

37 Some of these resources have been evaluated for the NRHP and CRHR eligibility criteria, but the  
 38 majority remains unevaluated either because they are inaccessible or because destructive test  
 39 excavation is not currently feasible. Based on available records, many of these resources appear  
 40 likely to qualify as historical resources and historic properties. While the CRHR and NRHP were

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<sup>1</sup> (*In Re Department of Water Resources Cases*, JCCP Action No. 4594, Final Order April 8, 2011).

1 checked during the record search because many of these sites are very old and have not been  
2 revisited after initial documentation, they have not been previously evaluated for the NRHP or CRHR  
3 in earlier studies.

4 Identified resources were mapped with geographic information systems (GIS), and their locations  
5 were compared to the footprint of the alternatives.

### 6 **18.1.1.3 Field Surveys**

#### 7 **Initial Site Visits**

8 Where access was available, cultural resource site visits were first conducted in 2009 to confirm the  
9 location of known resources. Site visits were conducted over 6 days: May 19–21, September 21,  
10 October 27, and December 7, 2009 to confirm the location of previously documented resources.  
11 Documentation focused on photographing previously identified resources and recording locations  
12 using global positioning system (GPS) units. This effort focused on archaeological resources that  
13 were legally accessible. In addition, cultural resources surveys were conducted from May to August  
14 2011 to confirm additional archaeological resources where access became available. Attempts were  
15 made to verify the location of previously recorded sites in the Plan Area. Surveys of some of the  
16 recorded sites were completed. However, litigation in 2010 restricted DWR's ability to access all  
17 sites that could have been relevant to this analysis. This prohibition remains in effect for numerous  
18 properties as of the time of this Final EIR/EIS. The majority of the sites revisited in 2009 and 2011  
19 were in the southern and western portions of the Plan Area.

#### 20 **Field Surveys for Built-Environment Resources**

21 Appendix 18B, *Archaeological Resources Sensitivity Assessment*, enumerates identified built  
22 environment resources affected by the project alternatives. Field surveys were performed in May  
23 and June of 2012 and July of 2013 for those portions of the conveyance facility alternative  
24 alignments that could be viewed from public roads and accessible rights-of-way locations. Prior to  
25 surveys, background research was conducted for built-environment resources that required  
26 inventory and evaluation using records of previously recorded resources, topographic maps, aerial  
27 photographs, and the date of construction. Where access to a given resource was available and  
28 sufficient data could be collected, its eligibility for listing in the NRHP and CRHR was assessed.  
29 Where dense tree cover, recent structures, or landscaping obscured built environment resources,  
30 they were not evaluated. In addition, some large rural properties that contain many built resources  
31 were not evaluated because contributing structures that form part of the setting, and thus integrity  
32 of the resource could not be accessed for documentation. Appendix 18B summarizes identified built-  
33 environment resources and effect mechanisms (such as specific project features or activities that  
34 may potentially affect existing built-environment resources). In addition effect mechanisms are  
35 described in Section 18.3.2.

#### 36 **Field Surveys for Archaeological Resources**

37 Appendix 18B, *Archaeological Resources Sensitivity Assessment*, enumerates identified archaeological  
38 resources affected by the alternatives. Following initial site visits, archaeological sites were visited  
39 where legally accessible to update site record forms and confirm the general nature and boundaries  
40 of the resource in June of 2012. All parcels that were legally accessible were surveyed for  
41 archaeological resources. Of the 49,224 acres of the constructability footprint (including the pipeline

1 tunnel options, the west and east alignments, and the separate corridors option), 2,231 acres were  
2 surveyed (4.53%). Parcels were walked in traditional transects, with archaeologists spaced no more  
3 than 20 meters apart at any time. Visibility of the ground surface varied significantly, from excellent  
4 visibility to near zero where high grasses made visibility difficult. Identified resources were  
5 recorded on California Department of Parks and Recreation forms and surface boundaries were  
6 mapped.

7 Archaeological sites were not evaluated for their eligibility for listing in the CRHR and NRHP  
8 because the amount of information obtained during the field surveys would be insufficient for this  
9 purpose. This is because the evaluation of archaeological sites that have the potential for buried  
10 deposits would require subsurface investigations to retrieve a suitable sample of subsurface  
11 materials and to assess integrity and boundaries of the site. Therefore, subsurface investigations  
12 may be needed to evaluate the CRHR and NRHP eligibility of the archaeological sites visited during  
13 the field surveys and any identified during any future cultural resources studies performed after  
14 action alternative are selected.

15 It is important to note that subsurface investigations are considered potentially damaging both  
16 within the professional practice of archaeology and among the Native American community.  
17 Professional archaeologists consider test excavation destructive because it can only be performed  
18 once. After a portion of a deposit has been disturbed, the original spatial relationships between  
19 buried artifacts can never be perfectly restored for re-examination. In addition, because science  
20 improves over time, archaeologists assume that some data is always irretrievably lost during  
21 current excavations. Relative to future advances in science; current excavations destroy the  
22 possibility of retrieving information that cannot currently be analyzed based on available  
23 technology. In addition, the Native American community may object to excavation of prehistoric  
24 sites because testing itself has the potential to impact Native American cultural and religious values  
25 associated with prehistoric sites. Testing may also have the potential to disturb burials if present.

26 For the analysis of effects under CEQA and NEPA, the potential damage to archaeological resources  
27 associated with subsurface investigations does not sufficiently justify the information gained prior  
28 to the selection of an alternative for construction, as noted earlier. While individual archaeological  
29 sites cannot be completely evaluated without test excavation; however, suitable proxy measures  
30 offer means of assessing the potential of the various conveyance alignments to result in significant  
31 impacts on CRHR and NRHP eligible resources as well as unique archaeological sites. These proxy  
32 measures consist of analyzing the density and distribution of recorded resources, and estimating the  
33 nature and size of identified sites based surface observations. This approach allows for subsequent  
34 assessment of the potential of the alternatives to result in adverse effects on archaeological  
35 resources that are likely to qualify for the CRHR or NRHP without physical destruction of the sites.

#### 36 **18.1.1.4 Native American Correspondence and Consultation**

37 The NAHC was contacted on May 21, 2009, and February 25, 2011, for information about the  
38 location of known heritage or sacred sites in the Plan Area. The NAHC responded and provided a list  
39 of Native American individuals and organizations that may have knowledge of cultural resources in  
40 the Plan Area. DWR Staff archaeologists sent letters to the parties identified by the NAHC on June 22,  
41 2009, requesting information regarding resources that may occur in the Plan Area. Updated letters  
42 were sent on February 28, 2012 and follow-up phone calls were placed on July 26, 2012.

1 The NAHC indicated that the sacred lands file does not contain any mapped resources in the Plan  
 2 Area. In addition, representatives of the following Native American organizations also responded  
 3 and indicated that there were no objections or concerns about the project at that time, but wished to  
 4 be kept apprised of future progress on the project: Wintun Environmental Protection Agency;  
 5 California Valley Miwok Tribe; Cortina Indian Rancheria; the Yocha Dehe Indian Community; the  
 6 United Auburn Indian Community of Auburn Rancheria; the Shingle Springs Band of Miwoks; and  
 7 Wilton Rancheria.

8 The Bureau of Reclamation (Reclamation), the U.S. Fish and Wildlife Service (USFWS), and the  
 9 National Marine Fisheries Service (NMFS) sent a joint letter to federally recognized tribes on  
 10 September 24, 2010, notifying tribes that the three federal agencies were working with DWR on the  
 11 conservation plan, and that the plan could impact anadromous fish populations utilizing waterways  
 12 upstream and downstream of the legal Delta. The letter provided contact information (email  
 13 addresses and phone numbers) for individuals at each agency who could be contacted with  
 14 questions or comments. The letter stated that the federal agencies' efforts were in addition to DWR's  
 15 outreach to tribes, and was meant to strengthen the government-to-government relationships with  
 16 Indian tribes. Reclamation sent letters to federally recognized tribes and non-federally recognized  
 17 tribes on February 24, 2014 and February 21, 2014, respectively. These letters notified the tribes of  
 18 how the federal agencies would meet the requirements for compliance with Section 106 of the  
 19 NHPA, requested assistance in identifying known sites of cultural or religious significance, and  
 20 provided an agency contact list for four federal agencies (Reclamation, USFWS, NMFS, and the U.S.  
 21 Army Corps of Engineers [USACE]).

22 USACE sent a letter to federally recognized tribes on December 1, 2015 to notify them of continuing  
 23 consultation on the project under Section 106, and provide them with a copy of the draft  
 24 Programmatic Agreement for review and comment. From December 2015 to February 2016, USACE  
 25 conducted tribal consultation meetings with the following federally recognized tribes: United  
 26 Auburn Indian Community, Wilton Rancheria, Yocha Dehe Indian Community, and Single Springs  
 27 Band of Miwoks. USACE consultation with federally recognized tribes will continue through the  
 28 execution and implementation of the Programmatic Agreement.

29 DWR hosted tribal consultation meetings in 2013 and 2014 (dates and tribal participants listed  
 30 below). Reclamation, USFWS, and NMFS participated in these meetings, as well. Although some  
 31 meetings concerned DWR tribal policy in general, they are included here because the project  
 32 alternatives were discussed in detail.

- 33 • December 10, 2013 – Informational Meeting on the Proposed BDCP for the California Tribal  
 34 Community
- 35 • Northern Region Tribal Consultation April 23, 2014
  - 36 ○ Colusa Tribe
  - 37 ○ Hoopa Valley Tribe
  - 38 ○ Hopland Band of Pomo Indians
  - 39 ○ Inter-Tribal Council of California
  - 40 ○ Round Valley Indian Tribe
  - 41 ○ Shasta Indian Nation
  - 42 ○ Yurok Tribe

- 1       ● BDCP Bay-Delta Tribes Consultation Meeting June 13, 2014
  - 2           ○ Coyote Valley Band of Pomo Indians
  - 3           ○ Dry Creek Rancheria
  - 4           ○ Ione Band of Miwok Indians
  - 5           ○ Lytton Rancheria
  - 6           ○ Middle Town Rancheria
  - 7           ○ Pit River Tribe
  - 8           ○ United Auburn Indian Community
  - 9           ○ Wilton Rancheria
  - 10          ○ Winnemum Wintu Tribe
- 11       ● Yocha Dehe Wintun Nation South Central Regional Tribal Consultation June 17, 2014
  - 12           ○ North Fork Mono Tribe
  - 13           ○ North Fork Rancheria
  - 14           ○ Table Mountain Rancheria
  - 15           ○ Tule River Indian Tribe
  - 16           ○ Tuolumne Band of Me-Wuk Indians
- 17       ● Santa Clara Valley Water District and DWR Joint Tribal Informational Meeting June 27, 2014
  - 18           ○ Non-federally recognized Tribes – Central Coast Region
- 19       ● Southern Regional Tribal Consultation Meeting October 7, 2014
  - 20           ○ Agua Caliente Band of Cahuilla Indians
  - 21           ○ Cahuilla Band of Indians
  - 22           ○ Colorado River Indian Tribes
  - 23           ○ Fort Mojave Indian Tribe
  - 24           ○ Fort Mojave Tribe
  - 25           ○ La Jolla Band of Luiseño Indians
  - 26           ○ Mesa Grande Band of Mission Indians
  - 27           ○ Morongo Band of Mission Indians
  - 28           ○ Pala Band of Mission Indians
  - 29           ○ Pauma Band of Mission Indians
  - 30           ○ Ramona Band of Cahuilla Indians
  - 31           ○ Rincon Band of Luiseño Indians
  - 32           ○ San Luis Rey Indian Water Authority
  - 33           ○ San Pasqual Band of Diegueno Mission Indians

- 1           ○ Soboba Band of Luiseño Indians
- 2           ○ Viejas Band of Mission Indians

3 DWR continues to collaborate on tribal engagement and informational meetings on an as requested  
4 government-to-government basis. In 2015 and 2016 DWR met with the following tribes.

- 5           ● United Auburn Indian Colony Community general information meeting, July 24, 2015
- 6           ● Wilton Rancheria tribal government meeting, July 30, 2015
- 7           ● Shingle Springs Band of Miwoks tribal government meeting, July 31, 2015
- 8           ● California Indian Water Commission and Bureau of Indian Affairs (BIA) tribal informational  
9           meeting, August 8, 2015
- 10          ● Yocha Dehe Wintun Nation tribal government meeting, August 18, 2015
- 11          ● Pit River tribal government meeting, January 12, 2016

#### 12 **18.1.1.5           Interested Parties and Local Agency Correspondence**

13 DWR sent letters to 25 potentially interested parties, including local historical societies, local ethnic  
14 history groups, and local agencies on June 4, 2015. The letter briefly described the project and  
15 requested that the recipient groups or agencies provide input about historic resources they may be  
16 aware of that may not have been included in the survey due to access issues or otherwise not  
17 captured in the survey. The letter mentioned the development of a programmatic agreement (PA),  
18 pursuant to Section 106 36 Code of Federal Regulations part 800.14(b) of the NHPA that will be  
19 prepared for the conveyance facility and its components, with USACE as lead federal agency. The  
20 letter also asked the recipients if they would like to comment on the draft PA, which will be between  
21 the USACE, California State Historic Preservation Officer (SHPO), and DWR. The following  
22 organizations were sent the letter, with an exhibit showing the general alignment of each  
23 alternative.

- 24          ● Sacramento River Delta Historical Society
- 25          ● San Joaquin County Historical Society
- 26          ● Sacramento County Historical Society
- 27          ● Center for Sacramento History
- 28          ● Isleton-Brannan-Andrus Historical Society
- 29          ● West Sacramento Historical Society
- 30          ● Yolo County Historical Society
- 31          ● Sacramento-Delta Chapter of Filipino American National Historical Society
- 32          ● Chinese American Council of Sacramento
- 33          ● Japanese American Citizens League, Florin Chapter
- 34          ● Portuguese Historical and Cultural Society
- 35          ● East Contra Costa Historical Society and Museum
- 36          ● Locke Foundation

- 1       • Locke Boarding House Museum
- 2       • Dai Loy Museum
- 3       • Rio Vista Museum
- 4       • Solano County Historical Society
- 5       • Contra Costa Historical Society
- 6       • California Historical Society
- 7       • Contra Costa County Community Development Department
- 8       • Solano County Department of Resource Management, Planning Department
- 9       • Yolo County Department of Public Works, and Environmental Services
- 10      • Sacramento County Community Development Department, Planning and Environmental Review
- 11      • Alameda County Community Development Agency
- 12      • San Joaquin County Community Development Department, Planning/Development Services
- 13      Division

14      To date, responses have been received from the Sacramento River Delta Historical Society; Yolo  
 15      County Historical Society; San Joaquin Historical Society; Contra Costa Historical Society; Delta  
 16      Water Program, Department of Resource Management, Solano County; and Sacramento County  
 17      Department of Community Development, Planning and Environmental Review.

#### 18   **18.1.1.6        Geomorphology**

19      Archaeologists analyzed the geomorphology of the landscapes associated with the action  
 20      alternatives as a means of identifying relatively level and stable geomorphic surfaces that are  
 21      particularly sensitive for habitation. Such surfaces include alluvial fans and stream terraces located  
 22      near water, which are attractive places for habitation and subsistence activity, and may contain both  
 23      buried and surface archaeological sites. This information was used to assess the sensitivity of the  
 24      Plan Area for unidentified and buried cultural resources. This analysis indicates that the Plan Area  
 25      contains numerous landforms where buried prehistoric archaeological sites may be preserved. This  
 26      analysis is summarized in Appendix 18A, *Archaeological Resources Sensitivity Assessment*, and in  
 27      Figure 18-0.

#### 28   **18.1.2        Prehistoric Archaeological Setting**

29      The Plan Area is located in the Central Valley, which is divided into two major physiographic  
 30      provinces separated by the Delta. The Sacramento Valley, drained by the southward-flowing  
 31      Sacramento River, lies to the north, and the San Joaquin Valley, drained by the northward-flowing  
 32      San Joaquin River, lies to the south. The presence of this fresh water created one of the most diverse  
 33      and productive environmental zones in California (Rosenthal et al. 2007: 147).

34      Although various peoples dwelled in the area now known as the Central Valley (discussed further in  
 35      Section 18.1.4, *Ethnographic Setting*) and spoke a variety of languages, common linguistic roots  
 36      indicate that these groups had a related history and regular interaction (Rosenthal et al. 2007: 149),  
 37      A shared heritage is also indicated by common technological, economic, ceremonial, and

1 sociopolitical characteristics described by twentieth-century anthropologists who identified the  
2 Central Valley as the core of the California Culture area (Kroeber 1936, 1939).

3 Early inhabitants of the Central Valley used the various habitats found throughout the valley,  
4 including riparian forest, marsh, alkali basins, oak savanna, and foothill woodland communities.  
5 They created a sophisticated material culture and established a trade system involving a wide range  
6 of manufactured goods from distant and neighboring regions, and their population and villages  
7 prospered in the centuries prior to historic contact (Rosenthal et al. 2007:147, 149).

8 Over time, however, the majority of surface sites in the Central Valley, many mounds, have been  
9 destroyed by agricultural development, levee construction, and river erosion. Many excavations of  
10 Central Valley sites in the early twentieth century were performed by untrained individuals as well  
11 as professionals with rudimentary methods, who focused on artifact and burial recovery but paid  
12 little attention to other artifacts such as dietary remains and technological features, thus hampering  
13 modern attempts at reanalysis. Early professional efforts emphasized culture history rather than  
14 processes that drive culture change. Additionally, the Central Valley's archaeological record has  
15 been affected by the natural processes of landscape evolution: surface sites are embedded in young  
16 sediments set within a massive and dynamic alluvial basin, while most older archaeological deposits  
17 have been obliterated or buried by ongoing alluvial processes. Consequently, archaeologists are  
18 challenged to identify and explain long-term culture change in portions of the Central Valley where  
19 the majority of the available evidence spans only the past 2,500 years (or, in rare cases, the past  
20 5,500 years) (Rosenthal et al. 2007:150).

21 There is no single cultural-historical framework that accommodates the entire prehistoric record of  
22 the Central Valley. Moratto's (1984) well-regarded synthesis of Central Valley archaeology was  
23 based on works from Bennyhoff and Fredrickson (Elsasser 1978; Fredrickson 1973, 1974). The  
24 comparative frameworks established by Bennyhoff and Fredrickson (1994) incorporated a wide  
25 range of local and regional traditions but has not been systematically applied outside of the  
26 Sacramento Valley. For this reason, the following discussion uses a simple classification based on the  
27 three basic periods proposed by Fredrickson: the Paleo-Indian, Archaic, and Emergent (Fredrickson  
28 1973, 1974). The Archaic period has been further divided into the Lower, Middle, and Upper Archaic  
29 based on newer radiocarbon dates, adjusted with modern calibration curves (Rosenthal et al. 2007:  
30 150). The discussion that follows is based on these divisions.

### 31 **18.1.2.1 Paleo-Indian**

32 The earliest accepted evidence of human occupation in the Central Valley during the Paleo-Indian  
33 Period (11,550–8500 BC) comes from the discovery of basally thinned and fluted projectile points at  
34 three separate locations in the southern portion of the basin (Rosenthal et al. 2007:151). Recent  
35 geoarchaeological studies have shown that periodic episodes of erosion and deposition during the  
36 Holocene have removed or buried large segments of the Late Pleistocene landscape (Rosenthal and  
37 Meyer 2004; White 2003a). Archaeological deposits associated with these ancient landforms either  
38 have been destroyed or lie buried beneath more recent alluvial deposits (Rosenthal et al. 2007:151).

### 39 **18.1.2.2 Lower Archaic**

40 As with the Paleo-Indian Period, the Lower Archaic Period (8000–5550 BC) is characterized by  
41 mostly isolated finds, including stemmed points, chipped stone crescents, and early concave base

1 points. Typical examples of these artifact types have been found on the ancient shore of Tulare Lake  
2 (Wallace and Riddell 1991).

### 3 **18.1.2.3 Middle Archaic**

4 The beginning of the Middle Archaic (5550–550 BC) brought about significant climate changes to the  
5 Central Valley: warmer, drier conditions; the development of the Delta as sea levels rose; and the  
6 stabilization of fans and floodplains around 5550 BC calibrated (written as cal BC or cal AD;  
7 calibration is used to convert the laboratory determination of carbon-dated materials to calendar  
8 years) (Rosenthal et al. 2007:152). Around this time, there appeared to be two distinct settlement-  
9 subsistence adaptations operating in central California—one centering on the foothills and the other  
10 on the valley floor (Fredrickson 1994: 102–103; Rosenthal and McGuire 2004: 161–163). Late  
11 Middle Archaic sites appear to be increasingly sedentary, as indicated by refined and specialized tool  
12 assemblages and features, a wide range of non-utilitarian artifacts, abundant trade objects, and plant  
13 and animal remains indicative of year-round occupation (Moratto 1984; Ragir 1972; Schulz 1970,  
14 1981; White 2003a, 2003b).

### 15 **18.1.2.4 Upper Archaic**

16 The Upper Archaic (550 BC–AD 1100) is characterized by another change in climate conditions—  
17 this time, to a cooler, wetter, and more stable climate. These changes resulted in renewed fan and  
18 floodplain deposition and soil formation in the Central Valley (Rosenthal et al. 2007:156). New  
19 technologies were developed during this period, including new types of bone tools and bone  
20 implements and widespread manufactured goods such as *Haliotis* ornaments and ceremonial blades  
21 (Bennyhoff and Fredrickson 1994; Fredrickson 1974; Moratto 1984). The Berkeley Pattern  
22 (Fredrickson 1973, 1974) typically contains large quantities of habitation debris and features (such  
23 as fire-cracked rock heaps, shallow hearths, house floors, and flexed burials) that reflected long-  
24 term residential occupation.

### 25 **18.1.2.5 Emergent**

26 The archaeological record for the Emergent/Historic Period (AD 1000) is more substantial and  
27 comprehensive than those of earlier periods in the Central Valley, and the artifact assemblages are  
28 the most diverse (Bennyhoff 1977; Fredrickson 1974; Kowta 1988; Sundahl 1982, 1992). The  
29 Emergent Period, which enjoyed a relatively stable climate as opposed to the earlier periods, is  
30 associated with the use of the bow and arrow over the dart and atlatl (Bennyhoff 1994). Other  
31 characteristics of this period include a regionally variable economy, changes in manufacturing  
32 residues at Emergent Period sites, and the decentralization of shell bead production (Rosenthal et al.  
33 2007:159). The Emergent Period matches behavior typically associated with ethnographic  
34 populations.

## 35 **18.1.3 Prehistoric Archaeological Property Types**

36 This section describes the typical prehistoric archaeological property types that are expected in the  
37 Plan Area. These property type descriptions are based on the prehistoric archaeological setting  
38 presented above. The term *property type* refers to a grouping of properties that share similar  
39 important characteristics. For this setting, property types have been broadly categorized into groups  
40 based on their cultural and historical associations. These two groups are subdivided as discussed  
41 below. It should be noted that these “types” represent idealized and typical types; individual

1 resources may have characteristics associated with multiple types or may be unique. Sites that  
 2 combine the characteristics of multiple types and that contain deposits from different time periods  
 3 may be informally called “multi-component” or “multi-occupation” sites.

4 Identified property types provide reasonable expectations of the range of prehistoric archaeological  
 5 resources that may be affected by the action alternatives. These property types are classified here in  
 6 terms of constituents and features. Seven prehistoric archaeological property types have potential to  
 7 be present in the Plan Area: midden/mound sites, multiple-occupation sites, human burials, lithic  
 8 scatters, bedrock milling features, baked clay deposits, and isolated artifacts. Each prehistoric  
 9 property type is described under a separate heading below.

### 10 **18.1.3.1 Midden/Mound Sites**

11 Midden is an organically-rich soil generated during human habitation, and is typically darker than  
 12 surrounding native soils that were not used as a living surface. Many sites containing midden in the  
 13 Plan Area are referred to informally as “mound” sites because the site is elevated about the  
 14 surrounding land and appears as a low mound. Mound sites almost always contain midden, but  
 15 other site types contain midden as well. Midden and mound sites are anticipated to be the most  
 16 structurally complex and to have the greatest artifact diversity of all the prehistoric property types.  
 17 Midden deposits can vary greatly in size, and are found where people ate shellfish and other  
 18 invertebrates, fish, birds, sea mammals, ungulates, small mammals, acorns, seeds, tubers, and other  
 19 food resources. These food sources leave a large amount of debris, which customarily was piled up  
 20 where the food was processed, eaten, and discarded.

21 Midden deposits in the Plan Area were generally occupation sites, although some may have been  
 22 used only on a seasonal basis. When deaths occurred midden sites were sometimes used as  
 23 burial sites. Constituents may include stone flakes (byproducts of stone-tool manufacture), bedrock  
 24 mortars, ground-stone tools, marine shell, bone remains, charcoal, baked clay, charred floral  
 25 remains, and fire-affected rock. Non-utilitarian artifacts also may include charmstones, shell  
 26 ornaments, and beads. Discrete features, including house floors, hearths, and human burials, also  
 27 may be located within these deposits.

28 Village sites typically contain midden. It should be noted that while ethnographic sources often  
 29 identify villages, villages are not discussed as a discrete site type because village locations typically  
 30 manifest archaeologically as midden sites while combined with other archaeological components  
 31 such as burials. Midden sites are thus a cross-cutting category that may be associated with different  
 32 functional uses. It should be noted that some soils in the Plan Area are rich in organic matter from  
 33 natural rather than human sources and thus may appear similar to midden.

### 34 **18.1.3.2 Multiple-Occupation Sites**

35 These sites are archaeological deposits that contain material associated with two-or more distinct  
 36 occupational periods. The cultural remains may be of the same kind (i.e. midden from two distinct  
 37 periods), or may be functionally unrelated.

### 38 **18.1.3.3 Human Burials**

39 Burial features can range in complexity from a simple isolated inhumation (burial or cremation) to  
 40 more elaborate interments containing numerous bodies. These features may represent specially  
 41 designated interment areas or remnants of larger archaeological sites. Burial associations often

1 include shell beads and ornaments and ground and polished stone artifacts, such as charmstones  
 2 and plummets. In the Plan Area, human burials are expected to be found in raised earthen mounds  
 3 and midden sites, but burials may also be associated with lithic scatters, and have been found in  
 4 isolation in the archaeological record.

#### 5 **18.1.3.4 Lithic Scatters**

6 Lithic scatters are accumulations of stone artifacts, including finished tools and debitage (all the  
 7 waste material produced during lithic reduction and the production of chipped stone tools). These  
 8 sites may or may not contain chronological information, depending on the presence and quantity of  
 9 temporally diagnostic items such as projectile points and other or dateable materials such as  
 10 obsidian. Lithic scatters can be simple, containing only flaked-stone debitage and tools, or complex,  
 11 having primarily flaked-stone debris but some ground stone as well.

#### 12 **18.1.3.5 Resource Procurement/Processing**

13 Bedrock milling features are typically bedrock mortars (oval or circular depressions worked into  
 14 rock) and/or millingslicks (flat grinding surfaces). These features were used for processing vegetal  
 15 resources such as acorns and other seeds. Because of a dearth of exposed bedrock in the Central  
 16 Valley, milling features are typically associated with the Sierra Nevada foothills, where exposed  
 17 bedrock is much more common. These features often have associated artifacts such as pestles and  
 18 handstones. Flotation analysis (a method of separating light organic material such as fine plant  
 19 remains from the deposit, in order to identify plant species pursued by prehistoric populations) of  
 20 adjacent soils often can identify plant types that were processed at these sites. An overview of this  
 21 resource type is provided by White (2011).

#### 22 **18.1.3.6 Baked Clay Deposits**

23 One baked clay deposit has been identified in the Plan Area. Baked clay artifacts and detritus  
 24 emerged in the Plan Area in response to the stone tool-impooverished environment of the Delta and  
 25 surrounding alluvial plains. Accordingly, artifacts of this sort include utilitarian implements, such as  
 26 grinding tools and net weights for fishing. Bowls and decorative items were made of fired clay as  
 27 well.

#### 28 **18.1.3.7 Isolated Artifacts**

29 Isolated finds are three or fewer artifacts that occur within a restricted area, generally within an  
 30 area 30 feet in diameter. Information potential usually is limited to location, material type, style, and  
 31 function of the individual artifact. Isolated artifacts are not typically able to qualify as historical  
 32 resources, historic properties, or unique archaeological sites, because they contain very little useful  
 33 information for prehistoric research.

### 34 **18.1.4 Ethnographic Setting**

35 During the recent prehistory and historic era at least four main Native American cultural groups  
 36 inhabited portions of the Plan Area. These groups are the Nisenan, Miwok, Northern Valley Yokuts,  
 37 and southern Patwin.

#### 1 **18.1.4.1 Nisenan**

2 According to Kroeber (1932), the west side of the Sacramento River is within or near the southern  
3 limits of the Nisenan. Several ethnographic Nisenan villages have been documented along the  
4 western bank of the river (see Heizer and Hester [1970] and Johnson and Johnson [1974]). Along  
5 with Maidu and Konkow, the languages of the Nisenan people's northern neighbors, the Nisenan  
6 language forms the Maiduan language family of the Penutian linguistic stock (Shipley 1978: 83).

7 Wilson and Towne (1978) defined three main subgroups within the Nisenan tribe: Northern Hill  
8 Nisenan, Southern Hill Nisenan, and Valley Nisenan. The Valley Nisenan resided adjacent to the  
9 northernmost extent of the Plan Area before Euroamerican contact.

10 Valley Nisenan located their permanent settlements along the riverbanks on elevated natural levees  
11 near an adequate food and water supply, in fairly open terrain, with southern exposure preferred  
12 (Johnson and Johnson 1974; Beals 1933). Villages ranged from "tribelets" of small extended families  
13 consisting of 15 to 25 individuals to larger communities with more than 100 people (Kroeber 1925).

14 Village sizes ranged from 3 houses up to 40 or 50. Houses were domed structures covered with  
15 earth and tule or grass. Brush shelters were used in the summer and at temporary camps during  
16 food-gathering rounds (Kroeber 1925:407-408). Larger villages often had semi-subterranean dance  
17 houses, which were covered in earth and tule or brush and had a central smoke hole at the top.  
18 Other common village structures were the sweathouse, used for curing and purification, and the  
19 granary, used for storing acorns (Wilson and Towne 1978: 388-389).

20 The smallest Nisenan social and political unit was the family. Each extended family was represented  
21 by a family leader, who was called to council by a headman. The headman of the dominant village in  
22 a cluster of villages (tribelet) had the authority to call upon the aid of surrounding villages in social  
23 and political situations. The headman also served as village adviser, directed special festivities,  
24 arbitrated disputes, and acted as an official host (Wilson and Towne 1978: 393; Beals 1933: 360).

25 Early Nisenan contact with Europeans appears to have been limited to the southern reaches of their  
26 territory, beginning in the early 1800s. Unlike the Valley Nisenan, the groups in the foothills  
27 remained relatively unaffected by the European presence until the discovery of gold at Coloma in  
28 1848. In the years following the gold discovery, Nisenan territory was overrun by settlers. Gold  
29 seekers and the settlements that sprang up to support them were nearly fatal to the native  
30 inhabitants. Survivors worked as wage laborers and domestic help and lived on the edges of foothill  
31 towns. Despite severe depredations, descendants of the Nisenan still live in the northern Central  
32 Valley and maintain their cultural identity (Wilson and Towne 1978: 396-397).

#### 33 **18.1.4.2 Plains Miwok**

34 The eastern Miwok, and more specifically the Plains Miwok, inhabited the lower reaches of the  
35 Mokelumne and Cosumnes Rivers, and the banks of the Sacramento River from Rio Vista to Freeport  
36 (Levy 1978: 398).

37 Although the Plains Miwok shared a common language and cultural background, they comprised  
38 several separate, politically independent nations, or tribelets (the primary political unit). The  
39 tribelet represented an independent, sovereign nation that defined and defended a territory. The  
40 tribelet chief, usually a hereditary position, served as the voice of legal and political authority in the  
41 tribelet (Levy 1978: 410).

1 The eastern Miwok village comprised various structures. For houses, conical structures of bark were  
 2 used in the mountains, and conical structures of tule matting were used in the lower elevations of  
 3 the central Sierra. Semi-subterranean, earth-covered dwellings served as winter homes. Also within  
 4 the Miwok settlement were assembly houses, sweathouses, acorn granaries, menstrual huts, and  
 5 conical grinding huts over bedrock mortars (Levy 1978: 408–409).

6 With the arrival of trappers, gold miners, and other settlers to California, the Miwok suffered  
 7 exposure to introduced diseases. While some hostilities occurred between the Sierra Miwok and  
 8 miners, other Miwok groups became involved in agricultural operations on the newly developing  
 9 large land grants. The Spanish mission system forcibly assimilated many Plains Miwok circa 1811 to  
 10 1836 (Bennyhoff 1977). After California was annexed by the United States, some Miwok were  
 11 displaced to Central Valley locations, yet many remained on the rancherias established in the Sierra  
 12 Nevada foothills. During the late nineteenth and early twentieth centuries, the Miwok living on the  
 13 foothill rancherias adapted to new lifestyles, such as seasonal wage labor on ranches and farms, to  
 14 augment subsistence through hunting and gathering (Levy 1978: 400–401). Since the early  
 15 twentieth century, many persons of Miwok descent survive and maintain strong communities and  
 16 action-oriented organizations (see also Bennyhoff 1977).

### 17 **18.1.4.3 Northern Valley Yokuts**

18 The Northern Valley Yokuts were the historical occupants of the central and northern San Joaquin  
 19 Valley. *Yokuts* is a term applied to a large and diverse number of people inhabiting the San Joaquin  
 20 Valley and Sierra Nevada foothills of central California. The Northern Valley Yokuts' territory  
 21 extended from near where the San Joaquin River makes a big bend northward to a line midway  
 22 between the Calaveras and Mokelumne Rivers (Wallace 1978: 462).

23 For the Northern Valley Yokuts, the San Joaquin River and its main tributaries served as a lifeline to  
 24 the valley, and their villages congregated around these main water sources. They gained much of  
 25 their livelihood through fishing (in particular, salmon fishing) and varied their diet with waterfowl  
 26 and the harvesting of wild plant food, such as acorns, tule root, and seeds (Wallace 1978: 464).

27 Most settlements, or at least the principal ones, were built atop low mounds, on or near the banks of  
 28 large watercourses, for protection against spring flooding (Schenck 1926:132; Schenck and Dawson  
 29 1929: 308; Cook 1960: 242, 259, 285). Settlements were stable and occupied over multiple  
 30 generations. However, flooding posed the primary threat to a fully stationary existence, and the local  
 31 rivers, swollen from melting Sierra Nevada snows and heavy rains, periodically overflowed their  
 32 banks and drove the villagers to even higher ground (Wallace 1978: 466).

33 A headman guided each tribe, and village populations averaged around 300 people. Family houses  
 34 were round or oval, with a cone-shaped pole frame sunk into the ground and covered with tule mats.  
 35 Each village also had a community lodge for dances and community functions, as well as a  
 36 sweathouse (Wallace 1978: 465).

37 The Northern Valley Yokuts suffered great population decline and cultural breakdown when they  
 38 were drawn into the mission system. Following the mission period, Northern Valley Yokuts  
 39 continued to clash with the white settlers, and as a result, many villages were burned. The  
 40 population decline continued through the early American period, as the rich soils of the Delta and  
 41 valley attracted former miners and other settlers to farming. As they filled up the district, the  
 42 remaining Yokuts were driven off their hunting and food-gathering lands (Wallace 1978: 468–469).  
 43 As with the Miwok and the Nisenan, however, tribal population has surged in the latter decades of

1 the twentieth century, along with a renewed interest in traditional Yokuts culture. Today, the  
 2 descendants of the Yokuts live primarily on the Tule River Indian Reservation near Porterville,  
 3 established in 1873, and the Santa Rosa Rancheria near Lemoore, established in 1921 (World  
 4 Culture Encyclopedia 2008).

#### 5 **18.1.4.4 Southern Patwin**

6 The southern Patwin were a series of linguistically and culturally related tribelets that occupied a  
 7 portion of the lower Sacramento Valley west of the Sacramento River and north of Suisun Bay. They  
 8 resided adjacent to the Plan Area and probably used lands within its boundaries. These groups had  
 9 no common name, but spoke dialects of a single historically related language that extended  
 10 southward to the Delta. Patwin tribelets maintained their own autonomy and sense of territoriality  
 11 and typically consisted of one primary and several satellite villages. Villages were located along  
 12 waterways, often near the junction with another major topographic feature, such as foothills or  
 13 another waterway. The ethnographically documented villages nearest to the Plan Area were *Aguasto*  
 14 and *Tolenas*, both situated immediately north of San Pablo Bay to the west-northwest (Kroeber  
 15 1925, 1932).

16 The largest political unit for the Patwin was the tribelet, which consisted of one primary and several  
 17 satellite villages. Each tribelet had a discrete territory as well as autonomy relative to other social  
 18 units. While a common language unified these social units, tribelets each had subtle cultural  
 19 differences relative to one another. Within the tribelet were several political and social distinctions,  
 20 including a chief who oversaw village activities; this position was passed through inheritance from  
 21 father to son (Johnson 1978:354).

22 Patwin villages contained four main types of permanent structures: the dwelling or family house;  
 23 the ceremonial dance house, which was usually built at a short distance to the north or south end of  
 24 a village; the sudatory (sweathouse), which was positioned at either the east or the west of the  
 25 dance house; and the menstrual hut, which was placed on the edge of the village, farthest from the  
 26 dance house. All of these were earth-covered, semi-subterranean structures with either an elliptical  
 27 or circular shape (Johnson 1978: 357–358).

28 The principal subsistence activities of the Patwin were hunting, fishing, and the gathering of wild  
 29 plants. Along with the acorn, the primary staple, the Patwin gathered buckeye, pine nuts, berries,  
 30 wild grapes, and other plants. Each village had its own location for these food sources, and the  
 31 village chief oversaw the procurement of food for the village (Johnson 1978: 355).

32 Population estimates for Patwin groups, from pre-contact until 1833, are more than 15,000  
 33 (Kroeber 1932; Cook 1955). The Patwin were in contact with the Spanish missions by the late  
 34 eighteenth century, and some of the earliest historic records of the Patwin are found among mission  
 35 registers of baptisms, marriage, and deaths of Native American neophytes. Mission San Jose,  
 36 established in 1797, along with Mission Dolores, actively proselytized Patwin from their southern  
 37 villages, and Mission Sonoma, built in 1823, also baptized neophytes, until the secularization of all  
 38 missions by the Mexican government in 1832–1836. Afterward, many tribal territories were divided  
 39 into individual land grants (Johnson 1978: 351).

40 The U.S. conquest of California (1846–1848) was followed by a massive influx of American settlers  
 41 into Patwin territory. To facilitate the development of ranching, agriculture, mining, and large  
 42 settlements, the Patwin were usually moved to reservations. However, some Patwin assimilated  
 43 themselves, at least partially, into white culture by working as ranch laborers (Johnson 1978: 351).

1 Today, some Patwin descendants live on the Colusa, Cortina, and Rumsey Rancherias; although  
2 many of the people living on these rancherias are of general Wintun descent.

### 3 **18.1.5 Traditional Cultural Properties and Native American** 4 **Property Types (Including Sacred Sites)**

5 A traditional cultural property (TCP) is defined generally as a property that is associated with  
6 cultural practices or beliefs of a living community that (a) are rooted in that community's history for  
7 at least 50 years and (b) are important in maintaining the continuing cultural identity of the  
8 community (National Park Service 1998:1). Examples of TCPs range from expansive geographic  
9 areas such as the Sutter Buttes and Mt. Diablo to individual locations associated with beliefs or  
10 practices that are of traditional cultural significance. Examples of TCP types are described under  
11 separate headings below. Individual TCPs can qualify for listing in the NRHP if they meet the criteria  
12 described in *National Register Bulletin 38* (National Park Service 1998). In order to qualify, the TCP  
13 must retain the characteristics associated with its traditional use (integrity of condition) and still  
14 perform the traditional cultural function for which it is significant (integrity of relationship)  
15 (National Park Service 1998: 11–12), and must meet the criteria for listing in the NRHP (National  
16 Park Service 1998:12). TCPs may be associated with indigenous cultures or other communities.

17 Some Native American property types within the study area are typically associated with resource  
18 procurement activities along the waterways of the Central Valley, Delta, and adjacent foothills. Such  
19 Native American properties derive their significance not from the property itself, but from the role  
20 the property plays in the cultural practices or beliefs of an extant community or identifiable social  
21 group. Such properties have not been identified within the study area; however, there is a possibility  
22 that plant-gathering, fishing, and ceremonial and sacred sites that may occur in the study area  
23 qualify as TCPs. Native American property types that are not TPCs within the narrow criteria of  
24 *National Register Bulletin 38* may still be important cultural resources.

25 Sacred sites, as defined under Executive Order 13007, are also protected on federal lands under  
26 federal law. This order recognized sacred sites as religious and ceremonial sites. When such sites are  
27 identified by authoritative Native American representatives, federal land managers must  
28 accommodate access to such sites and avoid adversely affecting their physical integrity.

#### 29 **18.1.5.1 Plant-Gathering Areas**

30 Many Native American groups gather the same plant resources that have been used by their  
31 ancestors for centuries. Some gathered resources are used for subsistence or medicine, but Native  
32 Americans who currently practice traditional plant gathering focus more on materials for producing  
33 baskets and other items. Typical resources gathered for food include acorns, buckeye nuts, wild  
34 onion, and wild sweet potato. Resources gathered for materials include tule, willow, and various  
35 native grasses.

#### 36 **18.1.5.2 Fishing Locations**

37 Fishing played an important role in the lives of Native Americans within the Plan Area. Some Native  
38 American groups still procure fish (particularly salmon) using traditional methods, including weirs,  
39 nets, harpoons, and traps. There may be areas where Native American groups still practice these  
40 traditional procurement methods within the Plan Area.

### 1 **18.1.5.3 Ceremonial and Sacred Sites**

2 Some areas regarded as sacred by Native American groups are still used for ceremonial purposes.  
 3 These areas are typically associated with an event or a viewshed of particular importance. Often,  
 4 these are ancient village sites or meeting sites where tribal leaders from the region would gather, or  
 5 sites with views of areas important to their religious beliefs. The responsible federal agency is  
 6 required under EO 13007 to accommodate access to and ceremonial use of Indian sacred sites by  
 7 Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred  
 8 sites. There are no known federal lands with Indian sacred sites nor access to any sacred sites in the  
 9 proposed Plan Area. Should any sacred sites be identified through later consultations the federal  
 10 lead agencies will follow EO 13007 in accordance with the Section 106 PA.

### 11 **18.1.5.4 Historic-Era Traditional Cultural Properties**

12 Historic-era built-environment resources may qualify as TCPs as well; examples of historic-era TCPs  
 13 include some community gathering halls and neighborhoods associated with discrete and  
 14 identifiable living communities. Like all TCPs, historic-era TCPs must meet the NRHP-eligibility  
 15 criteria.

## 16 **18.1.6 Historic-Era Setting**

17 The following section summarizes the historic context developed in the technical report supporting  
 18 the findings of the built-environment field survey. The resources and events described in the setting  
 19 are intended to provide an overview of the significance themes associated with the geographic area  
 20 surrounding the location where impacts may occur. Impacts are identified after the setting in  
 21 Section 18.3, *Environmental Consequences*. A more detailed discussion of the Delta's history can be  
 22 found in the technical report prepared to document the inventory and evaluation of accessible built-  
 23 environment resources (ICF 2012). The Delta's historic-era built environment is largely the product  
 24 of agricultural and residential development, as well as fishing, canning and other industrialized  
 25 produce processing. These were facilitated by land reclamation and by transportation development,  
 26 the latter of which initially depended on Delta waterways but eventually served to surmount those  
 27 waterways. The Delta's built environment has also been shaped by large-scale flood control and  
 28 water management efforts, as well as recreational activities such as fishing and boating.

### 29 **18.1.6.1 The Spanish Era to the Gold Rush**

30 The first Spanish expedition to reach the Delta was led by Captain Pedro Fages in 1772, and it did  
 31 not spark interest in colonizing the region. Instead, the Spanish presence in California remained  
 32 concentrated mainly along the coastal strip of missions and *presidios*, the nearest of which was  
 33 located west of the Delta. During the early nineteenth century Spanish and Mexican soldiers  
 34 sometimes entered the Delta region on incursions to capture Native Americans who had fled  
 35 missions. When Mexico achieved independence from Spain in 1822, California became a territory of  
 36 Mexico, but remained a remote frontier province. By the end of the decade, American fur trappers  
 37 began to enter the San Joaquin Valley and the Delta after hearing reports of abundant beaver that  
 38 circulated after Jedediah Smith's trapping expeditions through central California in 1827 and 1828.  
 39 Fur trapping in and around the Delta resulted in a steep decline of beaver populations, and fur  
 40 trappers introduced diseases in the region that also heavily affected Native American tribes (Owens  
 41 1991:15; Sandos 2004: 1–13, 99–103; Thompson 1957: 88–90, 94–109).

1 By 1848, when gold was discovered at Sutter’s Mill in Coloma, only a handful of people had settled in  
 2 the Delta, but thousands of newcomers traveled Delta waterways en route to the foothill and  
 3 mountain mines to the east. Sacramento and Stockton developed as shipping centers and stopovers  
 4 for the mining economy. Some California newcomers made the sometimes lucrative decision to  
 5 forego mining and produce food to feed the growing population of miners. Farmers began to work  
 6 land at the edge of the Delta, along the natural levees of the major rivers draining into it. Known as  
 7 “rim landers,” these early settlers built so-called *shoestring levees* atop the natural levees to  
 8 withstand the highest tidal rises. Later, more extensive levee construction would transform the  
 9 Delta (Paul 1973: 19–20; Street 2004: 117; Thompson 1957: 133–146).

### 10 **18.1.6.2 Land Reclamation**

11 The Swampland Act of 1850 and subsequent creation of the State Board of Swamp Land  
 12 Commissioners enabled groups of small landholders to establish districts to undertake Delta land  
 13 reclamation. Lack of cooperation among small landholders and new legislation allowed most Delta  
 14 agriculture to be dominated by wealthy absentee owners rather than modest independent farmers.  
 15 Two large firms formed in the 1860s, George Roberts’s Tide Land Reclamation Company and Morton  
 16 Fischer’s Glasgow-California Land and Reclamation Company, dominated Delta reclamation into the  
 17 late nineteenth century. Speculative, large-scale land reclamation brought thousands of Chinese  
 18 workers to the Delta. Their labor first enabled the construction of levees and then helped the islands  
 19 created by such reclamation efforts yield abundant produce (Garone 2011: 113; Kelley 1989: 60;  
 20 Lund et al. 2007: 20; Owens 1991: 19; Thompson 1957: 198–202, 225).

21 Reclaimed lands required constant and expensive maintenance and repair. Levees frequently failed  
 22 and islands flooded. Sacramento and San Joaquin River beds were raised and choked by tailings  
 23 from hydraulic mining in the Sierra Nevada Mountains, which was outlawed in the mid-1880s but  
 24 had a longer lasting impact on rivers. The floors of the Delta’s peat land islands frequently  
 25 underwent subsidence, causing groundwater seepage to create new marsh areas. Upstream  
 26 irrigation draws caused saltwater intrusion deeper into the Delta.

27 Technology helped landowners overcome some of these problems. The introduction of clamshell  
 28 dredges in 1879 enabled the construction of increasingly larger and more secure levees. Modern  
 29 pumps and the introduction of electricity allowed for more efficient and thorough draining of  
 30 flooded islands. By the early twentieth century, the rise of industrial agriculture across the Delta  
 31 increased pressure for state and federal action to protect and facilitate the region’s agricultural  
 32 economy through flood control efforts, transportation development, and large-scale water policy  
 33 and development in the early twentieth century (Garone 2011:115: 155; Thompson 1957: 226–272;  
 34 Thompson 2006: 48, 55, 65).

### 35 **18.1.6.3 Agriculture**

36 Agricultural activity initially took place on higher lands near natural levees and rises along the  
 37 Sacramento River, where farmers raised potatoes, onions, and beans, among other crops, and grazed  
 38 cattle and sheep. By 1852 the banks of the lower San Joaquin River were almost entirely occupied by  
 39 small-scale farming operations as well. From the 1860s through the 1880s, reclamation spread  
 40 agriculture from alluvium lands upstream into the peat lands of the central Delta. Growers typically  
 41 planted newly reclaimed islands in grains, especially wheat. With water access to a growing urban  
 42 market in San Francisco, Delta agriculture boomed and crops were diversified. By 1883, large  
 43 tonnages of vegetables were being shipped to San Francisco in steamers that allowed Delta

1 vegetables and fruit to be sold a day after they were harvested. Over time, dairies, Bartlett pear  
 2 orchards, and asparagus became important components of the Delta economy (Lokke and Simmons  
 3 1980: 223-224; Rawls and Bean 2003: 201-02; Thompson 1957:139-44; Thompson 2006: 52, 56,  
 4 61-63).

5 On land created by large-scale speculative reclamation, patterns of Delta agriculture production  
 6 usually bore little resemblance to the image of an American farm worked and owned by an  
 7 independent Anglo-American farmer. Large land holdings were divided into agricultural “camps”  
 8 with a resident superintendent. American-born Delta farmers tended to be engaged in grain,  
 9 orchard, and livestock husbandry as lessees, farm managers, and in a few cases, independent  
 10 farmers. They sometimes subleased to ethnic entrepreneurs who then arranged to have members of  
 11 their ethnic communities work the land. Chinese, Italian, and Portuguese tenant farmers often  
 12 specialized in garden or truck farming. Chinese agricultural laborers also became associated with  
 13 row crops, especially nineteenth-century potato cultivation. In the twentieth century, Japanese  
 14 farmers frequently engaged in potato and asparagus production. Japanese entrepreneurs George  
 15 Shima and Hotta Kamajirō built agricultural empires, but most Japanese farmers were hampered  
 16 with discriminatory laws that barred them from land ownership and eventually barred them from  
 17 leasing land as well. Beginning in the 1920s, Filipino and Mexican day laborers also worked Delta  
 18 lands (Azuma 1994: 14-20; Miller 1995: 180-182; Thompson 1957: 300-302, 305-306, 309-310,  
 19 312-314, 331, 335).

20 Technological advances in the first decades of the twentieth century signaled the arrival of modern  
 21 industrial farming after World War I. “Caterpillar” tractors became commonplace in the Delta,  
 22 particularly among the large land companies. Although large acreage continued to be reclaimed, a  
 23 good deal of island land was improved through the introduction of electric pumps. The sale of field  
 24 crops by consignment to wholesale markets or shippers nurtured the rise of canneries and  
 25 wholesale produce houses with product standards and field buyers. Adding to the Delta’s industrial  
 26 built environment of salmon canneries developed in the latter nineteenth century were new  
 27 industrial complexes resembling urban factories, which often employed ethnic laborers to help  
 28 make sugar out of sugar beets or can fruit, asparagus, and other vegetables (Armentrout-Ma 1981:  
 29 149; Thompson 1957: 281, 296-298, 312, 314-318, 343-344).

#### 30 **18.1.6.4 Transportation Development**

31 During the Gold Rush, most Americans who encountered the Delta did so as passengers of sailboats  
 32 and steamers en route between San Francisco and the mines east of the Delta. A few trails and later  
 33 roadways complemented the water traffic. Only after the start of the twentieth century did roads  
 34 begin to dominate traffic in the Delta with the introduction of the automobile and truck. Ferries  
 35 connected roads with agriculture on remote islands. Anxious to retire their ferries, island owners  
 36 convinced county governments to take over their operation and maintenance. Ferries were always a  
 37 short-term solution to a transportation problem, and most land owners awaited local, state, or  
 38 federal investment in bridge construction to connect them more directly to markets. Nevertheless,  
 39 ferry boats still operate at the Empire Tract, Woodward Island, and connecting Jersey Island with  
 40 Bethel Island, among others. Early trails evolved into roads traveled by stages hauling freight back  
 41 and forth between the farms and the small towns that took shape behind recently constructed  
 42 levees. Railroads also played an important role in the development of agriculture, especially after  
 43 the beginning of the twentieth century. The San Joaquin Railroad was completed across the Delta in  
 44 1897 and purchased by Atchison, Topeka, & Santa Fe in 1898. Originating primarily in Antioch,

1 Stockton, and Sacramento, steamboats plied the waterways on set schedules dropping off workers  
2 and supplies and transporting harvested crops (Daggett 1922: 122, 334; Thompson 1980: 145–147).

3 After 1900, county and state investment nurtured bridge construction, which in turn enabled the  
4 development of year-round roads serving Delta residents and visitors. During the first decade of the  
5 twentieth century, the construction of steel draw and swing bridges across Georgiana Slough, both  
6 the North and South Forks of the Mokelumne River, and the Sacramento River below the head of  
7 Grand Island, provided for road connections from Walnut Grove and Brannan, Andrus, and Grand  
8 Islands to the population centers of Sacramento and Stockton. During the 1910s and early 1920s,  
9 additional bridge construction and road development connected the era’s increasing automobile  
10 traffic from the earlier established roads to new routes extending to Isleton and Rio Vista. In 1915  
11 the American Bridge Company completed the Middle River Bridge, currently the second oldest steel  
12 swing bridge in California. This bridge facilitated development of the southern Delta’s Borden  
13 Highway, or State Route 4 between Stockton and Contra Costa County. By 1922, the completion of  
14 River Road through the northern Delta allowed motorists to travel from Stockton and Sacramento  
15 across the northern Delta to Vallejo. Constructed in 1926 to replace a major ferry crossing, the  
16 American Toll Bridge Company’s Antioch Bridge provided for completion of the Victory Highway  
17 route, which crossed the Delta to connect Sacramento and the East Bay via Antioch. No longer extant  
18 electric interurban railroads also extended into portions of the Delta during the early twentieth  
19 century (Blow 1920: 226; California Department of Transportation 1990: 116–117; Thompson  
20 1980: 151–154, 163).

### 21 **18.1.6.5 Community Development**

22 During the mid-nineteenth century, Sacramento and Stockton took shape east of the Delta and  
23 became the most important supply ports and trading centers of the central California interior,  
24 dwarfing the small and modest-sized agricultural shipping hubs and processing centers that  
25 developed into Delta communities. Some of these Delta towns—Courtland, Rio Vista, Isleton,  
26 Knightsen, and Byron—are located outside but in the vicinity of the study area. These communities  
27 are discussed below because historically, residents of nearby properties within the study area likely  
28 identified themselves as members of those communities even while living on their peripheries.  
29 Hood, Locke, Holt and portions of Clarksburg and Walnut Grove are located within the study area.

30 Clarksburg was established in 1850 in the northernmost Delta as a commercial fishing community  
31 along the Sacramento River. The river banks north of Clarksburg attracted Portuguese settlement in  
32 what came to be known as the Lisbon District. The American Crystal Sugar Company developed a  
33 sugar refinery north of Clarksburg in the 1920s that continued to operate into the mid twentieth  
34 century. The community of Courtland was established on Randall Island approximately six-and-a-  
35 half miles south of Clarksburg along the east bank of the Sacramento River in 1867, when a post  
36 office was moved there from Onisbo across Steamboat Slough. Fruit production and other  
37 agricultural activity on Randall, Grand, and Sutter islands initially drove the town’s economy.  
38 Encompassing wharves, a hotel, and stores, Courtland experienced continued growth after 1900 as  
39 asparagus became the dominant crop. Unlike other Delta landing settlements, Courtland sent its  
40 fruits and vegetables to Hood for canning and other processing. Initially known as Richland, Hood  
41 was established in 1860 as a river landing with a warehouse and school house serving nearby  
42 agricultural producers. Located nearly seven miles southeast of Courtland, Walnut Grove was  
43 founded in 1851 by John W. Sharp. By the end of the 1870s the town had a post office, hotel,  
44 schoolhouse, meeting hall, sheltered wharf, and warehouses. The construction of nearby bridges and  
45 ferry services linked Walnut Grove to other towns as asparagus production boosted the local

1 economy in the twentieth century (Gregory 1913: 158; HARD Townsite Team 2007: 79–80; Reed  
2 1923: 121; Thompson 1957: 427–28, 431).

3 Located approximately 11 miles southwest of Walnut Grove, Rio Vista was founded by members of  
4 the Brazos del Rio (“Arms of the River”) community that flooded in 1861. Displaced Brazos del Rio  
5 residents established the new town on the ranch lands of Joseph Bruning adjacent to the Montezuma  
6 Hills. Rio Vista became a major wheat producer as well as an important shipping center. Between,  
7 1868 and 1878 the population within a ten mile radius of Rio Vista grew from 200 to 1,500. At the  
8 turn of the century, Rio Vista’s wharf was the Delta’s busiest. Cannery operations began in Rio Vista  
9 in 1904. The river on the east side of the town was spanned in 1918 by a bridge to Brannan Island.  
10 Four miles east of Rio Vista, Isleton was founded in 1874 by Dr. Josiah Pool as an agricultural service  
11 town and shipment landing. By 1878, the bustling town had a city hall, a water company, a  
12 warehouse, a hotel, a grange hall, two saloons, a blacksmith’s shop, several stores, and a commercial  
13 ferry that ran to Grand Island and Rio Vista. During the twentieth century, Isleton became a center of  
14 asparagus and other vegetable canning, including the Libby, McNeal & Libby operations (HARD  
15 Townsite Team 2007: 79; Thompson 1957: 429–30; Thompson 2006: 63–65).

16 Most of these northern and central Delta communities included Asian immigrant enclaves.  
17 Chinatowns comprised of two-story wood-frame buildings took shape in Walnut Grove, Isleton,  
18 Courtland, and Rio Vista during the late nineteenth century. Delta Chinatowns housed workers and  
19 high status bosses and merchants, and included vice-oriented venues such as opium dens, brothels,  
20 and gambling halls. After fire burned Walnut Grove’s Chinatown in 1915, members of the  
21 community’s ethnic Chungshan population—who were prohibited from owning land under the  
22 California Alien Land Act of 1913—leased nine acres north of Walnut Grove from George Locke and  
23 established a new Chinatown that became known as Locke. Locke residents created an unusual mix  
24 of traditional Chinese building patterns and Delta vernacular architecture in the two-story buildings  
25 overhanging Locke’s 12-foot-wide main street. In the early twentieth century, Japanese immigrants  
26 and their Nisei offspring settled in and farmed the Delta in increasing numbers. Limited by the alien  
27 land laws barring Japanese land ownership, Japanese farmers nevertheless established new ethnic  
28 enclaves in Delta towns such as Walnut Grove and Isleton (Charleton 1990: 23–25; Hoover et al.  
29 1990: 314–315).

30 Towns established within and in the vicinity of the conveyance alignments include Holt, Byron, and  
31 Knightsen. Located approximately seven miles west of the Stockton embarcadero is Holt, a small  
32 enclave established as a freight-car loading point along the Atchison, Topeka, and Santa Fe Railroad  
33 (Santa Fe) line completed in 1897. Holt was named for brothers Benjamin and Frank Holt, who  
34 founded Stockton’s Holt Manufacturing Company. Byron was established along the Southern Pacific  
35 Railroad line in 1878 approximately 12 miles southwest of Holt. Wheat farming initially drove  
36 Byron’s economy. Water from the Byron-Bethany irrigation district (1915–1916) helped diversify  
37 the town’s agricultural output with almond, walnut, alfalfa and dairy production. Knightsen was  
38 founded along the Santa Fe Railroad line at seven miles north of Byron in 1899. The town’s  
39 agricultural activity featured celery, dairy, and silkworm production. By World War I Knightsen  
40 consisted of residences, a store, blacksmith shop, garage, and a saloon (Hoover et al. 2002: 68, 370–  
41 371; Hulanski 1917: 404–05, 426–428; Thompson 1957: 411, 416, 425; Tinkham 1923: 339–340).

#### 42 **18.1.6.6 Water Management**

43 The Delta became a focal point of increasingly large-scale water engineering and management  
44 during the early twentieth century. Pressure to ameliorate ongoing flood threats due to the legacies

1 of hydraulic mining led to 1917 legislation creating the first federal control project. The plan  
2 included nearly two hundred miles of levees, several hundred miles of bypass channels, and  
3 ultimately the rerouting of floodwaters of the Sacramento, Yuba, and American Rivers. Large  
4 dredges in use in the Delta for decades were now employed to build new levees and create channels  
5 for flood control.

6 Numerous canals and straightened and widened river channels were by-products of the islands and  
7 levees created by Delta reclamation. These functioned as an important water source for irrigation  
8 and provided both recreational boating waterway and dredge access for levee construction and  
9 maintenance. The simplest and most cost-efficient method by which to obtain levee material was to  
10 dig a large ditch and build a berm on one side (the levee), with the ditch filling in with Delta waters  
11 on the other side (the canal). Late nineteenth century dredges were capable of moving up to 400  
12 cubic yards of earth per hour. The use of similar dredges across the Delta explains the similar  
13 appearance of many of the canals throughout the Delta. Most Delta canals appear to have been  
14 opportunistically created rather than being formally engineered, hence no design or “as-built”  
15 drawings for early canals and levees have been located. Nevertheless, with federal involvement in  
16 flood control after 1917, and especially in the 1920s, plans were drawn and implemented for  
17 standard levees and canals for both the Sacramento and Mississippi deltas (Kelley 1989: 252, 288–  
18 291; Mowry 1951: 152; Pisani 1984: 255).

19 California’s great Central Valley and many smaller valleys to the west and south had abundant land  
20 but lacked the water resources necessary for expanded agriculture. The federal Reclamation  
21 Act/Newlands Act of 1902, improvements in irrigation technology, and improving transportation  
22 technology and networks all held out promise for agricultural expansion in California. Limits on  
23 water availability remained the major hindrance to such expansion. After World War I, groundwater  
24 levels dropped under drought conditions, and saltwater reached east into the Delta as far as  
25 Courtland. At the end of the 1920s, state engineer Edward Hyatt developed a State Water Plan to  
26 respond to growing water problems. In 1928 the state’s voters approved a constitutional  
27 amendment that limited the holders of riparian water rights to reasonable use of their water, which  
28 opened the way for the state legislature to pass the Central Valley Project Act in 1933. The  
29 Department of Interior’s Bureau of Reclamation ultimately took responsibility for the Central Valley  
30 Project (CVP) at the behest of Congress. The project included pumping plants that would divert  
31 Sacramento River water southward through a series of canals linking with the Delta-Mendota Canal,  
32 which was designed to replace water diverted from the San Joaquin River at Friant Dam in the  
33 southern Sierra Nevada. Most of the Central Valley Project was completed by the early 1950s,  
34 including more than 500 miles of canals and 20 dams and reservoirs. After World War II, the state’s  
35 Water Resources Control Board began planning for additional large-scale water management  
36 projects. Then state engineer Arthur D. Edmonston developed a state water plan entailing major  
37 new water impoundment and conveyance development. Known as the State Water Project (SWP),  
38 Edmonston’s plan promised to augment flows to the Delta during dry years and develop state-  
39 funded canals to convey additional water to the San Joaquin Valley and new supplies to Santa Clara  
40 and Alameda Counties. The plan also called for the development of pumps to transmit Delta water to  
41 what would become known as San Luis Reservoir and to a huge aqueduct conveying water south to  
42 be pumped over the Tehachapi Mountains into Southern California. In 1960 voters approved the  
43 financing for the project, and the first phase was implemented between 1962 and 1971 (Cooper  
44 1968: 50–52; Kahrl 1979: 46–51; Rarick 2005: 205–228).

### 1 **18.1.6.7 Recreation**

2 Wild game and abundant fisheries have attracted people to the Delta for millennia, but with the  
 3 arrival of Jedediah Strong Smith and other Americans in the first half of the nineteenth century,  
 4 market hunting and commercial fishing began to dominate the marshes. By the end of the century,  
 5 however, several factors contributed to a change in emphasis from market to non-sale game and  
 6 from commercial fishing to sport and recreation. In addition, investors reclaimed swamp land faster  
 7 than the same could be put to productive agricultural uses, opening large areas for alternative uses,  
 8 including recreation. By the first decades of the twentieth century the Delta became a haven for  
 9 sportsmen and by the 1920s, with the construction of year-round roads and bridges, hotels and  
 10 campsites, it had become a destination for the recreational driver, the car camper, and the sightseer.  
 11 In the post-World War II era, the widespread development of tract housing bypassed the Delta,  
 12 primarily due to land ownership patterns, limited transportation options, and the overabundance of  
 13 water. At the same time, those factors helped to foster an increased demand for recreational  
 14 opportunities and the proliferation of house and party boats. Recently, wetlands restoration has  
 15 made the Delta a destination for bird watchers as several communities have embraced rare and  
 16 endangered birds (California Department of Water Resources 1995: 37–48; Schell 1979: 196;  
 17 Gardner 1964: 8–19; Steienstra 2012: 289; Thompson 1957: 58; Young 1969: 1).

### 18 **18.1.7 Historic-Era Built Environment Property Types**

19 This section outlines property types and subtypes known to be located in the geographic area where  
 20 conveyance facilities may be constructed and where conservation measures may be implemented  
 21 (the study area). The property types are organized chronologically, according to the historical  
 22 themes that generated these resources. Surveyors recorded built-environment resources that were  
 23 45 years old or older. These structures range from mid-to-late-nineteenth-century wood-frame  
 24 Delta residences to properties constructed in roughly the middle of the twentieth century. Specific  
 25 property types include buildings, structures, districts, landscapes, transportation facilities, and  
 26 reclamation and flood management buildings and structures. Relatively few nineteenth-century  
 27 buildings have been identified in the study area, reflecting both the sparse settlement during that  
 28 century and the vast changes that have occurred in more recent decades. These scarce nineteenth-  
 29 century buildings are more valuable for their rarity. However, the development of communities in  
 30 the Delta during the twentieth century is represented by a variety of building property types.  
 31 Residential and agricultural buildings make up the bulk of these properties in the study area, but  
 32 there are also a moderate number of commercial and industrial buildings within the study area that  
 33 illustrate equally important components of this development.

### 34 **18.1.7.1 Residential Buildings**

35 Residential buildings constructed in the nineteenth century are scattered throughout the region.  
 36 These residences exhibit Anglo-American and vernacular styles. Many of the buildings in the Delta  
 37 reflect adaptation to local conditions such as flooding, as well as the adherence to design and  
 38 structural forms consistent with the larger architectural style. One example of conformity within  
 39 architectural design can be seen in what are commonly referred to as “river homes,” or “Delta  
 40 homes.” These two-story buildings were often built within feet of levees and below the river level.  
 41 Some of the examples are located in the study area along River Road, the meandering State Highway  
 42 160 atop the Sacramento River levee. The second stories of these homes frequently extended

1 beyond the height of the levee, and in the event of a flood, it is customary for the occupant to open  
2 all doors and windows on the ground floor, and retreat to the dry, second floor.

3 Many of the relevant styles fall into the picturesque movement, including the romantic, Gothic  
4 revival, Greek revival, Italianate, and Victorian styles. These nineteenth-century homes are found on  
5 farms, smaller ranchettes, and in small towns throughout the study area. They also span a wide  
6 socioeconomic range, from modest vernacular cottages in the smaller towns to grand Beaux Arts  
7 mansions on the pioneering farms and ranches. The urban homes are generally built in the same  
8 styles as the rural homes and are typically cottages on small residential parcels that may also  
9 include a garage, fences or walls, and landscaping. Homes on farms and ranches may be contributors  
10 to rural historic landscapes, the evaluation of which involves consideration of the property as a  
11 whole, including residences as well as other ancillary buildings, structures, circulation systems, and  
12 boundary demarcations.

13 Residential buildings in the Delta constructed during the twentieth century include Craftsman-style  
14 bungalows, and Foursquare, Colonial Revival, Spanish Colonial Revival, Minimal Traditional, Ranch-  
15 style residences. These buildings were mainly constructed during the first half of the twentieth  
16 century in urban, rural, and suburban settings. The grand period revival farm and ranch mansions  
17 from the 1910s and 1920s represent some of the more striking property types. Rural homes also  
18 typically exist within a cluster of farmstead buildings, from barns to packing sheds to equipment  
19 sheds, and tank houses. House boats and floating cabins exist along several of the major sloughs  
20 within the study area. It is not uncommon to see dilapidated homes (at times reclaimed by the  
21 Delta's waterways), sheds, and general agricultural infrastructure in a variety of massing and scale.

22 Residential buildings exist in the small towns, such as Clarksburg, Hood, Locke, and Walnut Grove.  
23 With rare exceptions, the residential structures in these small towns lack the fine design of the  
24 grand rural properties. Suburban development dates almost exclusively to the post-World War II  
25 era. Homes in small suburban riverfront enclaves best reflect the ranch style and other mid-century  
26 modern styles.

### 27 **18.1.7.2 Commercial Buildings**

28 Commercial buildings located within the study area include a range of compositional types  
29 representing a variety of economic activities. Commercial buildings include stores, banks,  
30 agricultural vendors, and office buildings, and are typically one-part commercial block buildings  
31 with moderately decorative facades. Commercial buildings, with rare exceptions, exist in the small  
32 towns as well as the larger communities. Twentieth-century commercial buildings in the rural Delta  
33 occur almost exclusively in the small towns, including Clarksburg, Hood, Locke, and Walnut Grove.  
34 Although generally small in scale (reflecting the modest scale of commercial activity), these  
35 buildings mimic the design of commercial buildings in bigger cities. The few nonurban commercial  
36 buildings in the region comprise roadside or waterfront service buildings, such as stores and  
37 restaurants.

### 38 **18.1.7.3 Agricultural Properties**

39 Several property types within the study area are associated with the historical theme of agriculture.  
40 The infrastructure of agricultural properties includes individual ranchettes, large orchards and  
41 pastures, labor camps, and processing facilities, each of which include a consistent assemblage of  
42 mostly utilitarian buildings and structures that provide explicit functions.

1 Agricultural buildings and structures within the study area include residences, barns, tank houses,  
 2 shed outbuildings, grain silos and elevators, culling chutes, corrals, fences, and irrigation or drainage  
 3 ditches. The majority of these resource types date primarily to the early twentieth century and  
 4 reflect a broad range of architectural styles, from period revival mansions to vernacular barns, tank  
 5 houses, and weathered storage sheds. Of these architectural types, the most prominent agricultural  
 6 structure found within the study area is the gable-roofed barn. These barns share similar  
 7 characteristics, including moderately steep gables, tall sidewalls, rectangular massing, and post and  
 8 beam construction.

#### 9 **18.1.7.4 Historic Districts**

10 In addition to individual buildings, cultural resources can include historic districts. The National  
 11 Park Service defines *historic district* in *National Register Bulletin 15* as possessing “a significant  
 12 concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or  
 13 aesthetically by plan or physical development” (National Park Service 1987a:5). Examples of NRHP  
 14 listed historic districts include Locke and portions of Walnut Grove. Locke was listed in 1971, while  
 15 the constituent elements of Walnut Grove were listed between 1980 and 1990. These districts each  
 16 contain a cluster of buildings that are connected by similar themes of Asian-American settlement  
 17 and agriculture in the Delta. While these historic districts include a few nineteenth-century  
 18 residences and commercial buildings, they are dominated by buildings constructed during the first  
 19 few decades of the twentieth century. These districts reflect a wide range of functional building  
 20 types, including residential buildings, agricultural buildings and structures, and commercial  
 21 buildings. Districts also include scattered industrial buildings generally associated with food storage  
 22 or processing.

23 Districts are not limited to urban settings. South River Road, in the vicinity of Clarksburg, has a  
 24 series of late-nineteenth and early-twentieth-century grand rural homes associated with agriculture  
 25 that collectively could be considered a district. Also identified on South River Road are a series of  
 26 “river” or “Delta” homes built between 1855 and 1875. These modest vernacular buildings are  
 27 associated with early Portuguese settlers and comprise what is known in the region as the Lisbon  
 28 District.

#### 29 **18.1.7.5 Reclamation and Flood Management Structures**

30 The single greatest factor advancing settlement in the Delta was the reclamation of land and the  
 31 introduction of flood-management systems that shaped the landscape to accommodate the  
 32 agricultural development that still characterizes the region. The entire Delta’s natural landscape was  
 33 significantly altered and many features of these introduced systems are extant. Compared to many  
 34 built resources in the region, reclamation and flood-management structures have had minimal  
 35 consideration as historical resources.

36 Typical structures associated with reclamation and flood management include levees, canals, and  
 37 land-side irrigation and water conveyance infrastructure such as ditches, pump houses, and other  
 38 structures that support reclamation and agriculture on reclaimed uplands. These structures range in  
 39 sophistication from shoestring levees built in the nineteenth century, which required frequent  
 40 repair and reconstruction, to the canals built by Reclamation and DWR, which are among the largest  
 41 and most highly engineered water conveyance structures in the nation.

1 Diversion structures include weirs, either steel or wood, such as the fish protective facility at the  
2 Clifton Court Forebay. Pumping facilities of varying sizes are used to move water from where it is in  
3 excess to where it is needed. These range from the massive plants at Banks and Tracy Pumping  
4 Plants, to the mid-sized Middle River pumping plant, and to the single pumps that line the levees  
5 throughout the study area. Conduits such as canals, flumes, tunnels, and pipelines used to convey  
6 water are found throughout the study area. They range from simple dirt-lined ditches found on  
7 virtually every agricultural parcel to the three pipelines that make up the massive Mokelumne  
8 Aqueduct. Smaller pipelines with siphons, penstocks, gates, valves or other distribution and  
9 regulation structures are found throughout the study area.

#### 10 **18.1.7.6 Transportation**

11 One of the direct results of settlement was the development and improvement of the transportation  
12 infrastructure in the Delta. During the nineteenth and early twentieth centuries, several railroads  
13 were constructed through the region, roads were improved, and bridges were constructed to ensure  
14 efficient delivery of produce grown in the Delta region to major markets.

#### 15 **Railroads**

16 Railroads were important in the creation and economic success of many Delta towns. Relevant  
17 railroad systems in the Delta include the Southern Pacific Railroad; Atchison, Topeka, and Santa Fe  
18 Railway; San Pablo and Tulare Railroad; Sacramento Southern Railroad; Oakland East Bay and  
19 Antioch Railroad; and Electric Northern Railroad. The Atchison, Topeka, and Santa Fe Railway line,  
20 originally constructed in the late 1890s, now carries the Burlington Northern & Santa Fe as well as  
21 Amtrak's *San Joaquin*. Running generally east from the Antioch area, the line passes between Bacon  
22 and Woodward Islands before crossing the Middle River Bridge, opened in 1929.

#### 23 **Roads**

24 During the second half of the nineteenth century, early roads in the Delta were built over old trails  
25 that ran along the tops of river levees. One of the first public roads established in the Delta was  
26 Georgiana Road, which paralleled the east bank of the Sacramento River from Freeport to Walnut  
27 Grove and eventually to Sherman Island by 1870. Historic road alignments traverse the Delta and  
28 form one of the property types that may be affected by the project options.

#### 29 **Bridges and Ferries**

30 Bridges have been an important element in the transportation network of the Delta since the  
31 nineteenth century. Because these bridges often cross navigable waterways, their builders were  
32 required by law to provide the means of accommodating river traffic, until recently by constructing  
33 movable bridges. This was true of highway bridges as well as railroad bridges. There are dozens of  
34 movable spans in the study area, most dating to the early decades of the twentieth century. These  
35 include single-leaf as well as double-leaf bascule bridges. They also include a large number of  
36 center-pivot swing bridges. Owing to the presence of numerous railroad and highway lines in the  
37 region, the Delta is home to the majority of all movable spans in California. Since the end of World  
38 War II, the trend has been to construct high bridges that allow river traffic to pass without  
39 interrupting highway traffic.

1 For less significant crossing, ferries were often built to carry automobile traffic over navigable  
 2 waters. Most of these were simple cable ferries, capable of carrying only a small number of vehicles  
 3 at a time. San Joaquin County operated as many as 16 ferries at one time. Several of them are still in  
 4 service including one connecting the Upper Jones Tract with Woodward Island, and the Empire  
 5 Tract-Venice Island Ferry. The California Department of Transportation also operated J-Mack ferry  
 6 operates on Highway 220 at Ryer Island and Howard's Landing.

### 7 **18.1.7.7 Utility Infrastructure**

8 The growth and development of towns throughout the Delta necessitated the development of utility  
 9 infrastructure. Documented historic-era utility infrastructure in the study area is related primarily  
 10 to electrical transmission (e.g., transmission lines, yards, substations). This infrastructure can be  
 11 found throughout the study area, with features and elements spanning the 1910s through the 1950s.

### 12 **18.1.7.8 Rural Historic Landscapes**

13 Cultural resources do not always consist of individual sites, buildings, structures, or features. They  
 14 can also encompass landscapes, including those in rural contexts, such as those found throughout  
 15 the Delta. According to the National Park Service *National Register Bulletin 18* (National Park Service  
 16 1987) a *rural historic landscape* is defined as:

17 a geographical area that historically has been used by people, or shaped or modified by human  
 18 activity, occupancy, or intervention, and that possesses a significant concentration, linkage, or  
 19 continuity of areas of land use, vegetation, buildings and structures, roads and waterways, and  
 20 natural features. Rural landscapes commonly reflect the day-to-day occupational activities of people  
 21 engaged in traditional work such as mining, fishing, and various types of agriculture. Often, they have  
 22 developed and evolved in response to both the forces of nature and the pragmatic need to make a  
 23 living.

24 Such landscapes have been identified and evaluated in the Delta. The most notable example is Bacon  
 25 Island; the entire island has been designated an NRHP-eligible Rural Historic District. Although  
 26 large-scale agriculture is clearly still the predominant industry and way of life in the Delta, the  
 27 social, ethnic, technological, and economic context has changed dramatically since the early 1900s,  
 28 and few such complexes retaining a high degree of historical integrity have been recorded in the  
 29 Delta. Rural historic landscapes can include constituent elements of all the various property types  
 30 from the historic era. Rural historic landscapes can qualify as historic properties (National Park  
 31 Service 1987:24).

### 32 **18.1.8 Historical Archaeological Property Types**

33 For the purposes of this study, a historic archaeological property is defined as an archaeological site  
 34 that was formed during the period in which written records can inform and contextualize the  
 35 materials located within the site and is greater than 50 years in age. Previous studies in the vicinity  
 36 of the Plan Area provide reasonable expectations of the range of historic archaeological property  
 37 types relevant to the study area. These property types are classified here in terms of function.  
 38 Intensive historic-era use of waterways within the Plan Area coincides with the discovery of gold in  
 39 1848. The sudden influx of fortune seekers resulted in heavy use of waterways within the Plan Area  
 40 for transportation of individuals and supplies. To accommodate the surge, cities and towns were  
 41 established along the rivers. Both small- and large-scale mining endeavors were carried out in the  
 42 Plan Area vicinity along the Feather, Bear, Yuba, and American Rivers. Agricultural endeavors

1 followed quickly, and overland transportation routes were developed that often paralleled  
 2 waterways in the Plan Area. Historic archaeological resources within the Plan Area are mostly  
 3 related to these events. Six categories of historical archaeological property types have been  
 4 identified within the Plan Area and are described under separate headings below.

#### 5 **18.1.8.1 Building Foundations**

6 This property type is typically related to either commercial or residential structures that have been  
 7 demolished or burned down. Foundation materials can include stacked rock, wood, brick and  
 8 mortar, and concrete. There are often associated structural remains such as plate glass, nails, and  
 9 other hardware in the vicinity. Associated domestic refuse deposits are common, as well as  
 10 subterranean wells and privy pits. In the Plan Area, many examples of this site type are associated  
 11 with farming and ranching.

#### 12 **18.1.8.2 Refuse Scatters/Dumps**

13 This property type can range from a single dumping episode to an established community dump.  
 14 Associated artifacts include glass bottles and jars, ceramics, metal cans, and a multitude of other  
 15 domestic items. Many examples of this site type represent the remnants of labor camps and  
 16 townsites.

#### 17 **18.1.8.3 Transportation-Related Features**

18 This property type includes roads, railroads, and landings for water vessels. Roads and railroad lines  
 19 were often established on the crown of levees that parallel waterways in the Plan Area. Public  
 20 landings were often established for towns, but many were associated with private properties.  
 21 Landings associated with private property were typically used for loading and unloading of  
 22 materials and livestock associated with agricultural endeavors.

#### 23 **18.1.8.4 Water Conveyance Systems**

24 This property type consists of both small-scale systems, such as ditches, canals, and pump house  
 25 foundations, and large-scale systems, such as levees, sloughs, and weirs. Small-scale water  
 26 conveyance systems are typically associated with irrigation for agricultural endeavors.

#### 27 **18.1.8.5 Historic Isolates**

28 Isolated finds are three or fewer artifacts that occur within a restricted spatial context, generally  
 29 within an area 30 feet in diameter. Information potential usually is limited to location, material type,  
 30 style, and function of the individual artifact.

#### 31 **18.1.8.6 Maritime/Riverine Property Types**

32 The variety of riverine and maritime resources in the Plan Area provides a reasonable prediction of  
 33 the range of maritime/riverine property types that may be affected by the action alternatives. These  
 34 property types are classified here in terms of function because of the wide variation in form.  
 35 Maritime/riverine resources are typically associated with historic-era activities, although there is a  
 36 small possibility of submerged prehistoric resources. Use of the waterways in the Plan Area for  
 37 commercial, military, and recreational endeavors has been intensive since the 1840s, resulting, for  
 38 various reasons, in numerous maritime/riverine properties. Previous cultural resources studies in

1 the Plan Area have identified a few maritime/riverine property types. Maritime/riverine resource  
 2 property types include the remains of landings, pilings, and modern and historic vessels. Each  
 3 property type is described under a separate heading below.

#### 4 **Landings**

5 This property type includes wooden structures used for docking vessels to load and unload people,  
 6 livestock, and materials. Public landings were often established for towns, but many were associated  
 7 with private properties. Landings associated with private property were typically used for loading  
 8 and unloading materials associated with agricultural endeavors. As overland transportation became  
 9 more common, use of the waterways declined and landings fell into disrepair, often resulting in their  
 10 collapse into the water.

#### 11 **Pilings**

12 This property type was often associated with landings or structures built along the riverfront.  
 13 Pilings are wood or concrete poles driven into the river bottom to support the associated structure,  
 14 but they were sometimes used individually for the mooring of vessels. Many pilings in the Plan Area  
 15 have fallen into disrepair and sunk, although some are intact and being used for mooring.

#### 16 **Vessels**

17 A wide range of submerged vessels dating from the 1840s to the present can be found in the Plan  
 18 Area. The earliest vessel types included small and large sailing vessels and barges, typically with  
 19 wooden hulls and metal hardware. These vessels were usually associated with commercial  
 20 endeavors because recreational boating was not common until the 1930s. Wooden barges in the  
 21 Plan Area were typically “dumb” barges (i.e., no built-in means of propulsion) and were used for  
 22 transporting produce while tethered to a wind- or steam-powered vessel. Steel hulls became more  
 23 prominent after the 1860s and are typically steamboats, barges, fishing vessels, or military vessels.  
 24 Modern vessels are most often recreational and are made of fiberglass and wood or steel composite.

### 25 **18.1.9 Identified Resources and Action Alternatives**

26 Appendix 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, describes identified  
 27 cultural resources affected by the alternatives under consideration. These resources were identified  
 28 through record searches at the various regional offices of the CHRIS as well as historical map  
 29 research and field inventory efforts for built-environment resources. Appendix 18B identifies which  
 30 resources occur in each of the alternatives, and resources that are unique to specific alternatives.  
 31 This set of identified resources provides a sample used to predict the sensitivity of these rights-of-  
 32 way for additional cultural resources, and indicates that all action alternatives are sensitive for  
 33 archaeological and built-environment resources. Appendix 18A, *Archaeological Resources Sensitivity*  
 34 *Assessment*, provides a further analysis of the sensitivity of the Plan Area for buried archaeological  
 35 resources based on land forms and geological processes.

## 1 18.2 Regulatory Setting

### 2 18.2.1 Federal Plans, Policies, and Regulations

#### 3 18.2.1.1 National Environmental Policy Act

4 NEPA establishes the federal policy of preserving important historic, cultural, and natural aspects of  
5 our national heritage during federal project planning. All federal or federally assisted projects  
6 requiring action pursuant to Section 102 of the act must take into account impacts on cultural  
7 resources (42 United States Code [USC] Sections 4321–4347).

8 The Council on Environmental Quality (CEQ) Guidelines provided a standard for determining the  
9 significance of impacts analyzed under NEPA. *Significance* as used in NEPA requires considering  
10 impacts in terms of both context and intensity (40 Code of Federal Regulations [CFR] 1508.27).

- 11 • *Context* means that the action must be analyzed in terms of society as a whole, the affected  
12 region and interests, and the local setting. The span of the context should be scaled to match the  
13 action. For larger actions a wider context is appropriate. For smaller site-specific actions the  
14 local context may be sufficient. Both the short- and long-term impacts of an action are relevant  
15 to this analysis (40 CFR 1508.27[a]).
- 16 • *Intensity* means the severity of an impact. The CEQ Guidelines direct federal agencies to consider  
17 cultural resources when evaluating intensity. Specific factors that may affect the intensity of an  
18 impact include the proximity to historical or cultural resources, the potential for impacts on  
19 NRHP-eligible or listed properties and the potential for loss or destruction of significant  
20 scientific, cultural, or historical resources (40 CFR 1508.27[b]).

21 These considerations mean that NEPA analysis should identify the potential for an action to  
22 adversely affect resources that are or may be eligible for listing on the NRHP. It should be noted that  
23 some federal agencies, such as USACE, follow 33 CFR Part 325, Appendix C. The substance of these  
24 regulations generally follows 36 CFR Part 800.

#### 25 18.2.1.2 Section 106 of the National Historic Preservation Act of 1966

26 Section 106 of the NHPA (“Section 106”) requires federal agencies to consider the effects of their  
27 actions on historic properties (54 USC 306108). *Historic properties* are resources listed on or eligible  
28 for listing on the NRHP (36 CFR 800.16[l][1]). A property may be listed in the NRHP if it meets  
29 criteria provided in the NRHP regulations (36 CFR 60.4). Typically properties must also be 50 years  
30 old or greater (36 CFR 60.4[d]).

- 31 • The quality of significance in American history, architecture, archaeology, engineering, and  
32 culture is present in districts, sites, buildings, structures, and objects that possess integrity of  
33 location, design, setting, materials, workmanship, feeling, and association (further discussed  
34 below in Section 18.2.2.1) and:

35 (A) That are associated with events that have made a significant contribution to the broad  
36 patterns of our history; or

37 (B) That are associated with the lives of persons significant in our past; or

- 1 (C) That embody the distinctive characteristics of a type, period, or method of construction, or  
 2 that represent the work of a master, or that possess artistic value, or that represent a  
 3 significant and distinguishable entity whose components may lack individual distinction; or  
 4 (D) That have yielded, or may be likely to yield, information important in prehistory or history.

5 Some property types do not typically qualify for the NRHP, however these properties may qualify if  
 6 they fall into one or more of the following criteria considerations. These considerations consist of  
 7 the following (36 CFR 60.4).

- 8 • A religious property deriving primary significance from architectural or artistic distinction or  
 9 historical importance (a); or
- 10 • A building or structure removed from its original location but which is significant primarily for  
 11 architectural value, or which is the surviving structure most importantly associated with a  
 12 historic person or event (b); or
- 13 • A birthplace or grave of a historical figure of outstanding importance if there is no appropriate  
 14 site or building directly associated with his productive life (c).
- 15 • A cemetery which derives its primary significance from graves of persons of transcendent  
 16 importance, from age, from distinctive design features, or from association with historic events  
 17 (d); or
- 18 • A reconstructed building when accurately executed in a suitable environment and presented in a  
 19 dignified manner as part of a restoration master plan, and when no other building or structure  
 20 with the same association has survived (e); or
- 21 • A property primarily commemorative in intent if design, age, tradition, or symbolic value has  
 22 invested it with its own exceptional significance (f); or
- 23 • A property achieving significance within the past 50 years if it is of exceptional importance (g).

24 The Section 106 review process typically consists of the following major steps; all of which occur in  
 25 consultation with SHPO, Tribes, and other consulting parties.

- 26 • Identify the federal agency undertaking.
- 27 • Initiate Section 106 process.
- 28 • Identify an area of potential effects, and within these limits, identify historic properties.
- 29 • Assess adverse effects.
- 30 • Resolve adverse effects (typically through treatment, avoidance, preservation, or other  
 31 mechanisms identified by the lead agency in consultation with SHPO and interested parties).

32 The Section 106 regulations define an adverse effect as an effect that alters, directly or indirectly, the  
 33 qualities that make a resource eligible for listing in the NRHP (36 CFR 800.5[a][1]). Consideration  
 34 must be given to the property's location, design, setting, materials, workmanship, feeling, and  
 35 association, to the extent that these qualities contribute to the integrity and significance of the  
 36 resource. Adverse effects may be direct and reasonably foreseeable, or may be more remote in time  
 37 or distance (36 CFR 800.5[a][1]).

1 Under Section 307103(a) of the NHPA, “[t]he head of a Federal agency ... shall withhold from  
 2 disclosure to the public, information about the location, character, or ownership of a historic  
 3 resource if the Secretary and the agency determine that disclosure may ... risk harm to the historic  
 4 resources ...”

### 5 **18.2.1.3 Compliance with Section 106 of the National Historic** 6 **Preservation Act**

7 Section 106 review will be performed for relevant federal actions that qualify as undertakings and  
 8 that are necessary to implement the project. Phased identification and evaluation of cultural  
 9 resources will be completed as authorized by 36 CFR 800.4(b)(2) and 36 CFR 800.14(b)(1). The  
 10 phased completion of these steps will be accomplished by a PA covering federal agency  
 11 responsibilities under Section 106 of the NHPA. This PA will require USACE to complete the  
 12 management steps required under Section 106 of the NHPA, as well as any CEQA or NEPA mitigation  
 13 obligations, for all future undertakings necessary to implement the project. For each undertaking  
 14 the agencies shall:

- 15 ● Identify the area in which historic properties may be affected.
- 16 ● Complete an inventory for historic properties.
- 17 ● Evaluate identified resources to determine if they are historic properties.
- 18 ● Determine if the undertaking will adversely affect those properties.
- 19 ● Resolve adverse effects.

20 These steps will be completed in consultation with the SHPO and Indian Tribes, the ACHP, and other  
 21 interested parties that choose to participate in the Section 106 process.

22 A PA is currently in development and USACE will be the lead agency. The PA identifies the major  
 23 projects related to the proposed project and will include the water conveyance system and its  
 24 components.

### 25 **18.2.1.4 Native American Graves Protection and Repatriation Act**

26 The Native American Graves Protection and Repatriation Act (NAGPRA) provides a process for  
 27 federal agencies to determine custody of Native American cultural items to lineal descendants and  
 28 culturally affiliated Indian tribes. NAGPRA defines the ownership of Native American human  
 29 remains and funerary materials excavated on lands owned or controlled by the federal government.  
 30 NAGPRA establishes a hierarchy of ownership rights for Native American remains identified on  
 31 these lands (25 USC Section 3002[a]):

- 32 ● Where the lineal descendants can be found, the lineal descendants own the remains.
- 33 ● Where the lineal descendants cannot be found, the remains belong to the Indian tribe or Native  
 34 Hawaiian organization on whose land the remains were found.
- 35 ● If the remains are discovered on other lands owned or controlled by the federal government and  
 36 the lineal descendants cannot be determined, the remains belong to the Indian tribe or Native  
 37 Hawaiian organization that is culturally affiliated with the remains, or the tribe that aboriginally  
 38 occupied the land where the remains were discovered.

1 Under NAGPRA intentional excavation of Native American human remains on lands owned or  
 2 controlled by the federal government may occur (25 USC Section 3002[c]) only under the following  
 3 circumstances.

- 4 • With a permit issued under the Archaeological Resources Protection Act (16 USC Section 470cc);  
 5 and;
- 6 • After documented consultation with the relevant tribal or Native American groups.
- 7 • Ownership and disposition follows NAGPRA for all human burials and associated artifacts (25  
 8 US Code Section 3001 and 43 CFR Section 10.6) when cultural affiliation can be determined.

9 NAGPRA also provides guidance on inadvertent discoveries of Native American or Hawaiian human  
 10 remains on lands owned or controlled by the federal government. When an inadvertent discovery  
 11 on these lands occurs in association with construction, construction must cease. The party that  
 12 discovers the remains must notify the relevant federal agency, and the remains must be transferred  
 13 according to the ownership provisions above (25 USC Section 3002[d]).

#### 14 **18.2.1.5 The Archaeological Resources Protection Act**

15 The Archaeological Resources Protection Act (ARPA) requires a permit for intentional excavation of  
 16 archaeological materials on federal lands (16 USC 470ee[a]). The federal agency that owns or  
 17 controls the land may dispense permits for excavation as provided in the ARPA regulations (43 CFR  
 18 7.5). The permit may require notice to affected Indian tribes (43 CFR 7.7), and compliance with the  
 19 terms and conditions provided in the ARPA regulations (43 CFR 7.9). While few federal lands occur  
 20 in the study area, it should be noted that work on federal lands and collections retrieved from  
 21 federal lands are subject to ARPA.

### 22 **18.2.2 State Plans, Policies, and Regulations**

#### 23 **18.2.2.1 California Environmental Quality Act – Statute and Guidelines**

24 CEQA requires the lead agency to consider the effects of a project on cultural resources. Two  
 25 categories of cultural resources are specifically identified in the State CEQA Guidelines; historical  
 26 resources (State CEQA Guidelines Section 15064.5[b]) and unique archaeological sites (State CEQA  
 27 Guidelines 15064.5[c] and California Public Resources Code (PRC) Section 21083.2). Different legal  
 28 rules apply to the two different categories of cultural resources, though the two categories  
 29 sometimes overlap where a “unique archaeological resource” also qualifies as an “historical  
 30 resource.” In such an instance, the more stringent rules for archaeological resources that are  
 31 historical resources apply, as explained below. CEQA and other California laws also set forth special  
 32 rules for dealing with human remains that might be encountered during construction.

33 Historical resources are those meeting the requirements listed below.

- 34 • Resources listed in or determined eligible for listing in the CRHR (State CEQA Guidelines Section  
 35 15064.5[a][1]). Note that CRHR-eligible resources include resources listed on or eligible for the  
 36 NRHP (California PRC Section 5024.1);
- 37 • Resources included in a local register as defined in California PRC Section 5020.1(k), “unless the  
 38 preponderance of evidence demonstrates” that the resource “is not historically or culturally  
 39 significant.” (State CEQA Guidelines Section 15064.5[a][2]);

- 1 • Resources that are identified as significant in surveys that meet the standards provided in  
2 California PRC Section 5024.1[g] (State CEQA Guidelines Section 15064.5[a][3]); or
- 3 • Resources that the lead agency determines are significant, based on substantial evidence (State  
4 CEQA Guidelines Section 15064.5[a][3]).

5 Cultural resources may be listed in the CRHR if they have historical significance and integrity.

- 6 • Cultural resources are significant if they meet any of the following criteria:
  - 7 1. Are associated with events that have made a significant contribution to the broad patterns  
8 of California’s history and cultural heritage, or the United States (California Code of  
9 Regulations [CCR], Title 14, Section 4852[b][1]),
  - 10 2. Are associated with the lives of persons important in our past (14 CCR Section 4852[b][2]),
  - 11 3. Embody the distinctive characteristics of a type, period, region, or method of construction,  
12 or represent the work of an important creative individual, or possess high artistic values (14  
13 CCR Section 4852[b][3]), or;
  - 14 4. Yield, or may be likely to yield, information important in prehistory or history (14 CCR  
15 Section 4852[b][4]).

16 Integrity for built-environment resources means the “survival of characteristics that existed during  
17 the resource’s period of significance. Integrity must also be assessed in relationship to the particular  
18 criterion under which a resource has significance. For example, even where a resource has “lost its  
19 historic character or appearance [it] may still have sufficient integrity for the California Register if it  
20 maintains the potential to yield significant scientific or historical information or specific data.”  
21 Integrity is further defined as the ability to “convey the reasons” for the significance of the resource  
22 (14 CCR Section 4852[c])

23 For archaeological sites, this language therefore means that a site must have a likelihood of yielding  
24 useful information for research in order to have integrity, if the site is significant for its data  
25 potential.

26 The fact that a resource is not listed in, or determined to be eligible for listing in the California  
27 Register of Historic Resources, not included in a local register of historical resources, or identified in  
28 an historical resource survey does not preclude a CEQA lead agency from determining that the  
29 resource *may* be an historical resource as defined in California PRC Section 5020.1(j) or 5024.1  
30 (State CEQA Guidelines Section 15064.5[a][4]).

31 Notably, a project that causes a substantial adverse change in the significance of an historical  
32 resource is a project that may have significant impact under CEQA (State CEQA Guidelines Section  
33 15064.5[b]). A substantial adverse change in the significance of an historical resource means  
34 physical demolition, destruction, relocation, or alteration of the resource or its immediate  
35 surroundings such that the significance of the historical resource would be materially impaired. The  
36 significance of an historical resource is materially impaired if the project demolishes or materially  
37 alters any qualities that justify the:

- 38 • inclusion or eligibility for inclusion of a resource on the CRHR (State CEQA Guidelines Section  
39 15064.5[b][2][A],[C]).
- 40 • inclusion of the resource on a local register (State CEQA Guidelines Section 15064.5[b][2][B]).

1 *Unique archaeological resources*, on the other hand, are defined in California PRC Section 21083.2 as  
2 a resource that meets at least one of the following criteria.

- 3 • Contains information needed to answer important scientific research questions and there is a  
4 demonstrable public interest in that information.
- 5 • Has a special and particular quality such as being the oldest of its type or the best available  
6 example of its type.
- 7 • Is directly associated with a scientifically recognized important prehistoric or historic event or  
8 person (California PRC Section 21083.2[g])

## 9 **Integrity Considerations for Historic-Era Built-Environment Resources**

10 Integrity in this context is the authenticity of a historic resource's physical characteristics so that it  
11 is recognizable as a historic resource and retains its ability to convey its historical associations or  
12 attributes. The evaluation of integrity is grounded in the evaluator's understanding of a property's  
13 physical features and how these features relate to its historical associations or attributes.  
14 Associations and attributes for properties found in the Delta have been summarized in Section  
15 18.1.6 *Historic-Era Setting* and Section 18.1.7, *Historic-Era Built Environment Property Types*.

16 Both the CRHR and NRHP define the following seven aspects of integrity.

- 17 • Location: where the historic property was constructed or the place where the historic event  
18 occurred.
- 19 • Design: the combination of elements that create the historic form, plan, space, structure, and  
20 style of a property. This includes organization of space, proportion, scale, technology,  
21 ornamentation, and materials. This is applicable to larger properties for the historic way in  
22 which the buildings, sites, and structures are related.
- 23 • Setting: the physical environment of a historic property. It refers to the historic character of the  
24 property. It includes the historical relationship of the property to surrounding features and open  
25 space. These include topographic features, vegetation, simple manmade paths or fencing and the  
26 relationships between buildings, structures or open space.
- 27 • Materials: the physical elements that were combined during a particular period of time and in a  
28 particular pattern or configuration to form the historic property.
- 29 • Workmanship: the physical evidence of the crafts of a particular culture or people during a given  
30 period in history. It may be expressed in vernacular methods of construction and plain finishes  
31 or in highly sophisticated configuration and ornamental detailing.
- 32 • Feeling: the property's expression of the aesthetic or historic sense of a particular period of  
33 time. It results from the presence of physical features that, taken together, convey the property's  
34 historic character.
- 35 • Association: the direct link between an important historic event or person and a historic  
36 property. A property retains association if it is the place where the event or activity occurred  
37 and is sufficiently intact to convey that relationship to an observer. Like feeling, association  
38 requires the presence of physical features that convey a property's historic character.

1 The Delta contains a large variety of built resources, from levees to communities, spanning a period  
 2 from about 1850 to present. When considering integrity, properties that are rare or are early  
 3 examples of built resources in the region are eligible under different criteria, but still maintain  
 4 integrity for the characteristics that make it eligible for listing in the register. Delta-style houses,  
 5 some of the earliest residential building in the region, are one such property type because they are  
 6 particular to the region, having been designed in response to that environment and, due to their age  
 7 and modest origins, are more likely to have been subject to incongruous alterations over the years  
 8 or poorly maintained than the grander late 19<sup>th</sup> century – 1920s farming estates or river-front  
 9 homes.

10 Integrity conclusions for large agricultural properties are complex in that these properties have  
 11 multiple associated features to consider and were likely developed over time in response to  
 12 technological advances, changes in land use, and changes in number of residents. When determining  
 13 integrity for this kind of property, the architectural historian looked at the property as a whole and  
 14 determined which resources would be contributors to the property and which would be of primary  
 15 importance to the property's significance. For example, an agricultural property may have altered  
 16 residences, new outbuildings, an altered barn, and a shed that appears to be original or not altered  
 17 in the last 45 years. Based on the ubiquitous nature of sheds in rural landscapes, it is unlikely that  
 18 the shed would be individually eligible. Due to the property's majority of altered and newly built  
 19 resources, it will have been determined to lack integrity. If insufficient primary buildings, such as the  
 20 main residence or major agriculture-related buildings such as barns were not visible from the public  
 21 right-of-way, the property as a whole was listed as being insufficiently accessible and no  
 22 determination could be made.

23 Properties such as the islands/reclamation districts or railroads that are subject to heavy use or  
 24 gradual impacts from environmental stresses have to be maintained to continue to be useable. Some  
 25 materials and structures on the islands may have to be replaced, such as pumps and pipes, or  
 26 reinforced, such as the levees, Railroad ties rot and have to be replaced. The historic use of the island  
 27 is maintained and the alignment and grade of the railroad is unaltered, which are the over-arching  
 28 historic features of these kinds of properties. Accordingly, ongoing repair and replacement of  
 29 individual components of the resource may be consistent with the character and significance of the  
 30 resource. These factors are considered when determining levels of integrity.

31 If a property known to be 45 years old or more appears to have been significantly altered within the  
 32 last 45 years, such that it no longer retains character-defining elements, and so that it is  
 33 recognizable as a historic resource, and no longer retains its ability to convey its historical  
 34 associations or attributes, it is considered to not have adequate historic integrity.

35 While integrity can be somewhat subjective, the following are alterations commonly seen in Delta  
 36 buildings.

- 37 ● Windows have been replaced with inconsistent window types, such as aluminum or vinyl;
- 38 ● Window openings have been changed, enclosed, or new opening have been made;
- 39 ● Siding has been replaced with a substitute material, such as vinyl, aluminum, stucco;
- 40 ● Rooflines have been changed;
- 41 ● Doors have been replaced with new doors inconsistent with the original in style and/or
- 42 material;

- 1 • Door openings have been altered, enlarged, or moved;
- 2 • Ornamentation characteristic to specific architectural styles has been added or removed;
- 3 • Additions, particularly those out of scale or otherwise inconsistent in materials, form or
- 4 massing.

5 These considerations were taken into account when conducting field surveys and when assessing  
6 effects.

## 7 **Mitigation Requirements for Archaeological Resources Qualifying As Historical** 8 **Resources**

9 As set forth in State CEQA Guidelines Section 15064.5[c], special rules apply where a lead agency is  
10 not certain at first whether an archaeological resource qualifies as either an “historical resource” or  
11 a “unique archaeological resource.” That section provides that “[w]hen a project will impact an  
12 archaeological site, a lead agency shall first determine whether the site is an historical resource[.]”  
13 “If a lead agency determines that the archaeological site is an historical resource,” the resource shall  
14 be subject to the rules set forth above regarding historical resources. In addition, according to State  
15 CEQA Guidelines Section 15126.4[b]

16 [p]ublic agencies should, whenever feasible, seek to avoid damaging effects on any historical  
17 resource of an archaeological nature. The following factors shall be considered and discussed in  
18 an EIR for a project involving such an archaeological site:

- 19 (A) Preservation in place is the preferred manner of mitigating impacts to archaeological sites.  
20 Preservation in place maintains the relationship between artifacts and the archaeological  
21 context. Preservation may also avoid conflict with religious or cultural values of groups  
22 associated with the site.
- 23 (B) Preservation in place may be accomplished by, but is not limited to, the following:
- 24 1. Planning construction to avoid archaeological sites;
  - 25 2. Incorporation of sites within parks, greenspace, or other open space;
  - 26 3. Covering the archaeological sites with a layer of chemically stable soil before building tennis  
27 courts, parking lots, or similar facilities on the site.
  - 28 4. Deeding the site into a permanent conservation easement.

29 Thus, although California PRC Section 21083.2, in dealing with “unique archaeological sites,”  
30 provides for specific mitigation options “in no order of preference,” CEQA Guidelines Section  
31 15126.4[b], in dealing with “historical resources of an archaeological nature,” provides that  
32 “[p]reservation in place is the preferred manner of mitigating impacts to archaeological sites.”

33 For archaeological resources that qualify as historical resources, “data recovery” is a disfavored  
34 form of mitigation compared with “preservation in place.” Yet “[w]hen data recovery through  
35 excavation is the only feasible mitigation, a data recovery plan, which makes provisions for  
36 adequately recovering the scientifically consequential information from and about the historical  
37 resource, shall be prepared and adopted prior to any excavation being undertaken. Such studies  
38 shall be deposited with the California Historical Resources Regional Information Center.” Moreover,  
39 “[i]f an artifact must be removed during project excavation or testing, curation may be an  
40 appropriate mitigation” (State CEQA Guidelines Section 15126.4[b][3][C]). “Data recovery shall not  
41 be required[, however,] for an historical resource [as with a unique archaeological resource] if the  
42 lead agency determines that testing or studies already completed have adequately recovered the

1 scientifically consequential information from and about the archaeological or historical resource,  
 2 provided that the determination is documented in the EIR and that the studies are deposited with  
 3 the California Historical Resources Regional Information Center” (State CEQA Guidelines Section  
 4 15126.4[b][3][D]).

5 With respect to *both* historical resources and unique archaeological resources

6 a lead agency should make provisions for...resources accidentally discovered during construction.  
 7 These provisions should include an immediate evaluation of the find by a qualified archaeologist. If  
 8 the find is determined to be an historical or unique archaeological resource, contingency funding and  
 9 a time allotment sufficient to allow for implementation of avoidance measures or appropriate  
 10 mitigation should be available. Work could continue on other parts of the building site while  
 11 historical or unique archaeological resource mitigation takes place (State CEQA Guidelines Section  
 12 15064.5[f])

### 13 **Mitigation for Unique Archaeological Resources**

14 If a lead agency determines that “an archaeological site does *not* meet the criteria” for qualifying as  
 15 an historical resource “but does meet the definition of a unique archeological resource..., the site  
 16 shall be treated in accordance with the provisions of section 21083.2” (described above). Section  
 17 21083.2 contains the special rules for mitigation for “unique archaeological resources.” These rules  
 18 do not apply if the archaeological resource is an historical resource (State CEQA Guidelines Section  
 19 15064.5[c][1]). CEQA states that

20 [i]f it can be demonstrated that a project will cause damage to a unique archaeological resource, the  
 21 lead agency may require reasonable efforts to be made to permit any or all of these resources to be  
 22 preserved in place or left in an undisturbed state. Examples of that treatment, in no order of  
 23 preference, may include, but are not limited to, any of the following:

- 24 1. Planning construction to avoid archaeological sites.
- 25 2. Deeding archaeological sites into permanent conservation easements.
- 26 3. Capping or covering archaeological sites with a layer of soil before building on the sites.
- 27 4. Planning parks, greenspace, or other open space to incorporate archaeological sites.

28 Excavation as mitigation shall be restricted to those parts of the unique archaeological resource that  
 29 would be damaged or destroyed by the project. Excavation as mitigation shall not be required for a  
 30 unique archaeological resource if the lead agency determines that testing or studies already  
 31 completed have adequately recovered the scientifically consequential information from and about  
 32 the resource, if this determination is documented in the environmental impact report. (California  
 33 Public Resources Code Section 21083.2[d])

34 If, however, “an archaeological resource is neither a unique archaeological nor an historical  
 35 resource, the effects of the project on those resources shall not be considered a significant effect on  
 36 the environment. It shall be sufficient that both the resource and the effect on it are noted in the  
 37 Initial Study or EIR, if one is prepared to address impacts on other resources, but they need not be  
 38 considered further in the CEQA process” (State CEQA Guidelines Section 15064.5[c][4]).

### 39 **18.2.2.2 California Public Resources Code, Duties of State Agencies**

40 California state agencies must provide the Office of Historic Preservation an inventory of all state-  
 41 owned structures older than 50 years of age under its jurisdiction that are listed in or that may be  
 42 eligible for inclusion in the NRHP or are registered or that may be eligible for registration as a state

1 historical landmark (California PRC Section 5024[a]). The Office of Historic Preservation compiles  
2 these lists into a master list (California PRC Section 5024[d]).

3 State agencies must provide notice to the SHPO early in the planning process if the agency intends to  
4 alter or demolish resources on the master list (California PRC Section 5024.5[a]). The SHPO has 30  
5 days to respond after receiving notice. If the SHPO determines that the action will have an adverse  
6 effect on a listed historical resource, the agency must adopt prudent and feasible measures to  
7 mitigate or eliminate the adverse effects (California PRC Section 5024.5[b]).

### 8 **18.2.2.3 Discoveries of Human Remains under California Environmental** 9 **Quality Act Public Law**

10 California law sets forth special rules that apply where *human remains* are encountered during  
11 project construction. These rules are set forth in one place in State CEQA Guidelines, Section  
12 15064.5[e] as follows:

13 In the event of the accidental discovery or recognition of any human remains in any location other  
14 than a dedicated cemetery, the following steps should be taken:

15 (1) There shall be no further excavation or disturbance of the site or any nearby area reasonably  
16 suspected to overlie adjacent human remains until:

17 (A) The coroner of the county in which the remains are discovered must be contacted to  
18 determine that no investigation of the cause of death is required (as required under  
19 California Health and Safety Code Section 7050.5).

20 (B) If the coroner determines the remains to be Native American:

21 1. The coroner shall contact the Native American Heritage Commission within 24  
22 hours.

23 2. The Native American Heritage Commission shall identify the person or persons it  
24 believes to be the most likely descended from the deceased Native American.

25 3. The most likely descendent may make recommendations to the landowner or the  
26 person responsible for the excavation work, for means of treating or disposing of,  
27 with appropriate dignity, the human remains and any associated grave goods (as  
28 provided in Public Resources Code Section 5097.98), or

29 (2) Where the following conditions occur, the landowner or his authorized representative shall  
30 rebury the Native American human remains and associated grave goods with appropriate dignity  
31 on the property in a location not subject to further subsurface disturbance.

32 (A) The Native American Heritage Commission is unable to identify a most likely descendent or  
33 the most likely descendent failed to make a recommendation within 24 hours after being  
34 notified by the commission.

35 (B) The descendant identified fails to make a recommendation; or

36 (C) The landowner or his authorized representative rejects the recommendation of the  
37 descendant, and the mediation by the Native American Heritage Commission fails to provide  
38 measures acceptable to the landowner.

### 39 **18.2.2.4 California Native American Graves Protection and Repatriation** 40 **Act**

41 Sections 8010–8011 of the California Health and Safety Code establish a state repatriation policy  
42 that is consistent with and facilitates implementation of NAGPRA. The policy requires that all

1 California Indian human remains and cultural items be treated with dignity and respect and  
 2 encourages voluntary disclosure and return of remains and cultural items by publicly funded  
 3 agencies and museums in California. The policy provides for mechanisms to aid California Indian  
 4 tribes, including non-federally recognized tribes, in filing repatriation claims and getting responses  
 5 to those claims.

### 6 **18.2.2.5 Confidentiality Considerations**

7 CEQA and the California Public Records Act restrict the amount of information regarding cultural  
 8 resources that can be disclosed in an EIR in order to avoid the possibility that such resources could  
 9 be subject to vandalism or other damage (*Clower Valley Foundation v. City of Rocklin* (2011) 197  
 10 Cal.App.4th 200, 219). The State CEQA Guidelines prohibit an EIR from including “information about  
 11 the location of archaeological sites and sacred lands, or any other information that is subject to the  
 12 disclosure restrictions of Section 6254 of the Government Code [(part of the California Public  
 13 Records Act)].” (State CEQA Guidelines Section 15120, subd. (d)). In turn, California Government  
 14 Code Section 2654 of the California Public Records Act lists as exempt from public disclosure any  
 15 records “of Native American graves, cemeteries, and sacred places and records of Native American  
 16 places, features, and objects described in Sections 5097.9 and 5097.933 of the [California] Public  
 17 Resources Code maintained by, or in the possession of, the Native American Heritage Commission,  
 18 another state agency, or a local agency.” (Government Code Section 6254, subd. (r)).

19 California PRC Sections 5097.9 and 5097.993 list the Native American places, features, and objects,  
 20 the records of which are not to be publically disclosed under the California Public Records Act: “any  
 21 Native American sanctified cemetery, places of worship, religious or ceremonial site, or sacred  
 22 shrine located on public property (Section 5097.9) and any “Native American historic, cultural, or  
 23 sacred site, that is listed or may be eligible for listing in the California Register of Historic Resources  
 24 ..., including any historic or prehistoric ruins, any burial ground, any archaeological or historic site,  
 25 any inscriptions made by Native Americans at such a site, any archaeological or historic Native  
 26 American rock art, or any archaeological or historic feature of a Native American historic, cultural,  
 27 or sacred site ...” (Section 5097.993, subd. (a)(1)).

28 The California Public Resources Act also generally prohibits disclosure of archaeological records.  
 29 Government Code Section 6254.10 provides: “Nothing in [the California Public Records Act] requires  
 30 disclosure of records that relate to archaeological site information and reports maintained by, or in  
 31 the possession of ... a local agency, including the records that the agency obtains through a  
 32 consultation process between a California Native American tribe and a state or local agency.”

33 These authorities prohibit the disclosure of records and information concerning certain of the Delta  
 34 region’s archeological, cultural, and historic resources in this EIS/EIR. The lead agencies believe  
 35 confidentiality of the site locations of certain archaeological, cultural, and historic resources found in  
 36 the region is necessary to prevent vandalism to the resources. Public release of information on the  
 37 sites may allow their discovery by trespassers, leading to potential looting. The lead agencies’  
 38 position is consistent with the intent of NHPA Section 304(a):

39       The head of a Federal agency ... shall withhold from disclosure to the public, information about the  
 40       location, character, or ownership of a historic resource if the Secretary and the agency determine  
 41       that disclosure may ... risk harm to the historic resources ...

42 As a result, specific descriptions of certain of the archeological, cultural, and historic resources are  
 43 not provided in this chapter. For the preservation of the sites, specific information on the locations

1 and nature of findings at the resources cannot be included in the CEQA documents. Site-specific  
 2 content and location information will be reviewed by appropriate federal and state agency officials  
 3 on a need-to-know basis, thereby protecting the confidential information regarding location and  
 4 content of the sites. The lead agencies believe protecting the confidentiality of certain information  
 5 concerning the location and nature of the resources from public disclosure is the best way to  
 6 preserve the integrity of the valuable resources within the Delta region.

## 7 **18.2.3 Regional and Local Plans, Policies, and Regulations**

### 8 **18.2.3.1 City and County General Plans**

9 Many of the counties and cities encompassing lands in the Plan Area have developed policies and  
 10 goals intended to document and preserve cultural resources in their areas. These general plans  
 11 specify locally proposed goals or objectives and policies intended to enforce them and act as  
 12 performance standards.

### 13 **18.2.3.2 Alameda County**

#### 14 **East County Area Plan**

15 Land use planning in the eastern portion of Alameda County is governed by the East County Area  
 16 Plan (ECAP), which was adopted by the County in May 1994. In November 2000, the Alameda  
 17 County electorate approved Measure D, the Save Agriculture and Open Space Lands Initiative, which  
 18 amended portions of the general plan, including the ECAP (Alameda County 2000).

19 The Open Space Element addresses sensitive lands and regionally significant open space, including  
 20 cultural resources. Goals and policies from the ECAP related to protection of cultural resources that  
 21 apply to the Plan Area are listed below (Alameda County 2000).

- 22 • **Goal:** To protect cultural resources from development.
- 23 ○ **Policy 136:** The County shall identify and preserve significant archaeological and historical  
 24 resources, including structures and sites which contribute to the heritage of East County.
- 25 ○ **Policy 137:** The County shall require development to be designed to avoid cultural  
 26 resources or, if avoidance is determined by the County to be infeasible, to include  
 27 appropriate mitigation measures that offset the impacts.

### 28 **18.2.3.3 Contra Costa County**

#### 29 **Contra Costa County General Plan**

30 A comprehensive update to the Contra Costa County General Plan was adopted on January 18, 1991.  
 31 Amendments to the general plan followed in 1996 and 2005 to reflect changes to the Land Use Map  
 32 and the incorporation of the City of Oakley (Roche pers. comm.). The Open Space Element of the  
 33 general plan addresses preservation of historical and cultural resources. The following goal and  
 34 policy from the Open Space Element are considered applicable to implementation of the BDCP  
 35 (Contra Costa County 2005).

- 36 • **Policy 9-31:** To identify and preserve important archaeological and historic resources within  
 37 the County.

- 1       • **Policy 9-32:** Areas which have identifiable and important archaeological or historic significance  
2       shall be preserved for such uses, preferably in public ownership.

### 3   **18.2.3.4            City of Lathrop**

4       The Resource Management Element of the City of Lathrop General Plan (2004) identifies the  
5       following goals and policies encouraging protection of cultural resources for land development  
6       projects within the City's boundaries:

- 7       • **Policy 7.3:** Significant natural open space and cultural resources should be identified prior to  
8       development and incorporated into site-specific development project design.

- 9       ○ Archaeological and Cultural Resource Policies:

10       (1) Existing known archaeological and cultural resources are to be protected, beginning  
11       with the filing of an application for development in the immediate vicinity of such  
12       resources. The City shall follow the procedures set forth in Appendix K of CEQA  
13       Guidelines. Confidentiality shall be maintained between the City and developer to avoid  
14       vandalism or desecration of such resources. Alternatives for development design  
15       intended to protect cultural resources shall be reviewed by a Native American having  
16       competence in understanding and interpreting the importance of the resources and of  
17       the most desirable methods to assure their preservation.

18       (2) The potential loss of as yet unknown archaeological and cultural resources shall be  
19       avoided by close monitoring of the development process. The close proximity of  
20       properties intended for development to natural watercourses or to known  
21       archaeological or cultural resources shall be taken as a signal by the City and developer  
22       of a potential for unearthing unknown resources. In such cases, the City shall instruct  
23       the developers, construction foremen and City inspectors of the potential for damage to  
24       artifacts and sites, and provide written instructions requiring a halt to all excavation  
25       work in the event of any find until the significance of the find can be evaluated by  
26       competent archaeological and Native American specialists. The costs of such protection  
27       work shall be the responsibility of the developer.

### 28   **18.2.3.5            City of Oakley**

#### 29   **City of Oakley General Plan**

30       The City of Oakley General Plan was adopted on December 16, 2002. The Open Space and  
31       Conservation Element of the general plan addresses protection and enhancement of environmental  
32       resources, including cultural resources, in the Sacramento–San Joaquin River Delta (Delta). The  
33       following goal and policy from the Open Space and Conservation Element are considered applicable  
34       to implementation of the BDCP (City of Oakley 2002).

- 35       • **Goal 6.4:** Encourage preservation of cultural resources within the Plan Area.

- 36       ○ **Policy.6.4.1:** Preserve areas that have identifiable and important archaeological or  
37       paleontological significance.

### 1 18.2.3.6 Sacramento County

#### 2 Sacramento County General Plan

3 The Sacramento County General Plan Update was adopted on November 9, 2011. The amended  
4 Conservation Element addresses protection of cultural resources. The following objective and  
5 policies from the Conservation Element of the general plan are considered applicable to  
6 implementation of the BDCP (Sacramento County 2011).

- 7 • **Goal:** Promote the inventory, protection and interpretation of the cultural heritage of  
8 Sacramento County, including historical and archaeological settings, sites, buildings, features,  
9 artifacts and/or areas of ethnic historical, religious, or socioeconomic importance.
- 10 ○ **Objective:** Preserve structures such as buildings, bridges, or other permanent structures  
11 with architectural or historical importance to maintain contributing design.
- 12 • **Policy CO-164:** Structures having historical and architectural importance shall be  
13 preserved and protected.
- 14 • **Policy CO-165:** Refer projects involving structures or within districts having historical  
15 or architectural importance to the Cultural Resources Committee to recommend  
16 appropriate means of protection and mitigation.
- 17 • **Policy CO-166:** Development surrounding areas of historic significance shall have  
18 compatible design in order to protect and enhance the historic quality of the areas.
- 19 • **Policy CO-167:** When conducting planning studies, County Planning staff, shall  
20 encourage the adaptive reuse of historic resources when the original use is no longer  
21 feasible or allowed under proposed area planning efforts.
- 22 • **Policy CO-168:** County-owned historic and cultural resources shall be preserved and  
23 maintained, such that modifications, alterations, and rehabilitations are conducted in a  
24 manner that is consistent with the U.S. Secretary of the Interiors Standards for the  
25 Treatment of Historic Properties.

### 26 18.2.3.7 City of Sacramento

#### 27 City of Sacramento General Plan

28 The City of Sacramento 2030 General Plan was adopted on March 3, 2009. The revised Historic and  
29 Cultural Resources Element of the general plan addresses preservation of historical and cultural  
30 resources and adaptive reuse of historic structures. The following goal and policies from the Historic  
31 and Cultural Resources Element are considered applicable to implementation of the BDCP (City of  
32 Sacramento 2009).

- 33 • **Goal HCR 2.1, Identification and Preservation of Historic and Cultural Resources:** Identify  
34 and preserve the City's historic and cultural resources to enrich our sense of place and our  
35 understanding of the City's prehistory and history.
- 36 ○ **HCR 2.1.2, Applicable Laws and Regulations:** The City shall ensure that City, State, and  
37 Federal historic preservation laws, regulations, and codes are implemented, including the  
38 California Historical Building Code and State laws related to archaeological resources, to  
39 ensure the adequate protection of these resources.

- 1           ○ **HCR 2.1.3, Consultation:** The City shall consult with the appropriate organizations and  
 2 individuals (e.g., Information Centers of the CHRIS System, the NAHC, and Native American  
 3 groups and individuals) to minimize potential impacts to historic and cultural resources.
- 4           ○ **HCR 2.1.15, Archaeological Resources:** The City shall develop or ensure compliance with  
 5 protocols that protect or mitigate impacts to archaeological, historic, and cultural resources  
 6 including prehistoric resources.

### 7 **18.2.3.8           San Joaquin County**

#### 8 **San Joaquin County General Plan**

9 The San Joaquin County General Plan 2010 was adopted on July 29, 1992. The Resources Element  
 10 contained in Volume 1 of the general plan addresses protection of heritage resources, including  
 11 archaeological resources. The following objective and policies from the Resources Element are  
 12 considered applicable to implementation of the BDCP (San Joaquin County 1992):

- 13       ● **Objective 1:** To protect San Joaquin County’s valuable architectural, historical, archaeological,  
 14 and cultural resources.
- 15           ○ **Policy 2:** Significant archaeological and historical resources shall be identified and  
 16 protected from destruction. If evidence of such resources appears after development begins,  
 17 an assessment shall be made of the appropriate actions to preserve or remove the  
 18 resources.
- 19           ○ **Policy 3:** No significant architectural, historical, archaeological or cultural resources shall be  
 20 knowingly destroyed through County action.

### 21 **18.2.3.9           Solano County**

#### 22 **Solano County General Plan**

23 The Solano County General Plan was adopted on August 5, 2008, and was subject to voter approval  
 24 as Measure T on the November 4, 2008, ballot. Measure T was passed by the voters, thereby  
 25 confirming the approval of the new general plan.

26 The Resources Chapter of the Solano County General Plan includes an Open Space Element that  
 27 addresses preservation and protection of recreational, scenic, agricultural, and cultural resources.  
 28 The following policy from the Open Space Element of the Resources Chapter is considered  
 29 applicable to implementation of the BDCP (Solano County 2008).

- 30       ● **Policy RS.P-38:** Identify and preserve important prehistoric and historic structures, features,  
 31 and communities.

### 32 **18.2.3.10          City of Stockton**

#### 33 **City of Stockton General Plan**

34 The City of Stockton General Plan includes a natural and cultural resources element with the  
 35 following policies that addresses protection of cultural resources within the City (City of Stockton  
 36 2007):

- 1       • **NCR-3.5 Archaeological Resource Surveys:** Prior to project approval, the City shall require  
 2       project applicant to have a qualified archeologist conduct the following activities: (1) conduct a  
 3       record search at the Central California Information Center located at California State University  
 4       Stanislaus and other appropriate historical repositories, (2) conduct field surveys where  
 5       appropriate, and (3) prepare technical reports, where appropriate, meeting California Office of  
 6       Historic Preservation Standards.
- 7       • **NCR-3.6 Discovery of Archaeological Resources:** Consistent with Stockton Municipal Code  
 8       Section 16-310.050, *Cultural Resources*, in the event that archaeological/paleontological  
 9       resources are discovered during site excavation, the City shall require that grading and  
 10      construction work on the project site be suspended until the significance of the features can be  
 11      determined by a qualified archaeologist/paleontologist. The City will require that a qualified  
 12      archeologist/paleontologist make recommendations for measures necessary to protect any site  
 13      determined to contain or constitute an historical resource, a unique archaeological resource, or  
 14      a unique paleontological resource or to undertake data recovery, excavation, analysis, and  
 15      curation of archaeological/paleontologist materials. City staff shall consider such  
 16      recommendations and implement them where they are feasible in light of project design as  
 17      previously approved by the City.
- 18      • **NCR-3.8 Discovery of Human Remains:** Consistent with Stockton Municipal Code Section 16-  
 19      310.050, If any human remains are discovered or recognized in any location on the project site,  
 20      there shall be no further excavation or disturbance of the site or any nearby area reasonably  
 21      suspected to overlie adjacent human remains until the county coroner is notified, and if the  
 22      remains are of prehistoric Native American origin, the NAHC is notified and the requirements of  
 23      California PRC Section 5097.98 are met.

### 24   **18.2.3.11        City of Rio Vista**

#### 25   **City of Rio Vista General Plan**

26   The City of Rio Vista General Plan 2001 was adopted on July 18, 2002. The Resource Conservation  
 27   and Management Element of the general plan addresses conservation of resources, including  
 28   historical resources. The following goal and policy from the general plan are considered applicable  
 29   to implementation of the BDCP (City of Rio Vista 2002).

- 30   • **Goal 10.10:** To encourage preservation of the City’s historic resources while enhancing their  
 31   value and economic life.
- 32    ○ **Policy 10.10.C:** The City shall require that discretionary development projects identify  
 33    important historic, archaeological, and cultural sites and their contributing environment  
 34    from damage, destruction, and abuse. The City shall ensure that such assessments are  
 35    incorporated into the City’s cultural and historical database, to be maintained by the Rio  
 36    Vista Museum.

### 37   **18.2.3.12        Yolo County**

#### 38   **Yolo County General Plan**

39   The Yolo County General Plan was adopted on November 10, 2009. The general plan integrates, by  
 40   reference, locally effective parts of the Delta Protection Commission’s Land Use and Resource  
 41   Management Plan for the Primary Zone of the Delta.

1 The Conservation and Open Space Element of the Yolo County General Plan addresses preservation  
 2 of various resources in an open space environment. The following policies from the general plan are  
 3 considered applicable to implementation of the BDCP (County of Yolo 2009a).

- 4 • **Goal CO-4, Cultural Resources:** Preserve and protect cultural resources within the County.
  - 5 ○ **Policy CO-4.1:** Identify and safeguard important cultural resources.
  - 6 ○ **Policy CO-4.12:** Work with culturally affiliated tribes to identify and appropriately address  
 7 cultural resources and tribal sacred sites through the development review process.
  - 8 ○ **Policy CO-4.13:** Avoid or mitigate to the maximum extent feasible the impacts of  
 9 development on Native American archaeological and cultural resources.
  - 10 ○ **Policy CO-4.14:** Within the Delta Primary Zone, ensure compatibility of permitted land use  
 11 activities with applicable cultural resources policies of the Land Use and Resource  
 12 Management Plan of the Delta Protection Commission.

## 13 18.3 Environmental Consequences

14 This section describes the methods used to identify the known resources that would be affected by  
 15 the action alternatives effects on previously unidentified resources. The direct, indirect, and  
 16 cumulative effects on known and unknown archeological, built environment, and TCP resources that  
 17 would result from implementing alternatives are evaluated and mitigation measures are presented  
 18 to reduce potential effects.

### 19 18.3.1 Determination of Effects

20 This section describes the criteria used to identify adverse effects on cultural resources. “Adverse effect”  
 21 here means effects that are significant under CEQA and other relevant state regulatory frameworks and  
 22 thresholds, and are “adverse” within the meaning of NEPA and the Section 106 regulations.

23 Effects on unique archaeological resources and historical resources are considered adverse for  
 24 purposes of NEPA, and significant for purposes of CEQA, if the project alternatives would do any of  
 25 the following.

- 26 • Demolish or materially alter the qualities that justify the resource for inclusion or eligibility for  
 27 inclusion on the CRHR (State CEQA Guidelines Section 15064.5[b][2][A],[C]). For the purposes of  
 28 this analysis, “materially altering or destroying qualities that contribute to eligibility” means  
 29 altering the resource so that it can no longer convey its association with significant historical  
 30 events or people, distinctive style or artistic value, or the potential to yield information  
 31 important in history or prehistory (14 CCR Section 4852[b]).
- 32 • Demolish or materially alter the qualities that justify the inclusion of the resource on a local  
 33 register (State CEQA Guidelines Section 15064.5[b][2][B]) or its identification as an historical  
 34 resource survey meeting the requirements of California PRC Section 5024.1(g). For the purposes  
 35 of this analysis, “materially altering a resource so that it no longer qualifies for a local register”  
 36 means altering the resource so it can no longer convey the significance that makes it eligible for  
 37 the local register. These significance themes often mirror the CRHR and the NRHP, but  
 38 emphasize historical or cultural themes that are locally relevant.

- 1       • Demolish or materially impair the characteristics that allow a site to qualify as a unique  
2 archaeological resource (California PRC Section 21083.2[g]). “Demolishing or materially  
3 impairing a unique archaeological resource” means altering the ability of the site to convey one  
4 or more of the following characteristics.
- 5       ○ Data useful in important scientific questions associated with demonstrable public interest in  
6 those questions.
- 7       ○ The quality of being the oldest or best example of a type.
- 8       ○ Association with an important person or event in history or prehistory (California PRC  
9 Section 21083.2[g]).
- 10      • The criteria of adverse effect in 36 CFR Part 800.5(a)(1) provides a standard for Section 106 of  
11 the NHPA. Alter, directly or indirectly, any of the characteristics of a historic property that  
12 qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of  
13 the property’s location, design, setting, materials, workmanship, feeling, or association (36 CFR  
14 800.5[a][1]). For the purposes of this analysis, “alteration of qualifying characteristics” may  
15 include but is not necessarily limited to:
- 16      ○ Physical destruction of all or part of a property.
- 17      ○ Alteration of built-environment resources that is not consistent with the federal standards  
18 for treatment of historic properties (36 CFR 68).
- 19      ○ Removal of a property from its historical location.
- 20      ○ Alteration of the significant features of a property or introduction of incongruous elements  
21 to the setting.
- 22      ○ For federally owned properties, transfer of the property out of federal control without  
23 adequate and legally enforceable mechanisms to ensure preservation.
- 24      ○ Neglect of a property that results in deterioration (36 CFR 800.5[a][2]).
- 25      • Disturbance of human remains, including remains interred outside of established cemeteries is  
26 an adverse effect (State CEQA Guidelines, Appendix G checklist). For the purposes of this  
27 analysis, “disturbance” may consist of direct excavation or damage through compaction even  
28 where the resource is not directly excavated.

### 29 **18.3.2 Direct and Indirect Effects and Impact Mechanisms**

30 Project-related activities may affect cultural resources directly or indirectly. This section describes  
31 the direct and indirect impact mechanisms associated with the alternatives. Direct effects on  
32 cultural resources may occur through any of the following.

- 33      • Ground-disturbing construction that damages historic or prehistoric archaeological sites and  
34 impairs the constituent deposits in the site and their utility for answering archaeological  
35 research questions.
- 36      • Ground-disturbing construction that unearths and damages human remains.
- 37      • Direct demolition of built-environment resources such as historic-era residences, structures or  
38 buildings, or landscape features.
- 39      • Direct excavation or alteration of TCPs.

- Direct effects on individual resources creating adverse effects on rural historic landscapes, where the individual resource is a constituent element of the rural historic landscape.

Indirect effects may occur under any of the circumstances described below.

- Construction in the vicinity of a resource removes features of the surrounding setting, where the setting is an integral part of the resource.
- Construction in the vicinity introduces new physical features that are incongruent with the setting, where the setting is an integral part of the resource.
- Introduction of new sources of sound or activities in the vicinity that would be inconsistent with the setting, where the setting is an integral part of the resource.

The alternatives would result in direct and indirect effects, as described below. Where resources have been recorded in the footprint of action alternatives, these resources are identified in the relevant impact discussions.

### 18.3.3 Geographic Scope of Effects

The project alternatives covers a large, generally rural area. The boundaries of the area in which significant effects could occur for each alternative were determined by taking this kind of environment into consideration, as well as the nature of proposed conveyance facilities, such as temporary impacts, temporary and permanent power access, and indirect or visual impacts. The approach was as follows:

- For direct impacts: all land physically within the footprint of alternative water conveyance alignments is included, for both temporary impacts and permanent impacts. Usually the entire legal parcel is included, whether or not it is all within the area of direct impacts. In areas where the parcels are very large, generally agricultural, the boundary of the survey map may not include the entire parcel, but includes a reasonable portion, determined by land use. The edge of the survey may be established following features such as roads, irrigation channels, changes in crops, or natural topographic features.
- For the tunnel areas: all land directly above the tunnel was included, again generally including the entire legal parcel. It was decided that it would be prudent in some areas to include properties adjacent to the tunnel footprint if they contain built resources in close proximity to the tunnel footprint to demonstrate that effects potentially resulting from settlement or vibration are considered.
- For temporary and permanent power: only the footprint of the power line is included in the survey map. In cases where a built resource is very close to this footprint, that resource is included in the survey.
- For visual or auditory impacts: built resources facing on-bank intake facilities or pumping plants, but are across the river, are included. Resources adjacent to these plants are also included for these potential indirect effects where the height or line of sight to the structure creates an effect. The introduction of new buildings or structures associated with construction can also cause a change to the setting.
- For impacts on districts listed, or that could be listed, in the NRHP: the district in its entirety is included, because an effect to one element of the district has the potential to diminish the integrity of the entire district.

## 18.3.4 Issues Not Carried Forward for Detailed Analysis

Potential effects on cultural resources at upstream reservoirs associated with operational changes are not carried forward for detailed analysis because they are too speculative for meaningful consideration. Currently, reservoir levels upstream of the Delta fluctuate greatly between wet and dry years, and during operational changes necessary to meet flood management and water use demands. Each action alternative is associated with particular operational changes for upstream reservoirs, or “scenarios” (see Chapter 3, *Description of Alternatives*). These operational changes, combined with other regional effects such as climate change, may (but are not certain to) increase both the range of variation in water levels at these reservoirs and the frequency that reservoir levels are drawn down. Current modeling shows that precipitation, rather than operational rules, is the largest cause of fluctuation at upstream reservoirs. Because precipitation patterns may be altered by climate change, a slight increase in the frequency with which cultural resources at upstream reservoirs are exposed rather than inundated may occur. However, because the increase in degree and frequency fluctuation is likely to be small and is speculative as to degree and intensity, this effect cannot be carried forward for meaningful analysis for the majority of the action alternatives. Furthermore, climate change, by itself, is not an effect of the action alternatives.

## 18.3.5 Effects and Mitigation Approaches

### 18.3.5.1 No Action Alternative

Under the No Action Alternative, current and reasonably foreseeable projects would continue, with the associated potential for effects on cultural resources. These projects and programs include the continued implementation of SWP/CVP operations, maintenance, enforcement, and protection programs by federal, state, and local agencies and nonprofit groups, as well as projects that are permitted or under construction. A complete list of the programs and plans considered under the No Action Alternative is provided in Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*. The following discussion describes the effects on cultural resources that would occur if no new conveyance facilities were constructed; these effects would not be the result of the project alternatives, but instead the result of reasonably foreseeable projects and actions that would occur without the project alternatives as of the year 2060.

### The Future of Cultural Resources in the Delta

The Delta region is rich in prehistoric and historic-era cultural resources. These resources include prehistoric and historic archaeological sites, buried human remains, and built-environment resources. Subsidence, levee failure, and climate change all have the potential to increase the inundation and erosion of cultural resources that currently occur on the landside of existing flood management structures.

### SWP/CVP Operations

Ongoing SWP/CVP operations include both levee repair and habitat restoration and conservation activities. Where specific projects will result in ground-disturbing construction these actions have the potential to result in effects on cultural resources through direct excavation into such resources or the introduction of new inconsistent features such as setback levees, borrow areas, or other landside features that may not be consistent with the rural agricultural setting.

## 1 Ongoing Plans, Policies, and Programs

2 The plans, policies, and projects that are included in the No Action Alternative are summarized in  
 3 Table 18-1 as well as in Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project*  
 4 *Alternative, and Cumulative Impact Conditions.*

5 **Table 18-1. Programs and Projects Occurring under the No Action Alternative**

Agency	Program/ Project	Status	Description of Program/Project	Potential Effects on Cultural Resources
California Department of Water Resources	Levee Repair- Levee Evaluation Program	Ongoing	Identification and repair of hundreds of levees throughout the Central Valley. These repairs are necessary to maintain the functionality of flood management systems that have deteriorated over time and/or do not meet current design standards.	Individual future levee repair projects may disturb landside and waterside cultural resources such as prehistoric and historic archaeological sites, and result in direct and indirect effects on built-environment resources.
Bureau of Reclamation, U.S. Fish and Wildlife Service, National Marine Fisheries Service, California Department of Water Resources and California Department of Fish and Wildlife	San Joaquin River Restoration Program	Ongoing	The program would implement a comprehensive long-term effort to restore flows to the San Joaquin River from Friant Dam to the confluence of Merced River and restore a self-sustaining Chinook salmon fishery in the river. There are many physical improvements within and near the San Joaquin River that will be undertaken to fully achieve the river restoration goal.	Individual projects necessary to implement this program may result in disturbance to cultural resources such as prehistoric and historic archaeological sites, and result in direct and indirect effects on built-environment resources.
California Department of Water Resources	Delta Levees Flood Protection Program	Ongoing	Under this program DWR works with the local agencies to maintain, plan, and complete levee rehabilitation projects.	Individual projects necessary to implement this program may result in disturbance to cultural resources such as prehistoric and historic archaeological sites, and result in direct and indirect effects on built-environment resources.
Yolo County	Yolo County General Plan Update/Plan Buildout	Ongoing	The Yolo County 2030 General Plan was adopted in November of 2009. The updated plan would allow for additional growth in the unincorporated area of the County of approximately 30,195 people, up to 10,784 homes, and 19,209 jobs.	Buildout will result in significant effects on archaeological and built-environment resources.
Semitropic Water Storage District	Delta Wetlands Project	EIR/EIS completed 2011	Wildlife enhancement on Delta islands.	The project may demolish cultural resources or expedite decay of cultural resources.
National Marine Fisheries Services, U.S. Fish and Wildlife Service	2008 and 2009 Biological Opinions	Ongoing.	The Biological Opinions establish certain reasonable and prudent alternatives requiring habitat restoration to be implemented.	Construction of habitat may demolish cultural resources or expedite decay of cultural resources.

1 The plans, programs, and projects that would occur under the No Action Alternative collectively will  
2 result in adverse effects on cultural resources. For example, Yolo County concludes in the General  
3 Plan Update EIR that plan buildout will result in significant and unavoidable effects on cultural  
4 resources (County of Yolo 2009b:546). Similarly, levee repairs performed in the Delta region under  
5 the No Action conditions are likely to contribute to effects on archaeological and built-environment  
6 resources and Native American buried human remains because the Delta is sensitive for such  
7 resources, and construction of such improvements would require ground-disturbing work. Habitat  
8 restoration in Suisun Marsh or elsewhere necessary to comply with federal biological opinions could  
9 also contribute to effects on archaeological and built-environment resources and buried Native  
10 American human remains.

11 Although mitigation may be implemented as a part of these ongoing projects, which would reduce  
12 their effects, or manage significant effects through treatment, such treatment typically does not  
13 reduce impacts on cultural resources to less than adverse. Mitigation such as data recovery  
14 excavations conducted to retrieve scientifically important material from archaeological sites reduces  
15 the loss of data, but does not completely avoid data loss because complete recovery of data is  
16 typically infeasible. In addition, treatment of identified effects and construction monitoring cannot  
17 guarantee that effects on undiscovered archaeological resources and buried human remains would  
18 be avoided, because unidentified resources can occur without surface manifestation that would  
19 allow their identification and avoidance. In a similar fashion the set of actions that would occur  
20 under the No Action Alternative, although not as a result of the proposed action, would likely result  
21 in the demolition of significant historical structures. Although mitigation is typically performed to  
22 document such structures before they are lost, such documentation does not replace the structure  
23 and does not reduce such impacts to a level less than significant. For these reasons, the loss of built  
24 environment cultural resources under the No Action Alternative would be adverse. No mitigation is  
25 proposed under this impact because the action alternatives would not be implemented and no  
26 mitigation would be prepared for the action alternatives. Collectively, effects on cultural resources  
27 under the No Action Alternative would therefore be adverse.

## 28 **Catastrophic Seismic Risks**

29 The Delta and vicinity is within a highly active seismic area, with a generally high potential for major  
30 future earthquake events along nearby and/or regional faults, and with the probability for such  
31 events increasing over time. Based on the location, extent and non-engineered nature of many  
32 existing levee structures in the Delta area, the potential for significant damage to, or failure of, these  
33 structures during a major local seismic event is generally moderate to high. In the instance of a large  
34 seismic event, levees constructed on liquefiable foundations are expected to experience large  
35 deformations (in excess of 10 feet) under a moderate to large earthquake in the region (see  
36 Appendix 3E, *Potential Seismic and Climate Change Risks to SWP/CVP Water Supplies*, for more  
37 detailed discussion). Reclaiming land or rebuilding levees after a catastrophic event due to climate  
38 change or a seismic event could result in the destruction of cultural resources.

39 **CEQA Conclusion:** Under the No Action conditions significant effects on archaeological and built-  
40 environment resources as well as human remains would occur. Although it is expected that project-  
41 level review for individual actions would result in mitigation of these impacts, such mitigation  
42 would reduce but not necessarily avoid such effects. Data recovery excavations and construction  
43 phase monitoring do not avoid the loss of data in archaeological sites or the potential for  
44 inadvertent damage to buried resources and human remains that cannot be identified in advance of  
45 construction. Similarly, treatment for built-environment resources would reduce the severity of

1 effects, but would not mitigate the anticipated loss of significant structures to a level less than  
2 significant. For these reasons effects on cultural resources would be significant and unavoidable.

### 3 **18.3.5.2 Alternative 1A—Dual Conveyance with Pipeline/Tunnel and** 4 **Intakes 1–5 (15,000 cfs; Operational Scenario A)**

5 A total of five intakes would be constructed on the east bank of the Sacramento River under  
6 Alternative 1A. For the purposes of this analysis, Alternative 1A was assumed to entail construction  
7 of Intakes 1–5. This alternative would also include an intermediate forebay, and the conveyance  
8 facility would be a buried pipeline/tunnel (see Figures 3-2 and 3-3 in Chapter 3, *Description of the*  
9 *Alternatives*).

#### 10 **Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of** 11 **Conveyance Facilities**

##### 12 **Identified Resources**

13 Record searches at the CHRIS and inventory efforts for the BDCP have identified seven previously  
14 recorded prehistoric archaeological sites in the footprint of this alternative (Appendix 18B,  
15 *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-1). These seven  
16 previously recorded resources represent the known resources that occur in the footprint of this  
17 alternative. Detailed site descriptions are provided in Appendix 18B, Section 18B.1.1, *Archaeological*  
18 *Site Descriptions*.

##### 19 **Significance of Identified Archaeological Resources**

20 Many of the directly affected sites are midden sites, with debris and artifacts associated with  
21 prehistoric habitation and residence activities. Midden sites in the Plan Area are often colloquially  
22 referred to as “mound sites” because they often form low mounds elevated relative to the  
23 surrounding landform. While the original raised deposit has sometimes been destroyed, midden  
24 sites often have substantial deposits below the original raised landform that remain intact that  
25 typically contain the material remains associated with prehistoric habitation. This organic debris  
26 can be used for radiocarbon dating, as well as material that reveals the nature of subsistence  
27 activities pursued by prehistoric populations. Because there is no single unified prehistoric  
28 chronology for the Delta region, substantial research questions remain unresolved regarding nature  
29 and changes of subsistence and settlement activity over the span of the prehistoric occupation of the  
30 Delta. The Delta is the prehistoric point of articulation between Central Valley cultures and the  
31 aboriginal people that occupied the San Francisco Bay area. Because the cultural chronology and  
32 sources of cultural change for the Delta remain unresolved in part, sites in the footprint of this  
33 alternative likely contain information that could help clarify these research issues. For these reasons  
34 these resources are likely significant under the fourth criterion for the CRHR and NRHP (see Section  
35 18.2.1.2, *Section 106 of the National Historic Preservation Act of 1966*: “That have yielded, or may be  
36 likely to yield, information important in prehistory or history”).

37 Three of the identified sites contain human burials, as described on the site records (CA-SAC-328,  
38 CA-SAC-59, and CA-SAC-65/H). Most if not all of the remaining sites are likely to contain additional  
39 burials because midden sites in the Plan Area typically contain human burials or cremations. Burial  
40 components within these sites often contain ornaments and other personal items such as  
41 charmstones, beads, and other decorative material. Because the style and form of these artifacts

1 change throughout prehistory, and because these stylistic changes have been defined, these  
2 materials provide a method of associating archaeological material with specific prehistoric time  
3 periods. The ability to associate habitation remains with specific time periods is one of the most  
4 significant problems in prehistoric research, because the sequence of specific adaptations and  
5 behaviors only becomes clear when a chronology can be constructed that associates behavior and  
6 material culture with specific time frames. For this reason these resources are likely significant  
7 under the fourth criterion for the CRHR and NRHP.

8 Because many of these resources are large (typically in excess of 30 meters across), they are each  
9 likely to contain some portion of the deposit with sufficient integrity to yield artifacts in their  
10 original associations in a manner that will convey these significance themes. Therefore these  
11 identified resources are likely to qualify as historical resources under CEQA. For the same reasons,  
12 these resources are likely to be eligible for the NRHP.

### 13 **Anticipated Effects on Identified Resources**

14 The exact location of these resources cannot be disclosed because such disclosure might lead to  
15 damage of the sites. However, these resources occur within the footprint of both temporary work  
16 areas and permanent surface impacts. The resources are generally distributed evenly across the  
17 alignment, but are somewhat clustered where construction of large above-ground features would  
18 occur, such as the northern end of the alignment, at the intermediate forebay, and at the southern  
19 end of the alignment. Ground-disturbing construction is likely to disturb the deposits and thus  
20 materially alter their ability to convey their significance. Much of the data potential in archaeological  
21 resources exists in the spatial associations of different artifacts and other cultural material. Where  
22 artifacts that have known associations with particular time periods occur adjacent to other material  
23 such as faunal bone or plant remains from subsistence activity, the proximity of the materials allows  
24 an inference as to the age of the subsistence remains, thereby allowing researchers to infer  
25 particular subsistence strategies during different prehistoric periods. Intrusive ground-disturbing  
26 construction, vibration, and other physical disturbance may disrupt these associations and thus  
27 disrupt the qualities for which the sites may qualify as historical resources or historic properties. In  
28 addition, because not all identified resources are legally accessible, these resources may be  
29 significant for other reasons than their data potential. Indirect effects such as introduction of  
30 changes to the setting associated with construction of new features or creation of new sources of  
31 noise (also a change to the setting) may diminish the basis for the significance of these resources.  
32 For these reasons, construction has the potential to materially impair these resources under CEQA  
33 and to adversely affect the resources as defined by Section 106 of the NHPA. This effect would be  
34 adverse.

35 **NEPA Effects:** Construction may disturb NRHP and CRHR-eligible archaeological resources and  
36 damage these resources. This damage may impair the integrity of these resources and thus reduce  
37 their ability to convey their significance. For these reasons this effect would be adverse.

38 **CEQA Conclusion:** Construction of conveyance facilities would affect identified archaeological  
39 resources that occur in the footprint of this alternative. DWR identified these resources and finds  
40 that they are likely to qualify as historical resources under CEQA (see the individual site descriptions  
41 in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*); these resources thus have the  
42 potential to qualify as historical resources. Therefore, these sites are considered historic resources  
43 for the purposes of CEQA. This impact would be significant because construction could materially  
44 alter or destroy the potential of these resources to yield information useful in archaeological

1 research, the basis for the significance of these resources, through excavation and disruption of the  
 2 spatial associations that contain meaningful information. Identified but currently inaccessible  
 3 resources may also be significant under other register criteria; indirect effects such as introduction  
 4 of new inconsistent changes to the setting may also diminish the significance of these resources.  
 5 Mitigation Measure CUL-1 would reduce this impact by recovering scientifically important material  
 6 prior to construction through the sensitive area, but would not guarantee that all of the scientifically  
 7 important material would be retrieved because feasible archaeological excavation only typically  
 8 retrieves a sample of the deposit, and portions of the site with important information may remain  
 9 after treatment. Construction could damage these remaining portions of the deposit. Therefore, this  
 10 impact is significant and unavoidable.

11 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
 12 **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
 13 **Archaeological Sites**

14 Prior to ground-disturbing construction, the BDCP proponents will implement a treatment plan  
 15 for identified “historic properties,” “historical resources” and “unique archaeological resources”  
 16 sites affected by Alternative 1A construction, that cannot be avoided.

17 ***Basis for Selection of Treatment***

18 Identified archaeological resources occur in the footprint of large features that would be  
 19 constructed under this alternative. Preservation in place, through methods such as redesign of  
 20 relevant facilities to avoid destruction or damage to eligible cultural resources, capping  
 21 resources with fill, or deeding resources into conservation easements shall be the preferred  
 22 method of mitigation where feasible. Because these resources occur within the footprint of these  
 23 features, avoidance may not be feasible in light of costs, logistics, technological and  
 24 environmental considerations, the location of the archeological resources, and the extent to  
 25 which avoidance and/or preservation of the resource is inconsistent with the objectives of the  
 26 project. These objectives include protection of other sensitive environmental resources where  
 27 possible. Because of the density and location of other sensitive environmental resources such as  
 28 natural communities and habitats, relocation of proposed facilities necessary to ensure all  
 29 historical resources are preserved in places is unlikely to be feasible. Furthermore, the large,  
 30 linear, nature of proposed conveyance facilities would result in overlap with cultural resources  
 31 across almost any potential alignment because of the manner in which cultural resources are  
 32 distributed in the study area. These same facilities will require ongoing maintenance and  
 33 operational activities that would likely be inconsistent with dedicated conservation easements  
 34 or other land management methods designed to preserve existing resources in place. For these  
 35 reasons, preservation of all potentially affected archaeological sites through capping with soil or  
 36 incorporation into conservation easements or green space is not likely to be feasible.  
 37 Accordingly, data recovery is necessary to retrieve information that conveys the significance of  
 38 the resource that would otherwise be lost. This data recovery excavation will conform to the  
 39 following standards that meet the Secretary of the Department of the Interior’s professional  
 40 qualification standards provided in 36 CFR 68:

- 41 ● The BDCP proponents will retain a qualified archaeological consultant to conduct data  
 42 recovery excavations necessary to retrieve material that would otherwise be lost, (material  
 43 with scientifically important data associated with the significance of the resource). Qualified  
 44 archaeological consultant here means a consultant with a graduate degree in archaeology,

- 1 anthropology, or closely related field, plus at least one year full-time professional experience  
2 or equivalent specialized training in archaeological research, administration or  
3 management, at least four months of supervised field and analytic experience in general  
4 North American archaeology, and has demonstrated experience conducting and completing  
5 effective data recovery excavations at the kinds of sites subject to treatment.
- 6 • BDCP proponents will prepare, and deposit with the relevant information center of the  
7 CHRIS, a data recovery plan prior to conducting these excavations, as required under State  
8 CEQA Guidelines Section 15126.4(b)(3)(C). The plan will provide a literature review of  
9 recent regional archaeological research and a summary of regional research questions. The  
10 plan will incorporate the methods prescribed above and include a more detailed description  
11 of the sampling and excavation methods that are appropriate for the regional research  
12 questions. The plan will not disclose the location of the resources subject to treatment in a  
13 manner that would allow their location to be known by the public so as to avoid inadvertent  
14 or intentional damage to or removal of the resources by members of the public.
  - 15 • Data recovery excavations will remove a sample of the affected portion of the deposit to  
16 retrieve scientifically important material. Excavation will be conducted in representative  
17 levels, and material removed will be divided and screened through a combination of 1/4”  
18 and 1/8 “ mesh screen, so as to capture both the gross cultural constituents and the finer  
19 material that can only be captured in fine mesh. Excavation will be conducted in 10-  
20 centimeter levels so that the horizontal association of different cultural materials is  
21 recorded. Removed material will be segregated by type and bagged with labels noting their  
22 horizontal and vertical location relative to an established datum point. The datum point will  
23 be recorded in the field with GPS to at least 10-centimeter horizontal and vertical accuracy.  
24 If, in the course of data recovery excavations, it is determined that, contrary to available  
25 evidence, the resource lacks integrity, data recovery excavations will cease.
  - 26 • Faunal material (animal bone) will be segregated and studied by a qualified faunal analyst to  
27 identify the species pursued, relative abundance and diversity of different species present,  
28 and the manner in which the prey were processed by the prehistoric occupants.
  - 29 • Obsidian glass will be retrieved and studied through both X-ray fluorescence (a method that  
30 allows the source of the obsidian to be identified) and obsidian hydration analysis (a  
31 method that allows approximate determination of the time when the material was subject to  
32 human modification).
  - 33 • Soil samples will be retrieved, with their horizontal and vertical location recorded, for  
34 flotation analysis (a method of separating light organic material such as fine plant remains  
35 from the deposit, in order to identify plant species pursued by prehistoric populations).
  - 36 • Because some of the resources subject to treatment contain human remains, provisions for  
37 such remains are necessary. If human remains are discovered in these deposits during data  
38 recovery, the county coroner will be contacted as required in California Health and Safety  
39 Code Section 7050.5. After the coroner confirms the remains are of prehistoric origin, the  
40 NAHC will be contacted and given the opportunity to identify a most likely descendant  
41 (MLD). The MLD will be given the opportunity to reinter the remains with appropriate  
42 dignity. If the NAHC fails to identify the MLD or if the parties cannot reach agreement as to  
43 how to reinter the remains as described in California PRC Section 5097.98(e), the  
44 landowner will reinter the remains at a location not subject to further disturbance. The  
45 BDCP proponents will ensure the protections prescribed in California PRC Section

1 5097.98(e), are performed, such as the use of conservation easements and recording of the  
 2 location with whichever county in which the remains are found as well as the relevant  
 3 information center of the CHRIS.

- 4 • After completion of data recovery excavations DWR and/or the appropriate federal agencies  
 5 will prepare a data recovery report. DWR and/or the appropriate federal agencies will  
 6 retain a qualified archaeological consultant to conduct relevant studies specified in the data  
 7 recovery plan such as obsidian hydration, faunal analysis, and X-ray fluorescence. The  
 8 consultant or staff archaeologists will synthesize the results of these studies and summarize  
 9 the results relative to regional research questions in the data recovery report. The report  
 10 will be filed with the relevant information center of the CHRIS. DWR and/or the appropriate  
 11 federal agencies will also store the recovered material (other than human remains) at an  
 12 appropriate facility for curation.
- 13 • **Construction phase monitoring and resource protection:** During construction on or near  
 14 the resource, DWR and/or the appropriate federal agencies will retain a qualified  
 15 archaeologist (a person knowledgeable in the identification of the kind of resources known  
 16 to occur), to observe excavations over any remaining portions of the deposit that are  
 17 sensitive for buried human remains or which may contain other significant buried  
 18 archaeological material that could be inadvertently damaged. If human remains are  
 19 discovered the archaeologist will direct compliance with the requirements of California  
 20 Health and Safety Code Section 7050.5 and California PRC Section 5097.98 and the relevant  
 21 federal agency with responsibility for Section 106 will be contacted. In addition DWR  
 22 and/or the appropriate federal agencies will use fencing, flagging, or other appropriate  
 23 means to exclude unnecessary disturbance and activity from sensitive resources during  
 24 construction.

25 The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Army Corps of  
 26 Engineers are entering into a PA with the California State Historic Preservation Officer for the  
 27 implementation of NHPA Section 106 for their undertakings associated with the BDCP. The  
 28 effects of Federal undertakings (actions) on historic properties (eligible for or listed on the  
 29 National Register of Historic Places) will be taken into account through the implementation of  
 30 this PA.

### 31 **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory** 32 **Efforts**

33 An inventory for the majority of the footprint for this alternative has not been conducted because  
 34 the majority of the footprint is not currently legally accessible (Appendix 4A, *Summary of Survey*  
 35 *Data Collection by Department of Water Resources to Obtain Information Regarding Baseline*  
 36 *Conditions in Areas That Could Be Affected by BDCP*). Furthermore, complete evaluation of all  
 37 potentially affected resources associated with this alternative may require destructive test  
 38 excavation in advance of any final decision regarding the selection of the alternative. Because  
 39 several prehistoric archaeological sites qualifying as historical resources have been identified in the  
 40 footprint of this alternative, the remaining non-accessible portion of the footprint for this  
 41 conveyance feature is sensitive for previously unidentified archaeological resources. Record  
 42 searches performed through the CHRIS reviewed the mapped location of previous cultural resource  
 43 inventories in the footprint of this alternative and the vicinity. This map review revealed that a  
 44 cultural resources inventory has never been conducted in the majority of the footprint for this

1 alternative. The presence of archaeological sites that qualify as historical resources and historic  
2 properties in the portion of the footprint that has been previously inspected provides a sample of  
3 the likely density and occurrence of resources in the remaining footprint. For this reason, additional  
4 prehistoric archaeological resources are likely to be found in the portion of the footprint where  
5 surveys have not been conducted, once access is available and such studies can be completed.

6 In addition to prehistoric archaeological resources, the BDCP area is sensitive for historic-era  
7 archaeological resources. It is likely that previously unidentified historic archaeological sites occur  
8 in the footprint of this alternative because of the intensity of human activity in the Plan Area during  
9 the historic era, as described in Section 18.1.6, *Historic-Era Setting*.

10 Prehistoric sites in the Plan Area tend to be large and rich in material remains, including human  
11 burials and associated ornaments and beads. Habitation debris also often contains both floral and  
12 faunal material that can be used for both radiocarbon dating and analysis regarding subsistence  
13 strategies. In addition, the large scale of typical prehistoric archaeological resources suggests  
14 portions of these deposits will remain with sufficient integrity to convey research information.  
15 Therefore, these sites are likely to qualify as historical resources or unique archaeological resources  
16 under CEQA and be eligible for the NHPA.

17 Historic sites are likely to be associated with the historic-era themes of settlement, reclamation,  
18 agriculture, and flood management in the Delta region. Because the reclamation and agricultural  
19 development of the Delta region provided part of the economic base for the development of  
20 surrounding urban centers, these historic themes are significant at both a state and national level.  
21 These resources accordingly may contain data useful in historical research. In addition, the intensity  
22 of historic activity in the Delta region suggests that many of these resources are likely to be  
23 distributed across the footprint of this alternative and some are likely to retain sufficient integrity to  
24 convey this significance if they are subject to archaeological excavation and investigation. Therefore,  
25 these sites are likely to qualify as historical resources or unique archaeological resources under  
26 CEQA and be eligible for the NHPA.

27 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
28 resources by disrupting the spatial associations that convey data useful in research or changing the  
29 setting such that the resource no longer contains its significance. These impacts would thus  
30 materially impair these resources within the meaning of CEQA and adversely affect the resources  
31 within the meaning of Section 106 of the NHPA. The locations of various features such as intakes,  
32 forebays, and tunnels shaft locations that would result in ground disturbance are depicted in  
33 Mapbook Figure M3-1 in Chapter 3, *Description of Alternatives*. These effects would be adverse.

34 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
35 sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
36 their integrity. For these reasons this effect would be adverse.

37 **CEQA Conclusion:** The footprint for this alternative is sensitive for both prehistoric and historic-era  
38 archaeological resources that cannot be identified at this time because much of the footprint is not  
39 legally accessible. Because many of these resources are likely to have data useful in prehistoric and  
40 historic archaeological research, as well as the integrity to convey this significance, they are likely to  
41 qualify as historical resources or unique archaeological sites under CEQA and be eligible for the  
42 NHPA. Ground-disturbing construction may materially alter the significance of these resources by  
43 disrupting the spatial associations that could yield important data, resulting in a significant effect.  
44 While mitigation is available (Mitigation Measure CUL-2), this mitigation cannot guarantee that all

1 eligible or significant resources would be preserved in place, or that all important data would be  
 2 retrieved before construction destroys these resources. The scale of the BDCP, investment into  
 3 existing designs, and the presence of other important environmental resources such as habitat,  
 4 natural communities, and wetlands that should be avoided are constraints on the flexibility and  
 5 feasibility of avoidance. For these reasons this impact is significant and unavoidable.

6 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of**  
 7 **Archaeological Resources**

8 Prior to ground-disturbing construction, the BDCP proponents will implement the following  
 9 mitigation measures:

- 10 • Because DWR and federal agencies could not feasibly access the majority of the footprint for  
 11 this alternative, a cultural resource inventory has not been completed for the entire  
 12 footprint. Prior to ground-disturbing construction, the BDCP proponents will ensure that an  
 13 inventory and evaluation report for cultural resources is completed. The inventory will  
 14 cover the APE for relevant federal undertakings.
- 15 • The scope of the inventory will include the entire area where effects may occur. Such effects  
 16 consist of direct disturbance through excavation or indirect damage through vibration or  
 17 changes to the setting, where the setting may be relevant for archaeological resources.
- 18 • The work will be led or supervised by cultural resource specialists who meet the Secretary  
 19 of the Department of the Interior’s professional qualification standards provided in 36 CFR  
 20 61.
- 21 • Inventory methods will include pedestrian surveys and other any other appropriate  
 22 sampling methods identified by DWR and/or the federal lead agencies.
- 23 • Identified resources will be mapped and described on forms provided by the California State  
 24 Parks forms (“DPR” forms). Mapping will be performed by recording data points with GPS  
 25 hardware that can be imported and managed digitally.
- 26 • For all identified resources DWR and/or the appropriate federal agencies will evaluate the  
 27 resources to determine if they are any of the following.
  - 28 ○ Historical resources (State CEQA Guidelines Section 15064.5[a])
  - 29 ○ Unique archaeological resources under CEQA (California PRC Section 21083.2[g])
  - 30 ○ Historic properties (36 CFR 60.4)
  - 31 ○ Eligible for local registers
- 32 • The recorded resources and the resource evaluations will be summarized in an inventory  
 33 report. In the inventory report DWR and/or the appropriate federal agencies will also  
 34 determine if individual resources qualifying as unique archaeological sites, historical  
 35 resources, or historic properties will require mitigation to the extent feasible, as described  
 36 below. The BDCP proponents will make such a determination if the BDCP would involve any  
 37 of the following consequences.
  - 38 ○ Demolish or materially alter the qualities that make the resource eligible for listing in  
 39 the CRHR (State CEQA Guidelines Section 15064.5[b][2][A],[C]).

- 1           ○ Demolish or materially alter the qualities that justify the inclusion of the resource on a  
2           local register or its identification in an historical resources survey meeting the  
3           requirements of California PRC Section 5024.1(g), unless the BDCP proponents  
4           establishes by a preponderance of evidence that the resource is not historically or  
5           culturally significant (State CEQA Guidelines Section 15064.5[b][2][B]).
- 6           ○ Alter, directly or indirectly, the qualities that make a resource eligible for listing in the  
7           NRHP (36 CFR 800.5[a][1]).
- 8           ○ Demolish or materially impair the qualities that allow a resource to qualify as a unique  
9           archaeological site (California PRC Section 21083.2).
- 10          ● For all resources qualifying as unique archaeological resources, historical resources, or  
11          historic properties that would be subject to significant effects, the BDCP proponents will  
12          develop and implement treatment. Such treatment will consist of the following, in order of  
13          priority.
- 14               ○ It should be noted that this order of priority applies to mitigation on historical resources  
15               performed to satisfy CEQA. Relevant federal agencies with management responsibilities  
16               for cultural resources shall implement mitigation for adverse effects to satisfy Section  
17               106 of the NHPA, which does not specify this order of priority.
- 18               ○ Preservation in place where feasible in light of costs, logistics, technological, and  
19               environmental considerations, and the extent to which avoidance is consistent with the  
20               objectives of the project, through methods such as redesign of relevant facilities to avoid  
21               destruction or damage to eligible cultural resources, capping resources with fill, or  
22               deeding resources into conservation easements.
- 23               ○ Review and study of existing collections previously retrieved from affected resources,  
24               where feasible, in lieu of data recovery excavations.
- 25               ○ Data recovery excavations that retrieve the information that makes the resource eligible  
26               for CRHR or NRHP listing, or that qualifies the site as a unique archaeological resource.  
27               If data recovery through excavation is the only feasible mitigation, a data recovery plan,  
28               which makes provisions for adequately recovering the scientifically consequential  
29               information from and about the historical resource, will be prepared and adopted prior  
30               to any excavation being undertaken. Such studies will be deposited with the relevant  
31               information center of the CHRIS. Excavation as mitigation will be restricted to those  
32               parts of the resource that would be damaged or destroyed by the BDCP. If, in the course  
33               of data recovery excavations, it is determined that contrary to available evidence, the  
34               resource lacks integrity, data recovery excavations will cease. The data recovery plan  
35               will specify the basis for the significance of the resource and methods for retrieving the  
36               consequential information from the site. After completion of excavation the BDCP  
37               proponents will retain a qualified archaeological consultant to synthesize the findings  
38               into a data recovery report describing the findings and will deposit the report at the  
39               relevant information center of the CHRIS.
- 40          ● The treatment plan will identify treatment methods that are proposed by the lead agencies  
41          and other public entities. The plan will also specify the basis for selecting a particular  
42          mitigation measure.

- 1           • For archaeological sites that qualify as historical resources, the BDCP proponents will  
2 consider preservation in place (including by avoidance) as the preferred treatment where  
3 feasible in light of costs, logistics, technological, and environmental considerations and the  
4 extent to which avoidance is consistent with the objectives of the project.
- 5           • If preservation in place of archaeological sites that qualify as historical resources or unique  
6 archaeological resources is not feasible in light of costs, logistics, technological  
7 considerations, the location of the find, and the extent to which preservation of the find is  
8 consistent or inconsistent with the design and objectives of the BDCP, the BDCP proponents  
9 will include a discussion in the treatment plan describing why the selected mitigation serves  
10 the interests protected by CEQA better than preservation in place.
- 11          • **Construction phase monitoring:** During construction on or near resources sensitive for  
12 human remains or archaeological resources, the BDCP proponents will retain a qualified  
13 archaeologist to observe excavations over any remaining portions of the deposit that are  
14 sensitive for buried deposits or human remains. If human remains are discovered the  
15 archaeologist will direct compliance with the requirements of California Health and Safety  
16 Code Section 7050.5 and California PRC Section 5097.98 and the relevant federal agency  
17 with responsibility for Section 106 will be contacted. If Native American human remains are  
18 discovered on federal land, work in the immediate vicinity will cease, and the BDCP  
19 proponents will contact the relevant representative of the federal agency where the remains  
20 were discovered, as prescribed in 25 USC Section 3002(d) (NAGPRA). After notification from  
21 the relevant agency representative and treatment of the remains as required under  
22 NAGPRA, work may continue. Disposition of the remains will follow the ownership priority  
23 described in NAGPRA (25 USC Section 3002[a]).

24           The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Army Corps of  
25 Engineers are entering into a PA with the California State Historic Preservation Officer for the  
26 implementation of NHPA Section 106 for their undertakings associated with the BDCP. The  
27 effects of Federal undertakings (actions) on historic properties (eligible for or listed on the  
28 National Register of Historic Places) will be taken into account through the implementation of  
29 this PA.

### 30           **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory** 31           **Efforts**

32           Appendix 18A, *Archaeological Resources Sensitivity Assessment*, presents an overview of the  
33 sensitivity of the Plan Area for previously unidentified archaeological resources and demonstrates  
34 that additional prehistoric and historic-era sites that have not yet been identified are almost certain  
35 to occur in the portion of the Plan Area where this alternative would be constructed. While surveys  
36 will be completed for the footprint, once access is available, such surveys cannot guarantee that all  
37 sites will be identified prior to construction. The rapid rate of at which alluvium and sediment  
38 accumulates in the Delta region, and the geologically unstable nature of the floodplain and riverbank  
39 environments in which these resources may occur, makes it likely that numerous sites are naturally  
40 capped below surface soils. Cultural resource inventory efforts cannot always identify such  
41 resources, even with exhaustive sampling methods designed to reveal sites with little or no surface  
42 manifestation because subsurface sampling to identify every buried resource is economically and  
43 technically infeasible. These sites may also occur buried at the depth at which tunnel boring  
44 operations would be performed.

1 Many of these unidentified prehistoric resources are likely to qualify as historical resources, historic  
2 properties, or unique archaeological resources because prehistoric sites in the Delta region tend to  
3 be large and contain a rich material culture. In particular, burial features tend to be associated with  
4 numerous shell ornaments, charmstones, and associated grave goods. Habitation components often  
5 contain abundant faunal and floral remains that elucidate prehistoric adaptations such as  
6 subsistence methods.

7 In addition to prehistoric archaeological resources, the BDCP area is sensitive for historic-era  
8 archaeological resources. Archaeological debris found in historic era archaeological sites activity is  
9 likely to be associated with significant themes such as agriculture, reclamation, and settlement of the  
10 Delta region. The size of the BDCP area and the intensity of historic activity suggest that some of  
11 these resources may qualify as historical resources, historic properties, or unique archaeological  
12 resources.

13 Ground-disturbing work, including the construction of surface features such as intakes, and the  
14 subterranean tunnel boring operations and shafts may disturb and damage these resources before  
15 they can be identified and avoided during monitoring efforts required under Mitigation Measure  
16 CUL-3. This damage and disturbance may materially impair these resources within the meaning of  
17 CEQA or adversely affect the resources within the meaning of Section 106 because this disturbance  
18 would impair the ability of these resources to yield data useful in research. While Mitigation  
19 Measure CUL-3 would reduce the potential for this impact, it would not guarantee the impact would  
20 be avoided entirely. Therefore, this impact is adverse.

21 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
22 sites that also may not necessarily be identified prior to construction. While cultural resource  
23 inventories will be completed once legal access is secured, no inventory can ensure that all  
24 resources are identified prior to construction. Because these sites may be eligible for the NRHP or  
25 CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
26 adverse.

27 **CEQA Conclusion:** This impact would be significant. Construction has the potential to disturb  
28 previously unidentified archaeological sites qualifying as historical resources, historic properties, or  
29 unique archaeological resources. Because direct excavation, compaction, or other disturbance may  
30 disrupt the spatial associations that contain scientifically useful information it would alter the  
31 potential basis for eligibility, thus materially altering the resource and resulting in a significant  
32 effect. Because these resources would not be identified prior to construction, they cannot be  
33 recorded and effects cannot be managed through construction treatment. DWR has made an  
34 environmental commitment to conduct environmental training regarding how to avoid and protect  
35 sensitive areas (Appendix 3B, *Environmental Commitments, AMMs, and CMs*). This environmental  
36 commitment, in addition to implementation of Mitigation Measure CUL-3, would reduce the  
37 potential for this impact, by implementing construction worker training, monitoring and discovery  
38 protocols. However, because archaeological resources may not be identified prior to disturbance  
39 through these measures, the effect cannot be entirely avoided. Therefore, this impact would remain  
40 significant and unavoidable.

1       **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
2       **Perform Training of Construction Workers, and Conduct Construction Monitoring**

3       Prior to ground-disturbing construction, the BDCP proponents will include a cultural resources  
4       discovery plan in the contract conditions of the construction contractor, incorporating the  
5       following actions to be taken in the event of the inadvertent discovery of cultural resources.

- 6       • An archaeological monitor will be present to observe construction at geographic locations  
7       that are sensitive for unidentified cultural resources. Such locations consist of construction  
8       near identified sites (within a 100-foot radius around the known boundaries of identified  
9       resources), and where ground-disturbing construction will occur within 500 feet of major  
10      water features.
- 11     • In the event of an archaeological resources discovery, work will cease in the immediate  
12     vicinity of the find (typically 100-feet), based on the direction of the archaeological monitor  
13     or the apparent distribution of cultural resources if no monitor is present. A qualified  
14     archaeologist will assess the significance of the find and make recommendations for further  
15     evaluation and treatment as necessary.
- 16     • Discovered resources will be mapped and described on forms provided by the California  
17     Department of Parks and Recreation (DPR). Mapping will be performed by recording data  
18     points with GPS hardware that can be imported and managed digitally.
- 19     • Evaluation and treatment will follow the standards and order of priority described above for  
20     Mitigation Measure CUL-2. After receiving recommendations from the qualified  
21     archaeologist, DWR and/or the appropriate federal agencies shall jointly determine the  
22     feasibility of such recommendations, and particularly any recommended avoidance  
23     measures, in light of factors such as costs, logistics, technological, and environmental  
24     considerations and the extent to which avoidance is consistent with the objectives of the  
25     project.
- 26     • If human remains are discovered as part of a larger cultural deposit, the BDCP proponents  
27     and the contractors will coordinate with the county coroner and NAHC to make the  
28     determinations and perform the management steps prescribed in California Health and  
29     Safety Code Section 7050.5 and California PRC Section 5097.98.
- 30     • If Native American human remains are discovered on federal land, work in the immediate  
31     vicinity will cease, and the BDCP proponents will contact the relevant representative of the  
32     federal agency where the remains were discovered, as prescribed in 25 USC Section 3002(d)  
33     (NAGPRA). After notification from the relevant agency representative and treatment of the  
34     remains as required under NAGPRA, work may continue. Disposition of the remains will  
35     follow the ownership priority described in NAGPRA (25 USC Section 3002[a]), as defined  
36     below under Mitigation Measure CUL-4.
- 37     • DWR and/or the appropriate federal agencies shall provide pre-construction training of all  
38     construction personnel engaged in construction that has the potential to affect  
39     archaeological resources. This training will provide instruction on how to identify resources  
40     in the field and appropriate measures to be taken if a discovery or potential discovery  
41     occurs.

1 DWR will include a list of DWR cultural-resources staff that can respond to cultural resource  
 2 discoveries and provide management direction following discoveries in the construction  
 3 training materials, and will also provide this list as well as these discovery requirements to the  
 4 supervisory field staff for the construction workers.

5 The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Army Corps of  
 6 Engineers are entering into a PA with the California State Historic Preservation Officer for the  
 7 implementation of NHPA Section 106 for their undertakings associated with the BDCP. The  
 8 effects of Federal undertakings (actions) on historic properties (eligible for or listed on the  
 9 National Register of Historic Places) will be taken into account through the implementation of  
 10 this PA.

#### 11 **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

12 The footprint of this alternative is sensitive for buried human remains that may occur in isolation,  
 13 rather than as part of prehistoric or historic archaeological sites. Historic and prehistoric human  
 14 remains have been discovered as isolated interments rather than as part of larger sites. Because  
 15 these isolated resources are not associated with larger deposits, their distribution and depth cannot  
 16 be estimated. Construction of this alternative would require ground-disturbing work that may  
 17 damage previously unidentified human remains, resulting in direct effects on these resources. While  
 18 inventory and monitoring efforts are prescribed under Mitigation Measures CUL-2, CUL-3, and CUL-  
 19 4, the large acreages subject to disturbance under this alternative make exhaustive sampling to  
 20 identify all buried and isolated human remains technically and economically infeasible. For these  
 21 reasons the potential remains that such resources may be damaged or exposed before they can be  
 22 discovered through inventory or monitoring. This effect would be adverse.

23 **NEPA Effects:** Buried human remains may be damaged by this alternative because such remains  
 24 may occur either in isolation or as part of identified and previously unidentified archaeological  
 25 resources where construction will occur. This effect would be adverse.

26 **CEQA Conclusion:** This impact would be significant. The Alternative 1A area is sensitive for buried  
 27 human remains. Construction would likely result in disturbance of these features. Disturbance of  
 28 human remains, including remains interred outside of cemeteries is considered a significant impact  
 29 in the CEQA Appendix G checklist; therefore disturbance of these remains would result in a  
 30 significant effect. Mitigation measures would reduce the severity of this impact, but not to a less-  
 31 than-significant level because mitigation would not guarantee that these features could be  
 32 discovered and treated in advance of construction; the scale of construction makes it technically and  
 33 economically infeasible to perform the level of sampling necessary to identify all such resources  
 34 prior to construction. Therefore, this impact is considered significant and unavoidable.

#### 35 **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if** 36 **Such Resources Are Discovered during Construction**

- 37 • If human remains are discovered as part of a larger cultural deposit, the BDCP proponents  
 38 and the construction contractors will coordinate with the county coroner and NAHC to make  
 39 the determinations and perform the management steps prescribed in California Health and  
 40 Safety Code Section 7050.5 and California PRC Section 5097.98. The provisions of these  
 41 state laws apply unless discoveries occur on land owned or controlled by the federal  
 42 government. For discoveries on federal land the bulleted procedures for NAGPRA, provided

1 below shall be followed. Compliance with state law for discoveries occurring on private or  
2 state lands requires the following steps.

- 3 ○ Notification of the county coroner so the coroner may determine if an investigation  
4 regarding the cause of death is required. If the coroner determines that the remains are  
5 of prehistoric Native American origin, the coroner will notify the NAHC.
- 6 ○ Upon notification the NAHC will identify the MLD, and the MLD will be given the  
7 opportunity to reinter the remains with appropriate dignity. If the NAHC fails to identify  
8 the MLD or if the parties cannot reach agreement as to how to reinter the remains as  
9 described in California PRC Section 5097.98(e), the BDCP proponents will reinter the  
10 remains at a location not subject to further disturbance. The BDCP proponents will  
11 ensure the protections prescribed in California PRC Section 5097.98(e), are performed,  
12 such as the use of conservation easements and recording of the location with the  
13 relevant county as well as information center of the CHRIS.
- 14 ● If Native American human remains are discovered on federal land, work in the immediate  
15 vicinity will cease, and the BDCP proponents will contact the relevant representative of the  
16 federal agency where the remains were discovered, as prescribed in 25 USC Section 3002(d)  
17 (NAGPRA). After notification from the relevant agency representative and treatment of the  
18 remains as required under NAGPRA, work may continue. Disposition of the remains will  
19 follow the ownership priority described in NAGPRA (25 USC Section 3002[a]):
  - 20 ○ Where the lineal descendants can be found, the lineal descendants own the remains.
  - 21 ○ Where the lineal descendants cannot be found, the remains belong to the Indian tribe on  
22 whose land the remains were found.
  - 23 ○ If the remains are discovered on other lands owned or controlled by the federal  
24 government and the lineal descendants cannot be determined, the remains belong to the  
25 Indian tribe that is culturally affiliated with the remains, or the tribe that aboriginally  
26 occupied the land where the remains were discovered.
  - 27 ○ “Indian Tribe” here means federally recognized tribes identified in the list of such tribes  
28 published by the Bureau of Indian Affairs in the *Federal Register* as well as in the tribal  
29 directory compiled by the BIA.

30 The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Army Corps of  
31 Engineers are entering into a PA with the California State Historic Preservation Officer for the  
32 implementation of NHPA Section 106 for their undertakings associated with the BDCP. The  
33 effects of Federal undertakings (actions) on historic properties (eligible for or listed on the  
34 National Register of Historic Places) will be taken into account through the implementation of  
35 this PA.

### 36 **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic** 37 **Architectural/Built-Environment Resources Resulting from Construction Activities**

38 Built-environment resources that may be affected by this alternative include resources identified  
39 and evaluated in inventory efforts conducted for other projects and resources identified in surveys  
40 for the BDCP. Some resources are considered historic properties for the purposes of this analysis  
41 because they meet the criteria in the NRHP regulations (36 CFR 60.4), as described below. For  
42 similar reasons some are considered historical resources under CEQA. As identified in Appendix

1 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-2, a total of 24  
 2 built-environment resources have the potential to be directly or indirectly affected by construction  
 3 of this alternative. The specific nature and location of the impact mechanism for each affected  
 4 resource is also described in Table 18B-2. These resources are spatially distributed across the  
 5 alignment, but are clustered to some extent, either where large project features such as intakes and  
 6 the intermediate forebay occur, or where the alignment approaches small towns and other  
 7 concentrations of resources such as the town of Walnut Grove. The affected resources have been  
 8 evaluated for the NRHP and CRHR. The basis for the eligibility recommendations for each resource is  
 9 provided in Appendix 18B, in Section 18B.1.2, *Built Environment Resource Descriptions*.

## 10 **Discussion of Anticipated Effects on Identified and Accessible Resources**

11 Direct effects would result from demolition of resources to construct features such as intakes or  
 12 other improvements. Indirect effects would result where resources would remain, but the nearby  
 13 setting would be altered by new inconsistent structures such as intakes or transmission lines.  
 14 Modification of resources may result in direct effects. The exact effect mechanism for each resource  
 15 is described in Appendix 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, in  
 16 Table 18B-2. Facility redesign to avoid direct impacts on historic architectural resources is  
 17 preferred as mitigation if possible. However, it is unlikely that all identified resources can be  
 18 avoided because of the scale of the BDCP and the need to balance avoidance of other important  
 19 environmental resources such as wetlands, natural communities, and special-status species habitat.  
 20 These effects would materially impair the resources within the meaning of CEQA and result in  
 21 adverse effects within the meaning of Section 106 because they would diminish the characteristics  
 22 that convey the significance of the resources. Some direct demolition and indirect effects such as  
 23 setting changes are likely to occur even with mitigation. Therefore, these effects would be adverse.

24 **NEPA Effects:** This alternative would result in direct and indirect effects on NRHP and CRHR eligible  
 25 built environment resources. These alterations may diminish the integrity of these resources. For  
 26 these reasons this effect would be adverse.

27 **CEQA Conclusion:** Historic-era built-environment resources have been identified in the footprint of  
 28 this alternative (24 individual resources, as described in Appendix 18B, *Identified Resources*  
 29 *Potentially Affected by the BDCP Alternatives*, Table 18B-2). These resources have been evaluated for  
 30 the CRHR and qualify as historical resources under CEQA. Construction of conveyance facilities may  
 31 require demolition of the historic built-environment resources. Construction may also result in  
 32 permanent indirect effects such as changes to the setting. Direct demolition or changes to the setting  
 33 would be material alterations because they would either remove the resource or alter the resource  
 34 character, resulting in an inability of the resource to convey its significance. For these reasons this  
 35 would be a significant effect. Mitigation described below may reduce these effects, but cannot  
 36 guarantee they would be entirely avoided. The scale of the BDCP and the constraints imposed by  
 37 other environmental resources make avoidance of all significant effects unlikely. For these reasons  
 38 this impact remains significant and unavoidable even with implementation of the following  
 39 mitigation measures.

### 40 **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and Implement a Built** 41 **Environment Treatment Plan**

42 All mitigation will be undertaken by individuals who meet the Secretary of the Interior's  
 43 professional qualifications and have demonstrable experience conducting the following

1 recommended measures. In preparation of the built environment treatment measures relevant  
 2 parties will be consulted. Such parties may include but are not limited to the SHPO, the ACHP,  
 3 local historical societies, and other interested parties such as local preservation and community  
 4 organizations. DWR will perform the following measures as part of mitigation and monitoring  
 5 for compliance with CEQA. Appropriate federal agencies shall perform these measures as part of  
 6 their management responsibilities performed to satisfy Section 106 of the NHPA.

7 A built environment treatment plan (BETP) will be prepared by an architectural historian with  
 8 demonstrated experience preparing treatment for similar kinds of resources, and reviewed by  
 9 relevant parties prior to any demolition or ground-disturbing activity for all CRHR- and NRHP-  
 10 eligible built-environment resources subject to adverse effects or significant impacts.

11 Recommended property specific mitigation is identified in Appendix 18B, *Identified Resources*  
 12 *Potentially Affected by the BDCP Alternatives*, Tables 18B-17 through 18B-31, and shall be  
 13 implemented in accordance with the specifics developed in the BETP.

14 The following protective measures and monitoring protocols will be implemented for historic  
 15 resources in close proximity to the project but that are not anticipated to be directly affected by  
 16 demolition or construction but which may be subject to direct effects such as vibration or  
 17 inadvertent damage activities:

- 18 • Historic Structures Reports (HSR) will be prepared for buildings and structures adjacent to  
 19 the project for which detailed information is required to develop protection measures.  
 20 These will be done for buildings and structures that appear to be in poor condition and,  
 21 therefore, potentially sensitive to construction-related activities such as vibration.  
 22 Preconstruction stabilization or temporary removal of these buildings may be necessary.
- 23 • Preconstruction condition assessments will be prepared for buildings and structures  
 24 adjacent to the project that are stable, but could be unintentionally damaged during  
 25 construction. Should there be any question as to whether or not the project caused damage,  
 26 these condition assessments will provide confirmation of the preconstruction condition.
- 27 • Precautions to protect built resources from construction vehicles, debris and dust may  
 28 include fencing or debris meshing. Temporary mothballing, and fire and intrusion  
 29 protection may be needed if the buildings are unoccupied during construction.
- 30 • Protective measures will be field checked as needed during construction by a qualified  
 31 architectural historian with demonstrated experience conducting monitoring of this nature.  
 32 Vibration monitoring may be required for buildings determined to be susceptible to  
 33 vibration damage that are in close proximity to construction activities or machinery that  
 34 cause vibration.
- 35 • These measures are designed to avoid direct effects such as vibration that may result in  
 36 structural damage or inadvertent direct effects such as demolition.
- 37 • Redesign of relevant facilities will be used to avoid destruction or damage where feasible,  
 38 taking into account costs, logistics, technological and environmental considerations, and the  
 39 extent to which avoidance is consistent with the objectives of the project.

40 For built resources that will be directly and adversely impacted, the BETP will specify resource-  
 41 specific treatment measures such as, but not limited to, the following examples of treatments  
 42 used to minimize effects on built-environment resources:

- 1           • Historic American Building Survey (HABS) records documentation will be prepared for  
2 CRHR- and NRHP-eligible buildings and structures that will be demolished (National Park  
3 Service 2000). These reports will include written and photographic documentation of the  
4 significant and character-defining features of these properties. These reports will minimize  
5 the adverse effect by capturing and preserving a description of the significant information  
6 and characteristics associated with the resource.
- 7           ○ In recent years, the National Park Service and National Archives have issued directives  
8 indicating that they will not accept formal submissions under the HABS program unless  
9 the resource being documented is a rare, unusual, or exceptionally high-quality example  
10 of its type, due to the huge volume of submissions generated by environmental  
11 mitigation requirements. The BETP will indicate whether the HABS documentation will  
12 be formally submitted to the National Park Service for review and approval, based on a  
13 consideration of the rarity or caliber of the resource being mitigated, or instead will be  
14 prepared informally for distribution to local repositories or for re-use for interpretive or  
15 educational programs.
- 16           ○ For formal HABS documentation, reports are subject to review and approval by the  
17 National Park Service. Following approval, the BDCP lead agencies will produce  
18 sufficient copies for distribution to identified repositories identified in the BETP,  
19 including the Library of Congress, the California State Library, the University of  
20 California Water Resources Center Archives, and any local repositories, as appropriate  
21 and agreed upon with the SHPO and interested parties. Distribution will further enhance  
22 the mitigation of the adverse effect because it will ensure that the significance is  
23 retained and conveyed to a wide audience.
- 24           ○ For informal HABS documentation, report contents may be prepared in high-resolution  
25 digital format, rather than being produced to the high archival standards required by  
26 the National Park Service for formal submissions. The Lead Agencies will produce  
27 sufficient copies for distribution to repositories identified in the BETP, which may  
28 include the California State Library, the University of California Water Resources Center  
29 Archives, and any local repositories, as appropriate and agreed upon with the SHPO and  
30 interested parties.
- 31           • As applicable, Historic American Landscape Survey (HALS) records and Historic American  
32 Engineering Record (HAER) documents will be prepared for historic water-associated  
33 resources (National Park Service 2005). The levees and other linear CRHR- and NRHP-  
34 eligible features will be recorded following HAER guidelines. Additionally the settings will  
35 be recorded following HALS guidelines. These reports will include written and photographic  
36 documentation of the significant and character-defining features of these properties. The  
37 HALS and HAER reports will minimize the adverse effect by capturing and retaining a  
38 description of the significant engineering and design information associated with the  
39 resource.
- 40           ○ In recent years, the National Park Service and National Archives have issued directives  
41 indicating that they will not accept formal submissions under the HALS and HAER  
42 programs unless the resource being documented is a rare, unusual, or exceptionally  
43 high-quality example of its type, due to the huge volume of submissions generated by  
44 environmental mitigation requirements. The BETP will indicate whether the HALS or  
45 HAER documentation will be formally submitted to the National Park Service for review

1 and approval, based on a consideration of the rarity or caliber of the resource being  
 2 mitigated, or instead will be prepared informally for distribution to local repositories or  
 3 for re-use for interpretive or educational programs.

- 4 ○ Formal HALS/HAER reports submissions are subject to review and approval by the  
 5 National Park Service. Following approval, the BDCP lead agencies will produce  
 6 sufficient copies for distribution to identified repositories identified in the BETP,  
 7 including the Library of Congress, the California State Library, the University of  
 8 California Water Resources Center Archives, and any local repositories, as appropriate  
 9 and agreed upon with the SHPO and interested parties. Distribution will further enhance  
 10 the mitigation of the adverse effect because it will ensure that the significance is  
 11 retained and conveyed to a wide audience.

- 12 ○ For informal HALS/HAER documentation, report contents may be prepared in high-  
 13 resolution digital format, rather than being produced to the high archival standards  
 14 required by the National Park Service for formal submissions. The Lead Agencies will  
 15 produce sufficient copies for distribution to repositories identified in the BETP, which  
 16 may include the California State Library, the University of California Water Resources  
 17 Center Archives, and any local repositories, as appropriate and agreed upon with the  
 18 SHPO and interested parties.

- 19 ● Preparation of interpretive or educational media such as displays in public spaces, print  
 20 materials, or websites. Interpretive and educational media may incorporate written,  
 21 photographic, and archival documentation, such as those compiled for informal  
 22 HABS/HAER/HALS reports), oral history interviews, video, or animation to tell the story of  
 23 the heritage represented by the impacted resource. Interpretive media is an appropriate  
 24 mitigation for resources that are CRHR- or NRHP-eligible because they are associated with  
 25 events that have made a significant contribution to the broad patterns of California's history  
 26 and cultural heritage or that are associated with persons important in our past for their  
 27 association with historical trends or people, rather than for their design qualities.
- 28 ● Salvage of materials will be performed to the extent feasible to enable the restoration of  
 29 similar buildings, structures, or water-conveyance features outside of the area of direct  
 30 impact. Salvage will further minimize adverse effects by using salvaged materials to ensure  
 31 that similar resources are restored and maintained in manner that will ensure the  
 32 significance of the resource is preserved.
- 33 ● Relocation of historic buildings that would otherwise be demolished.
- 34 ● Following the Secretary of the Interior's standards to restore built resources outside of the  
 35 area of direct effect that are of the same type as resources that will be demolished by the  
 36 BDCP.
- 37 ● Other appropriate treatment methods that are identified in relation to particular resources  
 38 that are affected.

39 The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Army Corps of  
 40 Engineers are entering into a PA with the California State Historic Preservation Officer for the  
 41 implementation of NHPA Section 106 for their undertakings associated with the BDCP. The  
 42 effects of Federal undertakings (actions) on historic properties (eligible for or listed on the  
 43 National Register of Historic Places) will be taken into account through the implementation of  
 44 this PA.

1 **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic**  
2 **Architectural/Built-Environment Resources Resulting from Construction Activities**

3 Because DWR does not have legal access to the majority of the footprint for this alternative,  
4 inventory efforts in the entire footprint have not been completed. Nonetheless, the intensity of  
5 activity in the Delta region during the historic era and a review of available data such as aerial  
6 photographs suggest that numerous additional resources occur in the footprint that have not been  
7 identified or which cannot currently be accessed and evaluated.

8 Review of available data such as aerial photographs, historic topographic maps, and assessors'  
9 records also indicates that many of these inaccessible properties are 45 years of age or older and  
10 have the potential to be eligible historic resources. Approximately 71 unevaluated built-  
11 environment resources have been identified in the footprint of this alternative (ICF 2012, see tables  
12 of inaccessible properties and associated maps). Many of these resources are likely to be significant  
13 because they may be associated with the important historical themes described above in Section  
14 18.1.6, *Historic-Era Setting*. In addition, such resources may be associated with historically  
15 significant persons, or may represent significant artistic values. Thus the resources may have  
16 significance under both CEQA (State CEQA Guidelines Section 15064.5[a][3]) and the NRHP (30 CFR  
17 60.4). In addition, because many of the historic-era structures in the Delta region are intact, and  
18 retain their rural agricultural setting, many of these resources are likely to have integrity within the  
19 meaning of CEQA and the NRHP (14 CCR Section 4852[c], 30 CFR 60.4). Because many unidentified  
20 resources are likely to have significance and integrity, they may qualify as historical resources under  
21 CEQA and historic properties under Section 106 of the NHPA.

22 **Anticipated Effects**

23 Construction may result in direct demolition of these resources, damage through vibration, or  
24 indirect effects such as changes to the setting. While mitigation is available to reduce these effects,  
25 this mitigation cannot guarantee that all effects would be avoided because mitigation cannot  
26 guarantee that eligible resources would be avoided and that adverse changes to the setting would  
27 not occur. The scale of the BDCP and other design constraints, such as the presence of other  
28 important environmental resources, makes avoidance of all direct and indirect effects unlikely.  
29 Therefore, this effect would be adverse.

30 TCPs may also occur within the footprint of this alternative. These resources consist of built  
31 environment features or activity areas that are important in the cultural life of a living community.  
32 Examples of such resources include local gathering halls and Native American traditional activity  
33 areas. Where these resources have both integrity of condition and integrity of relationship, and meet  
34 the criteria for listing in the NRHP, they can qualify as historic properties (National Park Service  
35 1998:11–12). Resources that are NRHP-eligible would also be historical resources under CEQA  
36 (California PRC Section 5024.1[d][1]). Construction has the potential to directly or indirectly  
37 damage such resources through demolition or introduction of new inconsistent features into the  
38 setting. These changes would impair the ability of the resources to convey their significance because  
39 the character defining elements or setting of the resource would be lost. Therefore, impacts on these  
40 resources may be adverse.

41 **NEPA Effects:** This alternative may result in direct modification or indirect changes to the setting for  
42 inaccessible and NRHP and CRHR-eligible built environment resources. These changes may diminish  
43 the integrity of these resources. For these reasons, this effect would be adverse.

1 **CEQA Conclusion:** The study area is sensitive for built-environment resources that have not yet  
 2 been recorded and evaluated because the majority of the area is legally inaccessible. Inventory  
 3 efforts have not gathered complete information in these inaccessible areas. Many of these resources  
 4 are likely to be associated with important historical themes or persons, or possess high creative  
 5 values; therefore, they are likely to have significance under CEQA and the NHPA. Because many of  
 6 these resources remain intact and retain their rural agricultural setting they are also likely to have  
 7 integrity under CEQA and the NHPA. Therefore, many are likely to qualify as historic properties or  
 8 historical resources under the NHPA and CEQA. Construction of conveyance facilities may require  
 9 demolition of the historic built-environment resources. Construction may also result in permanent  
 10 indirect effects such as changes to the setting. Direct demolition or changes to the setting would be  
 11 material alterations because they would either remove the resource or alter the resource character,  
 12 resulting in an inability of the resource to convey its significance. For these reasons this would be a  
 13 significant effect. Mitigation described below may reduce these effects, but cannot guarantee they  
 14 would be entirely avoided. The scale of the BDCP and the constraints imposed by other  
 15 environmental resources make avoidance of all significant effects unlikely. For these reasons this  
 16 impact remains significant and unavoidable even with implementation of the following mitigation  
 17 measures.

18 **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 19 **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 20 **Develop Treatment to Resolve or Mitigate Adverse Impacts**

21 Because DWR does not have legal access to the majority of the footprint for this alternative, a  
 22 built resources inventory has not been completed for the entire footprint for this alternative.  
 23 Prior to construction, the BDCP proponents will ensure that an inventory and evaluation report  
 24 is completed within all areas where effects on built resources may occur. This subsequent  
 25 survey will be conducted in a manner consistent with the May–June 2012 survey.

- 26 ● The scope of the inventory will include the entire area where effects may occur that were  
 27 inaccessible or partially inaccessible in the first survey efforts. Such effects consist of direct  
 28 disturbance, damage through vibration, or changes to the setting.
- 29 ● The work will be led or supervised by architectural historians that meet the Secretary of the  
 30 Department of the Interior’s professional qualification standards provided in 36 CFR 61.
- 31 ● Inventory methods and evaluation will include pedestrian surveys, photographic  
 32 documentation, historical research using both primary and secondary sources, and  
 33 interviews and oral histories.
- 34 ● Newly identified resources will be mapped and described on forms provided by the DPR.  
 35 Mapping will be performed by recording data points with GPS hardware that can be  
 36 imported and managed digitally.
- 37 ● For all identified resources, the BDCP proponents will evaluate the resources to determine if  
 38 they are any of the following.
  - 39 ○ Historical resources (State CEQA Guidelines Section 15064.5[a])
  - 40 ○ Significant historic resources under CEQA (California PRC Section 21084.1)
  - 41 ○ Historic properties (36 CFR 60.4)
  - 42 ○ Eligible for local registers

- 1       • The recorded resources and the resource evaluations will be summarized in an inventory  
2 report. In the inventory report, the BDCP proponents will also determine if individual  
3 resources qualifying as historical resources or historic properties will be subject to  
4 significant effects. DWR will make such a finding if the BDCP would result in the following.
- 5           ○ Demolish or materially alter the qualities that make the resource eligible for listing in  
6 the CRHR (State CEQA Guidelines Section 15064.5[b][2][A],[C]).
- 7           ○ Demolish or materially alter the qualities that justify the inclusion of the resource on a  
8 local register or its identification in an historical resources survey meeting the  
9 requirements of California PRC Section 5024.1(g), unless DWR establishes by a  
10 preponderance of evidence that the resource is not historically or culturally significant  
11 (State CEQA Guidelines Section 15064.5[b][2][B]).
- 12           ○ Alter, directly or indirectly, the qualities that make a resource eligible for listing in the  
13 NRHP (36 CFR 800.5[a][1]).
- 14           ○ Cause a substantial adverse change in the significance of an historical resource  
15 (California PRC Section 21084.1).

16       Where built-environment resources that are listed or qualify for listing in the CRHR or NRHP, or  
17 that have been designated as locally significant, or are otherwise identified by the BDCP  
18 proponents as historical resources will be subject to significant effects, the BDCP proponents  
19 will prepare a BETP. The treatment plan will provide detailed descriptions of treatment  
20 measures that will be implemented to avoid, protect, minimize, and mitigate adverse effects on  
21 historic properties in accordance with the Secretary of the Interior's Standards for the  
22 Treatment of Historic Properties (36 CFR 68) and the National Park Service's Guidelines for the  
23 Treatment of Cultural Landscapes. The treatment plan will describe work to be done prior to,  
24 during, and after construction.

- 25       • Where feasible in light of costs, logistics, technological and environmental considerations,  
26 and the extent to which avoidance is consistent with the objectives of the project, The BDCP  
27 proponents will first seek to avoid demolition or materially altering the historical resource  
28 by avoidance measures, such as the following.
- 29           ○ Construction condition assessments or HSRs of properties adjacent to construction to  
30 determine if these properties are at risk of being damaged.
- 31           ○ Redesign of relevant facilities to avoid destruction or damage.
- 32           ○ Determination of tolerable levels of construction vibration.
- 33           ○ Stabilization design and implementation to ensure fragile built resources are not  
34 damaged by construction activities.
- 35           ○ Temporarily moving built resources, or other measures determined appropriate.
- 36       • If avoidance is not feasible, the BDCP proponents will implement treatment measures such  
37 as, but not limited to the following examples of treatments used to minimize effects on built-  
38 environment resources.
- 39           ○ Redesign of relevant facilities to minimize the scale or extent of damage to eligible or  
40 listed built resources.

- 1           ○ Design standards to minimize the visual impact and to ensure context-appropriate  
2           design.
- 3           ○ Complete documentation in accordance with HABS/HAER/HALS programs, including  
4           written and photographic documentation of the significant qualities of the CRHR and  
5           NRHP listed and determined eligible districts or individually eligible resources (where  
6           resources cannot be avoided).
- 7           ○ Relocation of historic buildings that would otherwise be demolished.
- 8           ○ Following the Secretary of the Interior’s standards to restore built resources outside of  
9           the area of direct effect that are of the same type as resources that will be demolished by  
10          the BDCP.
- 11          ○ Other appropriate treatment methods that are identified in relation to particular  
12          resources that are affected.
- 13          The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Army  
14          Corps of Engineers are entering into a PA with the California State Historic Preservation  
15          Officer for the implementation of NHPA Section 106 for their undertakings associated with  
16          the BDCP. The effects of Federal undertakings (actions) on historic properties (eligible for or  
17          listed on the National Register of Historic Places) will be taken into account through the  
18          implementation of this PA.

#### 19          **Impact CUL-7: Effects of Other Conservation Measures on Cultural Resources**

20          This impact describes the potential effects of other conservation measures at a program level of  
21          detail, with the exception of *CM1 Water Facilities and Operation*. The following conservation  
22          measures would not result in impacts on cultural resources because they consist of changes to  
23          existing activities, or planning and regulatory actions that do not have the potential to result in  
24          ground-disturbing work with effects on cultural resources.

- 25          ● *CM11: Natural Communities Enhancement and Management*
- 26          ● *CM12: Methylmercury Management*
- 27          ● *CM13: Invasive Aquatic Vegetation Control*
- 28          ● *CM14: Stockton Deep Water Ship Channel Dissolved Oxygen Levels*
- 29          ● *CM15: Predator Control*
- 30          ● *CM16: Nonphysical Fish Barriers*
- 31          ● *CM17: Illegal Harvest Reduction*
- 32          ● *CM19: Urban Stormwater Treatment*
- 33          ● *CM20: Recreational Users Invasive Species Program*
- 34          ● *CM21: Nonproject Diversions*

35          Implementation of the remaining conservation measures could result in effects on prehistoric and  
36          historic archaeological resources, as well as TCPs and the built environment because the scope of  
37          conservation actions includes large areas of land, and the areas identified for potential restoration  
38          or other conservation actions are sensitive for cultural resources, including prehistoric and historic  
39          archaeological sites as well as human remains, architectural resources, and rural historic

1 landscapes. Specific conservation actions that could result in foreseeable ground-disturbing work  
 2 that could alter or impair the significance of NRHP-, CRHR-, or local registry-eligible cultural  
 3 resources are listed below.

- 4 • *CM2: Yolo Bypass Fisheries Enhancement*
- 5 • *CM3: Natural Communities Protection and Restoration*
- 6 • *CM4: Tidal Natural Communities Restoration*
- 7 • *CM5: Seasonally Inundated Floodplain Restoration*
- 8 • *CM6: Channel Margin Enhancement*
- 9 • *CM7: Riparian Natural Community Restoration*
- 10 • *CM8: Grassland Natural Community Restoration*
- 11 • *CM9: Vernal Pool Complex Restoration*
- 12 • *CM10: Nontidal Marsh Restoration*
- 13 • *CM18: Conservation Hatcheries*

14 These measures would result in effects on cultural resources when ground-disturbing work is  
 15 performed to construct improvements and enhance or restore natural communities. Direct effects  
 16 would occur through demolition or destruction of NRHP-, CRHR-, and/or local registry-eligible  
 17 prehistoric and historic archaeological sites, unique archaeological sites, TCPs, human remains, and  
 18 built-environment resources. Indirect effects may occur where changes to the setting alter the  
 19 existing setting in a manner that is inconsistent with the feeling and association of the resource. For  
 20 example, reclaimed agricultural landscapes that are converted to habitat may no longer convey the  
 21 themes of agriculture and settlement, and thus would be inconsistent with remaining features  
 22 associated with rural historic landscapes created by reclamation, cultivation, and ranching.

23 Because of the large acreages of land included in all conservation measures that would be  
 24 implemented under this alternative, it is unlikely that all effects on NRHP-, CRHR-, and /or local  
 25 registry-eligible resources and unique archaeological sites could be avoided. Therefore, this impact  
 26 would be adverse. These effects would be material alterations and adverse changes because  
 27 demolition or alteration of the setting would diminish or destroy the ability of these resources to  
 28 convey their significance. Mitigation Measure CUL-7 below addresses this effect.

29 **NEPA Effects:** Implementation of conservation measures will result in ground disturbing work and  
 30 introduction of new infrastructure to the Plan Area. These physical modifications may result in  
 31 direct effects on NRHP and CRHR eligible resources. These changes may therefore reduce the  
 32 integrity of these resources. For these reasons these effects would be adverse.

33 **CEQA Conclusion:** Construction and implementation of conservation measures would result in  
 34 ground-disturbing work that could alter the significant characteristics of NRHP, CRHR, and/or local  
 35 registry-eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and  
 36 built-environment resources such as historic architectural structures and rural historic landscapes.  
 37 The same construction may damage unique archaeological sites. This construction would likely  
 38 result in materially adverse changes for the following reasons.

- 1 • Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
2 contain data useful in research, thus diminishing or destroying the basis for the significance of  
3 the resource, and;
- 4 • Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
5 built-environment resources, resulting in an inability of the resource to convey its significance,  
6 and;
- 7 • Ground-disturbing construction may either directly demolish or change the setting of TCPs  
8 resulting in an inability of the resource to convey its significance.
- 9 • Ground-disturbing construction may inadvertently disturb human remains.

10 The alteration of a resource that changes the characteristics that convey its significance is a material  
11 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
12 CEQA under the Appendix G checklist. Because this construction would materially alter these  
13 categories of resources and disturb human remains it would result in a significant impact. Mitigation  
14 is available to reduce these impacts by identifying and evaluating resources, avoiding resources  
15 where possible, and developing treatment where avoidance is not possible. In addition construction  
16 would be monitored. However, because of the acreage associated with the proposed restoration  
17 under conservation measures, as well as the multiple constraints associated with other  
18 environmental resources that require mitigation or avoidance, it is unlikely that all cultural  
19 resources could be avoided. Therefore, this impact remains significant and unavoidable.

20 **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
21 **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
22 **Implementation of CM2-21**

23 As part of the design process for all Environmental Commitments other than water conveyance  
24 construction that could involve adverse effects on cultural resources within the meaning of  
25 NEPA, or significant impacts on cultural resources within the meaning of CEQA, The project  
26 proponents will conduct additional site-specific cultural resource studies and develop site-  
27 specific strategies for addressing impacts on cultural resources. The cultural resource studies  
28 will include the following steps.

- 29 • Record searches at the relevant information centers of the CHRIS to retrieve records of  
30 identified resources. Inventories will consist of surveys using both historical and map  
31 research as well as field-inspection. Evaluation will consist of assessment of identified  
32 resources to determine if they have both significance and integrity sufficient to qualify for  
33 the CRHR, and NRHP, as well as any relevant local registers.
- 34 • Cultural resource inventories and evaluations that identify archaeological resources and  
35 built-environment resources.
- 36 • Correspondence or discussion with the Native American contacts on file with the NAHC and  
37 relevant tribes from the list of relevant federally recognized tribes that qualify as *Indian*  
38 *tribes*, as used in 36 CFR 800.16(m), maintained by the Bureau of Indian Affairs (BIA), in  
39 order to identify resources that may be known to the Native American community, and to  
40 incorporate their preferences for treatment and management.
- 41 • Resource-specific evaluations that apply the criteria to determine if the identified resources  
42 qualify as historical resources (State CEQA Guidelines Section 15064.5[a]) or unique

1 archaeological resources under CEQA (California PRC Section 21083.2[g]), historic  
2 properties (36 CFR 60.4), or are eligible for local registers.

- 3 ● Resource-specific treatment for historical resources, unique archaeological resources, and  
4 historic properties that would be materially impaired as defined in CEQA (State CEQA  
5 Guidelines Section 15064.5[b][1]) or adversely affected, as defined in the Section 106  
6 regulations (36 CFR 800.5[a][1]).

7 Treatment and mitigation will include the following elements and steps.

- 8 ● Treatment for archaeological resources qualifying as historical resources that are subject to  
9 significant effects will follow the order of preference described in State CEQA Guidelines  
10 Section 15126.4[b][3].
- 11 ● Treatment for unique archaeological resources subject to significant effects will conform to  
12 the mitigation prescribed under CEQA (California PRC Section 21083.2[b]).
- 13 ● Treatment for historic properties subject to adverse effects will seek to avoid or minimize  
14 the consequences of the BDCP that would diminish the characteristics that make the historic  
15 property eligible for inclusion in the NRHP.
- 16 ● Treatment plans or mitigation measures in environmental documents will include  
17 monitoring and discovery plans that provide for observation of construction to avoid  
18 inadvertent effects on previously unidentified human remains and cultural resources, to the  
19 extent feasible.
- 20 ● Treatment plans or mitigation measures in environmental documents will also include the  
21 notification and consultation provisions required for discoveries of human remains  
22 provided in California Health and Safety Code Section 7050.5 and California PRC Section  
23 5097.98.
- 24 ● If Native American human remains are discovered on federal land, work in the immediate  
25 vicinity will cease and the BDCP proponents will contact the relevant representative of the  
26 federal agency where the remains were discovered, as prescribed in 25 USC Section 3002(d)  
27 (NAGPRA). After notification from the relevant agency representative and treatment of the  
28 remains as required under NAGPRA, work may continue. Disposition of the remains will  
29 follow the ownership priority described in NAGPRA (25 USC Section 3002[a]).
- 30 ● For federal agency undertakings, management will be coordinated through a PA and  
31 memoranda of agreement, as described above in Section 18.2.1.3, *Compliance with Section*  
32 *106 of the National Historic Preservation Act*.

33 The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Army Corps of  
34 Engineers are entering into a PA with the California State Historic Preservation Officer for the  
35 implementation of NHPA Section 106 for their undertakings associated with the BDCP. The  
36 effects of Federal undertakings (actions) on historic properties (eligible for or listed on the  
37 National Register of Historic Places) will be taken into account through the implementation of  
38 this PA.

## 1 **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Other** 2 **Conservation Measures with Plans and Policies**

3 Constructing the proposed water conveyance facilities (CM1) and implementing CM2–CM21 could  
 4 result in the potential for incompatibilities with plans and policies related to protecting cultural  
 5 resources of the Delta. A number of plans and policies that coincide with the study area provide  
 6 guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local*  
 7 *Plans, Policies, and Regulations*. This overview of plan and policy compatibility evaluates whether  
 8 Alternative 1A is compatible or incompatible with these policies, rather than whether impacts are  
 9 adverse or not adverse or significant or less than significant. The physical and indirect effects of the  
 10 alternatives on cultural resources are address in Impacts CUL-1 through CUL-7, as described for  
 11 each alternative. The following comparison analyzes the compatibility of the BDCP with the cultural  
 12 resource preservation plans and policies of the cities and counties in the region that have adopted  
 13 such policies. In general, these policies fall into two categories; policies that emphasize preservation  
 14 *or* mitigation for effects on significant cultural resources, and policies that specifically emphasize or  
 15 favor preservation as the preferred management method. For policies that emphasize preservation  
 16 or mitigation the BDCP will be compatible with these policies for the reasons described below. For  
 17 policies that emphasize preservation the BDCP is incompatible in some instances because multiple  
 18 constraints governing the location of proposed facilities makes preservation of all significant  
 19 cultural resources unlikely.

- 20 • The Alameda County East Area Plan requires that Alameda County design development to avoid  
 21 cultural resources that contribute to the heritage of the County, or in the alternative to include  
 22 mitigation to offset impacts to those resources (Alameda County 2000:36). Because the BDCP  
 23 includes mitigation measures requiring identification of cultural resources, evaluation for the  
 24 CRHR and NRHP, and mitigation to reduce unavoidable effects, the BDCP would be compatible  
 25 with this policy.
- 26 • The Contra Costa County General Plan encourages identification and preservation of important  
 27 cultural resources, preferably in public ownership. While other general plans and policies  
 28 typically encourage preservation or mitigation, the Contra Costa County General Plan  
 29 emphasizes preservation (Contra Costa County 2005: 9-11). While the BDCP will require  
 30 identification, evaluation, and mitigation to the extent feasible, the preservation of all affected  
 31 cultural resources is infeasible because conflicting constraints such as the location of other  
 32 significant environmental resources make such avoidance unlikely in every instance. For this  
 33 reason, the BDCP is not compatible with the Contra Costa County General Plan.
- 34 • San Joaquin County has adopted cultural resource protection policies as part of their general  
 35 plan (San Joaquin County 1992:VI-37). These policies require identification of cultural resources  
 36 prior to construction where feasible, and assessment of resources identified during construction  
 37 so that appropriate mitigation may be implemented. The BDCP would be compatible with these  
 38 policies because cultural resource inventories are in progress for the BDCP, and this section  
 39 identifies mitigation measures and consultation that will be conducted to manage effects on  
 40 cultural resources.
- 41 • The Sacramento County General Plan includes policies encouraging preservation of important  
 42 buildings, bridges, and other important structures (Sacramento County 2011:80). The General  
 43 Plan requires that projects involving structures or districts of architectural importance are  
 44 referred to the Cultural Resources Committee of the County to recommend appropriate  
 45 mitigation. The BDCP would be potentially incompatible with these policies because the scale of

1 the project and the constraints associated with mitigation and avoidance for other resources  
2 makes protection and avoidance of all significant architectural resources unlikely.

- 3 • The Solano County General Plan encourages identification and preservation of important  
4 archaeological and built-environment resources (Solano County 2008:RS-43). The BDCP would  
5 be potentially incompatible with these policies because the scale of the project and the  
6 constraints associated with mitigation and avoidance for other resources makes protection and  
7 avoidance of all significant architectural resources unlikely.
- 8 • The Yolo County General Plan requires identification of important cultural resources,  
9 consultation with Native Americans that attach significance to these resources, and avoidance or  
10 mitigation for important cultural resources affected by development (County of Yolo 2009a:CO-  
11 55 to CO-56). The General Plan also requires that permitted land uses in the Primary Zone of the  
12 Delta are consistent with the policies of the Land Use and Resource Management Plan of the  
13 Delta Protection Commission, but these policies do not have specific provisions for cultural  
14 resources. The BDCP would be compatible with these policies because cultural resource  
15 inventories are in progress for the BDCP, and this section identifies mitigation measures and  
16 consultation that will be conducted to manage effects on cultural resources.
- 17 • The Yolo County General Plan also encourages the preservation and protection of cultural  
18 resources where feasible and consultation with Native American tribes (County of Yolo  
19 2009a:CO-55). The plan specifically encourages identification efforts, avoidance and mitigation  
20 to the maximum extent feasible, and consultation with tribes that attach significance to those  
21 resources. Because the BDCP includes mitigation measures requiring identification of cultural  
22 resources, evaluation for the CRHR and NRHP, consultation with Native American individuals  
23 and organizations, and mitigation to reduce unavoidable effects, the BDCP would be compatible  
24 with this policy.

25 It should be noted that incompatibility with land use policies, is not, by itself, a physical effect on the  
26 environment. It should be noted that, as described in Chapter 13, *Land Use*, Section 13.2.3, state and  
27 federal agencies are not subject to local land use regulations.

28 **NEPA Effects:** Because federal agencies are not regulated by local land use policy, Alternative 1A  
29 would not result in a conflict with local land use laws.

30 **CEQA Conclusion:** The Plan Area is governed by cultural resource management policies adopted by  
31 the various counties with jurisdiction in this region. For policies that emphasize preservation or  
32 mitigation the BDCP will be compatible with these policies because DWR and appropriate federal  
33 agencies will implement cultural resource management practices that will identify significant  
34 resources, preserve such resources where feasible, and complete mitigation to reduce significant  
35 effects where preservation is not feasible. For policies that emphasize preservation the BDCP is  
36 incompatible in some instances because multiple constraints governing the location of proposed  
37 facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as  
38 described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local  
39 land use regulations.

### 18.3.5.3 Alternative 1B—Dual Conveyance with East Alignment and Intakes 1–5 (15,000 cfs; Operational Scenario A)

#### Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of Conveyance Facilities

##### Identified Resources

Record searches at the CHRIS and inventory efforts for the BDCP have identified 17 previously recorded archaeological sites in the footprint of this alternative as described in Appendix 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-1. Detailed site descriptions summarizing available information regarding these resources, are provided in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*. These sites are distributed more heavily towards the northern and southern end of the alignment.

##### Significance of Identified Archaeological Resources

Many of the directly affected sites are midden sites, with debris and artifacts associated with prehistoric habitation and residence activities. Midden sites in the Plan Area are often colloquially referred to as “mound sites” because they often form low mounds elevated relative to the surrounding landform. While the original raised deposit has sometimes been destroyed, midden sites often have substantial deposits below the original raised landform that remain intact that typically contain the material remains associated with prehistoric habitation. This organic debris can be used for radiocarbon dating, as well as material that reveals the nature of subsistence activities pursued by prehistoric populations. Because there is no single unified prehistoric chronology for the Delta region, substantial research questions remain unresolved regarding nature and changes of subsistence and settlement activity over the span of the prehistoric occupation of the Delta. The Delta is the prehistoric point of articulation between Central Valley cultures and the aboriginal people that occupied the San Francisco Bay area. Because the cultural chronology and sources of cultural change for the Delta remain unresolved in part, sites in the footprint of this alternative likely contain information that could help clarify these research issues. For this reason these resources are likely significant under the fourth criterion for the CRHR and NRHP.

Six of the identified sites contain human burials, as described on the site records. Most if not all of the remaining sites are likely to contain additional burials because midden sites in the Plan Area typically contain human burials or cremations. Burial components within these sites often contain ornaments and other personal items such as charmstones, beads, and other decorative material. Because the style and form of these artifacts change throughout prehistory, and because these stylistic changes have been defined, these materials provide a method of associating archaeological material with specific prehistoric time periods. The ability to associate habitation remains with specific time periods is one of the most significant problems in prehistoric research, because the sequence of specific adaptations and behaviors only becomes clear when a chronology can be constructed that associates behavior and material culture with specific time frames. For this reason these resources are likely significant under the fourth criterion for the CRHR and NRHP.

Because many of these resources are large (typically in excess of 30 meters across), they are each likely to contain some portion of the deposit with sufficient integrity to yield artifacts in their original associations in a manner that will convey these significance themes. Therefore these

1 identified resources are likely to qualify as historical resources under CEQA. For the same reasons,  
2 these resources are likely to qualify as historic properties under the NRHP.

### 3 **Anticipated Effects on Identified Resources**

4 The exact location of these resources cannot be disclosed because such disclosure might lead to  
5 inadvertent damage. However these resources occur within the footprint of both temporary work  
6 areas and permanent surface impacts. These sites are distributed more heavily towards the  
7 northern and southern end of the alignment. Ground-disturbing construction is likely to disturb the  
8 deposits and thus materially alter their ability to convey their significance. Much of the data  
9 potential in archaeological resources exists in the spatial associations of different artifacts and other  
10 cultural material. Where artifacts that have known associations with particular time periods occur  
11 adjacent to other material such as faunal bone or plant remains from subsistence activity, the  
12 proximity of the materials allows an inference as to the age of the subsistence remains, thereby  
13 allowing researchers to infer particular subsistence strategies during different prehistoric periods.  
14 Intrusive ground-disturbing construction, vibration, and other physical disturbance may disrupt  
15 these associations and thus disrupt the qualities for which the sites may qualify as historical  
16 resources or historic properties. In addition, because not all identified resources are legally  
17 accessible, these resources may be significant for other reasons than their data potential. Indirect  
18 effects such as introduction of changes to the setting associated with construction of new features or  
19 creation of new sources of noise (also a change to the setting) may diminish the basis for the  
20 significance of these resources. For these reasons, construction has the potential to materially  
21 impair these resources under CEQA and to adversely affect the resources as defined by Section 106  
22 of the NHPA. This effect would be adverse.

23 **NEPA Effects:** Construction may disturb NRHP and CRHR-eligible archaeological resources and  
24 damage these resources. This damage may impair the integrity of these resources and thus reduce  
25 their ability to convey their significance. For these reasons this effect would be adverse.

26 **CEQA Conclusion:** Construction of conveyance facilities would affect identified 17 archaeological  
27 resources that occur in the footprint of this alternative. DWR identified these resources and finds  
28 that they are likely to qualify as historical resources under CEQA (see the individual site descriptions  
29 in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*); these resources thus have the  
30 potential to qualify as historical resources. Therefore, these sites are considered historic resources  
31 for the purposes of CEQA. This impact would be significant because construction could materially  
32 alter or destroy the potential of these resources to yield information useful in archaeological  
33 research, the basis for the significance of these resources, through excavation and disruption of the  
34 spatial associations that contain meaningful information. Identified but currently inaccessible  
35 resources may also be significant under other register criteria; indirect effects such as introduction  
36 of new inconsistent changes to the setting may also diminish the significance of these resources.  
37 Mitigation Measure CUL-1 would reduce this impact by recovering scientifically important material  
38 prior to construction through the sensitive area, but would not guarantee that all of the scientifically  
39 important material would be retrieved because feasible archaeological excavation only typically  
40 retrieves a sample of the deposit, and portions of the site may remain after treatment with  
41 important information. Construction could damage these remaining portions of the deposit.  
42 Therefore, this impact is significant and unavoidable.

1           **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
 2           **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
 3           **Archaeological Sites**

4           Please refer to Mitigation Measure CUL-1 under Alternative 1A.

5           **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory**  
 6           **Efforts**

7           This impact is generally similar to Impact CUL-2 described under Alternative 1A. This alternative is  
 8           sensitive for previously unidentified archaeological resources that are likely to be significant and to  
 9           have integrity for the same reasons as described under Alternative 1A. It should be noted however,  
 10          that the eastern canal would cross more sensitive soil formations and result in continuous ground-  
 11          disturbance than Alternative 1A, which consists of a tunnel, and Alternative 1C which makes use of a  
 12          tunnel for a portion of the conveyance alignment. This results in a slightly greater potential to affect  
 13          prehistoric archaeological resources compared to Alternative 1A and 1C. Figure 18A-1 in Appendix  
 14          18A, *Archaeological Resources Sensitivity Assessment*, depicts the eastern canal relative to  
 15          archaeologically sensitive soil formations. The general sensitivity for historic-era archaeological  
 16          resources is similar to Alternative 1A.

17          Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 18          resources by disrupting the spatial associations that convey data useful in research or changing the  
 19          setting such that the resource no longer contains its significance. The locations of ground-disturbing  
 20          features such as the canal, access roads, pumping plants, borrow areas and concrete batch plants are  
 21          depicted in Mapbook Figure M3-2 in Chapter 3, *Description of Alternatives*. These impacts would  
 22          thus materially impair these resources within the meaning of CEQA and adversely affect the  
 23          resources within the meaning of Section 106 of the NHPA because this disturbance would impair the  
 24          ability of these resources to yield data useful in research. These effects would be adverse.

25          **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 26          sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
 27          their integrity. For these reasons this effect would be adverse.

28          **CEQA Conclusion:** The footprint for this alternative is sensitive for both prehistoric and historic-era  
 29          resources that cannot be identified at this time because much of the footprint is not legally  
 30          accessible. Because many of these resources are likely to have data useful in prehistoric and historic  
 31          archaeological research, as well as the integrity to convey this significance, they are likely to qualify  
 32          as historical resources or unique archaeological sites under CEQA or historic properties under the  
 33          Section 106 of the NHPA. Ground-disturbing construction may materially alter the significance of  
 34          these resources by disrupting the spatial associations that could yield important data, resulting in a  
 35          significant effect. While mitigation is available (Mitigation Measure CUL-2), this mitigation cannot  
 36          guarantee that all eligible or significant resources would be preserved in place, or that all important  
 37          data would be retrieved before construction destroys these resources. The scale of the BDCP,  
 38          investment into existing designs, and the presence of other important environmental resources such  
 39          as habitat, natural communities, and wetlands that should be avoided are constraints on the  
 40          flexibility and feasibility of avoidance. For these reasons this impact is significant and unavoidable.

1           **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of**  
2           **Archaeological Resources**

3           Please refer to Mitigation Measure CUL-2 as described under Alternative 1A.

4           **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory**  
5           **Efforts**

6           Appendix 18A, *Archaeological Resources Sensitivity Assessment*, presents an overview of the  
7           sensitivity of the Plan Area for previously unidentified archaeological resources and demonstrates  
8           that additional prehistoric and historic-era sites that have not yet been identified are almost certain  
9           to occur in the portion of the Plan Area where this alternative would be constructed. This sensitivity  
10          and the potential impact mechanisms are substantially similar to the sensitivity and impact  
11          mechanism described for Alternative 1A. It should be noted however, that the eastern canal would  
12          cross more sensitive soil formations and result in continuous ground-disturbance than Alternative  
13          1A, which consists of a tunnel, and Alternative 1C which makes use of a tunnel for a portion of the  
14          conveyance alignment. This results in a slightly greater potential to affect prehistoric archaeological  
15          resources compared to Alternative 1A and 1C. Figure 18A-1 in Appendix 18A depicts the eastern  
16          canal relative to archaeologically sensitive soil formations. The general sensitivity for historic-era  
17          archaeological resources is similar to Alternative 1A.

18          Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
19          resources by disrupting the spatial associations that convey data useful in research or changing the  
20          setting such that the resource no longer contains its significance. These impacts would thus  
21          materially impair these resources within the meaning of CEQA and adversely affect the resources  
22          within the meaning of Section 106 of the NHPA because this disturbance would impair the ability of  
23          these resources to yield data useful in research. These effects would be adverse.

24          **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
25          sites that also may not necessarily be identified prior to construction. While cultural resource  
26          inventories will be completed once legal access is secured, no inventory can ensure that all  
27          resources are identified prior to construction. Because these sites may qualify for the NRHP or  
28          CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
29          adverse.

30          **CEQA Conclusion:** This impact would be significant. Construction has the potential to disturb  
31          previously unidentified archaeological sites qualifying as historical resources, historic properties, or  
32          unique archaeological resources. Because direct excavation, compaction, or other disturbance may  
33          disrupt the spatial associations that contain scientifically useful information it would alter the  
34          potential basis for eligibility, thus materially altering the resource and resulting in a significant  
35          effect. Because these resources would not be identified prior to construction, they cannot be  
36          recorded and effects cannot be managed through construction treatment. Mitigation Measures CUL-  
37          3 would reduce but not entirely avoid the potential for this impact, by implementing construction  
38          worker training, monitoring and discovery protocols. However, because archaeological resources  
39          may not be identified prior to disturbance through these measures, the effect cannot be entirely  
40          avoided. Therefore, this impact would remain significant and unavoidable.

1           **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
 2           **Perform Training of Construction Workers, and Conduct Construction Monitoring**

3           Please refer to Mitigation Measure CUL-3 as described under Alternative 1A.

4           **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

5           The footprint of this alternative is sensitive for buried human remains that may occur in isolation,  
 6           rather than as part of prehistoric or historic archaeological sites. This sensitivity and the impact  
 7           mechanisms are substantially similar to the sensitivity and impact mechanisms described under  
 8           Alternative 1A. However, because the eastern canal crosses more sensitive soil formations and may  
 9           result in greater continuous ground disturbance than the tunnel option or the western canal, the  
 10          potential for impacts on buried human remains may be slightly higher than described for these  
 11          other options.

12          Ground-disturbing construction has the potential to damage and disinter buried human remains,  
 13          resulting in an adverse effect. While mitigation is available under Mitigation Measure CUL-4 to  
 14          reduce this effect, it cannot guarantee that this effect would be avoided entirely, therefore this effect  
 15          remains adverse.

16          **NEPA Effects:** Buried human remains may be damaged by this alternative because such remains  
 17          may occur either in isolation or as part of identified and previously unidentified archaeological  
 18          resources where construction will occur. This effect would be adverse.

19          **CEQA Conclusion:** This impact would be significant. The Alternative 1B area is sensitive for buried  
 20          human remains. Construction would likely result in disturbance of these features. Disturbance of  
 21          human remains, including remains interred outside of cemeteries is considered a significant impact  
 22          in the CEQA Appendix G checklist; therefore disturbance of these remains would result in a  
 23          significant effect. Mitigation measures would reduce the severity of this impact, but not to a less-  
 24          than-significant level because mitigation would not guarantee that these features could be  
 25          discovered and treated in advance of construction; the scale of construction makes it technically and  
 26          economically infeasible to perform the level of sampling necessary to identify all such resources  
 27          prior to construction. Therefore, this impact is considered significant and unavoidable.

28           **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if**  
 29           **Such Resources Are Discovered during Construction**

30          Please refer to Mitigation Measure CUL-4 as described under Alternative 1A.

31           **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic**  
 32           **Architectural/Built-Environment Resources Resulting from Construction Activities**

33          Built-environment resources that may be affected by this alternative include resources identified  
 34          and evaluated in inventory efforts conducted for other projects and resources identified in surveys  
 35          for the BDCP. Some of resources are considered historic properties for the purposes of this analysis  
 36          because they meet the criteria in the NRHP regulations (36 CFR 60.4), as described below. For the  
 37          similar reasons some are considered historical resources under CEQA. As identified in Appendix  
 38          18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-3, a total of 24  
 39          built-environment resources have the potential to be directly or indirectly affected by construction  
 40          of this alternative. These resources are spatially distributed across the alignment. The affected  
 41          resources have been evaluated for the NRHP and CRHR. The basis for the eligibility

1 recommendations for each resource is provided in Appendix 18B, in Section 18B.1.2, *Built*  
 2 *Environment Resource Descriptions*.

3 **NEPA Effects:** This alternative would result in direct and indirect effects on NRHP and CRHR eligible  
 4 built environment resources. These alterations may diminish the integrity of these resources. For  
 5 these reasons this effect would be adverse.

### 6 **Discussion of Anticipated Effects on Identified and Accessible Resources**

7 Direct effects would result from demolition of resources to construct features such as intakes, the  
 8 canal, and reusable tunnel material (RTM) areas. Indirect effects would result where resources  
 9 would remain, but the nearby setting would be altered by these same features. Modification of  
 10 resources may result in direct effects. The exact effect mechanism for each resource is described in  
 11 Appendix 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, in Table 18B-3.  
 12 Facility redesign to avoid direct impacts on historic architectural resources is preferred as  
 13 mitigation if possible. However, it is unlikely that all identified resources can be avoided because of  
 14 the scale of the BDCP and the need to balance avoidance of other important environmental  
 15 resources such as wetlands, natural communities, and special-status species habitat. These effects  
 16 would materially impair the resources within the meaning of CEQA and result in adverse effects  
 17 within the meaning of Section 106 because they would diminish the characteristics that convey the  
 18 significance of the resources. Some direct demolition and indirect effects such as setting changes are  
 19 likely to occur even with mitigation. Therefore, these effects would be adverse.

20 **CEQA Conclusion:** Several identified historic-era built-environment resources have been identified  
 21 in the footprint of this alternative (24 individual resources, as described in Appendix 18B, *Identified*  
 22 *Resources Potentially Affected by the BDCP Alternatives*, Table 18B-3). These resources have been  
 23 evaluated for the CRHR and qualify as historical resources under CEQA. Construction of conveyance  
 24 facilities may require demolition of the historic built-environment resources. Construction may also  
 25 result in permanent indirect effects such as changes to the setting. Direct demolition or changes to  
 26 the setting would be material alterations because they would either remove the resource or alter the  
 27 resource character, resulting in an inability of the resource to convey its significance. For these  
 28 reasons this would be a significant effect. Mitigation described below may reduce these effects, but  
 29 cannot guarantee they would be entirely avoided. The scale of the BDCP and the constraints  
 30 imposed by other environmental resources make avoidance of all significant effects unlikely. For  
 31 these reasons this impact remains significant and unavoidable even with implementation of the  
 32 following mitigation measures.

### 33 **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and implement a Built** 34 **Environment Treatment Plan**

35 Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 1A.

### 36 **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic** 37 **Architectural/Built-Environment Resources Resulting from Construction Activities**

38 Because DWR does not have legal access to the majority of the footprint for this alternative,  
 39 inventory efforts in the entire footprint have not been completed. Nonetheless, the intensity of  
 40 activity in the Delta region during the historic era and a review of available data such as aerial  
 41 photographs suggest that numerous additional resources occur in the footprint that have not been  
 42 identified or which cannot currently be accessed and evaluated.

1 Review of available data such as aerial photographs, historic topographic maps, and assessors'  
2 records indicate that many of these inaccessible properties are 45 years of age or older and have the  
3 potential to be eligible historic resources.

4 Approximately 67 unevaluated built-environment resources have been identified in the footprint of  
5 this alternative (ICF 2012, see tables of inaccessible properties and associated maps). Many of these  
6 resources are likely to be significant because they may be associated with the important historical  
7 themes described above in Section 18.1.6, *Historic-Era Setting*. In addition, such resources may be  
8 associated with historically significant persons, or may represent significant artistic values. Thus the  
9 resources may have significance under both CEQA (State CEQA Guidelines Section 15064.5[a][3])  
10 and the NRHP (30 CFR 60.4). In addition, because many of the historic-era structures in the Delta  
11 region are intact, and retain their rural agricultural setting, many of these resources are likely to  
12 have integrity within the meaning of CEQA and the NRHP (14 CCR Section 4852[c], 30 CFR 60.4).  
13 Because many unidentified resources are likely to have significance and integrity, they may qualify  
14 as historical resources under CEQA and historic properties under Section 106 of the NHPA.

### 15 **Anticipated Effects**

16 Construction may result in direct demolition of these resources, damage through vibration, or  
17 indirect effects such as changes to the setting. While mitigation is available to reduce these effects,  
18 this mitigation cannot guarantee that all effects would be avoided because mitigation cannot  
19 guarantee that eligible resources would be avoided and that adverse changes to the setting would  
20 not occur. The scale of the BDCP and other design constraints, such as the presence of other  
21 important environmental resources, makes avoidance of all direct and indirect effects unlikely.  
22 Therefore, this effect would be adverse.

23 TCPs may also occur within the footprint of this alternative. These resources consist of built  
24 environment features or activity areas that are important in the cultural life of a living community.  
25 Examples of such resources include local gathering halls and Native American traditional activity  
26 areas. Where these resources have both integrity of condition and integrity of relationship, and meet  
27 the criteria for listing in the NRHP, they can qualify as historic properties (National Park Service  
28 1998:11–12). Resources that are NRHP-eligible would also be historical resources under CEQA  
29 (California PRC Section 5024.1[d][1]).

30 Construction has the potential to directly or indirectly damage built-environment resources through  
31 demolition or introduction of new inconsistent features into the setting. These changes would  
32 impair the ability of the resources to convey their significance because the character defining  
33 elements or setting of the resource would be lost. Therefore, impacts on these resources may be  
34 adverse.

35 **NEPA Effects:** This alternative may result in direct modification or indirect changes to the setting for  
36 inaccessible and NRHP and CRHR-eligible resources. These changes may diminish the integrity of  
37 these resources. For these reasons, this effect would be adverse.

38 **CEQA Conclusion:** The study area is sensitive for built-environment resources that have not yet  
39 been recorded and evaluated because the majority of the area is legally inaccessible. Inventory  
40 efforts have not gathered complete information in these inaccessible areas. Many of these resources  
41 are likely to be associated with important historical themes or persons, or possess high creative  
42 values; therefore, they are likely to have significance under CEQA and the NHPA. Because many of  
43 these resources remain intact and retain their rural agricultural setting they are also likely to have

1 integrity under CEQA and the NHPA. Therefore, many are likely to qualify as historic properties or  
 2 historical resources under the NHPA and CEQA. Construction of conveyance facilities may require  
 3 demolition of the historic built-environment resources. Construction may also result in permanent  
 4 indirect effects such as changes to the setting. Direct demolition or changes to the setting would be  
 5 material alterations because they would either remove the resource or alter the resource character,  
 6 resulting in an inability of the resource to convey its significance. For these reasons this would be a  
 7 significant effect. Mitigation described below may reduce these effects, but cannot guarantee they  
 8 would be entirely avoided. The scale of the BDCP and the constraints imposed by other  
 9 environmental resources make avoidance of all significant effects unlikely. For these reasons this  
 10 impact remains significant and unavoidable even with implementation of the following mitigation  
 11 measures.

12 **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 13 **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 14 **Develop Treatment to Resolve or Mitigate Adverse Impacts**

15 Please refer to Mitigation Measure CUL-6 under Alternative 1A.

16 **Impact CUL-7: Effects of Other Conservation Measures on Cultural Resources**

17 This impact describes the potential effects of other conservation measures at a program level of  
 18 detail, with the exception of *CM1 Water Facilities and Operation*. This impact is substantially similar  
 19 to Impact CUL-7 as discussed under Alternative 1A because the nature of the affected resources,  
 20 scope of activities, and geographic area of effects are generally similar. These measures would result  
 21 in effects on cultural resources when ground-disturbing work is performed to construct  
 22 improvements and enhance or restore natural communities. Direct effects would occur through  
 23 demolition or destruction of NRHP-, CRHR-, and/or local registry-eligible prehistoric and historic  
 24 archaeological sites, unique archaeological sites, TCPs, human remains, and built-environment  
 25 resources. Indirect effects may occur where changes to the setting alter the existing setting in a  
 26 manner that is inconsistent with the feeling and association of the resource. Because the ability of  
 27 the resources to convey their significance would be lost this effect would materially alter these  
 28 resources under CEQA and would be adverse under NEPA. For example, reclaimed agricultural  
 29 landscapes that are converted to habitat may no longer convey the themes of agriculture and  
 30 settlement, and thus would be inconsistent with remaining features associated with rural historic  
 31 landscapes created by reclamation, cultivation, and ranching.

32 Because of the large acreages of land included in all conservation measures that would be  
 33 implemented under this alternative, it is unlikely that all effects on NRHP-, CRHR-, and /or local  
 34 registry-eligible resources and unique archaeological sites could be avoided. Therefore, this impact  
 35 would be adverse. Mitigation Measure CUL-7 below addresses this effect.

36 **NEPA Effects:** Implementation of conservation measures will result in ground disturbing work and  
 37 introduction of new infrastructure to the Plan Area. These physical modifications may result in  
 38 direct effects on NRHP and CRHR eligible resources. These changes may therefore reduce the  
 39 integrity of these resources. For these reasons these effects would be adverse.

40 **CEQA Conclusion:** Construction and implementation of conservation measures would result in  
 41 ground-disturbing work that could alter the significant characteristics of NRHP, CRHR, and/or local  
 42 registry-eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and  
 43 built-environment resources such as historic architectural structures and rural historic landscapes.

1 The same construction may damage unique archaeological sites. This construction would likely  
2 result in materially adverse changes for the following reasons:

- 3 • Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
4 contain data useful in research, thus diminishing or destroying the basis for the significance of  
5 the resource, and;
- 6 • Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
7 built-environment resources, resulting in an inability of the resource to convey its significance,  
8 and;
- 9 • Ground-disturbing construction may either directly demolish or change the setting of TCPs  
10 resulting in an inability of the resource to convey its significance.
- 11 • Ground-disturbing construction may inadvertently disturb human remains.

12 The alteration of a resource that changes the characteristics that convey its significance is a material  
13 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
14 CEQA under the Appendix G checklist. Because this construction would materially alter these  
15 categories of resources and disturb human remains it would result in a significant impact. Mitigation  
16 is available to reduce these impacts by identifying and evaluating resources, avoiding resources  
17 where possible, and developing treatment where avoidance is not possible. In addition construction  
18 would be monitored. However, because of the acreage associated with the proposed restoration  
19 under conservation measures, as well as the multiple constraints associated with other  
20 environmental resources that require mitigation or avoidance, it is unlikely that all cultural  
21 resources could be avoided. Therefore, this impact remains significant and unavoidable.

22 **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
23 **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
24 **Implementation of CM2-21**

25 Please see Mitigation Measure CUL-7 under Impact CUL-7 in the discussion of Alternative 1A

26 **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Other**  
27 **Conservation Measures with Plans and Policies**

28 Constructing the proposed water conveyance facilities (CM1) and implementing CM2–CM21 could  
29 result in the potential for incompatibilities with plans and policies adopted to protect the cultural  
30 resources of the Delta. A number of plans and policies that coincide with the study area provide  
31 guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local*  
32 *Plans, Policies, and Regulations*. This overview of plan and policy compatibility evaluates whether  
33 Alternative 1B is compatible or incompatible with these policies, rather than whether impacts are  
34 adverse or not adverse or significant or less than significant. Because Alternative 1B would result in  
35 the same kinds of effects as Alternative 1A, this alternative is only compatible with some of the land  
36 use policies that govern the Plan Area. For policies that emphasize preservation or mitigation the  
37 BDCP will be compatible with these policies because significant cultural resources will be avoided  
38 where feasible, and mitigation will be implemented to reduce effects where avoidance and  
39 preservation is not feasible. For policies that emphasize preservation the BDCP is incompatible in  
40 some instances because multiple constraints governing the location of proposed facilities makes  
41 preservation of all significant cultural resources unlikely. It should be noted that, as described in  
42 Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local land use

1 regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
2 environment.

3 **NEPA Effects:** Because federal agencies are not regulated by local land use policy, Alternative 1B  
4 would not result in a conflict with local land use laws for the purposes of NEPA.

5 **CEQA Conclusion:** The Plan Area is governed by cultural resource management policies adopted by  
6 the various counties with jurisdiction in this region. For policies that emphasize preservation or  
7 mitigation the BDCP will be compatible with these policies because DWR and appropriate federal  
8 agencies will implement cultural resource management practices that will identify significant  
9 resources, preserve such resources where feasible, and complete mitigation to reduce significant  
10 effects where preservation is not feasible. For policies that emphasize preservation the BDCP is  
11 incompatible in some instances because multiple constraints governing the location of proposed  
12 facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as  
13 described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local  
14 land use regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
15 environment.

#### 16 **18.3.5.4 Alternative 1C—Dual Conveyance with West Alignment and** 17 **Intakes W1–W5 (15,000 cfs; Operational Scenario A)**

##### 18 **Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of** 19 **Conveyance Facilities**

##### 20 **Identified Resources**

21 Record searches at the CHRIS and inventory efforts for the BDCP have identified 12 previously  
22 recorded archaeological sites in the footprint of this alternative as described in Appendix 18B,  
23 *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-1 (only 11 are  
24 potentially register eligible). Detailed site descriptions summarizing available information regarding  
25 these resources, are provided in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*.

26 These sites are distributed more heavily towards the northern and southern end of the alignment  
27 where ground-disturbing effects of the western canal are concentrated.

##### 28 **Significance of Identified Archaeological Resources**

29 Many of the directly affected sites are midden sites, with debris and artifacts associated with  
30 prehistoric habitation and residence activities. Midden sites in the Plan Area are often colloquially  
31 referred to as “mound sites” because they often form low mounds elevated relative to the  
32 surrounding landform. While the original raised deposit has sometimes been destroyed, midden  
33 sites often have substantial deposits below the original raised landform that remain intact that  
34 typically contain the material remains associated with prehistoric habitation. This organic debris  
35 can be used for radiocarbon dating, as well as material that reveals the nature of subsistence  
36 activities pursued by prehistoric populations. Because there is no single unified prehistoric  
37 chronology for the Delta region, substantial research questions remain unresolved regarding nature  
38 and changes of subsistence and settlement activity over the span of the prehistoric occupation of the  
39 Delta. The Delta is the prehistoric point of articulation between Central Valley cultures and the  
40 aboriginal people that occupied the San Francisco Bay area. Because the cultural chronology and  
41 sources of cultural change for the Delta remain unresolved in part, sites in the footprint of this

1 alternative likely contain information that could help clarify these research issues. For this reason  
2 these resources are likely significant under the fourth criterion for the CRHR and NRHP.

3 Seven of the identified sites in the footprint of the western canal contain human burials, as described  
4 on the site records. Most if not all of the remaining sites are likely to contain additional burials  
5 because midden sites in the Plan Area typically contain human burials or cremations. Burial  
6 components within these sites often contain ornaments and other personal items such as  
7 charmstones, beads, and other decorative material. Because the style and form of these artifacts  
8 change throughout prehistory, and because these stylistic changes have been defined, these  
9 materials provide a method of associating archaeological material with specific prehistoric time  
10 periods. The ability to associate habitation remains with specific time periods is one of the most  
11 significant problems in prehistoric research, because the sequence of specific adaptations and  
12 behaviors only becomes clear when a chronology can be constructed that associates behavior and  
13 material culture with specific time frames. For this reason these resources are likely significant  
14 under the fourth criterion for the CRHR and NRHP.

15 Because many of these prehistoric resources are large (typically in excess of 30 meters across), they  
16 are each likely to contain some portion of the deposit with sufficient integrity to yield artifacts in  
17 their original associations in a manner that will convey these significance themes. Therefore these  
18 identified resources are likely to qualify as historical resources under CEQA. For the same reasons,  
19 these resources are likely to qualify as historic properties under the NRHP.

20 One historic-era archaeological resource consists of the remains of pilings and rip-rap (CA-Yol-  
21 165H). A site record update for CA-Yol-165H indicates that under a memorandum dated March 23,  
22 2006 "with the California SHPO," the site is not considered a contributing element of the Sacramento  
23 River levee system because it lacks integrity of design, setting, materials, workmanship, and feeling  
24 (Bell 2006). For these reasons this site is not an historic property, nor is it likely to qualify as an  
25 historical resource under CEQA.

## 26 **Anticipated Effects on Identified Resources**

27 The exact location of these resources cannot be disclosed because such disclosure might lead to  
28 damage (Government Code Section 6254[r]). However these resources occur within the footprint of  
29 both temporary work areas and permanent surface impacts. These sites are distributed more  
30 heavily towards the northern and southern end of the alignment. Ground-disturbing construction is  
31 likely to disturb the deposits and thus materially alter their ability to convey their significance. Much  
32 of the data potential in archaeological resources exists in the spatial associations of different  
33 artifacts and other cultural material. Where artifacts that have known associations with particular  
34 time periods occur adjacent to other material such as faunal bone or plant remains from subsistence  
35 activity, the proximity of the materials allows an inference as to the age of the subsistence remains,  
36 thereby allowing researchers to infer particular subsistence strategies during different prehistoric  
37 periods. Intrusive ground-disturbing construction, vibration, and other physical disturbance may  
38 disrupt these associations and thus disrupt the qualities for which the sites may qualify as historical  
39 resources or historic properties. In addition, because not all identified resources are legally  
40 accessible, these resources may be significant for other reasons than their data potential. Indirect  
41 effects such as introduction of changes to the setting associated with construction of new features or  
42 creation of new sources of noise (also a change to the setting) may diminish the basis for the  
43 significance of these resources. For these reasons, construction has the potential to materially

1 impair these resources under CEQA and to adversely affect the resources as defined by Section 106  
2 of the NHPA. This effect would be adverse.

3 **NEPA Effects:** Construction may disturb NRHP and CRHR-eligible archaeological resources and  
4 damage these resources. This damage may impair the integrity of these resources and thus reduce  
5 their ability to convey their significance. For these reasons this effect would be adverse.

6 **CEQA Conclusion:** Construction of conveyance facilities would affect identified 12 archaeological  
7 resources that occur in the footprint of this alternative. DWR identified these resources and finds  
8 that they are likely to qualify as historical resources under CEQA (see the individual site descriptions  
9 in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*); these resources thus have the  
10 potential to qualify as historical resources. Therefore, these sites are considered historic resources  
11 for the purposes of CEQA. This impact would be significant because construction could materially  
12 alter or destroy the potential of these resources to yield information useful in archaeological  
13 research, the basis for the significance of these resources, through excavation and disruption of the  
14 spatial associations that contain meaningful information. Identified but currently inaccessible  
15 resources may also be significant under other register criteria; indirect effects such as introduction  
16 of new inconsistent changes to the setting may also diminish the significance of these resources.  
17 Mitigation Measure CUL-1 would reduce this impact by recovering scientifically important material  
18 prior to construction through the sensitive area, but would not guarantee that all of the scientifically  
19 important material would be retrieved because feasible archaeological excavation only typically  
20 retrieves a sample of the deposit, and portions of the site may remain after treatment with  
21 important information. Construction could damage these remaining portions of the deposit.  
22 Therefore, this impact is significant and unavoidable.

23 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
24 **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
25 **Archaeological Sites**

26 Please refer to Mitigation Measure CUL-1 under Alternative 1A.

27 **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory**  
28 **Efforts**

29 This impact is generally similar to Impact CUL-2 described under Alternative 1A. This alternative is  
30 sensitive for previously unidentified archaeological resources that are likely to be significant and to  
31 have integrity for the same reasons as described under Alternative 1A. It should be noted however,  
32 that the western canal would cross more sensitive soil formations along the northern and southern  
33 ends of the alignment compared to Alternative 1A. The middle segment of this alternative would  
34 make use of a subterranean tunnel that crosses low-sensitivity soil units. The overall sensitivity for  
35 prehistoric archaeological resources may be slightly higher than Alternative 1A because of the  
36 relative proportion of high sensitivity geological formations, but the sensitivity for yet-unidentified  
37 resources may be slightly lower than the eastern canal (Alternative 1B). Figure 18A-1 in Appendix  
38 18A, *Archaeological Resources Sensitivity Assessment*, depicts the western canal relative to  
39 archaeologically sensitive soil formations. The general sensitivity for historic-era archaeological  
40 resources is similar to Alternative 1A.

41 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
42 resources by disrupting the spatial associations that convey data useful in research or changing the  
43 setting such that the resource no longer contains its significance. The location of ground-disturbing

1 features such as intakes, the canal, tunnel segment, and borrow areas are depicted in Mapbook  
 2 Figure M3-3 in Chapter 3, *Description of Alternatives*. These impacts would thus materially impair  
 3 these resources within the meaning of CEQA and adversely affect the resources within the meaning  
 4 of Section 106 of the NHPA because this disturbance would impair the ability of these resources to  
 5 yield data useful in research. While Mitigation Measure CUL-2 would reduce these effects, it cannot  
 6 guarantee all effects would be avoided because relocation of proposed facilities to avoid all  
 7 resources is unlikely. These effects would remain adverse.

8 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 9 sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
 10 their integrity. For these reasons this effect would be adverse.

11 **CEQA Conclusion:** The footprint for this alternative is sensitive for both prehistoric and historic-era  
 12 resources that cannot be identified at this time because much of the footprint is not legally  
 13 accessible. Because many of these resources are likely to have data useful in prehistoric and historic  
 14 archaeological research, as well as the integrity to convey this significance, they are likely to qualify  
 15 as historical resources or unique archaeological sites under CEQA or historic properties under the  
 16 Section 106 of the NHPA. Ground-disturbing construction may materially alter the significance of  
 17 these resources by disrupting the spatial associations that could yield important data, resulting in a  
 18 significant effect. While mitigation is available (Mitigation Measure CUL-2), this mitigation cannot  
 19 guarantee that all eligible or significant resources would be preserved in place, or that all important  
 20 data would be retrieved before construction destroys these resources. The scale of the BDCP,  
 21 investment into existing designs, and the presence of other important environmental resources such  
 22 as habitat, natural communities, and wetlands that should be avoided are constraints on the  
 23 flexibility and feasibility of avoidance. For these reasons this impact is significant and unavoidable.

#### 24 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of** 25 **Archaeological Resources**

26 Please refer to Mitigation Measure CUL-2 as described under Alternative 1A.

#### 27 **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory** 28 **Efforts**

29 Appendix 18A, *Archaeological Resources Sensitivity Assessment*, presents an overview of the  
 30 sensitivity of the Plan Area for previously unidentified archaeological resources and demonstrates  
 31 that additional prehistoric and historic-era sites that have not yet been identified are almost certain  
 32 to occur in the portion of the Plan Area where this alternative would be constructed. This sensitivity  
 33 and the potential impact mechanisms are substantially similar to the sensitivity and impact  
 34 mechanism described for Alternative 1A. It should be noted however, that the western canal would  
 35 cross more sensitive soil formations along the northern and southern ends of the alignment  
 36 compared to Alternative 1A. The portion of the alignment that would cross archaeologically  
 37 sensitive soil units is slightly lower than the eastern canal. The middle segment of this alternative  
 38 would make use of a subterranean tunnel that crosses low-sensitivity soil units. Figure 18A-1 in  
 39 Appendix 18A depicts the western canal relative to archaeologically sensitive soil formations. The  
 40 general sensitivity for historic-era archaeological resources is similar to Alternative 1A and 1B.

41 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 42 resources by disrupting the spatial associations that convey data useful in research or changing the  
 43 setting such that the resource no longer contains its significance. These impacts would thus

1 materially impair these resources within the meaning of CEQA and adversely affect the resources  
 2 within the meaning of Section 106 of the NHPA because this disturbance would impair the ability of  
 3 these resources to yield data useful in research. Mitigation Measure CUL-3 would reduce these  
 4 effects, but cannot guarantee that all effects would be avoided because inadvertent disturbance of  
 5 some resources is inevitable given the scale of the proposed construction. These effects would  
 6 therefore remain adverse.

7 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 8 sites that also may not necessarily be identified prior to construction. While cultural resource  
 9 inventories will be completed once legal access is secured, no inventory can ensure that all  
 10 resources are identified prior to construction. Because these sites may qualify for the NRHP or  
 11 CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
 12 adverse.

13 **CEQA Conclusion:** This impact would be significant. Construction has the potential to disturb  
 14 previously unidentified archaeological sites qualifying as historical resources, historic properties, or  
 15 unique archaeological resources. Because direct excavation, compaction, or other disturbance may  
 16 disrupt the spatial associations that contain scientifically useful information it would alter the  
 17 potential basis for eligibility, thus materially altering the resource and resulting in a significant  
 18 effect. Because these resources would not be identified prior to construction, they cannot be  
 19 recorded and effects cannot be managed through construction treatment. Mitigation Measures CUL-  
 20 3 would reduce but not entirely avoid the potential for this impact, by implementing construction  
 21 worker training, monitoring and discovery protocols. However, because archaeological resources  
 22 may not be identified prior to disturbance through these measures, the effect cannot be entirely  
 23 avoided. Therefore, this impact would remain significant and unavoidable.

24 **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,  
 25 Perform Training of Construction Workers, and Conduct Construction Monitoring**

26 Please refer to Mitigation Measure CUL-3 as described under Alternative 1A.

27 **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

28 The footprint of this alternative is sensitive for buried human remains that may occur in isolation,  
 29 rather than as part of prehistoric or historic archaeological sites. This sensitivity and the impact  
 30 mechanisms are substantially similar to the sensitivity and impact mechanisms described under  
 31 Alternative 1A. However, because the western canal crosses more sensitive soil formations and may  
 32 result in greater continuous ground disturbance than 1A, the potential for impacts on buried human  
 33 remains may be slightly higher than described for Alternative 1A, but this sensitivity is not as high  
 34 as the eastern canal because soil units this alignment crosses may be slightly less sensitive as  
 35 depicted in Appendix 18A, *Archaeological Resources Sensitivity Assessment*.

36 Ground-disturbing construction has the potential to damage and disinter buried human remains,  
 37 resulting in an adverse effect. While mitigation is available under Mitigation Measure CUL-4 to  
 38 reduce this effect, it cannot guarantee that this effect would be avoided entirely, therefore this effect  
 39 remains adverse.

40 **NEPA Effects:** Buried human remains may be damaged by this alternative because such remains  
 41 may occur either in isolation or as part of identified and previously unidentified archaeological  
 42 resources where construction will occur. This effect would be adverse.

1 **CEQA Conclusion:** This impact would be significant. The project area is sensitive for buried human  
 2 remains. Construction would likely result in disturbance of these features. Disturbance of human  
 3 remains, including remains interred outside of cemeteries is considered a significant impact in the  
 4 CEQA Appendix G checklist; therefore disturbance of these remains would result in a significant  
 5 effect. Mitigation measures would reduce the severity of this impact, but not to a less-than-  
 6 significant level because mitigation would not guarantee that these features could be discovered and  
 7 treated in advance of construction; the scale of construction makes it technically and economically  
 8 infeasible to perform the level of sampling necessary to identify all such resources prior to  
 9 construction. Therefore, this impact is considered significant and unavoidable.

10 **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if**  
 11 **Such Resources Are Discovered during Construction**

12 Please refer to Mitigation Measure CUL-4 as described under Alternative 1A.

13 **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic**  
 14 **Architectural/Built-Environment Resources Resulting from Construction Activities**

15 Built-environment resources that may be affected by this alternative include resources identified  
 16 and evaluated in inventory efforts conducted for other projects and resources identified in surveys  
 17 for the BDCP. Some of resources are considered historic properties for the purposes of this analysis  
 18 because they meet the criteria in the NRHP regulations (36 CFR 60.4), as described below. For the  
 19 similar reasons some are considered historical resources under CEQA. As identified in Appendix  
 20 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-4, a total of 22  
 21 built-environment resources have the potential to be directly or indirectly affected by construction  
 22 of this alternative. The specific nature and location of the impact mechanism for each affected  
 23 resource is also described in Table 18B-4. The affected resources have been evaluated for the NRHP  
 24 and CRHR. The basis for the eligibility recommendations for each resource is provided in Appendix  
 25 18B, Section 18B.1.2, *Built Environment Resource Descriptions*.

26 **Discussion of Anticipated Effects on Identified and Accessible Resources**

27 Construction of canal, intakes, borrow areas, and other features such as temporary work areas will  
 28 result in direct and indirect effects on built-environment resources. The exact effect mechanism for  
 29 each resource is described in Appendix 18B, *Identified Resources Potentially Affected by the BDCP*  
 30 *Alternatives*, in Table 18B-4. Facility redesign to avoid direct impacts on historic architectural  
 31 resources is preferred as mitigation if possible. However, it is unlikely that all identified resources  
 32 can be avoided because of the scale of the BDCP and the need to balance avoidance of other  
 33 important environmental resources such as wetlands, natural communities, and special-status  
 34 species habitat. These effects would materially impair the resources within the meaning of CEQA  
 35 and result in adverse effects within the meaning of Section 106 because they would diminish the  
 36 characteristics that convey the significance of the resources. Some direct demolition and indirect  
 37 effects such as setting changes are likely to occur even with mitigation. Therefore, these effects  
 38 would be adverse.

39 **NEPA Effects:** This alternative would result in direct and indirect effects on NRHP and CRHR eligible  
 40 built environment resources. These alterations may diminish the integrity of these resources. For  
 41 these reasons this effect would be adverse.

1 **CEQA Conclusion:** Several identified historic-era built-environment resources have been identified  
 2 in the footprint of this alternative (22 individual resources, as described in Appendix 18B, *Identified*  
 3 *Resources Potentially Affected by the BDCP Alternatives*, Table 18B-4). These resources have been  
 4 evaluated for the CRHR and qualify as historical resources under CEQA. Construction of conveyance  
 5 facilities may require demolition of the historic built-environment resources. Construction may also  
 6 result in permanent indirect effects such as changes to the setting. Direct demolition or changes to  
 7 the setting would be material alterations because they would either remove the resource or alter the  
 8 resource character, resulting in an inability of the resource to convey its significance. For these  
 9 reasons this would be a significant effect. Mitigation described below may reduce these effects, but  
 10 cannot guarantee they would be entirely avoided. The scale of the BDCP and the constraints  
 11 imposed by other environmental resources make avoidance of all significant effects unlikely. For  
 12 these reasons this impact remains significant and unavoidable even with implementation of the  
 13 following mitigation measures.

14 **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and implement a Built**  
 15 **Environment Treatment Plan**

16 Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 1A.

17 **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic**  
 18 **Architectural/Built-Environment Resources Resulting from Construction Activities**

19 Because DWR does not have legal access to the majority of the footprint for this alternative,  
 20 inventory efforts in the entire footprint have not been completed. Nonetheless, the intensity of  
 21 activity in the Delta region during the historic era and a review of available data such as aerial  
 22 photographs suggest that numerous additional resources occur in the footprint that have not been  
 23 identified or which cannot currently be accessed and evaluated.

24 Review of available data such as aerial photographs, historic topographic maps, and assessors'  
 25 records indicate that many of these inaccessible properties are 45 years of age or older and have the  
 26 potential to be eligible historic resources. Approximately 74 unevaluated built-environment  
 27 resources have been identified in the footprint of this alternative (ICF 2012, see tables of  
 28 inaccessible properties and associated maps). Many of these resources are likely to be significant  
 29 because they may be associated with the important historical themes described above in Section  
 30 18.1.6, *Historic-Era Setting*. In addition, such resources may be associated with historically  
 31 significant persons, or may represent significant artistic values. Thus the resources may have  
 32 significance under both CEQA, and the NRHP. In addition, because many of the historic-era  
 33 structures in the Delta region are intact, and retain their rural agricultural setting, many of these  
 34 resources are likely to have integrity within the meaning of CEQA and the NRHP. Because many  
 35 unidentified resources are likely to have significance and integrity, they may qualify as historical  
 36 resources under CEQA and historic properties under Section 106 of the NHPA.

37 **Anticipated Effects**

38 Construction may result in direct demolition of these resources, damage through vibration, or  
 39 indirect effects such as changes to the setting. While mitigation is available to reduce these effects,  
 40 this mitigation cannot guarantee that all effects would be avoided because mitigation cannot  
 41 guarantee that eligible resources would be avoided and that adverse changes to the setting would  
 42 not occur. The scale of the BDCP and other design constraints, such as the presence of other

1 important environmental resources, makes avoidance of all direct and indirect effects unlikely.  
2 Therefore, this effect would be adverse.

3 TCPs may also occur within the footprint of this alternative. These resources consist of built  
4 environment features or activity areas that are important in the cultural life of a living community.  
5 Examples of such resources include local gathering halls and Native American traditional activity  
6 areas. Where these resources have both integrity of condition and integrity of relationship, and meet  
7 the criteria for listing in the NRHP, they can qualify as historic properties (National Park Service  
8 1998:11–12). Resources that are NRHP-eligible would also be historical resources under CEQA  
9 (California PRC Section 5024.1[d][1])

10 Construction has the potential to directly or indirectly damage built-environment resources through  
11 demolition or introduction of new inconsistent features into the setting. These changes would  
12 impair the ability of the resources to convey their significance because the character defining  
13 elements or setting of the resource would be lost. Therefore, impacts on these resources may be  
14 adverse.

15 **NEPA Effects:** This alternative may result in direct modification or indirect changes to the setting for  
16 inaccessible and NRHP and CRHR-eligible built environment resources. These changes may diminish  
17 the integrity of these resources. For these reasons, this effect would be adverse.

18 **CEQA Conclusion:** The study area is sensitive for built-environment resources that have not yet  
19 been recorded and evaluated because the majority of the area is legally inaccessible. Inventory  
20 efforts have not gathered complete information in these inaccessible areas. Many of these resources  
21 are likely to be associated with important historical themes or persons, or possess high creative  
22 values; therefore, they are likely to have significance under CEQA and the NHPA. Construction of  
23 conveyance facilities may require demolition of the historic built-environment resources.  
24 Construction may also result in permanent indirect effects such as changes to the setting. Direct  
25 demolition or changes to the setting would be material alterations because they would either  
26 remove the resource or alter the resource character, resulting in an inability of the resource to  
27 convey its significance. For these reasons this would be a significant effect. Mitigation described  
28 below may reduce these effects, but cannot guarantee they would be entirely avoided. The scale of  
29 the BDCP and the constraints imposed by other environmental resources make avoidance of all  
30 significant effects unlikely. For these reasons this impact remains significant and unavoidable even  
31 with implementation of the following mitigation measures.

32 **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
33 **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
34 **Develop Treatment to Resolve or Mitigate Adverse Impacts**

35 Please refer to Mitigation Measure CUL-6 under Alternative 1A.

36 **Impact CUL-7: Effects of Other Conservation Measures on Cultural Resources**

37 This impact describes the potential effects of other conservation measures at a program level of  
38 detail, with the exception of *CM1 Water Facilities and Operation*. This impact is substantially similar  
39 to Impact CUL-7 as discussed under Alternative 1A because the nature of the affected resources,  
40 scope of activities, and geographic area of effects are generally similar. These measures would result  
41 in effects on cultural resources when ground-disturbing work is performed to construct  
42 improvements and enhance or restore natural communities. Direct effects would occur through

1 demolition or destruction of NRHP-, CRHR-, and/or local registry-eligible prehistoric and historic  
 2 archaeological sites, unique archaeological sites, TCPs, human remains, and built-environment  
 3 resources. Indirect effects may occur where changes to the setting alter the existing setting in a  
 4 manner that is inconsistent with the feeling and association of the resource. Because the ability of  
 5 the resources to convey their significance would be lost this effect would materially alter these  
 6 resources under CEQA and would be adverse under NEPA. For example, reclaimed agricultural  
 7 landscapes that are converted to habitat may no longer convey the themes of agriculture and  
 8 settlement, and thus would be inconsistent with remaining features associated with rural historic  
 9 landscapes created by reclamation, cultivation, and ranching.

10 Mitigation Measure CUL-7 below addresses this effect. However, because of the large acreages of  
 11 land included in all conservation measures that would be implemented under this alternative, it is  
 12 unlikely that all effects on NRHP-, CRHR-, and /or local registry-eligible resources and unique  
 13 archaeological sites could be avoided. Therefore, this impact would be adverse.

14 **NEPA Effects:** Implementation of conservation measures will result in ground disturbing work and  
 15 introduction of new infrastructure to the Plan Area. These physical modifications may result in  
 16 direct effects on NRHP and CRHR eligible resources. These changes may therefore reduce the  
 17 integrity of these resources. For these reasons these effects would be adverse.

18 **CEQA Conclusion:** Construction and implementation of conservation measures would result in  
 19 ground-disturbing work that could alter the significant characteristics of NRHP, CRHR, and/or local  
 20 registry-eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and  
 21 built-environment resources such as historic architectural structures and rural historic landscapes.  
 22 The same construction may damage unique archaeological sites. This construction would likely  
 23 result in materially adverse changes for the following reasons:

- 24 ● Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
 25 contain data useful in research, thus diminishing or destroying the basis for the significance of  
 26 the resource, and;
- 27 ● Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
 28 built-environment resources, resulting in an inability of the resource to convey its significance,  
 29 and;
- 30 ● Ground-disturbing construction may either directly demolish or change the setting of TCPs  
 31 resulting in an inability of the resource to convey its significance.
- 32 ● Ground-disturbing construction may inadvertently disturb human remains.

33 The alteration of a resource that changes the characteristics that convey its significance is a material  
 34 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
 35 CEQA under the Appendix G checklist. Because this construction would materially alter these  
 36 categories of resources and disturb human remains it would result in a significant impact. Mitigation  
 37 is available to reduce these impacts by identifying and evaluating resources, avoiding resources  
 38 where possible, and developing treatment where avoidance is not possible. In addition construction  
 39 would be monitored. However, because of the acreage associated with the proposed restoration  
 40 under conservation measures, as well as the multiple constraints associated with other  
 41 environmental resources that require mitigation or avoidance, it is unlikely that all cultural  
 42 resources could be avoided. Therefore, this impact remains significant and unavoidable.

1           **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
 2           **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
 3           **Implementation of CM2-21**

4           Please see Mitigation Measure CUL-7 under Impact CUL-7 in the discussion of Alternative 1A

5           **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Other**  
 6           **Conservation Measures with Plans and Policies**

7           Constructing the proposed water conveyance facilities (CM1) and implementing CM2–CM21 could  
 8           result in the potential for incompatibilities with plans and policies adopted to protect the cultural  
 9           resources of the Delta. A number of plans and policies that coincide with the study area provide  
 10          guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local*  
 11          *Plans, Policies, and Regulations*. This overview of plan and policy compatibility evaluates whether  
 12          Alternative 1C is compatible or incompatible with these policies, rather than whether impacts are  
 13          adverse or not adverse or significant or less than significant. Because Alternative 1C would result in  
 14          the same kinds of effects as Alternative 1A, this alternative is only compatible with some of the land  
 15          use policies that govern the Plan Area. For policies that emphasize preservation or mitigation the  
 16          BDCP will be compatible with these policies because significant cultural resources will be avoided  
 17          where feasible, and mitigation will be implemented to reduce effects where avoidance and  
 18          preservation is not feasible. For policies that emphasize preservation the BDCP is incompatible in  
 19          some instances because multiple constraints governing the location of proposed facilities makes  
 20          preservation of all significant cultural resources unlikely. It should be noted that, as described in  
 21          Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local land use  
 22          regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 23          environment.

24          **NEPA Effects:** Because federal agencies are not regulated by local land use policy, Alternative 1C  
 25          would not result in a conflict with local land use laws for the purposes of NEPA.

26          **CEQA Conclusion:** The Plan Area is governed by cultural resource management policies adopted by  
 27          the various counties with jurisdiction in this region. For policies that emphasize preservation or  
 28          mitigation the BDCP will be compatible with these policies because DWR and appropriate federal  
 29          agencies will implement cultural resource management practices that will identify significant  
 30          resources, preserve such resources where feasible, and complete mitigation to reduce significant  
 31          effects where preservation is not feasible. For policies that emphasize preservation the BDCP is  
 32          incompatible in some instances because multiple constraints governing the location of proposed  
 33          facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as  
 34          described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local  
 35          land use regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 36          environment.

### 18.3.5.5 Alternative 2A—Dual Conveyance with Pipeline/Tunnel and Five Intakes (15,000 cfs; Operational Scenario B)

#### Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of Conveyance Facilities

##### Identified Resources

Record searches at the CHRIS and inventory efforts for the BDCP have identified six previously recorded archaeological sites in the footprint of this alternative (Appendix 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-1). Detailed site descriptions summarizing available information regarding these resources, are provided in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*. These six previously recorded resources represent the known resources that occur in the footprint of this alternative. The resources are distributed evenly across the alignment, but are somewhat clustered where construction of large above-ground features would occur, such as the northern end of the alignment, at the intermediate forebay, and at the southern end of the alignment.

##### Significance of Identified Archaeological Resources

The resources affected by this alternative have likely have significance and integrity within the meaning of the NRHP and CRHR for the same reasons described above under Alternative 1A.

##### Anticipated Effects on Identified Resources

Ground-disturbing construction is likely to disturb the deposits and thus materially alter their ability to convey their significance. Much of the data potential in archaeological resources exists in the spatial associations of different artifacts and other cultural material. Where artifacts that have known associations with particular time periods occur adjacent to other material such as faunal bone or plant remains from subsistence activity, the proximity of the materials allows an inference as to the age of the subsistence remains, thereby allowing researchers to infer particular subsistence strategies during different prehistoric periods. Intrusive ground-disturbing construction, vibration, and other physical disturbance may disrupt these associations and thus disrupt the qualities for which the sites qualify as historical resources. In addition, because not all identified resources are legally accessible, these resources may be significant for other reasons than their data potential. Indirect effects such as introduction of changes to the setting associated with construction of new features or creation of new sources of noise (also a change to the setting) may diminish the basis for the significance of these resources. For these reasons, construction has the potential to materially impair these resources under CEQA and to adversely affect the resources as defined by Section 106 of the NHPA. This effect would be adverse.

**NEPA Effects:** Construction may disturb NRHP and CRHR-eligible archaeological resources and damage these resources. This damage may impair the integrity of these resources and thus reduce their ability to convey their significance. For these reasons this effect would be adverse.

**CEQA Conclusion:** Construction of conveyance facilities would affect six identified archaeological resources that occur in the footprint of this alternative. DWR identified these resources and finds that they are likely to qualify as historical resources under CEQA (see the individual site descriptions in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*); these resources thus have the potential to qualify as historical resources. Therefore, these sites are considered historic resources

1 for the purposes of CEQA. This impact would be significant because construction could materially  
 2 alter or destroy the potential of these resources to yield information useful in archaeological  
 3 research, the basis for the significance of these resources, through excavation and disruption of the  
 4 spatial associations that contain meaningful information. Identified but currently inaccessible  
 5 resources may also be significant under other register criteria; indirect effects such as introduction  
 6 of new inconsistent changes to the setting may also diminish the significance of these resources.  
 7 Mitigation Measure CUL-1 would reduce this impact by recovering scientifically important material  
 8 prior to construction through the sensitive area, but would not guarantee that all of the scientifically  
 9 important material would be retrieved because feasible archaeological excavation only typically  
 10 retrieves a sample of the deposit, and portions of the site may remain after treatment with  
 11 important information. Construction could damage these remaining portions of the deposit.  
 12 Therefore, this impact is significant and unavoidable.

13 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
 14 **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
 15 **Archaeological Sites**

16 Please refer to Mitigation Measure CUL-1 under Alternative 1A.

17 **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory**  
 18 **Efforts**

19 This impact is substantially similar to Impact CUL-2 described under Alternative 1A. While the  
 20 intake locations would vary, the number of intakes is the same, and thus the overall potential for  
 21 effects on archaeological resources is similar.

22 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 23 resources by disrupting the spatial associations that convey data useful in research or changing the  
 24 setting such that the resource no longer contains its significance. These impacts would thus  
 25 materially impair these resources within the meaning of CEQA and adversely affect the resources  
 26 within the meaning of Section 106 of the NHPA because this disturbance would impair the ability of  
 27 these resources to yield data useful in research. While Mitigation Measure CUL-2 would reduce  
 28 these effects, it cannot guarantee all effects would be avoided because relocation of proposed  
 29 facilities to avoid all resources is unlikely. These effects would remain adverse.

30 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 31 sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
 32 their integrity. For these reasons this effect would be adverse.

33 **CEQA Conclusion:** The footprint for this alternative is sensitive for both prehistoric and historic-era  
 34 resources that cannot be identified at this time because much of the footprint is not legally  
 35 accessible. Because many of these resources are likely to have data useful in prehistoric and historic  
 36 archaeological research, as well as the integrity to convey this significance, they are likely to qualify  
 37 as historical resources or unique archaeological sites under CEQA or historic properties under the  
 38 Section 106 of the NHPA. Ground-disturbing construction may materially alter the significance of  
 39 these resources by disrupting the spatial associations that could yield important data, resulting in a  
 40 significant effect. While mitigation is available (Mitigation Measure CUL-2), this mitigation cannot  
 41 guarantee that all eligible or significant resources would be preserved in place, or that all important  
 42 data would be retrieved before construction destroys these resources. The scale of the BDCP,  
 43 investment into existing designs, and the presence of other important environmental resources such

1 as habitat, natural communities, and wetlands that should be avoided are constraints on the  
2 flexibility and feasibility of avoidance. For these reasons this impact is significant and unavoidable.

3 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of**  
4 **Archaeological Resources**

5 Please refer to Mitigation Measure CUL-2 as described under Alternative 1A.

6 **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory**  
7 **Efforts**

8 This impact is substantially similar to Impact CUL-3 described under Alternative 1A. While the  
9 intake locations would vary, the number of intakes is the same, and thus the overall potential for  
10 effects on archaeological resources is similar.

11 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
12 resources by disrupting the spatial associations that convey data useful in research or changing the  
13 setting such that the resource no longer contains its significance. These impacts would thus  
14 materially impair these resources within the meaning of CEQA and adversely affect the resources  
15 within the meaning of Section 106 of the NHPA because this disturbance would impair the ability of  
16 these resources to yield data useful in research. Mitigation Measure CUL-3 would reduce these  
17 effects, but cannot guarantee that all effects would be avoided because inadvertent disturbance of  
18 some resources is inevitable given the scale of the proposed construction. These effects would  
19 therefore remain adverse.

20 **CEQA Conclusion:** This impact would be significant. Construction has the potential to disturb  
21 previously unidentified archaeological sites qualifying as historical resources, historic properties, or  
22 unique archaeological resources. Because direct excavation, compaction, or other disturbance may  
23 disrupt the spatial associations that contain scientifically useful information it would alter the  
24 potential basis for eligibility, thus materially altering the resource and resulting in a significant  
25 effect. Because these resources would not be identified prior to construction, they cannot be  
26 recorded and effects cannot be managed through construction treatment. Mitigation Measures CUL-  
27 3 would reduce but not entirely avoid the potential for this impact, by implementing construction  
28 worker training, monitoring and discovery protocols. However, because archaeological resources  
29 may not be identified prior to disturbance through these measures, the effect cannot be entirely  
30 avoided. Therefore, this impact would remain significant and unavoidable.

31 **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
32 **Perform Training of Construction Workers, and Conduct Construction Monitoring**

33 Please refer to Mitigation Measure CUL-3 as described under Alternative 1A.

34 **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

35 The footprint of this alternative is sensitive for buried human remains that may occur in isolation,  
36 rather than as part of prehistoric or historic archaeological sites. This sensitivity and the impact  
37 mechanisms are substantially similar to the sensitivity and impact mechanisms described under  
38 Alternative 1A. While the intake locations would vary, the number of intakes is the same, and thus  
39 the overall potential for effects on buried human remains is similar.

1 Ground-disturbing construction has the potential to damage and disinter buried human remains,  
 2 resulting in an adverse effect. While mitigation is available under Mitigation Measure CUL-4 to  
 3 reduce this effect, it cannot guarantee that this effect would be avoided entirely, therefore this effect  
 4 remains adverse.

5 **NEPA Effects:** Buried human remains may be damaged by this alternative because such remains  
 6 may occur either in isolation or as part of identified and previously unidentified archaeological  
 7 resources where construction will occur. This effect would be adverse.

8 **CEQA Conclusion:** This impact would be significant. The project area is sensitive for buried human  
 9 remains. Construction would likely result in disturbance of these features. Disturbance of human  
 10 remains, including remains interred outside of cemeteries is considered a significant impact in the  
 11 CEQA Appendix G checklist; therefore disturbance of these remains would result in a significant  
 12 effect. Mitigation measures would reduce the severity of this impact, but not to a less-than-  
 13 significant level because mitigation would not guarantee that these features could be discovered and  
 14 treated in advance of construction; the scale of construction makes it technically and economically  
 15 infeasible to perform the level of sampling necessary to identify all such resources prior to  
 16 construction. Therefore, this impact is considered significant and unavoidable.

17 **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if**  
 18 **Such Resources Are Discovered during Construction**

19 Please refer to Mitigation Measure CUL-4 as described under Alternative 1A.

20 **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic**  
 21 **Architectural/Built-Environment Resources Resulting from Construction Activities**

22 Built-environment resources that may be affected by this alternative include resources identified  
 23 and evaluated in inventory efforts conducted for other projects and resources identified in surveys  
 24 for the BDCP. Some of resources are considered historic properties for the purposes of this analysis  
 25 because they meet the criteria in the NRHP regulations (36 CFR 60.4), as described below. For the  
 26 similar reasons some are considered historical resources under CEQA. As identified in Appendix  
 27 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-5, a total of 24  
 28 built-environment resources have the potential to be directly or indirectly affected by construction  
 29 of this alternative. The specific nature and location of the impact mechanism for each affected  
 30 resource is also described in Table 18B-5. The affected resources have been evaluated for the NRHP  
 31 and CRHR. The basis for the eligibility recommendations for each resource is provided in Appendix  
 32 18B, in Section 18B.1.2, *Built Environment Resource Descriptions*.

33 **Discussion of Anticipated Effects on Identified and Accessible Resources**

34 Construction of intakes, transmission lines, temporary work areas and other features will result in  
 35 direct and indirect effects on identified and eligible built-environment resources. The exact effect  
 36 mechanism for each resource is described in Appendix 18B, *Identified Resources Potentially Affected*  
 37 *by the BDCP Alternatives*, in Table 18B-5. Facility redesign to avoid direct impacts on historic  
 38 architectural resources is preferred as mitigation if possible. However, it is unlikely that all  
 39 identified resources can be avoided because of the scale of the BDCP and the need to balance  
 40 avoidance of other important environmental resources such as wetlands, natural communities, and  
 41 special-status species habitat. These effects would materially impair the resources within the  
 42 meaning of CEQA and result in adverse effects within the meaning of Section 106 because they

1 would diminish the characteristics that convey the significance of the resources. Some direct  
 2 demolition and indirect effects such as setting changes are likely to occur even with mitigation.  
 3 Therefore, these effects would be adverse.

4 **NEPA Effects:** This alternative would result in direct and indirect effects on NRHP and CRHR eligible  
 5 built environment resources. These alterations may diminish the integrity of these resources. For  
 6 these reasons this effect would be adverse.

7 **CEQA Conclusion:** Several identified historic-era built-environment resources have been identified  
 8 in the footprint of this alternative (24 individual resources, as described in Appendix 18B, *Identified*  
 9 *Resources Potentially Affected by the BDCP Alternatives*, Table 18B-5). These resources have been  
 10 evaluated for the CRHR and qualify as historical resources under CEQA. Construction of conveyance  
 11 facilities may require demolition of the historic built-environment resources. Construction may also  
 12 result in permanent indirect effects such as changes to the setting. Direct demolition or changes to  
 13 the setting would be material alterations because they would either remove the resource or alter the  
 14 resource character, resulting in an inability of the resource to convey its significance. For these  
 15 reasons this would be a significant effect. Mitigation described below may reduce these effects, but  
 16 cannot guarantee they would be entirely avoided. The scale of the BDCP and the constraints  
 17 imposed by other environmental resources make avoidance of all significant effects unlikely. For  
 18 these reasons this impact remains significant and unavoidable even with implementation of the  
 19 following mitigation measures.

20 **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and Implement a Built**  
 21 **Environment Treatment Plan**

22 Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 1A.

23 **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic**  
 24 **Architectural/Built-Environment Resources Resulting from Construction Activities**

25 The footprint of this alternative is sensitive for unidentified and unevaluated built-environment  
 26 resources that may have significance and integrity for the same reasons described under Alternative  
 27 1A. Approximately 71 unevaluated built-environment resources have been identified that may be  
 28 subject to direct or indirect effects as a result of the construction of this alternative (ICF 2012, see  
 29 tables of inaccessible properties and associated maps).

30 **Anticipated Effects**

31 Construction may result in direct demolition of these resources, damage through vibration, or  
 32 indirect effects such as changes to the setting. While mitigation is available to reduce these effects,  
 33 this mitigation cannot guarantee that all effects would be avoided because mitigation cannot  
 34 guarantee that eligible resources would be avoided and that adverse changes to the setting would  
 35 not occur. Construction has the potential to directly or indirectly damage built-environment  
 36 resources through demolition or introduction of new inconsistent features into the setting. These  
 37 changes would impair the ability of the resources to convey their significance because the character  
 38 defining elements or setting of the resource would be lost. Therefore, impacts on these resources  
 39 may be adverse.

1 **NEPA Effects:** This alternative may result in direct modification or indirect changes to the setting for  
 2 inaccessible and NRHP and CRHR-eligible built environment resources. These changes may diminish  
 3 the integrity of these resources. For these reasons, this effect would be adverse.

4 **CEQA Conclusion:** The study area is sensitive for built-environment resources that have not yet  
 5 been recorded and evaluated because the majority of the area is legally inaccessible. Inventory  
 6 efforts have not gathered complete information in these inaccessible areas. Many of these resources  
 7 are likely to be associated with important historical themes or persons, or possess high creative  
 8 values; therefore, they are likely to have significance under CEQA and the NHPA. Because many of  
 9 these resources remain intact and retain their rural agricultural setting they are also likely to have  
 10 integrity under CEQA and the NHPA. Therefore, many are likely to qualify as historic properties or  
 11 historical resources under the NHPA and CEQA. Construction of conveyance facilities may require  
 12 demolition of the historic built-environment resources. Construction may also result in permanent  
 13 indirect effects such as changes to the setting. Direct demolition or changes to the setting would be  
 14 material alterations because they would either remove the resource or alter the resource character,  
 15 resulting in an inability of the resource to convey its significance. For these reasons this would be a  
 16 significant effect. Mitigation described below may reduce these effects, but cannot guarantee they  
 17 would be entirely avoided. The scale of the BDCP and the constraints imposed by other  
 18 environmental resources make avoidance of all significant effects unlikely. For these reasons this  
 19 impact remains significant and unavoidable even with implementation of the following mitigation  
 20 measures.

21 **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 22 **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 23 **Develop Treatment to Resolve or Mitigate Adverse Impacts**

24 Please refer to Mitigation Measure CUL-6 under Alternative 1A.

25 **Impact CUL-7: Effects of Other Conservation Measures on Cultural Resources**

26 This impact describes the potential effects of other conservation measures at a program level of  
 27 detail, with the exception of *CM1 Water Facilities and Operation*. This impact is substantially similar  
 28 to Impact CUL-7 as discussed under Alternative 1A because the nature of the affected resources,  
 29 scope of activities, and geographic area of effects are generally similar. These measures would result  
 30 in effects on cultural resources when ground-disturbing work is performed to construct  
 31 improvements and enhance or restore natural communities. Direct effects would occur through  
 32 demolition or destruction of NRHP-, CRHR-, and/or local registry-eligible prehistoric and historic  
 33 archaeological sites, unique archaeological sites, TCPs, human remains, and built-environment  
 34 resources. Indirect effects may occur where changes to the setting alter the existing setting in a  
 35 manner that is inconsistent with the feeling and association of the resource. Because the ability of  
 36 the resources to convey their significance would be lost this effect would materially alter these  
 37 resources under CEQA and would be adverse under NEPA. For example, reclaimed agricultural  
 38 landscapes that are converted to habitat may no longer convey the themes of agriculture and  
 39 settlement, and thus would be inconsistent with remaining features associated with rural historic  
 40 landscapes created by reclamation, cultivation, and ranching.

41 Mitigation Measure CUL-7 below addresses this effect. However, because of the large acreages of  
 42 land included in all conservation measures that would be implemented under this alternative, it is

1 unlikely that all effects on NRHP-, CRHR-, and /or local registry-eligible resources and unique  
2 archaeological sites could be avoided. Therefore, this impact would be adverse.

3 **NEPA Effects:** Implementation of conservation measures will result in ground disturbing work and  
4 introduction of new infrastructure to the Plan Area. These physical modifications may result in  
5 direct effects on NRHP and CRHR eligible resources. These changes may therefore reduce the  
6 integrity of these resources. For these reasons these effects would be adverse.

7 **CEQA Conclusion:** Construction and implementation of conservation measures would result in  
8 ground-disturbing work that could alter the significant characteristics of NRHP, CRHR, and/or local  
9 registry-eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and  
10 built-environment resources such as historic architectural structures and rural historic landscapes.  
11 The same construction may damage unique archaeological sites. This construction would likely  
12 result in materially adverse changes for the following reasons.

- 13 ● Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
14 contain data useful in research, thus diminishing or destroying the basis for the significance of  
15 the resource.
- 16 ● Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
17 built-environment resources, resulting in an inability of the resource to convey its significance.
- 18 ● Ground-disturbing construction may either directly demolish or change the setting of TCPs  
19 resulting in an inability of the resource to convey its significance.
- 20 ● Ground-disturbing construction may inadvertently disturb human remains.

21 The alteration of a resource that changes the characteristics that convey its significance is a material  
22 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
23 CEQA under the Appendix G checklist. Because this construction would materially alter these  
24 categories of resources and disturb human remains it would result in a significant impact. Mitigation  
25 is available to reduce these impacts by identifying and evaluating resources, avoiding resources  
26 where possible, and developing treatment where avoidance is not possible. In addition construction  
27 would be monitored. However, because of the acreage associated with the proposed restoration  
28 under conservation measures, as well as the multiple constraints associated with other  
29 environmental resources that require mitigation or avoidance, it is unlikely that all cultural  
30 resources could be avoided. Therefore, this impact remains significant and unavoidable.

31 **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
32 **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
33 **Implementation of CM2-21**

34 Please see Mitigation Measure CUL-7 under Impact CUL-7 in the discussion of Alternative 1A

35 **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Other**  
36 **Conservation Measures with Plans and Policies**

37 Constructing the proposed water conveyance facilities (CM1) and implementing CM2-CM21 could  
38 result in the potential for incompatibilities with plans and policies adopted to protect the cultural  
39 resources of the Delta. A number of plans and policies that coincide with the study area provide  
40 guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local*  
41 *Plans, Policies, and Regulations*. This overview of plan and policy compatibility evaluates whether

1 Alternative 2A is compatible or incompatible with these policies, rather than whether impacts are  
 2 adverse or not adverse or significant or less than significant. Because Alternative 2A would result in  
 3 the same kinds of effects as Alternative 1A, this alternative is only compatible with some of the land  
 4 use policies that govern the Plan Area. For policies that emphasize preservation or mitigation the  
 5 BDCP will be compatible with these policies because significant cultural resources will be avoided  
 6 where feasible, and mitigation will be implemented to reduce effects where avoidance and  
 7 preservation is not feasible. For policies that emphasize preservation the BDCP is incompatible in  
 8 some instances because multiple constraints governing the location of proposed facilities makes  
 9 preservation of all significant cultural resources unlikely. It should be noted that, as described in  
 10 Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local land use  
 11 regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 12 environment.

13 **NEPA Effects:** Because federal agencies are not regulated by local land use policy, Alternative 2A  
 14 would not result in a conflict with local land use laws for the purposes of NEPA.

15 **CEQA Conclusion:** The Plan Area is governed by cultural resource management policies adopted by  
 16 the various counties with jurisdiction in this region. For policies that emphasize preservation or  
 17 mitigation the BDCP will be compatible with these policies because DWR and appropriate federal  
 18 agencies will implement cultural resource management practices that will identify significant  
 19 resources, preserve such resources where feasible, and complete mitigation to reduce significant  
 20 effects where preservation is not feasible. For policies that emphasize preservation the BDCP is  
 21 incompatible in some instances because multiple constraints governing the location of proposed  
 22 facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as  
 23 described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local  
 24 land use regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 25 environment.

### 26 **18.3.5.6 Alternative 2B—Dual Conveyance with East Alignment and Five** 27 **Intakes (15,000 cfs; Operational Scenario B)**

#### 28 **Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of** 29 **Conveyance Facilities**

##### 30 **Identified Resources**

31 Record searches at the CHRIS and inventory efforts for the BDCP have identified 16 previously  
 32 recorded prehistoric archaeological sites in the footprint of this alternative (see Appendix 18B,  
 33 *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-1). Detailed site  
 34 descriptions summarizing available information regarding these resources, are provided in  
 35 Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*. These sites are distributed more  
 36 heavily towards the northern and southern end of the alignment. A total of six of these sites have  
 37 documented human remains, however most of the sites are likely to contain human remains because  
 38 midden sites and identified artifacts are typically associated with burials.

##### 39 **Significance of Identified Archaeological Resources**

40 The resources affected by this alternative have likely have significance and integrity within the  
 41 meaning of the NRHP and CRHR for the same reasons described above under Alternative 1B.

## 1 **Anticipated Effects on Identified Resources**

2 Ground-disturbing construction is likely to disturb the deposits and thus materially alter their  
 3 ability to convey their significance. Much of the data potential in archaeological resources exists in  
 4 the spatial associations of different artifacts and other cultural material. Where artifacts that have  
 5 known associations with particular time periods occur adjacent to other material such as faunal  
 6 bone or plant remains from subsistence activity, the proximity of the materials allows an inference  
 7 as to the age of the subsistence remains, thereby allowing researchers to infer particular subsistence  
 8 strategies during different prehistoric periods. Intrusive ground-disturbing construction, vibration,  
 9 and other physical disturbance may disrupt these associations and thus disrupt the qualities for  
 10 which the sites may qualify as historical resources or historic properties. In addition, because not all  
 11 identified resources are legally accessible, these resources may be significant for other reasons than  
 12 their data potential. Indirect effects such as introduction of changes to the setting associated with  
 13 construction of new features or creation of new sources of noise (also a change to the setting) may  
 14 diminish the basis for the significance of these resources. For these reasons, construction has the  
 15 potential to materially impair these resources under CEQA and to adversely affect the resources as  
 16 defined by Section 106 of the NHPA. This effect would be adverse.

17 **NEPA Effects:** Construction may disturb NRHP and CRHR-eligible archaeological resources and  
 18 damage these resources. This damage may impair the integrity of these resources and thus reduce  
 19 their ability to convey their significance. For these reasons this effect would be adverse.

20 **CEQA Conclusion:** Construction of conveyance facilities would affect identified 16 archaeological  
 21 resources that occur in the footprint of this alternative. DWR identified these resources and finds  
 22 that they are likely to qualify as historical resources under CEQA (see the individual site descriptions  
 23 in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*); these resources thus have the  
 24 potential to qualify as historical resources. Therefore, these sites are considered historic resources  
 25 for the purposes of CEQA. This impact would be significant because construction could materially  
 26 alter or destroy the potential of these resources to yield information useful in archaeological  
 27 research, the basis for the significance of these resources, through excavation and disruption of the  
 28 spatial associations that contain meaningful information. Identified but currently inaccessible  
 29 resources may also be significant under other register criteria; indirect effects such as introduction  
 30 of new inconsistent changes to the setting may also diminish the significance of these resources.  
 31 Mitigation Measure CUL-1 would reduce this impact by recovering scientifically important material  
 32 prior to construction through the sensitive area, but would not guarantee that all of the scientifically  
 33 important material would be retrieved because feasible archaeological excavation only typically  
 34 retrieves a sample of the deposit, and portions of the site may remain after treatment with  
 35 important information. Construction could damage these remaining portions of the deposit.  
 36 Therefore, this impact is significant and unavoidable.

### 37 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery** 38 **Excavations on the Affected Portion of the Deposits of Identified and Significant** 39 **Archaeological Sites**

40 Please refer to Mitigation Measure CUL-1 under Alternative 1A.

## 1 **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory** 2 **Efforts**

3 This impact is generally similar to Impact CUL-2 described under Alternative 1B. This alternative is  
4 sensitive for previously unidentified archaeological resources that are likely to be significant and to  
5 have integrity for the same reasons as described under Alternative 1B. It should be noted however,  
6 that the eastern canal would cross more sensitive soil formations than the tunnel option and result  
7 in continuous ground-disturbance that may have a slightly greater potential to affect prehistoric  
8 archaeological resources compared to Alternative 1A and Alternative 1C. Figure 18A-1 in Appendix  
9 18A, *Archaeological Resources Sensitivity Assessment*, depicts the eastern canal relative to  
10 archaeologically sensitive soil formations. The general sensitivity for historic-era archaeological  
11 resources is similar to Alternative 1A.

12 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
13 resources by disrupting the spatial associations that convey data useful in research or changing the  
14 setting such that the resource no longer contains its significance. These impacts would thus  
15 materially impair these resources within the meaning of CEQA and adversely affect the resources  
16 within the meaning of Section 106 of the NHPA because this disturbance would impair the ability of  
17 these resources to yield data useful in research. The locations of ground-disturbing features such as  
18 the canal, access roads, pumping plants, borrow areas and concrete batch plants are depicted in  
19 Mapbook Figure M3-2 in Chapter 3, *Description of Alternatives*. While Mitigation Measure CUL-2  
20 would reduce these effects, it cannot guarantee all effects would be avoided because relocation of  
21 proposed facilities to avoid all resources is unlikely. These effects would remain adverse.

22 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
23 sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
24 their integrity. For these reasons this effect would be adverse.

25 **CEQA Conclusion:** The footprint for this alternative is sensitive for both prehistoric and historic-era  
26 resources that cannot be identified at this time because much of the footprint is not legally  
27 accessible. Because many of these resources are likely to have data useful in prehistoric and historic  
28 archaeological research, as well as the integrity to convey this significance, they are likely to qualify  
29 as historical resources or unique archaeological sites under CEQA or historic properties under the  
30 Section 106 of the NHPA. Ground-disturbing construction may materially alter the significance of  
31 these resources by disrupting the spatial associations that could yield important data, resulting in a  
32 significant effect. While mitigation is available (Mitigation Measure CUL-2), this mitigation cannot  
33 guarantee that all eligible or significant resources would be preserved in place, or that all important  
34 data would be retrieved before construction destroys these resources. The scale of the BDCP,  
35 investment into existing designs, and the presence of other important environmental resources such  
36 as habitat, natural communities, and wetlands that should be avoided are constraints on the  
37 flexibility and feasibility of avoidance. For these reasons this impact is significant and unavoidable.

### 38 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of** 39 **Archaeological Resources**

40 Please refer to Mitigation Measure CUL-2 as described under Alternative 1A.

1 **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory**  
 2 **Efforts**

3 Appendix 18A, *Archaeological Resources Sensitivity Assessment*, presents an overview of the  
 4 sensitivity of the Plan Area for previously unidentified archaeological resources and demonstrates  
 5 that additional prehistoric and historic-era sites that have not yet been identified are almost certain  
 6 to occur in the portion of the Plan Area where this alternative would be constructed. This sensitivity  
 7 and the potential impact mechanisms are substantially similar to the sensitivity and impact  
 8 mechanism described for Alternative 1B. It should be noted however, that the eastern canal would  
 9 cross more sensitive soil formations and result in continuous ground-disturbance that may have a  
 10 slightly greater potential to affect prehistoric archaeological resources compared to Alternative 1A  
 11 and Alternative 1C. Figure 18A-1 in Appendix 18A depicts the eastern canal relative to  
 12 archaeologically sensitive soil formations. The general sensitivity for historic-era archaeological  
 13 resources is similar to Alternative 1A.

14 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 15 resources by disrupting the spatial associations that convey data useful in research or changing the  
 16 setting such that the resource no longer contains its significance. These impacts would thus  
 17 materially impair these resources within the meaning of CEQA and adversely affect the resources  
 18 within the meaning of Section 106 of the NHPA because this disturbance would impair the ability of  
 19 these resources to yield data useful in research. Mitigation Measure CUL-3 would reduce these  
 20 effects, but cannot guarantee that all effects would be avoided because inadvertent disturbance of  
 21 some resources is inevitable given the scale of the proposed construction. These effects would  
 22 therefore remain adverse.

23 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 24 sites that also may not necessarily be identified prior to construction. While cultural resource  
 25 inventories will be completed once legal access is secured, no inventory can ensure that all  
 26 resources are identified prior to construction. Because these sites may qualify for the NRHP or  
 27 CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
 28 adverse.

29 **CEQA Conclusion:** This impact would be significant. Construction has the potential to disturb  
 30 previously unidentified archaeological sites qualifying as historical resources, historic properties, or  
 31 unique archaeological resources. Because direct excavation, compaction, or other disturbance may  
 32 disrupt the spatial associations that contain scientifically useful information it would alter the  
 33 potential basis for eligibility, thus materially altering the resource and resulting in a significant  
 34 effect. Because these resources would not be identified prior to construction, they cannot be  
 35 recorded and effects cannot be managed through construction treatment. Mitigation Measures CUL-  
 36 3 would reduce but not entirely avoid the potential for this impact, by implementing construction  
 37 worker training, monitoring and discovery protocols. However, because archaeological resources  
 38 may not be identified prior to disturbance through these measures, the effect cannot be entirely  
 39 avoided. Therefore, this impact would remain significant and unavoidable.

40 **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
 41 **Perform Training of Construction Workers, and Conduct Construction Monitoring**

42 Please refer to Mitigation Measure CUL-3 as described under Alternative 1A.

## 1 **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

2 The footprint of this alternative is sensitive for buried human remains that may occur in isolation,  
 3 rather than as part of prehistoric or historic archaeological sites. This sensitivity and the impact  
 4 mechanisms are substantially similar to the sensitivity and impact mechanisms described under  
 5 Alternative 1B. However, because the eastern canal crosses more sensitive soil formations and may  
 6 result in greater continuous ground disturbance than 1A and 1C, the potential for impacts on buried  
 7 human remains may be slightly higher than described for Alternative 1A.

8 Ground-disturbing construction has the potential to damage and disinter buried human remains,  
 9 resulting in an adverse effect. While mitigation is available under Mitigation Measure CUL-4 to  
 10 reduce this effect, it cannot guarantee that this effect would be avoided entirely, therefore this effect  
 11 remains adverse.

12 **NEPA Effects:** Buried human remains may be damaged by this alternative because such remains  
 13 may occur either in isolation or as part of identified and previously unidentified archaeological  
 14 resources where construction will occur. This effect would be adverse.

15 **CEQA Conclusion:** This impact would be significant. The project area is sensitive for buried human  
 16 remains. Construction would likely result in disturbance of these features. Disturbance of human  
 17 remains, including remains interred outside of cemeteries is considered a significant impact in the  
 18 CEQA Appendix G checklist; therefore disturbance of these remains would result in a significant  
 19 effect. Mitigation measures would reduce the severity of this impact, but not to a less-than-  
 20 significant level because mitigation would not guarantee that these features could be discovered and  
 21 treated in advance of construction; the scale of construction makes it technically and economically  
 22 infeasible to perform the level of sampling necessary to identify all such resources prior to  
 23 construction. Therefore, this impact is considered significant and unavoidable.

### 24 **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if** 25 **Such Resources Are Discovered during Construction**

26 Please refer to Mitigation Measure CUL-4 as described under Alternative 1A.

## 27 **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic** 28 **Architectural/Built-Environment Resources Resulting from Construction Activities**

29 Built-environment resources that may be affected by this alternative include resources identified  
 30 and evaluated in inventory efforts conducted for other projects and resources identified in surveys  
 31 for the BDCP. Some of resources are considered historic properties for the purposes of this analysis  
 32 because they meet the criteria in the NRHP regulations (36 CFR 60.4), as described below. For the  
 33 similar reasons some are considered historical resources under CEQA. As identified in Appendix  
 34 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-6, a total of 25  
 35 built-environment resources have the potential to be directly or indirectly affected by construction  
 36 of this alternative. The specific nature and location of the impact mechanism for each affected  
 37 resource is also described in Table 18B-6. The affected resources have been evaluated for the NRHP  
 38 and CRHR. The basis for the eligibility recommendations for each resource is provided in Appendix  
 39 18B, in Section 18B.1.2, *Built Environment Resource Descriptions*.

## 1 Discussion of Anticipated Effects on Identified and Accessible Resources

2 Construction of the canal, intakes, RTM areas, and other temporary and permanent features would  
 3 result in direct and indirect effects. The exact effect mechanism for each resource is described in  
 4 Appendix 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, in Table 18B-6.  
 5 Facility redesign to avoid direct impacts on historic architectural resources is preferred as  
 6 mitigation if possible. However, it is unlikely that all identified resources can be avoided because of  
 7 the scale of the BDCP and the need to balance avoidance of other important environmental  
 8 resources such as wetlands, natural communities, and special-status species habitat. These effects  
 9 would materially impair the resources within the meaning of CEQA and result in adverse effects  
 10 within the meaning of Section 106 because they would diminish the characteristics that convey the  
 11 significance of the resources. Some direct demolition and indirect effects such as setting changes are  
 12 likely to occur even with mitigation. Therefore, these effects would be adverse.

13 **NEPA Effects:** This alternative would result in direct and indirect effects on NRHP and CRHR eligible  
 14 built environment resources. These alterations may diminish the integrity of these resources. For  
 15 these reasons this effect would be adverse.

16 **CEQA Conclusion:** Several identified historic-era built-environment resources have been identified  
 17 in the footprint of this alternative (25 individual resources, as described in Appendix 18B, *Identified*  
 18 *Resources Potentially Affected by the BDCP Alternatives*, Table 18B-6). These resources have been  
 19 evaluated for the CRHR and qualify as historical resources under CEQA. Construction of conveyance  
 20 facilities may require demolition of the historic built-environment resources. Construction may also  
 21 result in permanent indirect effects such as changes to the setting. Direct demolition or changes to  
 22 the setting would be material alterations because they would either remove the resource or alter the  
 23 resource character, resulting in an inability of the resource to convey its significance. For these  
 24 reasons this would be a significant effect. Mitigation described below may reduce these effects, but  
 25 cannot guarantee they would be entirely avoided. The scale of the BDCP and the constraints  
 26 imposed by other environmental resources make avoidance of all significant effects unlikely. For  
 27 these reasons this impact remains significant and unavoidable even with implementation of the  
 28 following mitigation measures.

### 29 Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and Implement a Built 30 Environment Treatment Plan

31 Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 1A.

### 32 Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic 33 Architectural/Built-Environment Resources Resulting from Construction Activities

34 The footprint of this alternative is sensitive for unidentified and unevaluated built-environment  
 35 resources that may have significance and integrity for the same reasons described under Alternative  
 36 1B. Approximately 67 unevaluated built-environment resources have been identified that may be  
 37 subject to direct or indirect effects as a result of the construction of this alternative (ICF 2012, see  
 38 tables of inaccessible properties and associated maps).

### 39 Anticipated Effects

40 Construction may result in direct demolition of these resources, damage through vibration, or  
 41 indirect effects such as changes to the setting. While mitigation is available to reduce these effects,

1 this mitigation cannot guarantee that all effects would be avoided because mitigation cannot  
 2 guarantee that eligible resources would be avoided and that adverse changes to the setting would  
 3 not occur. Construction has the potential to directly or indirectly damage built-environment  
 4 resources through demolition or introduction of new inconsistent features into the setting. These  
 5 changes would impair the ability of the resources to convey their significance because the character  
 6 defining elements or setting of the resource would be lost. Therefore, impacts on these resources  
 7 may be adverse.

8 **NEPA Effects:** This alternative may result in direct modification or indirect changes to the setting for  
 9 inaccessible and NRHP and CRHR-eligible resources. These changes may diminish the integrity of  
 10 these resources. For these reasons, this effect would be adverse.

11 **CEQA Conclusion:** The study area is sensitive for built-environment resources that have not yet  
 12 been recorded and evaluated because the majority of the area is legally inaccessible. Inventory  
 13 efforts have not gathered complete information in these inaccessible areas. Many of these resources  
 14 are likely to be associated with important historical themes or persons, or possess high creative  
 15 values; therefore, they are likely to have significance under CEQA and the NHPA. Because many of  
 16 these resources remain intact and retain their rural agricultural setting they are also likely to have  
 17 integrity under CEQA and the NHPA. Therefore, many are likely to qualify as historic properties or  
 18 historical resources under the NHPA and CEQA. Construction of conveyance facilities may require  
 19 demolition of the historic built-environment resources. Construction may also result in permanent  
 20 indirect effects such as changes to the setting. Direct demolition or changes to the setting would be  
 21 material alterations because they would either remove the resource or alter the resource character,  
 22 resulting in an inability of the resource to convey its significance. For these reasons this would be a  
 23 significant effect. Mitigation described below may reduce these effects, but cannot guarantee they  
 24 would be entirely avoided. The scale of the BDCP and the constraints imposed by other  
 25 environmental resources make avoidance of all significant effects unlikely. For these reasons this  
 26 impact remains significant and unavoidable even with implementation of the following mitigation  
 27 measures.

28 **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 29 **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 30 **Develop Treatment to Resolve or Mitigate Adverse Impacts**

31 Please refer to Mitigation Measure CUL-6 under Alternative 1A.

32 **Impact CUL-7: Effects of Other Conservation Measures on Cultural Resources**

33 This impact describes the potential effects of other conservation measures at a program level of  
 34 detail, with the exception of *CM1 Water Facilities and Operation*. This impact is substantially similar  
 35 to Impact CUL-7 as discussed under Alternative 1A because the nature of the affected resources,  
 36 scope of activities, and geographic area of effects are generally similar. These measures would result  
 37 in effects on cultural resources when ground-disturbing work is performed to construct  
 38 improvements and enhance or restore natural communities. Direct effects would occur through  
 39 demolition or destruction of NRHP-, CRHR-, and/or local registry-eligible prehistoric and historic  
 40 archaeological sites, unique archaeological sites, TCPs, human remains, and built-environment  
 41 resources. Indirect effects may occur where changes to the setting alter the existing setting in a  
 42 manner that is inconsistent with the feeling and association of the resource. Because the ability of  
 43 the resources to convey their significance would be lost this effect would materially alter these

1 resources under CEQA and would be adverse under NEPA. For example, reclaimed agricultural  
 2 landscapes that are converted to habitat may no longer convey the themes of agriculture and  
 3 settlement, and thus would be inconsistent with remaining features associated with rural historic  
 4 landscapes created by reclamation, cultivation, and ranching.

5 Mitigation Measure CUL-7 below addresses this effect. However, because of the large acreages of  
 6 land included in all conservation measures that would be implemented under this alternative, it is  
 7 unlikely that all effects on NRHP-, CRHR-, and /or local registry-eligible resources and unique  
 8 archaeological sites could be avoided. Therefore, this impact would be adverse.

9 **NEPA Effects:** Implementation of conservation measures will result in ground disturbing work and  
 10 introduction of new infrastructure to the Plan Area. These physical modifications may result in  
 11 direct effects on NRHP and CRHR eligible resources. These changes may therefore reduce the  
 12 integrity of these resources. For these reasons these effects would be adverse.

13 **CEQA Conclusion:** Construction and implementation of conservation measures would result in  
 14 ground-disturbing work that could alter the significant characteristics of NRHP, CRHR, and/or local  
 15 registry-eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and  
 16 built-environment resources such as historic architectural structures and rural historic landscapes.  
 17 The same construction may damage unique archaeological sites. This construction would likely  
 18 result in materially adverse changes for the following reasons.

- 19 ● Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
 20 contain data useful in research, thus diminishing or destroying the basis for the significance of  
 21 the resource.
- 22 ● Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
 23 built-environment resources, resulting in an inability of the resource to convey its significance.
- 24 ● Ground-disturbing construction may either directly demolish or change the setting of TCPs  
 25 resulting in an inability of the resource to convey its significance.
- 26 ● Ground-disturbing construction may inadvertently disturb human remains.

27 The alteration of a resource that changes the characteristics that convey its significance is a material  
 28 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
 29 CEQA under the Appendix G checklist. Because this construction would materially alter these  
 30 categories of resources and disturb human remains it would result in a significant impact. Mitigation  
 31 is available to reduce these impacts by identifying and evaluating resources, avoiding resources  
 32 where possible, and developing treatment where avoidance is not possible. In addition construction  
 33 would be monitored. However, because of the acreage associated with the proposed restoration  
 34 under conservation measures, as well as the multiple constraints associated with other  
 35 environmental resources that require mitigation or avoidance, it is unlikely that all cultural  
 36 resources could be avoided. Therefore, this impact remains significant and unavoidable.

37 **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
 38 **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
 39 **Implementation of CM2-21**

40 Please see Mitigation Measure CUL-7 under Impact CUL-7 in the discussion of Alternative 1A

1 **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Other**  
 2 **Conservation Measures with Plans and Policies**

3 Constructing the proposed water conveyance facilities (CM1) and implementing CM2–CM21 could  
 4 result in the potential for incompatibilities with plans and policies adopted to protect the cultural  
 5 resources of the Delta. A number of plans and policies that coincide with the study area provide  
 6 guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local*  
 7 *Plans, Policies, and Regulations*. This overview of plan and policy compatibility evaluates whether  
 8 Alternative 2B is compatible or incompatible with these policies, rather than whether impacts are  
 9 adverse or not adverse or significant or less than significant. Because Alternative 2B would result in  
 10 the same kinds of effects as Alternative 1A, this alternative is only compatible with some of the land  
 11 use policies that govern the Plan Area. For policies that emphasize preservation or mitigation the  
 12 BDCP will be compatible with these policies because significant cultural resources will be avoided  
 13 where feasible, and mitigation will be implemented to reduce effects where avoidance and  
 14 preservation is not feasible. For policies that emphasize preservation the BDCP is incompatible in  
 15 some instances because multiple constraints governing the location of proposed facilities makes  
 16 preservation of all significant cultural resources unlikely. It should be noted that, as described in  
 17 Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local land use  
 18 regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 19 environment.

20 **NEPA Effects:** Because federal agencies are not regulated by local land use policy, implementation of  
 21 Alternative 2B would not result in a conflict with local land use laws for the purposes of NEPA.

22 **CEQA Conclusion:** The Plan Area is governed by cultural resource management policies adopted by  
 23 the various counties with jurisdiction in this region. For policies that emphasize preservation or  
 24 mitigation the BDCP will be compatible with these policies because DWR and appropriate federal  
 25 agencies will implement cultural resource management practices that will identify significant  
 26 resources, preserve such resources where feasible, and complete mitigation to reduce significant  
 27 effects where preservation is not feasible. For policies that emphasize preservation the BDCP is  
 28 incompatible in some instances because multiple constraints governing the location of proposed  
 29 facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as  
 30 described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local  
 31 land use regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 32 environment.

33 **18.3.5.7 Alternative 2C—Dual Conveyance with West Alignment and**  
 34 **Intakes W1-W5 (15,000 cfs; Operational Scenario B)**

35 **Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of**  
 36 **Conveyance Facilities**

37 **Identified Resources**

38 Record searches at the CHRIS and inventory efforts for the BDCP have identified 12 previously  
 39 recorded archaeological sites in the footprint of this alternative as described in Appendix 18B,  
 40 *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-1 (only 11 are  
 41 potentially register eligible). Detailed site descriptions summarizing available information regarding  
 42 these resources, are provided in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*.

1 These sites are distributed more heavily towards the northern and southern end of the alignment  
2 where ground-disturbing effects of the western canal are concentrated.

### 3 **Significance of Identified Archaeological Resources**

4 The resources affected by this alternative have likely have significance and integrity within the  
5 meaning of the NRHP and CRHR for the same reasons described above under Alternative 1C. CA-Yol-  
6 165H does not have sufficient integrity to convey significance and therefore does not qualify as an  
7 historical resource or historic property. Seven of these sites have documented human remains;  
8 additional human remains are likely to be contained in the other sites based on the nature of the  
9 associated deposits (midden, ornaments typically used as grave goods).

### 10 **Anticipated Effects on Identified Resources**

11 Ground-disturbing construction is likely to disturb the deposits and thus materially alter their  
12 ability to convey their significance. Much of the data potential in archaeological resources exists in  
13 the spatial associations of different artifacts and other cultural material. Where artifacts that have  
14 known associations with particular time periods occur adjacent to other material such as faunal  
15 bone or plant remains from subsistence activity, the proximity of the materials allows an inference  
16 as to the age of the subsistence remains, thereby allowing researchers to infer particular subsistence  
17 strategies during different prehistoric periods. Intrusive ground-disturbing construction, vibration,  
18 and other physical disturbance may disrupt these associations and thus disrupt the qualities for  
19 which the sites may qualify as historical resources or historic properties. In addition, because not all  
20 identified resources are legally accessible, these resources may be significant for other reasons than  
21 their data potential. Indirect effects such as introduction of changes to the setting associated with  
22 construction of new features or creation of new sources of noise (also a change to the setting) may  
23 diminish the basis for the significance of these resources. For these reasons, construction has the  
24 potential to materially impair these resources under CEQA and to adversely affect the resources as  
25 defined by Section 106 of the NHPA. This effect would be adverse.

26 **NEPA Effects:** Construction may disturb NRHP and CRHR-eligible archaeological resources and  
27 damage these resources. This damage may impair the integrity of these resources and thus reduce  
28 their ability to convey their significance. For these reasons this effect would be adverse.

29 **CEQA Conclusion:** Construction of conveyance facilities would affect 12 identified archaeological  
30 resources that occur in the footprint of this alternative. DWR identified these resources and finds  
31 that they are likely to qualify as historical resources under CEQA (see the individual site descriptions  
32 in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*); these resources thus have the  
33 potential to qualify as historical resources. Therefore, these sites are considered historic resources  
34 for the purposes of CEQA. This impact would be significant because construction could materially  
35 alter or destroy the potential of these resources to yield information useful in archaeological  
36 research, the basis for the significance of these resources, through excavation and disruption of the  
37 spatial associations that contain meaningful information. Identified but currently inaccessible  
38 resources may also be significant under other register criteria; indirect effects such as introduction  
39 of new inconsistent changes to the setting may also diminish the significance of these resources.  
40 Mitigation Measure CUL-1 would reduce this impact by recovering scientifically important material  
41 prior to construction through the sensitive area, but would not guarantee that all of the scientifically  
42 important material would be retrieved because feasible archaeological excavation only typically  
43 retrieves a sample of the deposit, and portions of the site may remain after treatment with

1 important information. Construction could damage these remaining portions of the deposit.  
2 Therefore, this impact is significant and unavoidable.

3 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
4 **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
5 **Archaeological Sites**

6 Please refer to Mitigation Measure CUL-1 under Alternative 1A.

7 **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory**  
8 **Efforts**

9 This impact is generally similar to Impact CUL-2 described under Alternative 1C. This alternative is  
10 sensitive for previously unidentified archaeological resources that are likely to be significant and to  
11 have integrity for the same reasons as described under Alternative 1C. It should be noted however,  
12 that the western canal would cross more sensitive soil formations along the northern and southern  
13 ends of the alignment compared to Alternative 1A. The middle segment of this alternative would  
14 make use of a subterranean tunnel that crosses low-sensitivity soil units. The overall sensitivity for  
15 prehistoric archaeological resources may be slightly higher than Alternative 1A because of the  
16 relative proportion of high sensitivity geological formations. The overall sensitivity for the western  
17 canal may be less than for eastern canal alternatives because the concentration of sensitive  
18 geological formations is higher for the eastern canal. Figure 18A-1 in Appendix 18A, *Archaeological*  
19 *Resources Sensitivity Assessment*, depicts the western canal relative to archaeologically sensitive soil  
20 formations. The general sensitivity for historic-era archaeological resources is similar to Alternative  
21 1A.

22 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
23 resources by disrupting the spatial associations that convey data useful in research or changing the  
24 setting such that the resource no longer contains its significance. The location of ground-disturbing  
25 features such as intakes, the canal, tunnel segment, and borrow areas are depicted in Mapbook  
26 Figure M3-3 in Chapter 3, *Description of Alternatives*. These impacts would thus materially impair  
27 these resources within the meaning of CEQA and adversely affect the resources within the meaning  
28 of Section 106 of the NHPA because this disturbance would impair the ability of these resources to  
29 yield data useful in research. While Mitigation Measure CUL-2 would reduce these effects, it cannot  
30 guarantee all effects would be avoided because relocation of proposed facilities to avoid all  
31 resources is unlikely. These effects would remain adverse.

32 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
33 sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
34 their integrity. For these reasons this effect would be adverse.

35 **CEQA Conclusion:** The footprint for this alternative is sensitive for both prehistoric and historic-era  
36 resources that cannot be identified at this time because much of the footprint is not legally  
37 accessible. Because many of these resources are likely to have data useful in prehistoric and historic  
38 archaeological research, as well as the integrity to convey this significance, they are likely to qualify  
39 as historical resources or unique archaeological sites under CEQA or historic properties under the  
40 Section 106 of the NHPA. Ground-disturbing construction may materially alter the significance of  
41 these resources by disrupting the spatial associations that could yield important data, resulting in a  
42 significant effect. While mitigation is available (Mitigation Measure CUL-2), this mitigation cannot  
43 guarantee that all eligible or significant resources would be preserved in place, or that all important

1 data would be retrieved before construction destroys these resources. The scale of the BDCP,  
 2 investment into existing designs, and the presence of other important environmental resources such  
 3 as habitat, natural communities, and wetlands that should be avoided are constraints on the  
 4 flexibility and feasibility of avoidance. For these reasons this impact is significant and unavoidable.

5 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of**  
 6 **Archaeological Resources**

7 Please refer to Mitigation Measure CUL-2 as described under Alternative 1A.

8 **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory**  
 9 **Efforts**

10 Appendix 18A, *Archaeological Resources Sensitivity Assessment*, presents an overview of the  
 11 sensitivity of the Plan Area for previously unidentified archaeological resources and demonstrates  
 12 that additional prehistoric and historic-era sites that have not yet been identified are almost certain  
 13 to occur in the portion of the Plan Area where this alternative would be constructed. This sensitivity  
 14 and the potential impact mechanisms are substantially similar to the sensitivity and impact  
 15 mechanism described for Alternative 1C. It should be noted however, that the western canal would  
 16 cross more sensitive soil formations along the northern and southern ends of the alignment  
 17 compared to Alternative 1A. The middle segment of this alternative would make use of a  
 18 subterranean tunnel that crosses low-sensitivity soil units. The overall sensitivity for prehistoric  
 19 archaeological resources may be slightly higher than Alternative 1A because of the relative  
 20 proportion of high sensitivity geological formations. The overall sensitivity may be lower relative to  
 21 the eastern canal options. Figure 18A-1 in Appendix 18A depicts the western canal relative to  
 22 archaeologically sensitive soil formations. The general sensitivity for historic-era archaeological  
 23 resources is similar to Alternative 1A.

24 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 25 resources by disrupting the spatial associations that convey data useful in research or changing the  
 26 setting such that the resource no longer contains its significance. These impacts would thus  
 27 materially impair these resources within the meaning of CEQA and adversely affect the resources  
 28 within the meaning of Section 106 of the NHPA because this disturbance would impair the ability of  
 29 these resources to yield data useful in research. Mitigation Measure CUL-3 would reduce these  
 30 effects, but cannot guarantee that all effects would be avoided because inadvertent disturbance of  
 31 some resources is inevitable given the scale of the proposed construction. These effects would  
 32 therefore remain adverse.

33 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 34 sites that also may not necessarily be identified prior to construction. While cultural resource  
 35 inventories will be completed once legal access is secured, no inventory can ensure that all  
 36 resources are identified prior to construction. Because these sites may qualify for the NRHP or  
 37 CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
 38 adverse.

39 **CEQA Conclusion:** This impact would be significant. Construction has the potential to disturb  
 40 previously unidentified archaeological sites qualifying as historical resources, historic properties, or  
 41 unique archaeological resources. Because direct excavation, compaction, or other disturbance may  
 42 disrupt the spatial associations that contain scientifically useful information it would alter the  
 43 potential basis for eligibility, thus materially altering the resource and resulting in a significant

1 effect. Because these resources would not be identified prior to construction, they cannot be  
 2 recorded and effects cannot be managed through construction treatment. Mitigation Measures CUL-  
 3 3 would reduce but not entirely avoid the potential for this impact, by implementing construction  
 4 worker training, monitoring and discovery protocols. However, because archaeological resources  
 5 may not be identified prior to disturbance through these measures, the effect cannot be entirely  
 6 avoided. Therefore, this impact would remain significant and unavoidable.

7 **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
 8 **Perform Training of Construction Workers, and Conduct Construction Monitoring**

9 Please refer to Mitigation Measure CUL-3 as described under Alternative 1A.

10 **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

11 The footprint of this alternative is sensitive for buried human remains that may occur in isolation,  
 12 rather than as part of prehistoric or historic archaeological sites. This sensitivity and the impact  
 13 mechanisms are substantially similar to the sensitivity and impact mechanisms described under  
 14 Alternative 1A. However, because the western canal crosses more sensitive soil formations and may  
 15 result in greater continuous ground disturbance than 1A, the potential for impacts on buried human  
 16 remains may be slightly higher than described for Alternative 1A. Because the western canal crosses  
 17 slightly lower sensitivity soil formations it may be slightly less sensitive for buried human remains  
 18 relative to eastern canal options. Figure 18A-1 in Appendix 18A, *Archaeological Resources Sensitivity*  
 19 *Assessment*, depicts geological map units relative to the alignments.

20 Ground-disturbing construction has the potential to damage and disinter buried human remains,  
 21 resulting in an adverse effect. While mitigation is available under Mitigation Measure CUL-4 to  
 22 reduce this effect, it cannot guarantee that this effect would be avoided entirely, therefore this effect  
 23 remains adverse.

24 **NEPA Effects:** Buried human remains may be damaged by this alternative because such remains  
 25 may occur either in isolation or as part of identified and previously unidentified archaeological  
 26 resources where construction will occur. This effect would be adverse.

27 **CEQA Conclusion:** This impact would be significant. The project area is sensitive for buried human  
 28 remains. Construction would likely result in disturbance of these features. Disturbance of human  
 29 remains, including remains interred outside of cemeteries is considered a significant impact in the  
 30 CEQA Appendix G checklist; therefore disturbance of these remains would result in a significant  
 31 effect. Mitigation measures would reduce the severity of this impact, but not to a less-than-  
 32 significant level because mitigation would not guarantee that these features could be discovered and  
 33 treated in advance of construction; the scale of construction makes it technically and economically  
 34 infeasible to perform the level of sampling necessary to identify all such resources prior to  
 35 construction. Therefore, this impact is considered significant and unavoidable.

36 **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if**  
 37 **Such Resources Are Discovered during Construction**

38 Please refer to Mitigation Measure CUL-4 as described under Alternative 1A.

1 **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic**  
 2 **Architectural/Built-Environment Resources Resulting from Construction Activities**

3 Built-environment resources that may be affected by this alternative include resources identified  
 4 and evaluated in inventory efforts conducted for other projects and resources identified in surveys  
 5 for the BDCP. Some of resources are considered historic properties for the purposes of this analysis  
 6 because they meet the criteria in the NRHP regulations (36 CFR 60.4), as described below. For the  
 7 similar reasons some are considered historical resources under CEQA. As identified in Appendix  
 8 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-7, a total of 22  
 9 built-environment resources have the potential to be directly or indirectly affected by construction  
 10 of this alternative. The specific nature and location of the impact mechanism for each affected  
 11 resource is also described in Table 18B-7. The affected resources have been evaluated for the NRHP  
 12 and CRHR. The basis for the eligibility recommendations for each resource is provided in Appendix  
 13 18B, in Section 18B.1.2, *Built Environment Resource Descriptions*.

14 **Discussion of Anticipated Effects on Identified and Accessible Resources**

15 Construction of the canal, intakes, and borrow and spoil areas will result in direct and indirect  
 16 effects. The exact effect mechanism for each resource is described in Appendix 18B, *Identified*  
 17 *Resources Potentially Affected by the BDCP Alternatives*, in Table 18B-7. Facility redesign to avoid  
 18 direct impacts on historic architectural resources is preferred as mitigation if possible. However, it  
 19 is unlikely that all identified resources can be avoided because of the scale of the BDCP and the need  
 20 to balance avoidance of other important environmental resources such as wetlands, natural  
 21 communities, and special-status species habitat. These effects would materially impair the resources  
 22 within the meaning of CEQA and result in adverse effects within the meaning of Section 106 because  
 23 they would diminish the characteristics that convey the significance of the resources. Some direct  
 24 demolition and indirect effects such as setting changes are likely to occur even with mitigation.  
 25 Therefore, these effects would be adverse.

26 **NEPA Effects:** This alternative would result in direct and indirect effects on NRHP and CRHR eligible  
 27 built environment resources. These alterations may diminish the integrity of these resources. For  
 28 these reasons this effect would be adverse.

29 **CEQA Conclusion:** Several identified historic-era built-environment resources have been identified  
 30 in the footprint of this alternative (22 individual resources, as described in Appendix 18B, *Identified*  
 31 *Resources Potentially Affected by the BDCP Alternatives*, Table 18B-7). These resources have been  
 32 evaluated for the CRHR and qualify as historical resources under CEQA. Construction of conveyance  
 33 facilities may require demolition of the historic built-environment resources. Construction may also  
 34 result in permanent indirect effects such as changes to the setting. Direct demolition or changes to  
 35 the setting would be material alterations because they would either remove the resource or alter the  
 36 resource character, resulting in an inability of the resource to convey its significance. For these  
 37 reasons this would be a significant effect. Mitigation described below may reduce these effects, but  
 38 cannot guarantee they would be entirely avoided. The scale of the BDCP and the constraints  
 39 imposed by other environmental resources make avoidance of all significant effects unlikely. For  
 40 these reasons this impact remains significant and unavoidable even with implementation of the  
 41 following mitigation measures.

1           **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and implement a Built**  
2           **Environment Treatment Plan**

3           Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 1A.

4           **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic**  
5           **Architectural/Built-Environment Resources Resulting from Construction Activities**

6           The footprint of this alternative is sensitive for unidentified and unevaluated built-environment  
7           resources that may have significance and integrity for the same reasons described under Alternative  
8           1C. Approximately 74 unevaluated built-environment resources have been identified that may be  
9           subject to direct or indirect effects as a result of the construction of this alternative (ICF 2012, see  
10          tables of inaccessible properties and associated maps).

11          **Anticipated Effects**

12          Construction may result in direct demolition of these resources, damage through vibration, or  
13          indirect effects such as changes to the setting. While mitigation is available to reduce these effects,  
14          this mitigation cannot guarantee that all effects would be avoided because mitigation cannot  
15          guarantee that eligible resources would be avoided and that adverse changes to the setting would  
16          not occur. Construction has the potential to directly or indirectly damage built-environment  
17          resources through demolition or introduction of new inconsistent features into the setting. These  
18          changes would impair the ability of the resources to convey their significance because the character  
19          defining elements or setting of the resource would be lost. Therefore, impacts on these resources  
20          may be adverse.

21          **NEPA Effects:** This alternative may result in direct modification or indirect changes to the setting for  
22          inaccessible and NRHP and CRHR-eligible built environment resources. These changes may diminish  
23          the integrity of these resources. For these reasons, this effect would be adverse.

24          **CEQA Conclusion:** The study area is sensitive for built-environment resources that have not yet  
25          been recorded and evaluated because the majority of the area is legally inaccessible. Inventory  
26          efforts have not gathered complete information in these inaccessible areas. Many of these resources  
27          are likely to be associated with important historical themes or persons, or possess high creative  
28          values; therefore, they are likely to have significance under CEQA and the NHPA. Because many of  
29          these resources remain intact and retain their rural agricultural setting they are also likely to have  
30          integrity under CEQA and the NHPA. Therefore, many are likely to qualify as historic properties or  
31          historical resources under the NHPA and CEQA. Construction of conveyance facilities may require  
32          demolition of the historic built-environment resources. Construction may also result in permanent  
33          indirect effects such as changes to the setting. Direct demolition or changes to the setting would be  
34          material alterations because they would either remove the resource or alter the resource character,  
35          resulting in an inability of the resource to convey its significance. For these reasons this would be a  
36          significant effect. Mitigation described below may reduce these effects, but cannot guarantee they  
37          would be entirely avoided. The scale of the BDCP and the constraints imposed by other  
38          environmental resources make avoidance of all significant effects unlikely. For these reasons this  
39          impact remains significant and unavoidable even with implementation of the following mitigation  
40          measures.

1           **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 2           **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 3           **Develop Treatment to Resolve or Mitigate Adverse Impacts**

4           Please refer to Mitigation Measure CUL-6 under Alternative 1A.

5           **Impact CUL-7: Effects of Other Conservation Measures on Cultural Resources**

6           This impact describes the potential effects of other conservation measures at a program level of  
 7           detail, with the exception of *CM1 Water Facilities and Operation*. This impact is substantially similar  
 8           to Impact CUL-7 as discussed under Alternative 1A because the nature of the affected resources,  
 9           scope of activities, and geographic area of effects are generally similar. These measures would result  
 10          in effects on cultural resources when ground-disturbing work is performed to construct  
 11          improvements and enhance or restore natural communities. Direct effects would occur through  
 12          demolition or destruction of NRHP-, CRHR-, and/or local registry-eligible prehistoric and historic  
 13          archaeological sites, unique archaeological sites, TCPs, human remains, and built-environment  
 14          resources. Indirect effects may occur where changes to the setting alter the existing setting in a  
 15          manner that is inconsistent with the feeling and association of the resource. Because the ability of  
 16          the resources to convey their significance would be lost this effect would materially alter these  
 17          resources under CEQA and would be adverse under NEPA. For example, reclaimed agricultural  
 18          landscapes that are converted to habitat may no longer convey the themes of agriculture and  
 19          settlement, and thus would be inconsistent with remaining features associated with rural historic  
 20          landscapes created by reclamation, cultivation, and ranching.

21          Mitigation Measure CUL-7 below addresses this effect. However, because of the large acreages of  
 22          land included in all conservation measures that would be implemented under this alternative, it is  
 23          unlikely that all effects on NRHP-, CRHR-, and /or local registry-eligible resources and unique  
 24          archaeological sites could be avoided. Therefore, this impact would be adverse.

25          **NEPA Effects:** Implementation of conservation measures will result in ground disturbing work and  
 26          introduction of new infrastructure to the Plan Area. These physical modifications may result in  
 27          direct effects on NRHP and CRHR eligible resources. These changes may therefore reduce the  
 28          integrity of these resources. For these reasons these effects would be adverse.

29          **CEQA Conclusion:** Construction and implementation of conservation measures would result in  
 30          ground-disturbing work that could alter the significant characteristics of NRHP, CRHR, and/or local  
 31          registry-eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and  
 32          built-environment resources such as historic architectural structures and rural historic landscapes.  
 33          The same construction may damage unique archaeological sites. This construction would likely  
 34          result in materially adverse changes for the following reasons.

- 35          ● Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
 36          contain data useful in research, thus diminishing or destroying the basis for the significance of  
 37          the resource.
- 38          ● Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
 39          built-environment resources, resulting in an inability of the resource to convey its significance.
- 40          ● Ground-disturbing construction may either directly demolish or change the setting of TCPs  
 41          resulting in an inability of the resource to convey its significance.
- 42          ● Ground-disturbing construction may inadvertently disturb human remains.

1 The alteration of a resource that changes the characteristics that convey its significance is a material  
 2 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
 3 CEQA under the Appendix G checklist. Because this construction would materially alter these  
 4 categories of resources and disturb human remains it would result in a significant impact. Mitigation  
 5 is available to reduce these impacts by identifying and evaluating resources, avoiding resources  
 6 where possible, and developing treatment where avoidance is not possible. In addition construction  
 7 would be monitored. However, because of the acreage associated with the proposed restoration  
 8 under conservation measures, as well as the multiple constraints associated with other  
 9 environmental resources that require mitigation or avoidance, it is unlikely that all cultural  
 10 resources could be avoided. Therefore, this impact remains significant and unavoidable.

11 **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
 12 **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
 13 **Implementation of CM2-21**

14 Please see Mitigation Measure CUL-7 under Impact CUL-7 in the discussion of Alternative 1A

15 **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Other**  
 16 **Conservation Measures with Plans and Policies**

17 Constructing the proposed water conveyance facilities (CM1) and implementing CM2-CM21 could  
 18 result in the potential for incompatibilities with plans and policies adopted to protect the cultural  
 19 resources of the Delta. A number of plans and policies that coincide with the study area provide  
 20 guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local*  
 21 *Plans, Policies, and Regulations*. This overview of plan and policy compatibility evaluates whether  
 22 Alternative 2C is compatible or incompatible with these policies, rather than whether impacts are  
 23 adverse or not adverse or significant or less than significant. Because Alternative 2C would result in  
 24 the same kinds of effects as Alternative 1A, this alternative is only compatible with some of the land  
 25 use policies that govern the Plan Area. For policies that emphasize preservation or mitigation the  
 26 BDCP will be compatible with these policies because significant cultural resources will be avoided  
 27 where feasible, and mitigation will be implemented to reduce effects where avoidance and  
 28 preservation is not feasible. For policies that emphasize preservation the BDCP is incompatible in  
 29 some instances because multiple constraints governing the location of proposed facilities makes  
 30 preservation of all significant cultural resources unlikely. It should be noted that, as described in  
 31 Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local land use  
 32 regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 33 environment.

34 **NEPA Effects:** Because federal agencies are not regulated by local land use policy, implementation of  
 35 Alternative 2C would not result in a conflict with local land use laws for the purposes of NEPA.

36 **CEQA Conclusion:** The Plan Area is governed by cultural resource management policies adopted by  
 37 the various counties with jurisdiction in this region. For policies that emphasize preservation or  
 38 mitigation the BDCP will be compatible with these policies because DWR and appropriate federal  
 39 agencies will implement cultural resource management practices that will identify significant  
 40 resources, preserve such resources where feasible, and complete mitigation to reduce significant  
 41 effects where preservation is not feasible. For policies that emphasize preservation the BDCP is  
 42 incompatible in some instances because multiple constraints governing the location of proposed  
 43 facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as

1 described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local  
 2 land use regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 3 environment.

#### 4 **18.3.5.8 Alternative 3—Dual Conveyance with Pipeline/Tunnel and** 5 **Intakes 1 and 2 (6,000 cfs; Operational Scenario A)**

##### 6 **Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of** 7 **Conveyance Facilities**

##### 8 **Identified Resources**

9 Record searches at the CHRIS and inventory efforts for the BDCP have identified six previously  
 10 recorded prehistoric archaeological sites in the footprint of this alternative (Appendix 18B,  
 11 *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-1). Detailed site  
 12 descriptions summarizing available information regarding these resources, are provided in  
 13 Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*. These six previously recorded  
 14 resources represent the known resources that occur in the footprint of this alternative. The  
 15 resources are distributed evenly across the alignment, but are somewhat clustered where  
 16 construction of large above-ground features would occur, such as the northern end of the alignment,  
 17 at the intermediate forebay, and at the southern end of the alignment. Two of these sites have  
 18 documented human remains; however additional sites are likely to contain human remains because  
 19 burials are typically associated with midden sites.

##### 20 **Significance of Identified Archaeological Resources**

21 The resources affected by this alternative have likely have significance and integrity within the  
 22 meaning of the NRHP and CRHR for the same reasons described above under Alternative 1A.

##### 23 **Anticipated Effects on Identified Resources**

24 Ground-disturbing construction is likely to disturb the deposits and thus materially alter their  
 25 ability to convey their significance. Much of the data potential in archaeological resources exists in  
 26 the spatial associations of different artifacts and other cultural material. Where artifacts that have  
 27 known associations with particular time periods occur adjacent to other material such as faunal  
 28 bone or plant remains from subsistence activity, the proximity of the materials allows an inference  
 29 as to the age of the subsistence remains, thereby allowing researchers to infer particular subsistence  
 30 strategies during different prehistoric periods. Intrusive ground-disturbing construction may  
 31 disrupt these associations and thus disrupt the qualities for which the sites qualify as historical  
 32 resources. In addition, because not all identified resources are legally accessible, these resources  
 33 may be significant for other reasons than their data potential. Indirect effects such as introduction of  
 34 changes to the setting associated with construction of new features or creation of new sources of  
 35 noise (also a change to the setting) may diminish the basis for the significance of these resources.  
 36 For these reasons, construction has the potential to materially impair these resources under CEQA  
 37 and to adversely affect the resources as defined by Section 106 of the NHPA. This effect would be  
 38 adverse.

39 **NEPA Effects:** Construction may disturb NRHP and CRHR-eligible archaeological resources and  
 40 damage these resources. This damage may impair the integrity of these resources and thus reduce  
 41 their ability to convey their significance. For these reasons this effect would be adverse.

1 **CEQA Conclusion:** Construction of conveyance facilities would affect identified archaeological  
 2 resources that occur in the footprint of this alternative. DWR identified these resources and finds  
 3 that they are likely to qualify as historical resources under CEQA (see the individual site descriptions  
 4 in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*); these resources thus have the  
 5 potential to qualify as historical resources. Therefore, these sites are considered historic resources  
 6 for the purposes of CEQA. This impact would be significant because construction could materially  
 7 alter or destroy the potential of these resources to yield information useful in archaeological  
 8 research, the basis for the significance of these resources, through excavation and disruption of the  
 9 spatial associations that contain meaningful information. Identified but currently inaccessible  
 10 resources may also be significant under other register criteria; indirect effects such as introduction  
 11 of new inconsistent changes to the setting may also diminish the significance of these resources.  
 12 Mitigation Measure CUL-1 would reduce this impact by recovering scientifically important material  
 13 prior to construction through the sensitive area, but would not guarantee that all of the scientifically  
 14 important material would be retrieved because feasible archaeological excavation only typically  
 15 retrieves a sample of the deposit, and portions of the site may remain after treatment with  
 16 important information. Construction could damage these remaining portions of the deposit.  
 17 Therefore, this impact is significant and unavoidable.

18 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
 19 **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
 20 **Archaeological Sites**

21 Please refer to Mitigation Measure CUL-1 under Alternative 1A.

22 **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory**  
 23 **Efforts**

24 This impact is substantially similar to Impact CUL-2 described under Alternative 1A. While the  
 25 number of intakes would be reduced, slightly reducing the footprint the overall potential for effects  
 26 on archaeological resources is similar.

27 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 28 resources by disrupting the spatial associations that convey data useful in research or changing the  
 29 setting such that the resource no longer contains its significance. These impacts would thus  
 30 materially impair these resources within the meaning of CEQA and adversely affect the resources  
 31 within the meaning of Section 106 of the NHPA because this disturbance would impair the ability of  
 32 these resources to yield data useful in research. While Mitigation Measure CUL-2 would reduce  
 33 these effects, it cannot guarantee all effects would be avoided because relocation of proposed  
 34 facilities to avoid all resources is unlikely. The locations of various features such as intakes, forebays,  
 35 and tunnels shaft locations are depicted in Mapbook Figure M3-1 in Chapter 3, *Description of*  
 36 *Alternatives*. These effects would remain adverse.

37 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 38 sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
 39 their integrity. For these reasons this effect would be adverse.

40 **CEQA Conclusion:** The footprint for this alternative is sensitive for both prehistoric and historic-era  
 41 resources that cannot be identified at this time because much of the footprint is not legally  
 42 accessible. Because many of these resources are likely to have data useful in prehistoric and historic  
 43 archaeological research, as well as the integrity to convey this significance, they are likely to qualify

1 as historical resources or unique archaeological sites under CEQA or historic properties under the  
 2 Section 106 of the NHPA. Ground-disturbing construction may materially alter the significance of  
 3 these resources by disrupting the spatial associations that could yield important data, resulting in a  
 4 significant effect. While mitigation is available (Mitigation Measure CUL-2), this mitigation cannot  
 5 guarantee that all eligible or significant resources would be preserved in place, or that all important  
 6 data would be retrieved before construction destroys these resources. The scale of the BDCP,  
 7 investment into existing designs, and the presence of other important environmental resources such  
 8 as habitat, natural communities, and wetlands that should be avoided are constraints on the  
 9 flexibility and feasibility of avoidance. For these reasons this impact is significant and unavoidable.

10 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of**  
 11 **Archaeological Resources**

12 Please refer to Mitigation Measure CUL-2 as described under Alternative 1A.

13 **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory**  
 14 **Efforts**

15 This impact is substantially similar to Impact CUL-3 described under Alternative 1A. While the  
 16 number of intakes would be reduced, slightly reducing the footprint the overall potential for effects  
 17 on archaeological resources is similar.

18 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 19 resources by disrupting the spatial associations that convey data useful in research or changing the  
 20 setting such that the resource no longer contains its significance. These impacts would thus  
 21 materially impair these resources within the meaning of CEQA and adversely affect the resources  
 22 within the meaning of Section 106 of the NHPA because this disturbance would impair the ability of  
 23 these resources to yield data useful in research. Mitigation Measure CUL-3 would reduce these  
 24 effects, but cannot guarantee that all effects would be avoided because inadvertent disturbance of  
 25 some resources is inevitable given the scale of the proposed construction. These effects would  
 26 therefore remain adverse.

27 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 28 sites that also may not necessarily be identified prior to construction. While cultural resource  
 29 inventories will be completed once legal access is secured, no inventory can ensure that all  
 30 resources are identified prior to construction. Because these sites may qualify for the NRHP or  
 31 CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
 32 adverse.

33 **CEQA Conclusion:** This impact would be significant. Construction has the potential to disturb  
 34 previously unidentified archaeological sites qualifying as historical resources, historic properties, or  
 35 unique archaeological resources. Because direct excavation, compaction, or other disturbance may  
 36 disrupt the spatial associations that contain scientifically useful information it would alter the  
 37 potential basis for eligibility, thus materially altering the resource and resulting in a significant  
 38 effect. Because these resources would not be identified prior to construction, they cannot be  
 39 recorded and effects cannot be managed through construction treatment. Mitigation Measures CUL-  
 40 3 would reduce but not entirely avoid the potential for this impact, by implementing construction  
 41 worker training, monitoring and discovery protocols. However, because archaeological resources  
 42 may not be identified prior to disturbance through these measures, the effect cannot be entirely  
 43 avoided. Therefore, this impact would remain significant and unavoidable.

1           **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
 2           **Perform Training of Construction Workers, and Conduct Construction Monitoring**

3           Please refer to Mitigation Measure CUL-3 as described under Alternative 1A.

4           **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

5           The footprint of this alternative is sensitive for buried human remains that may occur in isolation,  
 6           rather than as part of prehistoric or historic archaeological sites. This sensitivity and the impact  
 7           mechanisms are substantially similar to the sensitivity and impact mechanisms described under  
 8           Alternative 1A. While the number of intakes would be reduced, slightly reducing the footprint the  
 9           overall potential for effects on buried human resources is similar.

10          Ground-disturbing construction has the potential to damage and disinter buried human remains,  
 11          resulting in an adverse effect. While mitigation is available under Mitigation Measure CUL-4 to  
 12          reduce this effect, it cannot guarantee that this effect would be avoided entirely, therefore this effect  
 13          remains adverse.

14          **NEPA Effects:** Buried human remains may be damaged by this alternative because such remains  
 15          may occur either in isolation or as part of identified and previously unidentified archaeological  
 16          resources where construction will occur. This effect would be adverse.

17          **CEQA Conclusion:** This impact would be significant. The project area is sensitive for buried human  
 18          remains. Construction would likely result in disturbance of these features. Disturbance of human  
 19          remains, including remains interred outside of cemeteries is considered a significant impact in the  
 20          CEQA Appendix G checklist; therefore disturbance of these remains would result in a significant  
 21          effect. Mitigation measures would reduce the severity of this impact, but not to a less-than-  
 22          significant level because mitigation would not guarantee that these features could be discovered and  
 23          treated in advance of construction; the scale of construction makes it technically and economically  
 24          infeasible to perform the level of sampling necessary to identify all such resources prior to  
 25          construction. Therefore, this impact is considered significant and unavoidable.

26                   **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if**  
 27                   **Such Resources Are Discovered during Construction**

28           Please refer to Mitigation Measure CUL-4 as described under Alternative 1A.

29           **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic**  
 30           **Architectural/Built-Environment Resources Resulting from Construction Activities**

31           Built-environment resources that may be affected by this alternative include resources identified  
 32           and evaluated in inventory efforts conducted for other projects and resources identified in surveys  
 33           for the BDCP. Some of resources are considered historic properties for the purposes of this analysis  
 34           because they meet the criteria in the NRHP regulations (36 CFR 60.4), as described below. For the  
 35           similar reasons some are considered historical resources under CEQA. As identified in Appendix  
 36           18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-8, a total of 20  
 37           built-environment resources have the potential to be directly or indirectly affected by construction  
 38           of this alternative. The specific nature and location of the impact mechanism for each affected  
 39           resource is also described in Table 18B-8. The affected resources have been evaluated for the NRHP  
 40           and CRHR. The basis for the eligibility recommendations for each resource is provided in Appendix  
 41           18B, in Section 18B.1.2, *Built Environment Resource Descriptions*.

## 1 Discussion of Anticipated Effects on Identified and Accessible Resources

2 Intakes, transmission lines, and other features would result in direct and indirect impacts. The exact  
 3 effect mechanism for each resource is described in Appendix 18B, *Identified Resources Potentially*  
 4 *Affected by the BDCP Alternatives*, in Table 18B-8. Facility redesign to avoid direct impacts on  
 5 historic architectural resources is preferred as mitigation if possible. However, it is unlikely that all  
 6 identified resources can be avoided because of the scale of the BDCP and the need to balance  
 7 avoidance of other important environmental resources such as wetlands, natural communities, and  
 8 special-status species habitat. These effects would materially impair the resources within the  
 9 meaning of CEQA and result in adverse effects within the meaning of Section 106 because they  
 10 would diminish the characteristics that convey the significance of the resources. Some direct  
 11 demolition and indirect effects such as setting changes are likely to occur even with mitigation.  
 12 Therefore, these effects would be adverse.

13 **NEPA Effects:** This alternative would result in direct and indirect effects on NRHP and CRHR eligible  
 14 built environment resources. These alterations may diminish the integrity of these resources. For  
 15 these reasons this effect would be adverse.

16 **CEQA Conclusion:** Several identified historic-era built-environment resources have been identified  
 17 in the footprint of this alternative (20 individual resources, as described in Appendix 18B, *Identified*  
 18 *Resources Potentially Affected by the BDCP Alternatives*, Table 18B-8). Construction of conveyance  
 19 facilities may require demolition of the historic built-environment resources. These resources have  
 20 been evaluated for the CRHR and qualify as historical resources under CEQA. Construction may also  
 21 result in permanent indirect effects such as changes to the setting. Direct demolition or changes to  
 22 the setting would be material alterations because they would either remove the resource or alter the  
 23 resource character, resulting in an inability of the resource to convey its significance. For these  
 24 reasons this would be a significant effect. Mitigation described below may reduce these effects, but  
 25 cannot guarantee they would be entirely avoided. The scale of the BDCP and the constraints  
 26 imposed by other environmental resources make avoidance of all significant effects unlikely. For  
 27 these reasons this impact remains significant and unavoidable even with implementation of the  
 28 following mitigation measures.

### 29 **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and implement a Built** 30 **Environment Treatment Plan**

31 Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 1A.

### 32 **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic** 33 **Architectural/Built-Environment Resources Resulting from Construction Activities**

34 The footprint of this alternative is sensitive for unidentified and unevaluated built-environment  
 35 resources that may have significance and integrity for the same reasons described under Alternative  
 36 1A. Approximately 71 unevaluated built-environment resources have been identified that may be  
 37 subject to direct or indirect effects as a result of the construction of this alternative (ICF 2012, see  
 38 tables of inaccessible properties and associated maps).

### 39 **Anticipated Effects**

40 Construction may result in direct demolition of these resources, damage through vibration, or  
 41 indirect effects such as changes to the setting. While mitigation is available to reduce these effects,

1 this mitigation cannot guarantee that all effects would be avoided because mitigation cannot  
 2 guarantee that eligible resources would be avoided and that adverse changes to the setting would  
 3 not occur. Construction has the potential to directly or indirectly damage built-environment  
 4 resources through demolition or introduction of new inconsistent features into the setting. These  
 5 changes would impair the ability of the resources to convey their significance because the character  
 6 defining elements or setting of the resource would be lost. Therefore, impacts on these resources  
 7 may be adverse.

8 **NEPA Effects:** This alternative may result in direct modification or indirect changes to the setting for  
 9 inaccessible and NRHP and CRHR-eligible built environment resources. These changes may diminish  
 10 the integrity of these resources. For these reasons, this effect would be adverse.

11 **CEQA Conclusion:** The study area is sensitive for built-environment resources that have not yet  
 12 been recorded and evaluated because the majority of the area is legally inaccessible. Inventory  
 13 efforts have not gathered complete information in these inaccessible areas. Many of these resources  
 14 are likely to be associated with important historical themes or persons, or possess high creative  
 15 values; therefore, they are likely to have significance under CEQA and the NHPA. Because many of  
 16 these resources remain intact and retain their rural agricultural setting they are also likely to have  
 17 integrity under CEQA and the NHPA. Therefore, many are likely to qualify as historic properties or  
 18 historical resources under the NHPA and CEQA. Construction of conveyance facilities may require  
 19 demolition of the historic built-environment resources. Construction may also result in permanent  
 20 indirect effects such as changes to the setting. Direct demolition or changes to the setting would be  
 21 material alterations because they would either remove the resource or alter the resource character,  
 22 resulting in an inability of the resource to convey its significance. For these reasons this would be a  
 23 significant effect. Mitigation described below may reduce these effects, but cannot guarantee they  
 24 would be entirely avoided. The scale of the BDCP and the constraints imposed by other  
 25 environmental resources make avoidance of all significant effects unlikely. For these reasons this  
 26 impact remains significant and unavoidable even with implementation of the following mitigation  
 27 measures.

28 **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 29 **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 30 **Develop Treatment to Resolve or Mitigate Adverse Impacts**

31 Please refer to Mitigation Measure CUL-6 under Alternative 1A.

32 **Impact CUL-7: Effects of Other Conservation Measures on Cultural Resources**

33 This impact describes the potential effects of other conservation measures at a program level of  
 34 detail, with the exception of *CM1 Water Facilities and Operation*. This impact is substantially similar  
 35 to Impact CUL-7 as discussed under Alternative 1A because the nature of the affected resources,  
 36 scope of activities, and geographic area of effects are generally similar. These measures would result  
 37 in effects on cultural resources when ground-disturbing work is performed to construct  
 38 improvements and enhance or restore natural communities. Direct effects would occur through  
 39 demolition or destruction of NRHP-, CRHR-, and/or local registry-eligible prehistoric and historic  
 40 archaeological sites, unique archaeological sites, TCPs, human remains, and built-environment  
 41 resources. Indirect effects may occur where changes to the setting alter the existing setting in a  
 42 manner that is inconsistent with the feeling and association of the resource. Because the ability of  
 43 the resources to convey their significance would be lost this effect would materially alter these

1 resources under CEQA and would be adverse under NEPA. For example, reclaimed agricultural  
 2 landscapes that are converted to habitat may no longer convey the themes of agriculture and  
 3 settlement, and thus would be inconsistent with remaining features associated with rural historic  
 4 landscapes created by reclamation, cultivation, and ranching.

5 Mitigation Measure CUL-7 below addresses this effect. However, because of the large acreages of  
 6 land included in all conservation measures that would be implemented under this alternative, it is  
 7 unlikely that all effects on NRHP-, CRHR-, and /or local registry-eligible resources and unique  
 8 archaeological sites could be avoided. Therefore, this impact would be adverse.

9 **CEQA Conclusion:** Construction and implementation of conservation measures would result in  
 10 ground-disturbing work that could alter the significant characteristics of NRHP, CRHR, and/or local  
 11 registry-eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and  
 12 built-environment resources such as historic architectural structures and rural historic landscapes.  
 13 The same construction may damage unique archaeological sites. This construction would likely  
 14 result in materially adverse changes for the following reasons.

- 15 • Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
 16 contain data useful in research, thus diminishing or destroying the basis for the significance of  
 17 the resource.
- 18 • Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
 19 built-environment resources, resulting in an inability of the resource to convey its significance.
- 20 • Ground-disturbing construction may either directly demolish or change the setting of TCPs  
 21 resulting in an inability of the resource to convey its significance.
- 22 • Ground-disturbing construction may inadvertently disturb human remains.

23 The alteration of a resource that changes the characteristics that convey its significance is a material  
 24 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
 25 CEQA under the Appendix G checklist. Because this construction would materially alter these  
 26 categories of resources and disturb human remains it would result in a significant impact. Mitigation  
 27 is available to reduce these impacts by identifying and evaluating resources, avoiding resources  
 28 where possible, and developing treatment where avoidance is not possible. In addition construction  
 29 would be monitored. However, because of the acreage associated with the proposed restoration  
 30 under conservation measures, as well as the multiple constraints associated with other  
 31 environmental resources that require mitigation or avoidance, it is unlikely that all cultural  
 32 resources could be avoided. Therefore, this impact remains significant and unavoidable.

33 **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
 34 **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
 35 **Implementation of CM2–21**

36 Please see Mitigation Measure CUL-7 under Impact CUL-7 in the discussion of Alternative 1A.

37 **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Other**  
 38 **Conservation Measures with Plans and Policies**

39 Constructing the proposed water conveyance facilities (CM1) and implementing CM2–CM21 could  
 40 result in the potential for incompatibilities with plans and policies adopted to protect the cultural  
 41 resources of the Delta. A number of plans and policies that coincide with the study area provide

1 guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local*  
 2 *Plans, Policies, and Regulations*. This overview of plan and policy compatibility evaluates whether  
 3 Alternative 3 is compatible or incompatible with these policies, rather than whether impacts are  
 4 adverse or not adverse or significant or less than significant. Because Alternative 3 would result in  
 5 the same kinds of effects as Alternative 1A, this alternative is only compatible with some of the land  
 6 use policies that govern the Plan Area. For policies that emphasize preservation or mitigation the  
 7 BDCP will be compatible with these policies because significant cultural resources will be avoided  
 8 where feasible, and mitigation will be implemented to reduce effects where avoidance and  
 9 preservation is not feasible. For policies that emphasize preservation the BDCP is incompatible in  
 10 some instances because multiple constraints governing the location of proposed facilities makes  
 11 preservation of all significant cultural resources unlikely. It should be noted that, as described in  
 12 Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local land use  
 13 regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 14 environment.

15 **CEQA Conclusion:** The Plan Area is governed by cultural resource management policies adopted by  
 16 the various counties with jurisdiction in this region. For policies that emphasize preservation or  
 17 mitigation the BDCP will be compatible with these policies because DWR and appropriate federal  
 18 agencies will implement cultural resource management practices that will identify significant  
 19 resources, preserve such resources where feasible, and complete mitigation to reduce significant  
 20 effects where preservation is not feasible. For policies that emphasize preservation the BDCP is  
 21 incompatible in some instances because multiple constraints governing the location of proposed  
 22 facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as  
 23 described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local  
 24 land use regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 25 environment.

### 26 **18.3.5.9 Alternative 4—Dual Conveyance with Modified Pipeline/Tunnel** 27 **and Intakes 2, 3, and 5 (9,000 cfs; Operational Scenario H)**

#### 28 **Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of** 29 **Conveyance Facilities**

##### 30 **Identified Resources**

31 Record searches at the CHRIS and inventory efforts for the BDCP have identified ten previously  
 32 recorded archaeological sites in the footprint of this alternative (Appendix 18B, *Identified Resources*  
 33 *Potentially Affected by the BDCP Alternatives*, Table 18B-1). Site descriptions summarizing available  
 34 information regarding these resources, are provided in Appendix 18B, Section 18B.1.1,  
 35 *Archaeological Site Descriptions*. These ten previously recorded resources represent the known  
 36 resources that occur in the footprint of this alternative. The majority of these sites either have  
 37 burials or cultural constituents or characteristics strongly associated with burials (such as a  
 38 “mound” deposit or burial associated items such as *Olivella biplicata* beads).

##### 39 **Significance of Identified Archaeological Resources**

40 Many of the directly affected sites are midden sites, with debris and artifacts associated with  
 41 prehistoric habitation and residence activities. Midden sites in the Plan Area are often colloquially  
 42 referred to as “mound sites” because they often form low mounds elevated relative to the

1 surrounding landform. While the original raised deposit has sometimes been destroyed, midden  
2 sites often have substantial deposits below the original raised landform that remain intact that  
3 typically contain the material remains associated with prehistoric habitation. This organic debris  
4 can be used for radiocarbon dating, as well as material that reveals the nature of subsistence  
5 activities pursued by prehistoric populations. Because there is no single unified prehistoric  
6 chronology for the Delta region, substantial research questions remain unresolved regarding nature  
7 and changes of subsistence and settlement activity over the span of the prehistoric occupation of the  
8 Delta. The Delta is the prehistoric point of articulation between Central Valley cultures and the  
9 aboriginal people that occupied the San Francisco Bay area. Because the cultural chronology and  
10 sources of cultural change for the Delta remain unresolved in part, sites in the footprint of this  
11 alternative likely contain information that could help clarify these research issues. For this reason  
12 these resources are likely significant under the fourth criterion for the CRHR and NRHP.

13 Two of the identified sites contain human burials, as described on the site records. Many of the  
14 remaining sites are likely to contain additional burials because midden sites in the Plan Area  
15 typically contain human burials or cremations. Burial components within these sites often contain  
16 ornaments and other personal items such as charmstones, beads, and other decorative material.  
17 Because the style and form of these artifacts change throughout prehistory, and because these  
18 stylistic changes have been defined, these materials provide a method of associating archaeological  
19 material with specific prehistoric time periods. The ability to associate habitation remains with  
20 specific time periods is one of the most significant problems in prehistoric research, because the  
21 sequence of specific adaptations and behaviors only becomes clear when a chronology can be  
22 constructed that associates behavior and material culture with specific time frames. For this reason  
23 these resources are likely significant under the fourth criterion for the CRHR and NRHP.

24 Because many of these resources are large (typically in excess of 30 meters across), they are each  
25 likely to contain some portion of the deposit with sufficient integrity to yield artifacts in their  
26 original associations in a manner that will convey these significance themes. Therefore these  
27 identified resources are likely to qualify as historical resources under CEQA. For the same reasons,  
28 these resources are likely to qualify as historic properties under the NRHP.

### 29 **Impact Mechanisms for Identified Resources**

30 The exact location of these resources cannot be disclosed because such a disclosure may lead to  
31 looting, which would result in damage and disturbance. However, these resources occur within the  
32 footprint of both temporary work areas and permanent surface impacts. The resources are  
33 distributed evenly across the alignment, but are somewhat clustered where construction of large  
34 above-ground features would occur, such as the northern end of the alignment, at the intermediate  
35 forebay, and at the southern end of the alignment. Ground-disturbing construction is likely to  
36 disturb the deposits and thus materially alter their ability to convey their significance. Much of the  
37 data potential in archaeological resources exists in the spatial associations of different artifacts and  
38 other cultural material, but these resources may also be significant for reasons other than data  
39 potential. Where artifacts that have known associations with particular time periods occur adjacent  
40 to other material such as faunal bone or plant remains from subsistence activity, the proximity of  
41 the materials allows an inference as to the age of the subsistence remains, thereby allowing  
42 researchers to infer particular subsistence strategies during different prehistoric periods. Intrusive  
43 ground-disturbing construction, vibration, and other physical disturbance may disrupt these  
44 associations and thus disrupt the qualities for which the sites may qualify as historical resources or  
45 historic properties. Indirect effects such as introduction of changes to the setting associated with

1 construction of new features or creation of new sources of noise (also a change to the setting) or  
 2 vibration may diminish the basis for the significance of these resources. For these reasons,  
 3 construction has the potential to materially impair these resources under CEQA and to adversely  
 4 affect the resources as defined by Section 106 of the NHPA.

5 **NEPA Effects:** Construction may disturb NRHP and CRHR-eligible archaeological resources and  
 6 damage these resources. This damage may impair the integrity of these resources and thus reduce  
 7 their ability to convey their significance. For these reasons this effect would be adverse.

8 **CEQA Conclusion:** Construction of conveyance facilities would affect ten identified archaeological  
 9 resources that occur in the footprint of this alternative. DWR identified these resources and finds  
 10 that they are likely to qualify as historical resources under CEQA (see the individual site descriptions  
 11 in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*.) This impact would be significant  
 12 because construction could materially alter or destroy the potential of these resources to yield  
 13 information useful in archaeological research, the basis for the significance of these resources,  
 14 through excavation and disruption of the spatial associations that contain meaningful information.  
 15 Identified but currently inaccessible resources may also be significant under other register criteria;  
 16 indirect effects such as introduction of new inconsistent changes to the setting may also diminish  
 17 the significance of these resources. Mitigation Measure CUL-1 would reduce this impact by  
 18 recovering scientifically important material prior to construction through the sensitive area, but  
 19 would not guarantee that all of the scientifically important material would be retrieved because  
 20 feasible archaeological excavation only typically retrieves a sample of the deposit, and portions of  
 21 the site may remain after treatment with important information. Construction could damage these  
 22 remaining portions of the deposit. Therefore, this impact is significant and unavoidable.

23 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
 24 **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
 25 **Archaeological Sites**

26 Prior to ground-disturbing construction, DWR will implement treatment for identified and  
 27 register eligible archaeological sites affected by Alternative 4 construction.

28 ***Basis for Selection of Treatment***

29 Identified archaeological resources occur in the footprint of large features that would be  
 30 constructed under this alternative. Because they occur within the footprint of these features,  
 31 avoidance may not be feasible. These objectives include protection of other sensitive  
 32 environmental resources where possible. Because of the density and location of other sensitive  
 33 environmental resources such as natural communities and habitats, relocation of proposed  
 34 facilities necessary to ensure all historical resources are preserved in places is unlikely to be  
 35 feasible. Furthermore, the large, linear, nature of proposed conveyance facilities would result in  
 36 overlap with cultural resources across almost any potential alignment because of the manner in  
 37 which cultural resources are distributed in the study area. These same facilities will require  
 38 ongoing maintenance and operational activities that would likely be inconsistent with dedicated  
 39 conservation easements or other land management methods designed to preserve existing  
 40 resources in place. For these reasons, preservation of all potentially affected archaeological sites  
 41 through capping with soil or incorporation into conservation easements or green space is not  
 42 likely to be feasible and capping may also adversely impact resource depending on the nature of  
 43 the resource and capping method. Accordingly, data recovery is proposed to retrieve the

1 scientifically important material that remains in these deposits. This data recovery excavation  
2 will conform to the Secretary of the Department of the Interior's standards for archaeological  
3 documentation.

- 4 • DWR will retain a qualified archaeological consultant to conduct data recovery excavations  
5 necessary to retrieve material that would otherwise be lost, (material with scientifically  
6 important data associated with the significance of the resource). Qualified archaeological  
7 consultant here means a consultant with demonstrated experience conducting effective data  
8 recovery excavations at the kinds of sites subject to treatment, including qualification under  
9 the Secretary of the Interior's Professional Qualification Standards (36 CFR 61).
- 10 • BDCP proponents will prepare, and deposit with the relevant information center of the  
11 CHRIS, a data recovery plan prior to conducting these excavations, as required under State  
12 CEQA Guidelines Section 15126.4(b)(3)(C). The plan will provide a literature review of  
13 recent regional archaeological research and a summary of regional research questions. The  
14 plan will incorporate the methods prescribed above and include a more detailed description  
15 of the sampling and excavation methods that are appropriate for the regional research  
16 questions. The plan will not disclose the location of the resources subject to treatment in a  
17 manner that would allow their location by the public and inadvertent damage.
- 18 • Data recovery excavations will remove a sample of the affected portion of the deposit to  
19 retrieve scientifically important material. Excavation will be conducted in representative  
20 levels, and material removed will be divided and screened through a combination of 1/4"  
21 and 1/8" mesh screen, so as to capture both the gross cultural constituents and the finer  
22 material that can only be captured in fine mesh. Excavation will be conducted in 10-  
23 centimeter levels so that the horizontal association of different cultural materials is  
24 recorded. Removed material will be segregated by type and bagged with labels noting their  
25 horizontal and vertical location relative to an established datum point. The datum point will  
26 be recorded in the field with GPS to at least 10-centimeter horizontal and vertical accuracy.  
27 If, in the course of data recovery excavations, it is determined that, contrary to available  
28 evidence, the resource lacks integrity, data recovery excavations will cease.
- 29 • Faunal material (animal bone) will be segregated and studied by a qualified faunal analyst to  
30 identify the species pursued, relative abundance and diversity of different species present,  
31 and the manner in which the prey were processed by the prehistoric occupants.
- 32 • Obsidian glass will be retrieved and studied through both X-ray fluorescence (a method that  
33 allows the source of the obsidian to be identified) and obsidian hydration analysis (a  
34 method that allows approximate determination of the time when the material was subject to  
35 human modification).
- 36 • Soil samples will be retrieved, with their horizontal and vertical location recorded, for  
37 flotation analysis (a method of separating light organic material such as fine plant remains  
38 from the deposit, in order to identify plant species pursued by prehistoric populations).
- 39 • Because some of the resources subject to treatment contain human remains, provisions for  
40 such remains are necessary. If human remains are discovered in these deposits during data  
41 recovery, the county coroner will be contacted as required in California Health and Safety  
42 Code Section 7050.5. If the coroner confirms the remains are of prehistoric origin, the NAHC  
43 will be contacted and given the opportunity to identify a MLD. The MLD will be given the  
44 opportunity to reinter the remains with appropriate dignity. If the NAHC fails to identify the

1 MLD or if the parties cannot reach agreement as to how to reinter the remains as described  
 2 in California PRC Section 5097.98(e), the landowner will reinter the remains at a location  
 3 not subject to further disturbance. DWR will ensure the protections prescribed in California  
 4 PRC Section 5097.98(e), are performed, such as the use of conservation easements and  
 5 recording of the location with whichever county in which the remains are found as well as  
 6 the relevant information center of the CHRIS and the NAHC.

- 7 • After completion of data recovery excavations DWR and appropriate federal agencies will  
 8 prepare a data recovery report synthesizing the results of data recovery and associated  
 9 studies and analysis. The consultant or staff archaeologists will synthesize the results of  
 10 these studies and summarize the results relative to regional research questions in the data  
 11 recovery report. The report will be filed with the relevant information center of the CHRIS.  
 12 DWR and appropriate federal agencies will also store the recovered material at an  
 13 appropriate facility for curation. Relevant federal curation standards such as 36 CFR 79 will  
 14 be followed where applicable.
- 15 • **Construction phase monitoring and resource protection:** During construction on or near  
 16 the resource, DWR and appropriate federal agencies will retain a qualified archaeologist (a  
 17 person knowledgeable in the identification of the kind of resources known to occur), to  
 18 observe excavations over any remaining portions of the deposit that are sensitive for buried  
 19 human remains or which may contain other significant buried archaeological material that  
 20 could be inadvertently damaged. If human remains are discovered the archaeologist will  
 21 direct compliance with the requirements of California Health and Safety Code Section  
 22 7050.5 and California PRC Section 5097.98 and the relevant federal agency with  
 23 responsibility for Section 106 will be contacted. In addition DWR and the appropriate  
 24 federal agencies will use fencing, flagging, or other appropriate means to exclude  
 25 unnecessary disturbance and activity from sensitive resources during construction.

26 The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Army Corps of  
 27 Engineers are entering into a PA with the California State Historic Preservation Officer for the  
 28 implementation of NHPA Section 106 for their undertakings associated with the BDCP. The  
 29 effects of Federal undertakings (actions) on historic properties (eligible for or listed on the  
 30 National Register of Historic Places) will be taken into account through the implementation of  
 31 this PA.

### 32 **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory** 33 **Efforts**

34 An inventory for the majority of the footprint for this alternative has not been conducted because  
 35 the footprint is not currently legally accessible (Appendix 4A, *Summary of Survey Data Collection by*  
 36 *Department of Water Resources to Obtain Information Regarding Baseline Conditions in Areas That*  
 37 *Could Be Affected by BDCP*). Furthermore, complete evaluation of all potentially affected resources  
 38 associated with this alternative may require destructive test excavation in advance of any final  
 39 decision regarding the selection of the alternative. Because several prehistoric archaeological sites  
 40 qualifying as historical resources have been identified in the footprint of this alternative, the  
 41 remaining portion of the footprint for this conveyance feature is sensitive for previously  
 42 unidentified archaeological resources. Record searches at the relevant information centers of the  
 43 CHRIS reviewed the mapped location of previous cultural resource inventories in the footprint of  
 44 this alternative and the vicinity. This map review revealed that a cultural resources inventory has

1 never been conducted in the majority of the footprint for this alternative. The presence of three  
2 archaeological sites that qualify as historical resources and historic properties in the portion of the  
3 footprint that has been previously inspected provides a sample of the likely density and occurrence  
4 of resources in the remaining footprint. For this reason, additional prehistoric archaeological  
5 resources are likely to be found in the portion of the footprint where surveys have not been  
6 conducted, once access is available and such studies can be completed.

7 In addition to prehistoric archaeological resources, the BDCP area is sensitive for historic-era  
8 archaeological resources. It is likely that previously unidentified historic archaeological sites occur  
9 in the footprint of this alternative because of the intensity of human activity in the Plan Area during  
10 the historic era, as described in Section 18.1.6, *Historic-Era Setting*.

11 Prehistoric sites in the Plan Area tend to be large and rich in material remains, including human  
12 burials and associated ornaments and beads. Habitation debris also often contains both floral and  
13 faunal material that can be used for both radiocarbon dating and analysis regarding subsistence  
14 strategies. In addition, the large scale of typical prehistoric archaeological resources suggests  
15 portions of these deposits will remain with sufficient integrity to convey research information.  
16 Therefore, these sites are likely to qualify as historical resources or unique archaeological resources  
17 under CEQA and historic properties under Section 106 of the NHPA.

18 Historic sites are likely to be associated with the historic-era themes of settlement, reclamation,  
19 agriculture, and flood management in the Delta region. Because the reclamation and agricultural  
20 development of the Delta region provided part of the economic base for the development of  
21 surrounding urban centers, these historic themes are significant at both a state and national level.  
22 These resources accordingly may contain data useful in historical research. In addition, the intensity  
23 of historic activity in the Delta region suggests that many of these resources are likely to be distributed  
24 across the footprint of this alternative and some are likely to retain sufficient integrity to convey this  
25 significance if they are subject to archaeological excavation and investigation. Therefore, these sites  
26 are likely to qualify as historical resources or unique archaeological resources under CEQA and  
27 historic properties under Section 106 of the NHPA.

28 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
29 resources by disrupting the spatial associations that convey data useful in research or changing the  
30 setting such that the resource no longer contains its significance. The locations of various features  
31 such as intakes, forebays, and tunnels shaft locations are depicted in Mapbook Figure M3-4 in  
32 Chapter 3, *Description of Alternatives*. These impacts would thus materially impair these resources  
33 within the meaning of CEQA and adversely affect the resources within the meaning of Section 106 of  
34 the NHPA. These effects would be adverse.

35 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
36 sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
37 their integrity. For these reasons this effect would be adverse.

38 **CEQA Conclusion:** The footprint for this alternative is sensitive for both prehistoric and historic-era  
39 resources that cannot be identified at this time because much of the footprint is not legally  
40 accessible. Because many of these resources are likely to have data useful in prehistoric and historic  
41 archaeological research, as well as the integrity to convey this significance, they are likely to qualify  
42 as historical resources or unique archaeological sites under CEQA or historic properties under the  
43 Section 106 of the NHPA. Ground-disturbing construction may materially alter the significance of  
44 these resources by disrupting the spatial associations that could yield important data, resulting in a

1 significant effect. While mitigation is available (Mitigation Measure CUL-2) to reduce impacts by  
 2 taking inventory of cultural resources within the affected area and thereby making it possible to  
 3 preserve or recover data from the sensitive area, this mitigation cannot guarantee that all eligible or  
 4 significant resources would be preserved in place, or that all important data would be retrieved  
 5 before construction destroys these resources. The scale of the BDCP, investment into existing  
 6 designs, and the presence of other important environmental resources such as habitat, natural  
 7 communities, and wetlands that should be avoided are constraints on the flexibility and feasibility of  
 8 avoidance. For these reasons this impact is significant and unavoidable.

## 9 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of** 10 **Archaeological Resources**

11 Prior to ground-disturbing construction, DWR will implement the following mitigation  
 12 measures.

- 13 • Because DWR and federal agencies could not feasibly access the majority of the footprint for  
 14 this alternative, a cultural resource inventory has not been completed for the entire  
 15 footprint. Prior to ground-disturbing construction, DWR will ensure that an inventory and  
 16 evaluation report for cultural resources is completed. The inventory will cover the federal  
 17 APE for relevant undertakings.
- 18 • The scope of the inventory will include the entire area where effects may occur. Such effects  
 19 consist of direct disturbance through excavation or indirect damage through vibration or  
 20 changes to the setting, where the setting may be relevant for archaeological resources.
- 21 • The work will be led or supervised by cultural resource specialists that meet the Secretary  
 22 of the Department of the Interior's professional qualification standards provided in 36 CFR  
 23 61.
- 24 • Inventory methods will include pedestrian surveys and other any other appropriate  
 25 sampling methods identified by DWR and the federal lead agencies.
- 26 • Identified resources will be mapped and described on forms provided by the California State  
 27 Parks forms ("DPR" forms). Mapping will be performed by recording data points with GPS  
 28 hardware that can be imported and managed digitally.
- 29 • For all identified resources DWR and appropriate federal agencies will evaluate the  
 30 resources to determine if they are any of the following.
  - 31 ○ Historical resources (State CEQA Guidelines Section 15064.5[a])
  - 32 ○ Unique archaeological resources under CEQA (California PRC Section 21083.2[g])
  - 33 ○ Historic properties (36 CFR 60.4)
  - 34 ○ Eligible for local registers
- 35 • The recorded resources and the resource evaluations will be summarized in an inventory  
 36 report. In the inventory report DWR and appropriate federal agencies will also determine if  
 37 individual resources qualifying as unique archaeological sites, historical resources, or  
 38 historic properties will require mitigation to the extent feasible, as described below. DWR  
 39 will make such a determination if the BDCP would involve any of the following  
 40 consequences.

- 1           ○ Demolish or materially alter the qualities that make the resource eligible for listing in  
2           the CRHR (State CEQA Guidelines Section 15064.5[b][2][A],[C]).
- 3           ○ Demolish or materially alter the qualities that justify the inclusion of the resource on a  
4           local register or its identification in an historical resources survey meeting the  
5           requirements of California PRC Section 5024.1(g), unless DWR establishes by a  
6           preponderance of evidence that the resource is not historically or culturally significant  
7           (State CEQA Guidelines Section 15064.5[b][2][B]).
- 8           ○ Alter, directly or indirectly, the qualities that make a resource eligible for listing in the  
9           NRHP (36 CFR 800.5[a][1]).
- 10          ○ Demolish or materially impair the qualities that allow a resource to qualify as a unique  
11          archaeological site (California PRC Section 21083.2).
- 12          ● For all resources qualifying as unique archaeological resources, historical resources, or  
13          historic properties that would be subject to significant effects, DWR will develop and  
14          implement treatment. Such treatment will consist of the following, in order of priority.
- 15          ○ It should be noted that this order of priority applies to mitigation on historical resources  
16          performed to satisfy CEQA. Relevant federal agencies with management responsibilities  
17          for cultural resources shall implement mitigation for adverse effects to satisfy Section  
18          106 of the NHPA, which does not specify this order of priority.
- 19          ○ Preservation in place where feasible, in light of costs, logistics, technological, and  
20          environmental considerations, and the extent to which avoidance is consistent with the  
21          objectives of the project, through methods such as redesign of relevant facilities to avoid  
22          destruction or damage to eligible cultural resources, capping resources with fill, or  
23          deeding resources into conservation easements.
- 24          ○ Review and study of existing collections previously retrieved from affected resources,  
25          where feasible, in lieu of data recovery excavations.
- 26          ○ Data recovery excavations that retrieve the information that makes the resource eligible  
27          for CRHR or NRHP listing, or that qualifies the site as a unique archaeological resource.  
28          If data recovery through excavation is the only feasible mitigation, a data recovery plan,  
29          which makes provisions for adequately recovering the scientifically consequential  
30          information from and about the historical resource, will be prepared and adopted prior  
31          to any excavation being undertaken. Such studies will be deposited with the relevant  
32          information center of the CHRIS. Excavation as mitigation will be restricted to those  
33          parts of the resource that would be damaged or destroyed by the BDCP. If, in the course  
34          of data recovery excavations, it is determined that contrary to available evidence, the  
35          resource lacks integrity, data recovery excavations will cease. The data recovery plan  
36          will specify the basis for the significance of the resource and methods for retrieving the  
37          consequential information from the site. After completion of excavation DWR will retain  
38          a qualified archaeological consultant to synthesize the findings into a data recovery  
39          report describing the findings and will deposit the report at the relevant information  
40          center of the CHRIS.
- 41          ● The treatment plan will identify treatment methods that are proposed by the lead agencies  
42          and other public entities. The plan will also specify the basis for selecting a particular  
43          mitigation measure.

- 1           • For archaeological sites that qualify as historical resources, the BDCP proponents will  
2 consider preservation in place as the preferred treatment where feasible, in light of costs,  
3 logistics, technological, and environmental considerations and the extent to which  
4 avoidance is consistent with the objectives of the project
- 5           • If preservation in place of archaeological sites that qualify as historical resources or unique  
6 archaeological resources is not feasible in light of costs, logistics, technological  
7 considerations, the location of the find, and the extent to which preservation of the find is  
8 consistent or inconsistent with the design and objectives of the BDCP, the BDCP proponents  
9 will include a discussion in the treatment plan describing why the selected mitigation serves  
10 the interests protected by CEQA better than preservation in place.
- 11          • **Construction phase monitoring:** During construction on or near resources sensitive for  
12 human remains or archaeological resources, DWR will retain a qualified archaeologist to  
13 observe excavations over any remaining portions of the deposit that are sensitive for buried  
14 deposits or human remains. If human remains are discovered the archaeologist will direct  
15 compliance with the requirements of California Health and Safety Code Section 7050.5 and  
16 California PRC Section 5097.98 and the relevant federal agency with responsibility for  
17 Section 106 will be contacted. If Native American human remains are discovered on federal  
18 land, work in the immediate vicinity will cease, and DWR will contact the relevant  
19 representative of the federal agency where the remains were discovered, as prescribed in 25  
20 USC Section 3002(d) (NAGPRA). After notification from the relevant agency representative  
21 and treatment of the remains as required under NAGPRA, work may continue. Disposition of  
22 the remains will follow the ownership priority described in NAGPRA (25 USC Section  
23 3002[a]).

24           The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Army Corps of  
25 Engineers are entering into a PA with the California State Historic Preservation Officer for the  
26 implementation of NHPA Section 106 for their undertakings associated with the BDCP. The  
27 effects of Federal undertakings (actions) on historic properties (eligible for or listed on the  
28 National Register of Historic Places) will be taken into account through the implementation of  
29 this PA.

### 30 **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory** 31 **Efforts**

32           Appendix 18A, *Archaeological Resources Sensitivity Assessment*, presents an overview of the  
33 sensitivity of the Plan Area for previously unidentified archaeological resources and demonstrates  
34 that additional prehistoric and historic-era sites that have not yet been identified are almost certain  
35 to occur in the portion of the Plan Area where this alternative would be constructed. While surveys  
36 will be completed for the footprint, once access is available, such surveys cannot guarantee that all  
37 sites will be identified prior to construction. The rapid rate of at which alluvium and sediment  
38 accumulates in the Delta region, and the geologically unstable nature of the floodplain and riverbank  
39 environments in which these resources may occur makes it likely that numerous sites occur buried  
40 below surface soils. Cultural resource inventory efforts cannot always identify such resources, even  
41 with intermittent surface excavation designed to reveal sites with little or no surface manifestation  
42 because exhaustive sampling to identify every resource is economically and technically infeasible.  
43 These sites may also occur buried at the depth at which tunnel boring operations would be  
44 performed.

1 Many of these unidentified prehistoric resources are likely to qualify as historical resources, historic  
2 properties, or unique archaeological resources because prehistoric sites in the Delta region tend to  
3 be large and contain a rich material culture. In particular, burial features tend to be associated with  
4 numerous shell ornaments, charmstones, and associated grave goods. Habitation components often  
5 contain abundant faunal and floral remains that elucidate prehistoric adaptations such as  
6 subsistence methods.

7 In addition to prehistoric archaeological resources, the BDCP area is sensitive for historic-era  
8 archaeological resources. Archaeological debris found in historic era archaeological sites activity is  
9 likely to be associated with significant themes such as agriculture, reclamation, and settlement of the  
10 Delta region. The size of the Plan area and the intensity of historic activity suggest that some of these  
11 resources may qualify as historical resources, historic properties, or unique archaeological  
12 resources.

13 Ground-disturbing work, including the construction of surface features such as intakes, and the  
14 subterranean tunnel boring operations and shafts may disturb and damage these resources before  
15 they can be identified and avoided during monitoring efforts required under Mitigation Measure  
16 CUL-3. This damage and disturbance may materially impair these resources within the meaning of  
17 CEQA or adversely affect the resources within the meaning of Section 106 because this disturbance  
18 would impair the ability of these resources to yield data useful in research. While Mitigation  
19 Measure CUL-3 would reduce the potential for this impact, it would not guarantee the impact would  
20 be avoided entirely. Therefore, this impact is adverse.

21 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
22 sites that also may not necessarily be identified prior to construction. While cultural resource  
23 inventories will be completed once legal access is secured, no inventory can ensure that all  
24 resources are identified prior to construction. Because these sites may qualify for the NRHP or  
25 CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
26 adverse.

27 **CEQA Conclusion:** This impact would be significant. Construction has the potential to disturb  
28 previously unidentified archaeological sites qualifying as historical resources, historic properties, or  
29 unique archaeological resources. Because direct excavation, compaction, or other disturbance may  
30 disrupt the spatial associations that contain scientifically useful information it would alter the  
31 potential basis for eligibility, thus materially altering the resource and resulting in a significant  
32 effect. Because these resources would not be identified prior to construction, they cannot be  
33 recorded and effects cannot be managed through construction treatment. Mitigation Measures CUL-  
34 3 would reduce but not entirely avoid the potential for this impact, by implementing construction  
35 worker training, monitoring and discovery protocols. However, because archaeological resources  
36 may not be identified prior to disturbance through these measures, the effect cannot be entirely  
37 avoided. Therefore, this impact would remain significant and unavoidable.

38 **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
39 **Perform Training of Construction Workers, and Conduct Construction Monitoring**

40 Prior to ground-disturbing construction, the BDCP proponents will include a cultural resources  
41 discovery plan in the contract conditions of the construction contractor, incorporating the  
42 following actions to be taken in the event of the inadvertent discovery of cultural resources.

- 1           • An archaeological monitor will be present to observe construction at geographic locations  
2 that are sensitive for unidentified cultural resources. Such locations consist of construction  
3 near identified sites (within a 100-foot radius around the known boundaries of identified  
4 resources), and where ground-disturbing construction will occur within 500 feet of major  
5 water features.
- 6           • In the event of an archaeological resources discovery, work will cease in the immediate  
7 vicinity of the find (typically 100-feet), based on the direction of the archaeological monitor  
8 or the apparent distribution of cultural resources if no monitor is present. A qualified  
9 archaeologist will assess the significance of the find and make recommendations for further  
10 evaluation and treatment as necessary.
- 11          • Discovered resources will be mapped and described on forms provided by the DPR.  
12 Mapping will be performed by recording data points with GPS hardware that can be  
13 imported and managed digitally.
- 14          • Evaluation and treatment will follow the standards and order of priority described above for  
15 Mitigation Measure CUL-2. After receiving recommendations from the qualified  
16 archaeologist, DWR, USFWS, NMFS, and USACE shall jointly determine the feasibility of such  
17 recommendations, and particularly any recommended avoidance measures, in light of  
18 factors such as costs, logistics, technological, and environmental considerations and the  
19 extent to which avoidance is consistent with the objectives of the project.
- 20          • If human remains are discovered as part of a larger cultural deposit, DWR and the  
21 contractors will coordinate with the county coroner and NAHC to make the determinations  
22 and perform the management steps prescribed in California Health and Safety Code Section  
23 7050.5 and California PRC Section 5097.98.
- 24          • If Native American human remains are discovered on federal land, work in the immediate  
25 vicinity will cease, and DWR will contact the relevant representative of the federal agency  
26 where the remains were discovered, as prescribed in 25 USC Section 3002(d) (NAGPRA).  
27 After notification from the relevant agency representative and treatment of the remains as  
28 required under NAGPRA, work may continue. Disposition of the remains will follow the  
29 ownership priority described in NAGPRA (25 USC Section 3002[a]), as defined below under  
30 Mitigation Measure CUL-4.
- 31          • DWR and appropriate federal agencies shall provide pre-construction training of all  
32 construction personnel engaged in construction that has the potential to affect  
33 archaeological resources. This training will provide instruction on how to identify resources  
34 in the field and appropriate measures to be taken if a discovery or potential discovery  
35 occurs.

36 DWR will include a list of DWR cultural-resources staff that can respond to cultural resource  
37 discoveries and provide management direction following discoveries in the construction  
38 training materials, and will also provide this list as well as these discovery requirements to the  
39 supervisory field staff for the construction workers.

40 The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Army Corps of  
41 Engineers are entering into a PA with the California State Historic Preservation Officer for the  
42 implementation of NHPA Section 106 for their undertakings associated with the BDCP. The  
43 effects of Federal undertakings (actions) on historic properties (eligible for or listed on the

1 National Register of Historic Places) will be taken into account through the implementation of  
2 this PA.

### 3 **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

4 The footprint of this alternative is sensitive for buried human remains that may occur in isolation,  
5 rather than as part of prehistoric or historic archaeological sites. Historic and prehistoric human  
6 remains have been discovered as isolated interments rather than as part of larger sites. Because  
7 these isolated resources are not associated with larger deposits, their distribution and depth cannot  
8 be estimated. Construction of this alternative would require ground-disturbing work that may  
9 damage previously unidentified human remains, resulting in direct effects on these resources. While  
10 inventory and monitoring efforts are prescribed above under Mitigation Measures CUL-2 and CUL-3,  
11 the large acreages subject to disturbance under this alternative make exhaustive sampling to  
12 identify all buried and isolated human remains technically and economically infeasible. For these  
13 reasons the potential remains that such resources may be damaged or exposed before they can be  
14 discovered through inventory or monitoring. This effect would be adverse.

15 **NEPA Effects:** Buried human remains may be damaged by this alternative because such remains  
16 may occur either in isolation or as part of identified and previously unidentified archaeological  
17 resources where construction will occur. This effect would be adverse.

18 **CEQA Conclusion:** This impact would be significant. The project area is sensitive for buried human  
19 remains. Construction would likely result in disturbance of these features. Disturbance of human  
20 remains, including remains interred outside of cemeteries is considered a significant impact in the  
21 CEQA Appendix G checklist; therefore, disturbance of these remains would result in a significant  
22 effect. Mitigation Measure CUL-4 would reduce the severity of this impact by appropriately  
23 protecting the integrity of the human remains discovered, but not to a less-than-significant level  
24 because mitigation would not guarantee that these features could be discovered and treated in  
25 advance of construction; the scale of construction makes it technically and economically infeasible  
26 to perform the level of sampling necessary to identify all such resources prior to construction.  
27 Therefore, this impact is considered significant and unavoidable.

### 28 **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if** 29 **Such Resources Are Discovered during Construction**

- 30 • If human remains are discovered as part a larger cultural deposit, the BDCP proponents and  
31 the construction contractors will coordinate with the county coroner and NAHC to make the  
32 determinations and perform the management steps prescribed in California Health and  
33 Safety Code Section 7050.5 and California PRC Section 5097.98. The provisions of these  
34 state laws apply unless discoveries occur on land owned or controlled by the federal  
35 government. For discoveries on federal land the bulleted procedures for NAGPRA, provided  
36 below shall be followed. Compliance with state law for discoveries occurring on private or  
37 state lands requires the following steps.
  - 38 ○ Notification of the county coroner so the coroner may determine if an investigation  
39 regarding the cause of death is required. It the coroner determines that the remains are  
40 of prehistoric Native American origin, the coroner will notify the NAHC.
  - 41 ○ Upon notification the NAHC will identify the MLD, and the MLD will be given the  
42 opportunity to reinter the remains with appropriate dignity. If the NAHC fails to identify  
43 the MLD or if the parties cannot reach agreement as to how to reinter the remains as

1 described in California PRC Section 5097.98(e), the project proponents will reinter the  
 2 remains at a location not subject to further disturbance. DWR will ensure the  
 3 protections prescribed in California PRC Section 5097.98(e), are performed, such as the  
 4 use of conservation easements and recording of the location with the relevant county  
 5 and information center of the CHRIS.

- 6 • If Native American human remains are discovered on federal land, work in the immediate  
 7 vicinity will cease, and DWR will contact the relevant representative of the federal agency  
 8 where the remains were discovered, as prescribed in 25 USC Section 3002(d) (NAGPRA).  
 9 After notification from the relevant agency representative and treatment of the remains as  
 10 required under NAGPRA, work may continue. Disposition of the remains will follow the  
 11 ownership priority described in NAGPRA (25 USC Section 3002[a]):
  - 12 ○ Where the lineal descendants can be found, the lineal descendants own the remains.
  - 13 ○ Where the lineal descendants cannot be found, the remains belong to the Indian tribe on  
 14 whose land the remains were found.
  - 15 ○ If the remains are discovered on other lands owned or controlled by the federal  
 16 government and the lineal descendants cannot be determined, the remains belong to the  
 17 Indian tribe that is culturally affiliated with the remains, or the tribe that aboriginally  
 18 occupied the land where the remains were discovered.
  - 19 ○ “Indian Tribe” here means federally recognized tribes identified in the list of such tribes  
 20 published by the Bureau of Indian Affairs in the *Federal Register* as well as in the tribal  
 21 directory compiled by the BIA.

22 The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Army Corps of  
 23 Engineers are entering into a PA with the California State Historic Preservation Officer for the  
 24 implementation of NHPA Section 106 for their undertakings associated with the BDCP. The  
 25 effects of Federal undertakings (actions) on historic properties (eligible for or listed on the  
 26 National Register of Historic Places) will be taken into account through the implementation of  
 27 this PA.

### 28 **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic** 29 **Architectural/Built-Environment Resources Resulting from Construction Activities**

30 Built-environment resources that may be affected by this alternative include resources identified  
 31 and evaluated in inventory efforts conducted for other projects and resources identified in surveys  
 32 for the BDCP. Some of resources are considered historic properties for the purposes of this analysis  
 33 because they meet the criteria in the NRHP regulations (36 CFR 60.4), as described below. For the  
 34 similar reasons some are considered historical resources under CEQA. As identified in Appendix  
 35 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-9, a total of 10  
 36 built-environment resources have the potential to be directly or indirectly affected by construction  
 37 of this alternative. Some of these resources have multiple contributing elements, as described in  
 38 Appendix 18B. The specific nature and location of the impact mechanism for each affected resource  
 39 is also described in Table 18B-9. The affected resources have been evaluated for the NRHP and  
 40 CRHR. The basis for the eligibility recommendations for each resource is provided in Appendix 18B,  
 41 in Section 18B.1.2, *Built Environment Resource Descriptions*.

## 1 Discussion of Anticipated Effects on Identified and Accessible Resources

2 The construction of intakes, transmission lines, RTM spoil areas and other features would result in  
 3 direct and indirect effects on identified and eligible resources. The exact effect mechanism for each  
 4 resource is described in Appendix 18B, *Identified Resources Potentially Affected by the BDCP*  
 5 *Alternatives*, in Table 18B-9. Facility redesign to avoid direct impacts on historic architectural  
 6 resources is preferred as mitigation if possible. However, it is unlikely that all identified resources  
 7 can be avoided because of the scale of the BDCP and the need to balance avoidance of other  
 8 important environmental resources such as wetlands, natural communities, and special-status  
 9 species habitat. These effects would materially impair the resources within the meaning of CEQA  
 10 and result in adverse effects within the meaning of Section 106 because they would diminish the  
 11 characteristics that convey the significance of the resources. Some direct demolition and indirect  
 12 effects such as setting changes are likely to occur even with mitigation. Therefore, these effects  
 13 would be adverse.

14 **NEPA Effects:** This alternative would result in direct and indirect effects on NRHP and CRHR eligible  
 15 built environment resources. These alterations may diminish the integrity of these resources. For  
 16 these reasons this effect would be adverse.

17 **CEQA Conclusion:** Several identified historic-era built-environment resources have been identified  
 18 in the footprint of this alternative (10 individual resources, as described in Appendix 18B, *Identified*  
 19 *Resources Potentially Affected by the BDCP Alternatives*, Table 18B-9). These resources have been  
 20 evaluated for the CRHR and qualify as historical resources under CEQA. Construction of conveyance  
 21 facilities may require demolition of the historic built-environment resources. Construction may also  
 22 result in permanent indirect effects such as changes to the setting. Direct demolition or changes to  
 23 the setting would be material alterations because they would either remove the resource or alter the  
 24 resource character, resulting in an inability of the resource to convey its significance. For these  
 25 reasons this would be a significant effect. Mitigation Measure CUL-5 may reduce these effects by  
 26 implementing protective measures and monitoring protocols for historic resources near the project  
 27 and capturing and preserving a description of the significant information and characteristics  
 28 associated with directly and adversely impacted resources, but cannot guarantee that effects would  
 29 be entirely avoided. The scale of the BDCP and the constraints imposed by other environmental  
 30 resources make avoidance of all significant effects unlikely. For these reasons, this impact remains  
 31 significant and unavoidable even with implementation of the following mitigation measures.

### 32 **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and Implement a Built** 33 **Environment Treatment Plan**

34 All mitigation will be undertaken by individuals who meet the Secretary of the Interior's  
 35 professional qualifications and have demonstrable experience conducting the following  
 36 recommended measures. In preparation of the built environment treatment measures relevant  
 37 parties will be consulted. Such parties may include but are not limited to the SHPO, the ACHP,  
 38 local historical societies, and other interested parties such as local preservation and community  
 39 organizations. DWR will perform the following measures as part of mitigation and monitoring  
 40 for compliance with CEQA. Appropriate federal agencies shall perform these measures as part of  
 41 their management responsibilities performed to satisfy Section 106 of the NHPA.

42 A BETP will be prepared by an architectural historian with demonstrated experience preparing  
 43 treatment for similar kinds of resources, and reviewed by relevant parties prior to any  
 44 demolition or ground-disturbing activity for all built-environment resources subject to adverse

1 effects or significant impacts. Recommended property specific mitigation is identified in  
 2 Appendix 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Tables 18B-17  
 3 through 18B-31 and shall be implemented in accordance with the specifics developed in the  
 4 BETP.

5 The following protective measures and monitoring protocols will be implemented for historic  
 6 resources in close proximity to the project but that are not anticipated to be directly affected by  
 7 demolition or construction but which may be subject to direct effects such as vibration or  
 8 inadvertent damage activities:

- 9 • HSR will be prepared for buildings and structures adjacent to the project for which detailed  
 10 information is required to develop protection measures. These will be done for buildings  
 11 and structures that appear to be in poor condition and, therefore, potentially sensitive to  
 12 construction-related activities such as vibration. Preconstruction stabilization or temporary  
 13 removal of these buildings may be necessary.
- 14 • Preconstruction condition assessments will be prepared for buildings and structures  
 15 adjacent to the project that are stable, but could be unintentionally damaged during  
 16 construction. Should there be any question as to whether or not the project caused damage,  
 17 these condition assessments will provide confirmation of the preconstruction condition.
- 18 • Precautions to protect built resources from construction vehicles, debris and dust may  
 19 include fencing or debris meshing. Temporary mothballing, and fire and intrusion  
 20 protection may be needed if the buildings are unoccupied during construction.
- 21 • Protective measures will be field checked as needed during construction by a qualified  
 22 architectural historian with demonstrated experience conducting monitoring of this nature.  
 23 Vibration monitoring may be required for buildings determined to be susceptible to  
 24 vibration damage that are in close proximity to construction activities or machinery that  
 25 cause vibration.
- 26 • These measures are designed to avoid direct effects such as vibration that may result in  
 27 structural damage or inadvertent direct effects such as demolition.
- 28 • Redesign of relevant facilities will be used to avoid destruction or damage where feasible.

29 For built resources that will be directly and adversely impacted, the BETP will specify resource-  
 30 specific treatment measures such as, but not limited to, the following examples of treatments  
 31 used to minimize effects on built-environment resources:

- 32 • HABS documentation will be prepared for CRHR and NRHP-eligible historic buildings and  
 33 structures that will be demolished (National Park Service 2000). These reports will include  
 34 written and photographic documentation of the significant and character-defining features  
 35 of these properties. These reports will minimize the adverse effect by capturing and  
 36 preserving a description of the significant information and characteristics associated with  
 37 the resource.
  - 38 ○ In recent years, the National Park Service and National Archives have issued directives  
 39 indicating that they will not accept formal submissions under the HABS program unless  
 40 the resource being documented is a rare, unusual, or exceptionally high-quality example  
 41 of its type, due to the huge volume of submissions generated by environmental  
 42 mitigation requirements. The BETP will indicate whether the HABS documentation will  
 43 be formally submitted to the National Park Service for review and approval, based on a

1 consideration of the rarity or caliber of the resource being mitigated, or instead will be  
2 prepared informally for distribution to local repositories or for re-use for interpretive or  
3 educational programs.

- 4 ○ For formal HABS documentation, reports are subject to review and approval by the  
5 National Park Service. Following approval, the BDCP lead agencies will produce  
6 sufficient copies for distribution to repositories identified in the BETP, including the  
7 Library of Congress, the California State Library, the University of California Water  
8 Resources Center Archives, and any local repositories, as appropriate and agreed upon  
9 with the SHPO and interested parties. Distribution will further enhance the mitigation of  
10 the adverse effect because it will ensure that the significance is retained and conveyed  
11 to a wide audience.

- 12 ○ For informal HABS documentation, report contents may be prepared in high-resolution  
13 digital format, rather than being produced to the high archival standards required by  
14 the National Park Service for formal submissions. The Lead Agencies will produce  
15 sufficient copies for distribution to repositories identified in the BETP, which may  
16 include the California State Library, the University of California Water Resources Center  
17 Archives, and any local repositories, as appropriate and agreed upon with the SHPO and  
18 interested parties.

- 19 ● As applicable, HALS records and HAER documents will be prepared for historic water-  
20 associated resources (National Park Service 2005). The levees and other CRHR and NRHP-  
21 eligible linear historic features will be recorded following HAER guidelines. Additionally the  
22 settings will be recorded following HALS guidelines. These reports will include written and  
23 photographic documentation of the significant and character-defining features of these  
24 properties. The HALS and HAER reports will minimize the adverse effect by capturing and  
25 retaining a description of the significant engineering and design information associated with  
26 the resource.

- 27 ○ In recent years, the National Park Service and National Archives have issued directives  
28 indicating that they will not accept formal submissions under the HALS and HAER  
29 programs unless the resource being documented is a rare, unusual, or exceptionally  
30 high-quality example of its type, due to the huge volume of submissions generated by  
31 environmental mitigation requirements. The BETP will indicate whether the HALS or  
32 HAER documentation will be formally submitted to the National Park Service for review  
33 and approval, based on a consideration of the rarity or caliber of the resource being  
34 mitigated, or instead will be prepared informally for distribution to local repositories or  
35 for re-use for interpretive or educational programs.

- 36 ○ Formal HALS/HAER submissions are subject to review and approval by the National  
37 Park Service. Following approval, the BDCP lead agencies will produce sufficient copies  
38 for distribution to repositories identified in the BETP, including the Library of Congress,  
39 the California State Library, the University of California Water Resources Center  
40 Archives, and any local repositories, as appropriate and agreed upon with the SHPO and  
41 interested parties. Distribution will further enhance the mitigation of the adverse effect  
42 because it will ensure that the significance is retained and conveyed to a wide audience.

- 43 ○ For informal HALS/HAER documentation, report contents may be prepared in high-  
44 resolution digital format, rather than being produced to the high archival standards  
45 required by the National Park Service for formal submissions. The Lead Agencies will

1 produce sufficient copies for distribution to repositories identified in the BETP, which  
 2 may include the California State Library, the University of California Water Resources  
 3 Center Archives, and any local repositories, as appropriate and agreed upon with the  
 4 SHPO and interested parties.

- 5 • Preparation of interpretive or educational media such as displays in public spaces, print  
 6 materials, or websites. Interpretive and educational media may incorporate written,  
 7 photographic, and archival documentation, such as those compiled for informal  
 8 HABS/HAER/HALS reports), oral history interviews, video, or animation to tell the story of  
 9 the heritage represented by the impacted resource. Interpretive media is an appropriate  
 10 mitigation for resources that are CRHR- or NRHP-eligible because they are associated with  
 11 events that have made a significant contribution to the broad patterns of California's history  
 12 and cultural heritage or that are associated with persons important in our past.
- 13 • Salvage of materials will be performed to the extent feasible to enable the restoration of  
 14 similar buildings, structures, or water-conveyance features outside of the area of direct  
 15 impact. Salvage will further minimize adverse effects by using salvaged materials to ensure  
 16 that similar resources are restored and maintained in manner that will ensure the  
 17 significance of the resource is preserved.
- 18 • Relocation of historic buildings that would otherwise be demolished.
- 19 • Following the Secretary of the Interior's standards to restore built resources outside of the  
 20 area of direct effect that are of the same type as resources that will be demolished by the  
 21 BDCP.
- 22 • Other appropriate treatment methods that are identified in relation to particular resources  
 23 that are affected.

24 The U.S. Fish and Wildlife Service U.S. Army Corps of Engineers is entering into a PA with the  
 25 California State Historic Preservation Officer for the implementation of NHPA Section 106 for  
 26 their undertakings associated with the BDCP. The effects of Federal undertakings (actions) on  
 27 historic properties (eligible for or listed on the National Register of Historic Places) will be taken  
 28 into account through the implementation of this PA.

### 29 **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic** 30 **Architectural/Built-Environment Resources Resulting from Construction Activities**

31 Because DWR does not have legal access to the majority of the footprint for this alternative,  
 32 inventory efforts in the entire footprint have not been completed. Nonetheless, the intensity of  
 33 activity in the Delta region during the historic era and a review of available data such as aerial  
 34 photographs suggest that numerous additional resources occur in the footprint that have not been  
 35 identified or which cannot currently be accessed and evaluated.

36 Review of available data such as aerial photographs, historic topographic maps, and assessors'  
 37 records also indicates that many of these inaccessible properties are 45 years of age or older and  
 38 have the potential to be eligible historic resources. Approximately 37 unevaluated built-  
 39 environment resources have been identified that may be subject to direct or indirect effects as a  
 40 result of the construction of this alternative (ICF 2013, see tables of inaccessible properties and  
 41 associated maps, one inaccessible property was determined NRHP-eligible and is not counted here  
 42 but included under CUL-5 for this alternative). Many of these resources are likely to be significant  
 43 because they may be associated with the important historical themes described above in Section

1 18.1.6, *Historic-Era Setting*. In addition, such resources may be associated with historically  
 2 significant persons, or may represent significant artistic values. Thus the resources may have  
 3 significance under both CEQA (State CEQA Guidelines Section 15064.5[a][3]) and the NRHP (30 CFR  
 4 60.4). In addition, because many of the historic-era structures in the Delta region are intact, and  
 5 retain their rural agricultural setting, many of these resources are likely to have integrity within the  
 6 meaning of CEQA and the NRHP (14 CCR Section 4852[c], 30 CFR 60.4). Because many unidentified  
 7 resources are likely to have significance and integrity, they may qualify as historical resources under  
 8 CEQA and historic properties under Section 106 of the NHPA.

### 9 **Anticipated Effects**

10 Construction may result in direct demolition of these resources, damage through vibration, or  
 11 indirect effects such as changes to the setting. While mitigation is available to reduce these effects,  
 12 this mitigation cannot guarantee that all effects would be avoided because mitigation cannot  
 13 guarantee that eligible resources would be avoided and that adverse changes to the setting would  
 14 not occur. The scale of the BDCP and other design constraints, such as the presence of other  
 15 important environmental resources, makes avoidance of all direct and indirect effects unlikely.  
 16 Therefore, this effect would be adverse.

17 Traditional cultural properties may also occur within the footprint of this alternative. These  
 18 resources consist of built environment features or activity areas that are important in the cultural  
 19 life of a living community. Examples of such resources include local gathering halls and Native  
 20 American traditional activity areas. Where these resources have both integrity of condition and  
 21 integrity of relationship, and meet the criteria for listing in the NRHP, they can qualify as historic  
 22 properties (National Park Service 1998:11–12). Resources that are NRHP-eligible would also be  
 23 historical resources under CEQA (California PRC Section 5024.1[d][1]) Construction has the  
 24 potential to directly or indirectly damage built-environment resources through demolition or  
 25 introduction of new inconsistent features into the setting. These changes would impair the ability of  
 26 the resources to convey their significance because the character defining elements or setting of the  
 27 resource would be lost. Therefore, impacts on these resources may be adverse.

28 **NEPA Effects:** This alternative may result in direct modification or indirect changes to the setting for  
 29 inaccessible and NRHP and CRHR-eligible resources. These changes may diminish the integrity of  
 30 these resources. For these reasons, this effect would be adverse.

31 **CEQA Conclusion:** The study area is sensitive for built-environment resources that have not yet  
 32 been recorded and evaluated because the majority of the area is legally inaccessible. Inventory  
 33 efforts have not gathered complete information in these inaccessible areas. Many of these resources  
 34 are likely to be associated with important historical themes or persons, or possess high creative  
 35 values; therefore, they are likely to have significance under CEQA and the NHPA. Because many of  
 36 these resources remain intact and retain their rural agricultural setting they are also likely to have  
 37 integrity under CEQA and the NHPA. Therefore, many are likely to qualify as historic properties or  
 38 historical resources under the NHPA and CEQA. Construction of conveyance facilities may require  
 39 demolition of the historic built-environment resources. Construction may also result in permanent  
 40 indirect effects such as changes to the setting. Direct demolition or changes to the setting would be  
 41 material alterations because they would either remove the resource or alter the resource character,  
 42 resulting in an inability of the resource to convey its significance. For these reasons this would be a  
 43 significant effect. Mitigation Measure CUL-6 may reduce these effects by ensuring that previously  
 44 inaccessible properties are properly inventoried so that impacts can be avoided to the extend

1 possible. However, the scale of the BDCP and the constraints imposed by other environmental  
 2 resources make avoidance of all significant effects unlikely. For these reasons this impact remains  
 3 significant and unavoidable even with implementation of the following mitigation measures.

4 **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 5 **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 6 **Develop Treatment to Resolve or Mitigate Adverse Impacts**

7 Because DWR does not have legal access to the majority of the footprint for this alternative, a  
 8 built resources inventory has not been completed for the entire footprint for this alternative.  
 9 Prior to construction, the BDCP proponents will ensure that an inventory and evaluation report  
 10 is completed within all areas where effects on built resources may occur. This subsequent  
 11 survey will be conducted in a manner consistent with the May–June 2012 survey.

- 12 ● The scope of the inventory will include the entire area where effects may occur that were  
 13 inaccessible or partially inaccessible in the first survey efforts. Such effects consist of direct  
 14 disturbance, damage through vibration, or changes to the setting.
- 15 ● The work will be led or supervised by architectural historians that meet the Secretary of the  
 16 Department of the Interior’s professional qualification standards provided in 36 CFR 61.
- 17 ● Inventory methods and evaluation will include pedestrian surveys, photographic  
 18 documentation, historical research using both primary and secondary sources, and  
 19 interviews and oral histories.
- 20 ● Newly identified resources will be mapped and described on forms provided by the DPR.  
 21 Mapping will be performed by recording data points with GPS hardware that can be  
 22 imported and managed digitally.
- 23 ● For all identified resources, DWR will evaluate the resources to determine if they are any of  
 24 the following.
  - 25 ○ Historical resources (State CEQA Guidelines Section 15064.5[a])
  - 26 ○ Significant historic resources under CEQA (California PRC Section 21084.1)
  - 27 ○ Historic properties (36 CFR 60.4)
  - 28 ○ Eligible for local registers
- 29 ● The recorded resources and the resource evaluations will be summarized in an inventory  
 30 report. In the inventory report, DWR will also determine if individual resources qualifying as  
 31 historical resources or historic properties will be subject to significant effects. DWR will  
 32 make such a finding if the BDCP would result in the following.
  - 33 ○ Demolish or materially alter the qualities that make the resource eligible for listing in  
 34 the CRHR (State CEQA Guidelines Section 15064.5[b][2][A],[C]).
  - 35 ○ Demolish or materially alter the qualities that justify the inclusion of the resource on a  
 36 local register or its identification in an historical resources survey meeting the  
 37 requirements of California PRC Section 5024.1(g), unless DWR establishes by a  
 38 preponderance of evidence that the resource is not historically or culturally significant  
 39 (State CEQA Guidelines Section 15064.5[b][2][B]).

- 1           ○ Alter, directly or indirectly, the qualities that make a resource eligible for listing in the
- 2           NRHP (36 CFR 800.5[a][1]).
- 3           ○ Cause a substantial adverse change in the significance of an historical resource
- 4           (California PRC Section 21084.1).

5           Where built-environment resources that are listed or qualify for listing in the CRHR or NRHP, or  
 6           that have been designated as locally significant, or are otherwise identified by DWR as historical  
 7           resources will be subject to significant effects, DWR will prepare a BETP. The treatment plan will  
 8           provide detailed descriptions of treatment measures that will be implemented to avoid, protect,  
 9           minimize, and mitigate adverse effects on historic properties in accordance with the Secretary of  
 10          the Interior's Standards for the Treatment of Historic Properties (36 CFR 68) and the National  
 11          Park Service's Guidelines for the Treatment of Cultural Landscapes. The treatment plan will  
 12          describe work to be done prior to, during, and after construction.

- 13          ● Where feasible, in light of costs, logistics, technological and environmental considerations,  
 14          and the extent to which avoidance is consistent with the objectives of the project, DWR will  
 15          first seek to avoid demolition or materially altering the historical resource by avoidance  
 16          measures, such as the following.
  - 17           ○ Construction condition assessments or HSRs of properties adjacent to construction to  
 18           determine if these properties are at risk of being damaged.
  - 19           ○ Redesign of relevant facilities to avoid destruction or damage.
  - 20           ○ Determination of tolerable levels of construction vibration
  - 21           ○ Stabilization design and implementation to ensure fragile built resources are not  
 22           damaged by construction activities
  - 23           ○ Temporarily moving built resources, or other measures determined appropriate.
- 24          ● If avoidance is not feasible, DWR will implement treatment measures such as, but not  
 25          limited to the following examples of treatments used to minimize effects on built-  
 26          environment resources.
  - 27           ○ Redesign of relevant facilities to minimize the scale or extent of damage to eligible or  
 28           listed built resources.
  - 29           ○ Design standards to minimize the visual impact and to ensure context-appropriate  
 30           design.
  - 31           ○ Complete documentation in accordance with HABS/HAER/HALS programs, including  
 32           written and photographic documentation of the significant qualities of the CRHR and  
 33           NRHP listed and determined eligible districts or individually eligible resources (where  
 34           resources cannot be avoided).
  - 35           ○ Relocation of historic buildings that would otherwise be demolished.
  - 36           ○ Following the Secretary of the Interior's standards to restore built resources outside of  
 37           the area of direct effect that are of the same type as resources that will be demolished by  
 38           the BDCP.
  - 39           ○ Other appropriate treatment methods that are identified in relation to particular  
 40           resources that are affected.

1 The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Army Corps of  
 2 Engineers are entering into a PA with the California State Historic Preservation Officer for the  
 3 implementation of NHPA Section 106 for their undertakings associated with the BDCP. The  
 4 effects of Federal undertakings (actions) on historic properties (eligible for or listed on the  
 5 National Register of Historic Places) will be taken into account through the implementation of  
 6 this PA.

### 7 **Impact CUL-7: Effects of Other Conservation Measures on Cultural Resources**

8 This impact describes the potential effects of other conservation measures at a program level of  
 9 detail, with the exception of *CM1 Water Facilities and Operation*. The following conservation  
 10 measures would not result in impacts on cultural resources because they consist of changes to  
 11 existing activities, or planning and regulatory actions that do not have the potential to result in  
 12 ground-disturbing work with effects on cultural resources.

- 13 • *CM11: Natural Communities Enhancement and Management*
- 14 • *CM12: Methylmercury Management*
- 15 • *CM13: Invasive Aquatic Vegetation Control*
- 16 • *CM14: Stockton Deep Water Ship Channel Dissolved Oxygen Levels*
- 17 • *CM15: Predator Control*
- 18 • *CM16: Nonphysical Fish Barriers*
- 19 • *CM17: Illegal Harvest Reduction*
- 20 • *CM19: Urban Stormwater Treatment*
- 21 • *CM20: Recreational Users Invasive Species Program*
- 22 • *CM21: Nonproject Diversions*

23 Implementation of the remaining conservation measures could result in effects on prehistoric and  
 24 historic archaeological resources, as well as TCPs and the built environment because the scope of  
 25 conservation actions includes large areas of land, and the areas identified for potential restoration  
 26 or other conservation actions are sensitive for cultural resources, including prehistoric and historic  
 27 archaeological sites as well as human remains, architectural resources, and rural historic  
 28 landscapes. Specific conservation actions that would result in foreseeable ground-disturbing work  
 29 that could alter or impair the significance of NRHP-, CRHR-, or local registry-eligible cultural  
 30 resources are listed below.

- 31 • *CM2: Yolo Bypass Fisheries Enhancement*
- 32 • *CM3: Natural Communities Protection and Restoration*
- 33 • *CM4: Tidal Natural Communities Restoration*
- 34 • *CM5: Seasonally Inundated Floodplain Restoration*
- 35 • *CM6: Channel Margin Enhancement*
- 36 • *CM7: Riparian Natural Community Restoration*
- 37 • *CM8: Grassland Natural Community Restoration*

- 1 • *CM9: Vernal Pool Complex Restoration*
- 2 • *CM10: Nontidal Marsh Restoration*
- 3 • *CM18: Conservation Hatcheries*

4 These measures would result in effects on cultural resources when ground-disturbing work is  
 5 performed to construct improvements and enhance or restore natural communities. Direct effects  
 6 would occur through demolition or destruction of NRHP-, CRHR-, and/or local registry-eligible  
 7 prehistoric and historic archaeological sites, unique archaeological sites, TCPs, human remains, and  
 8 built-environment resources. Indirect effects may occur where changes to the setting alter the  
 9 existing setting in a manner that is inconsistent with the feeling and association of the resource.  
 10 Because the ability of the resources to convey their significance would be lost this effect would  
 11 materially alter these resources under CEQA and would be adverse under NEPA. For example,  
 12 reclaimed agricultural landscapes that are converted to habitat may no longer convey the themes of  
 13 agriculture and settlement, and thus would be inconsistent with remaining features associated with  
 14 rural historic landscapes created by reclamation, cultivation, and ranching.

15 Mitigation Measure CUL-7 below addresses this effect. However, because of the large acreages of  
 16 land included in all conservation measures that would be implemented under this alternative, it is  
 17 unlikely that all effects on NRHP-, CRHR-, and /or local registry-eligible resources and unique  
 18 archaeological sites could be avoided. Therefore, this impact would be adverse.

19 **NEPA Effects:** Implementation of conservation measures will result in ground disturbing work and  
 20 introduction of new infrastructure to the Plan Area. These physical modifications may result in  
 21 direct effects on NRHP and CRHR eligible resources. These changes may therefore reduce the  
 22 integrity of these resources. For these reasons these effects would be adverse.

23 **CEQA Conclusion:** Construction and implementation of conservation measures would result in  
 24 ground-disturbing work that could alter the significant characteristics of NRHP, CRHR, and/or local  
 25 registry-eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and  
 26 built-environment resources such as historic architectural structures and rural historic landscapes.  
 27 The same construction may damage unique archaeological sites. This construction would likely  
 28 result in materially adverse changes for the following reasons.

- 29 • Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
 30 contain data useful in research, thus diminishing or destroying the basis for the significance of  
 31 the resource.
- 32 • Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
 33 built-environment resources, resulting in an inability of the resource to convey its significance.
- 34 • Ground-disturbing construction may either directly demolish or change the setting of TCPs  
 35 resulting in an inability of the resource to convey its significance.
- 36 • Ground-disturbing construction may inadvertently disturb human remains.

37 The alteration of a resource that changes the characteristics that convey its significance is a material  
 38 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
 39 CEQA under the Appendix G checklist. Because this construction would materially alter these  
 40 categories of resources and disturb human remains it would result in a significant impact. Mitigation  
 41 is available to reduce these impacts by identifying and evaluating resources, avoiding resources  
 42 where possible, and developing treatment where avoidance is not possible. In addition construction

1 would be monitored. However, because of the acreage associated with the proposed restoration  
 2 under conservation measures, as well as the multiple constraints associated with other  
 3 environmental resources that require mitigation or avoidance, it is unlikely that all cultural  
 4 resources could be avoided. Therefore, this impact remains significant and unavoidable.

5 **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
 6 **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
 7 **Implementation of CM2-21**

8 As part of the design process for all Environmental Commitments other than water conveyance  
 9 construction that could involve adverse effects on cultural resources within the meaning of  
 10 NEPA, or significant impacts on cultural resources within the meaning of CEQA, The project  
 11 proponents will conduct additional site-specific cultural resource studies and develop site-  
 12 specific strategies for addressing impacts on cultural resources. The cultural resource studies  
 13 will include the following steps.

- 14 • Record searches at the relevant information centers of the CHRIS to retrieve records of  
 15 identified resources. Inventories will consist of surveys using both historical and map  
 16 research as well as field-inspection. Evaluation will consist of assessment of identified  
 17 resources to determine if they have both significance and integrity sufficient to qualify for  
 18 the CRHR, and NRHP, as well as any relevant local registers.
- 19 • Cultural resource inventories and evaluations that identify archaeological resources and  
 20 built-environment resources.
- 21 • Correspondence or discussion with the Native American contacts on file with the NAHC and  
 22 relevant tribes from the list of relevant federally recognized tribes that qualify as *Indian*  
 23 *tribes*, as used in 36 CFR 800.16(m), maintained by the BIA, in order to identify resources  
 24 that may be known to the Native American community, and to incorporate their preferences  
 25 for treatment and management.
- 26 • Resource-specific evaluations that apply the criteria to determine if the identified resources  
 27 qualify as historical resources (State CEQA Guidelines Section 15064.5[a]) or unique  
 28 archaeological resources under CEQA (California PRC Section 21083.2[g]), historic  
 29 properties (36 CFR 60.4), or are eligible for local registers.
- 30 • Resource-specific treatment for historical resources, unique archaeological resources, and  
 31 historic properties that would be materially impaired as defined in CEQA (State CEQA  
 32 Guidelines Section 15064.5[b][1]) or adversely affected, as defined in the Section 106  
 33 regulations (36 CFR 800.5[a][1]).

34 Treatment and mitigation will include the following elements and steps.

- 35 • Treatment for archaeological resources qualifying as historical resources that are subject to  
 36 significant effects will follow the order of preference described in State CEQA Guidelines  
 37 Section 15126.4[b][3].
- 38 • Treatment for unique archaeological resources subject to significant effects will conform to  
 39 the mitigation prescribed under CEQA (California PRC Section 21083.2[b])
- 40 • Treatment for historic properties subject to adverse effects will seek to avoid or minimize  
 41 the consequences of the BDCP that would diminish the characteristics that make the historic  
 42 property eligible for inclusion in the NRHP.

- 1           • Treatment plans or mitigation measures in environmental documents will include  
2 monitoring and discovery plans that provide for observation of construction to avoid  
3 inadvertent effects on previously unidentified human remains and cultural resources, to the  
4 extent feasible.
- 5           • Treatment plans or mitigation measures in environmental documents will also include the  
6 notification and consultation provisions required for discoveries of human remains  
7 provided in California Health and Safety Code Section 7050.5 and California PRC Section  
8 5097.98.
- 9           • If Native American human remains are discovered on federal land, work in the immediate  
10 vicinity will cease and DWR will contact the relevant representative of the federal agency  
11 where the remains were discovered, as prescribed in 25 USC Section 3002(d) (NAGPRA).  
12 After notification from the relevant agency representative and treatment of the remains as  
13 required under NAGPRA, work may continue. Disposition of the remains will follow the  
14 ownership priority described in NAGPRA (25 USC Section 3002[a]).
- 15           • For federal agency undertakings, management will be coordinated through a PA and  
16 memoranda of agreement, as described above in 18.2.1.3, *Compliance with Section 106 of the*  
17 *National Historic Preservation Act*.

18           The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Army Corps of  
19 Engineers are entering into a PA with the California State Historic Preservation Officer for the  
20 implementation of NHPA Section 106 for their undertakings associated with the BDCP. The  
21 effects of Federal undertakings (actions) on historic properties (eligible for or listed on the  
22 National Register of Historic Places) will be taken into account through the implementation of  
23 this PA.

#### 24           **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Other** 25 **Conservation Measures with Plans and Policies**

26           Constructing the proposed water conveyance facilities (CM1) and implementing CM2–CM21 could  
27 result in the potential for incompatibilities with plans and policies adopted to protect the cultural  
28 resources of the Delta. A number of plans and policies that coincide with the study area provide  
29 guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local*  
30 *Plans, Policies, and Regulations*. This overview of plan and policy compatibility evaluates whether  
31 Alternative 4 is compatible or incompatible with these policies, rather than whether impacts are  
32 adverse or not adverse or significant or less than significant. The physical and indirect effects of the  
33 alternatives on cultural resources are address in Impacts CUL-1 through CUL-7, as described for  
34 each alternative. The following comparison analyzes the compatibility of the BDCP with the cultural  
35 resource preservation plans and policies of the cities and counties in the region that have adopted  
36 such policies. In general, these policies fall into two categories; policies that emphasize preservation  
37 *or* mitigation for effects on significant cultural resources, and policies that specifically emphasize or  
38 favor preservation as the preferred management method. For policies that emphasize preservation  
39 *or* mitigation the BDCP will be compatible with these policies because significant cultural resources  
40 will be avoided where feasible, and mitigation will be implemented to reduce effects where  
41 avoidance and preservation is not feasible. For policies that emphasize preservation the BDCP is  
42 incompatible in some instances because multiple constraints governing the location of proposed  
43 facilities makes preservation of all significant cultural resources unlikely.

- 1       • The Alameda County East Area Plan requires that Alameda County design development to avoid  
2       cultural resources that contribute to the heritage of the County, or in the alternative to include  
3       mitigation to offset impacts to those resources (Alameda County 2000:36). Because the BDCP  
4       includes mitigation measures requiring identification of cultural resources, evaluation for the  
5       CRHR and NRHP, and mitigation to reduce unavoidable effects, the BDCP would be compatible  
6       with this policy.
- 7       • The Contra Costa County General Plan encourages identification and preservation of important  
8       cultural resources, preferably in public ownership. While other general plans and policies  
9       typically encourage preservation or mitigation, the Contra Costa County General Plan  
10      emphasizes preservation (Contra Costa County 2005: 9-11). While the BDCP will require  
11      identification, evaluation, and mitigation to the extent feasible, the preservation of all affected  
12      cultural resources is infeasible because conflicting constraints such as the location of other  
13      significant environmental resources make such avoidance unlikely in every instance. For this  
14      reason, the BDCP is not compatible with the Contra Costa County General Plan.
- 15      • San Joaquin County has adopted cultural resource protection policies as part of their general  
16      plan (San Joaquin County 1992:VI-37). These policies require identification of cultural resources  
17      prior to construction where feasible, and assessment of resources identified during construction  
18      so that appropriate mitigation may be implemented. The BDCP would be compatible with these  
19      policies because cultural resource inventories are in progress for the BDCP, and this section  
20      identifies mitigation measures and consultation that will be conducted to manage effects on  
21      cultural resources.
- 22      • The Sacramento County General Plan includes policies encouraging preservation of important  
23      buildings, bridges, and other important structures (Sacramento County 2011:80). The General  
24      Plan requires that projects involving structures or districts of architectural importance are  
25      referred to the Cultural Resources Committee of the County to recommend appropriate  
26      mitigation. The BDCP would be potentially incompatible with these policies because the scale of  
27      the project and the constraints associated with mitigation and avoidance for other resources  
28      makes protection and avoidance of all significant architectural resources unlikely.
- 29      • The Solano County General Plan encourages identification and preservation of important  
30      archaeological and built-environment resources (Solano County 2008:RS-43). The BDCP would  
31      be potentially incompatible with these policies because the scale of the project and the  
32      constraints associated with mitigation and avoidance for other resources makes protection and  
33      avoidance of all significant architectural resources unlikely.
- 34      • The Yolo County General Plan requires identification of important cultural resources,  
35      consultation with Native Americans that attach significance to these resources, and avoidance or  
36      mitigation for important cultural resources affected by development (County of Yolo 2009a:CO-  
37      55 to CO-56). The General Plan also requires that permitted land uses in the Primary Zone of the  
38      Delta are consistent with the policies of the Land Use and Resource Management Plan of the  
39      Delta Protection Commission, but these policies do not have specific provisions for cultural  
40      resources. The BDCP would be compatible with these policies because cultural resource  
41      inventories are in progress for the BDCP, and this section identifies mitigation measures and  
42      consultation that will be conducted to manage effects on cultural resources.
- 43      • The Yolo County General Plan also encourages the preservation and protection of cultural  
44      resources where feasible and consultation with Native American tribes (County of Yolo  
45      2009a:CO-55). The plan specifically encourages identification efforts, avoidance and mitigation

1 to the maximum extent feasible, and consultation with tribes that attach significance to those  
 2 resources. Because the BDCP includes mitigation measures requiring identification of cultural  
 3 resources, evaluation for the CRHR and NRHP, consultation with Native American individuals  
 4 and organizations, and mitigation to reduce unavoidable effects, the BDCP would be compatible  
 5 with this policy.

6 It should be noted that, as described in Chapter 13, *Land Use*, Section 13.2.3, state and federal  
 7 agencies are not subject to local land use regulations. Furthermore, policy incompatibility, by itself is  
 8 not a physical impact on the environment.

9 **NEPA Effects:** Because federal agencies are not regulated by local land use policy, implementation of  
 10 Alternative 4 would not result in a conflict with local land use laws.

11 **CEQA Conclusion:** The Plan Area is governed by cultural resource management policies adopted by  
 12 the various counties with jurisdiction in this region. For policies that emphasize preservation or  
 13 mitigation the BDCP will be compatible with these policies because DWR and appropriate federal  
 14 agencies will implement cultural resource management practices that will identify significant  
 15 resources, preserve such resources where feasible, and complete mitigation to reduce significant  
 16 effects where preservation is not feasible. For policies that emphasize preservation the BDCP is  
 17 incompatible in some instances because multiple constraints governing the location of proposed  
 18 facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as  
 19 described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local  
 20 land use regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 21 environment.

### 22 **18.3.5.10 Alternative 5—Dual Conveyance with Pipeline/Tunnel and** 23 **Intake 1 (3,000 cfs; Operational Scenario C)**

#### 24 **Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of** 25 **Conveyance Facilities**

##### 26 **Identified Resources**

27 Record searches at the CHRIS and inventory efforts for the BDCP have identified five previously  
 28 recorded archaeological sites in the footprint of this alternative (Appendix 18B, *Identified Resources*  
 29 *Potentially Affected by the BDCP Alternatives*, Table 18B-1). Detailed site descriptions summarizing  
 30 available information regarding these resources, are provided in Appendix 18B, Section 18B.1.1,  
 31 *Archaeological Site Descriptions*. Two of these sites have documented human remains.

32 The resources are distributed evenly across the alignment, but are somewhat clustered where  
 33 construction of large above-ground features would occur, such as the northern end of the alignment,  
 34 at the intermediate forebay, and at the southern end of the alignment.

##### 35 **Significance of Identified Archaeological Resources**

36 The resources affected by this alternative have likely have significance and integrity within the  
 37 meaning of the NRHP and CRHR for the same reasons described above under Alternative 1A.

## 1 Anticipated Effects on Identified Resources

2 Ground-disturbing construction is likely to disturb the deposits and thus materially alter their  
 3 ability to convey their significance. Much of the data potential in archaeological resources exists in  
 4 the spatial associations of different artifacts and other cultural material. Where artifacts that have  
 5 known associations with particular time periods occur adjacent to other material such as faunal  
 6 bone or plant remains from subsistence activity, the proximity of the materials allows an inference  
 7 as to the age of the subsistence remains, thereby allowing researchers to infer particular subsistence  
 8 strategies during different prehistoric periods. Intrusive ground-disturbing construction, vibration,  
 9 and other physical disturbance may disrupt these associations and thus disrupt the qualities for  
 10 which the sites may qualify as historical resources or historic properties. In addition, because not all  
 11 identified resources are legally accessible, these resources may be significant for other reasons than  
 12 their data potential. Indirect effects such as introduction of changes to the setting associated with  
 13 construction of new features or creation of new sources of noise (also a change to the setting) may  
 14 diminish the basis for the significance of these resources. For these reasons, construction has the  
 15 potential to materially impair these resources under CEQA and to adversely affect the resources as  
 16 defined by Section 106 of the NHPA. This effect would be adverse.

17 **NEPA Effects:** Construction may disturb NRHP and CRHR-eligible archaeological resources and  
 18 damage these resources. This damage may impair the integrity of these resources and thus reduce  
 19 their ability to convey their significance. For these reasons this effect would be adverse.

20 **CEQA Conclusion:** Construction of conveyance facilities would affect identified five archaeological  
 21 resources that occur in the footprint of this alternative. DWR identified these resources and finds  
 22 that they are likely to qualify as historical resources under CEQA (see the individual site descriptions  
 23 in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*); these resources thus have the  
 24 potential to qualify as historical resources. Therefore, these sites are considered historic resources  
 25 for the purposes of CEQA. This impact would be significant because construction could materially  
 26 alter or destroy the potential of these resources to yield information useful in archaeological  
 27 research, the basis for the significance of these resources, through excavation and disruption of the  
 28 spatial associations that contain meaningful information. Identified but currently inaccessible  
 29 resources may also be significant under other register criteria; indirect effects such as introduction  
 30 of new inconsistent changes to the setting may also diminish the significance of these resources.  
 31 Mitigation Measure CUL-1 would reduce this impact by recovering scientifically important material  
 32 prior to construction through the sensitive area, but would not guarantee that all of the scientifically  
 33 important material would be retrieved because feasible archaeological excavation only typically  
 34 retrieves a sample of the deposit, and portions of the site may remain after treatment with  
 35 important information. Construction could damage these remaining portions of the deposit.  
 36 Therefore, this impact is significant and unavoidable.

### 37 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery** 38 **Excavations on the Affected Portion of the Deposits of Identified and Significant** 39 **Archaeological Sites**

40 Please refer to Mitigation Measure CUL-1 under Alternative 1A.

1     **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory**  
 2     **Efforts**

3     This impact is substantially similar to Impact CUL-2 described under Alternative 1A. While only one  
 4     intake would be constructed, slightly reducing the footprint, the overall potential for effects on  
 5     archaeological resources is similar.

6     Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 7     resources by disrupting the spatial associations that convey data useful in research or changing the  
 8     setting such that the resource no longer contains its significance. The locations of various features  
 9     such as intakes, forebays, and tunnels shaft locations are depicted in Mapbook Figure M3-1 in  
 10    Chapter 3, *Description of Alternatives*. These impacts would thus materially impair these resources  
 11    within the meaning of CEQA and adversely affect the resources within the meaning of Section 106 of  
 12    the NHPA because this disturbance would impair the ability of these resources to yield data useful in  
 13    research. While Mitigation Measure CUL-2 would reduce these effects, it cannot guarantee all effects  
 14    would be avoided because relocation of proposed facilities to avoid all resources is unlikely. These  
 15    effects would remain adverse.

16    **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 17    sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
 18    their integrity. For these reasons this effect would be adverse.

19    **CEQA Conclusion:** The footprint for this alternative is sensitive for both prehistoric and historic-era  
 20    resources that cannot be identified at this time because much of the footprint is not legally  
 21    accessible. Because many of these resources are likely to have data useful in prehistoric and historic  
 22    archaeological research, as well as the integrity to convey this significance, they are likely to qualify  
 23    as historical resources or unique archaeological sites under CEQA or historic properties under the  
 24    Section 106 of the NHPA. Ground-disturbing construction may materially alter the significance of  
 25    these resources by disrupting the spatial associations that could yield important data, resulting in a  
 26    significant effect. While mitigation is available (Mitigation Measure CUL-2), this mitigation cannot  
 27    guarantee that all eligible or significant resources would be preserved in place, or that all important  
 28    data would be retrieved before construction destroys these resources. The scale of the BDCP,  
 29    investment into existing designs, and the presence of other important environmental resources such  
 30    as habitat, natural communities, and wetlands that should be avoided are constraints on the  
 31    flexibility and feasibility of avoidance. For these reasons this impact is significant and unavoidable.

32           **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of**  
 33           **Archaeological Resources**

34           Please refer to Mitigation Measure CUL-2 as described under Alternative 1A.

35     **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory**  
 36     **Efforts**

37     This impact is substantially similar to Impact CUL-3 described under Alternative 1A. While only one  
 38     intake would be constructed, slightly reducing the footprint, the overall potential for effects on  
 39     unidentified archaeological resources is similar.

40     Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 41     resources by disrupting the spatial associations that convey data useful in research or changing the  
 42     setting such that the resource no longer contains its significance. These impacts would thus

1 materially impair these resources within the meaning of CEQA and adversely affect the resources  
 2 within the meaning of Section 106 of the NHPA because this disturbance would impair the ability of  
 3 these resources to yield data useful in research. Mitigation Measure CUL-3 would reduce these  
 4 effects, but cannot guarantee that all effects would be avoided because inadvertent disturbance of  
 5 some resources is inevitable given the scale of the proposed construction. These effects would  
 6 therefore remain adverse.

7 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 8 sites that also may not necessarily be identified prior to construction. While cultural resource  
 9 inventories will be completed once legal access is secured, no inventory can ensure that all  
 10 resources are identified prior to construction. Because these sites may qualify for the NRHP or  
 11 CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
 12 adverse.

13 **CEQA Conclusion:** This impact would be significant. Construction has the potential to disturb  
 14 previously unidentified archaeological sites qualifying as historical resources, historic properties, or  
 15 unique archaeological resources. Because direct excavation, compaction, or other disturbance may  
 16 disrupt the spatial associations that contain scientifically useful information it would alter the  
 17 potential basis for eligibility, thus materially altering the resource and resulting in a significant  
 18 effect. Because these resources would not be identified prior to construction, they cannot be  
 19 recorded and effects cannot be managed through construction treatment. Mitigation Measures CUL-  
 20 3 would reduce but not entirely avoid the potential for this impact, by implementing construction  
 21 worker training, monitoring and discovery protocols. However, because archaeological resources  
 22 may not be identified prior to disturbance through these measures, the effect cannot be entirely  
 23 avoided. Therefore, this impact would remain significant and unavoidable.

24 **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
 25 **Perform Training of Construction Workers, and Conduct Construction Monitoring**

26 Please refer to Mitigation Measure CUL-3 as described under Alternative 1A.

27 **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

28 The footprint of this alternative is sensitive for buried human remains that may occur in isolation,  
 29 rather than as part of prehistoric or historic archaeological sites. This sensitivity and the impact  
 30 mechanisms are substantially similar to the sensitivity and impact mechanisms described under  
 31 Alternative 1A. While only one intake would be constructed, slightly reducing the footprint, the  
 32 overall potential for effects on buried human remains is similar.

33 Ground-disturbing construction has the potential to damage and disinter buried human remains,  
 34 resulting in an adverse effect. While mitigation is available under Mitigation Measure CUL-4 to  
 35 reduce this effect, it cannot guarantee that this effect would be avoided entirely, therefore this effect  
 36 remains adverse.

37 **NEPA Effects:** Buried human remains may be damaged by this alternative because such remains  
 38 may occur either in isolation or as part of identified and previously unidentified archaeological  
 39 resources where construction will occur. This effect would be adverse.

40 **CEQA Conclusion:** This impact would be significant. The project area is sensitive for buried human  
 41 remains. Construction would likely result in disturbance of these features. Disturbance of human  
 42 remains, including remains interred outside of cemeteries is considered a significant impact in the

1 CEQA Appendix G checklist; therefore disturbance of these remains would result in a significant  
 2 effect. Mitigation measures would reduce the severity of this impact, but not to a less-than-  
 3 significant level because mitigation would not guarantee that these features could be discovered and  
 4 treated in advance of construction; the scale of construction makes it technically and economically  
 5 infeasible to perform the level of sampling necessary to identify all such resources prior to  
 6 construction. Therefore, this impact is considered significant and unavoidable.

7 **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if**  
 8 **Such Resources Are Discovered during Construction**

9 Please refer to Mitigation Measure CUL-4 as described under Alternative 1A.

10 **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic**  
 11 **Architectural/Built-Environment Resources Resulting from Construction Activities**

12 Built-environment resources that may be affected by this alternative include resources identified  
 13 and evaluated in inventory efforts conducted for other projects and resources identified in surveys  
 14 for the BDCP. Some of resources are considered historic properties for the purposes of this analysis  
 15 because they meet the criteria in the NRHP regulations (36 CFR 60.4), as described below. For the  
 16 similar reasons some are considered historical resources under CEQA. As identified in Appendix  
 17 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-10, a total of 17  
 18 built-environment resources have the potential to be directly or indirectly affected by construction  
 19 of this alternative. The specific nature and location of the impact mechanism for each affected  
 20 resource is also described in Table 18B-10. The affected resources have been evaluated for the  
 21 NRHP and CRHR. The basis for the eligibility recommendations for each resource is provided in  
 22 Appendix 18B, in Section 18B.1.2, *Built Environment Resource Descriptions*.

23 **Discussion of Anticipated Effects on Identified and Accessible Resources**

24 As with other tunnel alternatives, construction of intakes, RTM areas, transmission lines, and other  
 25 features would result in direct and indirect effects. The exact effect mechanism for each resource is  
 26 described in Appendix 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, in  
 27 Table 18B-10. Facility redesign to avoid direct impacts on historic architectural resources is  
 28 preferred as mitigation if possible. However, it is unlikely that all identified resources can be  
 29 avoided because of the scale of the BDCP and the need to balance avoidance of other important  
 30 environmental resources such as wetlands, natural communities, and special-status species habitat.  
 31 These effects would materially impair the resources within the meaning of CEQA and result in  
 32 adverse effects within the meaning of Section 106 because they would diminish the characteristics  
 33 that convey the significance of the resources. Some direct demolition and indirect effects such as  
 34 setting changes are likely to occur even with mitigation. Therefore, these effects would be adverse.

35 **NEPA Effects:** This alternative would result in direct and indirect effects on NRHP and CRHR eligible  
 36 built environment resources. These alterations may diminish the integrity of these resources. For  
 37 these reasons this effect would be adverse.

38 **CEQA Conclusion:** Several identified historic-era built-environment resources have been identified  
 39 in the footprint of this alternative (17 individual resources, as described in Appendix 18B, *Identified*  
 40 *Resources Potentially Affected by the BDCP Alternatives*, Table 18B-10). Construction of conveyance  
 41 facilities may require demolition of the historic built-environment resources. These resources have  
 42 been evaluated for the CRHR and qualify as historical resources under CEQA. Construction may also

1 result in permanent indirect effects such as changes to the setting. Direct demolition or changes to  
 2 the setting would be material alterations because they would either remove the resource or alter the  
 3 resource character, resulting in an inability of the resource to convey its significance. For these  
 4 reasons this would be a significant effect. Mitigation described below may reduce these effects, but  
 5 cannot guarantee they would be entirely avoided. The scale of the BDCP and the constraints  
 6 imposed by other environmental resources make avoidance of all significant effects unlikely. For  
 7 these reasons this impact remains significant and unavoidable even with implementation of the  
 8 following mitigation measures.

9 **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and implement a Built**  
 10 **Environment Treatment Plan**

11 Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 1A

12 **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic**  
 13 **Architectural/Built-Environment Resources Resulting from Construction Activities**

14 The footprint of this alternative is sensitive for unidentified and unevaluated built-environment  
 15 resources that may have significance and integrity for the same reasons described under Alternative  
 16 1A. Approximately 71 unevaluated built-environment resources have been identified that may be  
 17 subject to direct or indirect effects as a result of the construction of this alternative (ICF 2012, see  
 18 tables of inaccessible properties and associated maps).

19 **Anticipated Effects**

20 Construction may result in direct demolition of these resources, damage through vibration, or  
 21 indirect effects such as changes to the setting. While mitigation is available to reduce these effects,  
 22 this mitigation cannot guarantee that all effects would be avoided because mitigation cannot  
 23 guarantee that eligible resources would be avoided and that adverse changes to the setting would  
 24 not occur. Construction has the potential to directly or indirectly damage built-environment  
 25 resources through demolition or introduction of new inconsistent features into the setting. These  
 26 changes would impair the ability of the resources to convey their significance because the character  
 27 defining elements or setting of the resource would be lost. Therefore, impacts on these resources  
 28 may be adverse.

29 **NEPA Effects:** This alternative may result in direct modification or indirect changes to the setting for  
 30 inaccessible and NRHP and CRHR-eligible built environment resources. These changes may diminish  
 31 the integrity of these resources. For these reasons, this effect would be adverse.

32 **CEQA Conclusion:** The study area is sensitive for built-environment resources that have not yet  
 33 been recorded and evaluated because the majority of the area is legally inaccessible. Inventory  
 34 efforts have not gathered complete information in these inaccessible areas. Many of these resources  
 35 are likely to be associated with important historical themes or persons, or possess high creative  
 36 values; therefore, they are likely to have significance under CEQA and the NHPA. Because many of  
 37 these resources remain intact and retain their rural agricultural setting they are also likely to have  
 38 integrity under CEQA and the NHPA. Therefore, many are likely to qualify as historic properties or  
 39 historical resources under the NHPA and CEQA. Construction of conveyance facilities may require  
 40 demolition of the historic built-environment resources. Construction may also result in permanent  
 41 indirect effects such as changes to the setting. Direct demolition or changes to the setting would be  
 42 material alterations because they would either remove the resource or alter the resource character,

1 resulting in an inability of the resource to convey its significance. For these reasons this would be a  
 2 significant effect. Mitigation described below may reduce these effects, but cannot guarantee they  
 3 would be entirely avoided. The scale of the BDCP and the constraints imposed by other  
 4 environmental resources make avoidance of all significant effects unlikely. For these reasons this  
 5 impact remains significant and unavoidable even with implementation of the following mitigation  
 6 measures.

7 **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 8 **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 9 **Develop Treatment to Resolve or Mitigate Adverse Impacts**

10 Please refer to Mitigation Measure CUL-6 under Alternative 1A.

11 **Impact CUL-7: Effects of Other Conservation Measures on Cultural Resources**

12 This impact describes the potential effects of other conservation measures at a program level of  
 13 detail, with the exception of *CM1 Water Facilities and Operation*. This impact is substantially similar  
 14 to Impact CUL-7 as discussed under Alternative 1A because the nature of the affected resources,  
 15 scope of activities, and geographic area of effects are generally similar. These measures would result  
 16 in effects on cultural resources when ground-disturbing work is performed to construct  
 17 improvements and enhance or restore natural communities. Direct effects would occur through  
 18 demolition or destruction of NRHP-, CRHR-, and/or local registry-eligible prehistoric and historic  
 19 archaeological sites, unique archaeological sites, TCPs, human remains, and built-environment  
 20 resources. Indirect effects may occur where changes to the setting alter the existing setting in a  
 21 manner that is inconsistent with the feeling and association of the resource. Because the ability of  
 22 the resources to convey their significance would be lost this effect would materially alter these  
 23 resources under CEQA and would be adverse under NEPA. For example, reclaimed agricultural  
 24 landscapes that are converted to habitat may no longer convey the themes of agriculture and  
 25 settlement, and thus would be inconsistent with remaining features associated with rural historic  
 26 landscapes created by reclamation, cultivation, and ranching.

27 Mitigation Measure CUL-7 below addresses this effect. However, because of the large acreages of  
 28 land included in all conservation measures that would be implemented under this alternative, it is  
 29 unlikely that all effects on NRHP-, CRHR-, and /or local registry-eligible resources and unique  
 30 archaeological sites could be avoided. Therefore, this impact would be adverse.

31 **NEPA Effects:** Implementation of conservation measures will result in ground disturbing work and  
 32 introduction of new infrastructure to the Plan Area. These physical modifications may result in  
 33 direct effects on NRHP and CRHR eligible resources. These changes may therefore reduce the  
 34 integrity of these resources. For these reasons these effects would be adverse.

35 **CEQA Conclusion:** Construction and implementation of conservation measures would result in  
 36 ground-disturbing work that could alter the significant characteristics of NRHP, CRHR, and/or local  
 37 registry-eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and  
 38 built-environment resources such as historic architectural structures and rural historic landscapes.  
 39 The same construction may damage unique archaeological sites. This construction would likely  
 40 result in materially adverse changes for the following reasons.

- 1 • Ground-disturbing construction in archaeological sites disrupts the spatial associations that
- 2 contain data useful in research, thus diminishing or destroying the basis for the significance of
- 3 the resource.
- 4 • Ground-disturbing construction may either directly demolish or indirectly affect the setting of
- 5 built-environment resources, resulting in an inability of the resource to convey its significance.
- 6 • Ground-disturbing construction may either directly demolish or change the setting of TCPs
- 7 resulting in an inability of the resource to convey its significance.
- 8 • Ground-disturbing construction may inadvertently disturb human remains.

9 The alteration of a resource that changes the characteristics that convey its significance is a material  
 10 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
 11 CEQA under the Appendix G checklist. Because this construction would materially alter these  
 12 categories of resources and disturb human remains it would result in a significant impact. Mitigation  
 13 is available to reduce these impacts by identifying and evaluating resources, avoiding resources  
 14 where possible, and developing treatment where avoidance is not possible. In addition construction  
 15 would be monitored. However, because of the acreage associated with the proposed restoration  
 16 under conservation measures, as well as the multiple constraints associated with other  
 17 environmental resources that require mitigation or avoidance, it is unlikely that all cultural  
 18 resources could be avoided. Therefore, this impact remains significant and unavoidable.

19 **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
 20 **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
 21 **Implementation of CM2-21**

22 Please see Mitigation Measure CUL-7 under Impact CUL-7 in the discussion of Alternative 1A

23 **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Other**  
 24 **Conservation Measures with Plans and Policies**

25 Constructing the proposed water conveyance facilities (CM1) and implementing CM2–CM21 could  
 26 result in the potential for incompatibilities with plans and policies adopted to protect the cultural  
 27 resources of the Delta. A number of plans and policies that coincide with the study area provide  
 28 guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local*  
 29 *Plans, Policies, and Regulations*. This overview of plan and policy compatibility evaluates whether  
 30 Alternative 5 is compatible or incompatible with these policies, rather than whether impacts are  
 31 adverse or not adverse or significant or less than significant. Because Alternative 5 would result in  
 32 the same kinds of effects as Alternative 1A, this alternative is only compatible with some of the land  
 33 use policies that govern the Plan Area. For policies that emphasize preservation or mitigation the  
 34 BDCP will be compatible with these policies because significant cultural resources will be avoided  
 35 where feasible, and mitigation will be implemented to reduce effects where avoidance and  
 36 preservation is not feasible. For policies that emphasize preservation the BDCP is incompatible in  
 37 some instances because multiple constraints governing the location of proposed facilities makes  
 38 preservation of all significant cultural resources unlikely. It should be noted that, as described in  
 39 Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local land use  
 40 regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 41 environment.

1 **NEPA Effects:** Because federal agencies are not regulated by local land use policy, implementation of  
2 Alternative 5 would not result in a conflict with local land use laws for the purposes of NEPA.

3 **CEQA Conclusion:** The Plan Area is governed by cultural resource management policies adopted by  
4 the various counties with jurisdiction in this region. For policies that emphasize preservation or  
5 mitigation the BDCP will be compatible with these policies because DWR and appropriate federal  
6 agencies will implement cultural resource management practices that will identify significant  
7 resources, preserve such resources where feasible, and complete mitigation to reduce significant  
8 effects where preservation is not feasible. For policies that emphasize preservation the BDCP is  
9 incompatible in some instances because multiple constraints governing the location of proposed  
10 facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as  
11 described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local  
12 land use regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
13 environment.

### 14 **18.3.5.11 Alternative 6A—Isolated Conveyance with Pipeline/Tunnel and** 15 **Intakes 1–5 (15,000 cfs; Operational Scenario D)**

#### 16 **Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of** 17 **Conveyance Facilities**

##### 18 **Identified Resources**

19 Record searches at the CHRIS and inventory efforts for the BDCP have identified seven previously  
20 recorded archaeological sites in the footprint of this alternative (Appendix 18B, *Identified Resources*  
21 *Potentially Affected by the BDCP Alternatives*, Table 18B-1). Three of these sites have documented  
22 human remains. Detailed site descriptions summarizing available information regarding these  
23 resources, are provided in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*.

24 These seven previously recorded resources represent the known resources that occur in the  
25 footprint of this alternative. The resources are distributed evenly across the alignment, but are  
26 somewhat clustered where construction of large above-ground features would occur, such as the  
27 northern end of the alignment, at the intermediate forebay, and at the southern end of the  
28 alignment.

##### 29 **Significance of Identified Archaeological Resources**

30 The resources affected by this alternative have likely have significance and integrity within the  
31 meaning of the NRHP and CRHR for the same reasons described above under Alternative 1A.

##### 32 **Anticipated Effects on Identified Resources**

33 Ground-disturbing construction is likely to disturb the deposits and thus materially alter their  
34 ability to convey their significance. Much of the data potential in archaeological resources exists in  
35 the spatial associations of different artifacts and other cultural material. Where artifacts that have  
36 known associations with particular time periods occur adjacent to other material such as faunal  
37 bone or plant remains from subsistence activity, the proximity of the materials allows an inference  
38 as to the age of the subsistence remains, thereby allowing researchers to infer particular subsistence  
39 strategies during different prehistoric periods. Intrusive ground-disturbing construction, vibration,  
40 and other physical disturbance may disrupt these associations and thus disrupt the qualities for

1 which the sites may qualify as historical resources or historic properties. In addition, because not all  
 2 identified resources are legally accessible, these resources may be significant for other reasons than  
 3 their data potential. Indirect effects such as introduction of changes to the setting associated with  
 4 construction of new features or creation of new sources of noise (also a change to the setting) may  
 5 diminish the basis for the significance of these resources. For these reasons, construction has the  
 6 potential to materially impair these resources under CEQA and to adversely affect the resources as  
 7 defined by Section 106 of the NHPA. This effect would be adverse.

8 **NEPA Effects:** Construction may disturb NRHP and CRHR-eligible archaeological resources and  
 9 damage these resources. This damage may impair the integrity of these resources and thus reduce  
 10 their ability to convey their significance. For these reasons this effect would be adverse.

11 **CEQA Conclusion:** Construction of conveyance facilities would affect seven identified archaeological  
 12 resources that occur in the footprint of this alternative. DWR identified these resources and finds  
 13 that they are likely to qualify as historical resources under CEQA (see the individual site descriptions  
 14 in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*); these resources thus have the  
 15 potential to qualify as historical resources. Therefore, these sites are considered historic resources  
 16 for the purposes of CEQA. This impact would be significant because construction could materially  
 17 alter or destroy the potential of these resources to yield information useful in archaeological  
 18 research, the basis for the significance of these resources, through excavation and disruption of the  
 19 spatial associations that contain meaningful information. Identified but currently inaccessible  
 20 resources may also be significant under other register criteria; indirect effects such as introduction  
 21 of new inconsistent changes to the setting may also diminish the significance of these resources.  
 22 Mitigation Measure CUL-1 would reduce this impact by recovering scientifically important material  
 23 prior to construction through the sensitive area, but would not guarantee that all of the scientifically  
 24 important material would be retrieved because feasible archaeological excavation only typically  
 25 retrieves a sample of the deposit, and portions of the site may remain after treatment with  
 26 important information. Construction could damage these remaining portions of the deposit.  
 27 Therefore, this impact is significant and unavoidable.

28 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
 29 **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
 30 **Archaeological Sites**

31 Please refer to Mitigation Measure CUL-1 under Alternative 1A.

32 **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory**  
 33 **Efforts**

34 This impact is substantially similar to Impact CUL-2 described under Alternative 1A. The same  
 35 intakes would be constructed, and thus the overall potential for effects on archaeological resources  
 36 to be identified through inventory efforts is similar.

37 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 38 resources by disrupting the spatial associations that convey data useful in research or changing the  
 39 setting such that the resource no longer contains its significance. The locations of various features  
 40 such as intakes, forebays, and tunnels shaft locations are depicted in Mapbook Figure M3-1 in  
 41 Chapter 3, *Description of Alternatives*. These impacts would thus materially impair these resources  
 42 within the meaning of CEQA and adversely affect the resources within the meaning of Section 106 of  
 43 the NHPA because this disturbance would impair the ability of these resources to yield data useful in

1 research. While Mitigation Measure CUL-2 would reduce these effects, it cannot guarantee all effects  
 2 would be avoided because relocation of proposed facilities to avoid all resources is unlikely. These  
 3 effects would remain adverse.

4 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 5 sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
 6 their integrity. For these reasons this effect would be adverse.

7 **CEQA Conclusion:** The footprint for this alternative is sensitive for both prehistoric and historic-era  
 8 resources that cannot be identified at this time because much of the footprint is not legally  
 9 accessible. Because many of these resources are likely to have data useful in prehistoric and historic  
 10 archaeological research, as well as the integrity to convey this significance, they are likely to qualify  
 11 as historical resources or unique archaeological sites under CEQA or historic properties under the  
 12 Section 106 of the NHPA. Ground-disturbing construction may materially alter the significance of  
 13 these resources by disrupting the spatial associations that could yield important data, resulting in a  
 14 significant effect. While mitigation is available (Mitigation Measure CUL-2), this mitigation cannot  
 15 guarantee that all eligible or significant resources would be preserved in place, or that all important  
 16 data would be retrieved before construction destroys these resources. The scale of the BDCP,  
 17 investment into existing designs, and the presence of other important environmental resources such  
 18 as habitat, natural communities, and wetlands that should be avoided are constraints on the  
 19 flexibility and feasibility of avoidance. For these reasons this impact is significant and unavoidable.

#### 20 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of** 21 **Archaeological Resources**

22 Please refer to Mitigation Measure CUL-2 as described under Alternative 1A.

#### 23 **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory** 24 **Efforts**

25 This impact is substantially similar to Impact CUL-3 described under Alternative 1A. The same  
 26 intakes would be constructed, and thus the overall potential for effects on archaeological resources  
 27 is similar.

28 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 29 resources by disrupting the spatial associations that convey data useful in research or changing the  
 30 setting such that the resource no longer contains its significance. These impacts would thus  
 31 materially impair these resources within the meaning of CEQA and adversely affect the resources  
 32 within the meaning of Section 106 of the NHPA because this disturbance would impair the ability of  
 33 these resources to yield data useful in research. Mitigation Measure CUL-3 would reduce these  
 34 effects, but cannot guarantee that all effects would be avoided because inadvertent disturbance of  
 35 some resources is inevitable given the scale of the proposed construction. These effects would  
 36 therefore remain adverse.

37 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 38 sites that also may not necessarily be identified prior to construction. While cultural resource  
 39 inventories will be completed once legal access is secured, no inventory can ensure that all  
 40 resources are identified prior to construction. Because these sites may qualify for the NRHP or  
 41 CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
 42 adverse.

1 **CEQA Conclusion:** This impact would be significant. Construction has the potential to disturb  
 2 previously unidentified archaeological sites qualifying as historical resources, historic properties, or  
 3 unique archaeological resources. Because direct excavation, compaction, or other disturbance may  
 4 disrupt the spatial associations that contain scientifically useful information it would alter the  
 5 potential basis for eligibility, thus materially altering the resource and resulting in a significant  
 6 effect. Because these resources would not be identified prior to construction, they cannot be  
 7 recorded and effects cannot be managed through construction treatment. Mitigation Measures CUL-  
 8 3 would reduce but not entirely avoid the potential for this impact, by implementing construction  
 9 worker training, monitoring and discovery protocols. However, because archaeological resources  
 10 may not be identified prior to disturbance through these measures, the effect cannot be entirely  
 11 avoided. Therefore, this impact would remain significant and unavoidable.

12 **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
 13 **Perform Training of Construction Workers, and Conduct Construction Monitoring**

14 Please refer to Mitigation Measure CUL-3 as described under Alternative 1A.

15 **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

16 The footprint of this alternative is sensitive for buried human remains that may occur in isolation,  
 17 rather than as part of prehistoric or historic archaeological sites. This sensitivity and the impact  
 18 mechanisms are substantially similar to the sensitivity and impact mechanisms described under  
 19 Alternative 1A. The same intakes would be constructed, and thus the overall potential for effects on  
 20 buried human remains is similar.

21 Ground-disturbing construction has the potential to damage and disinter buried human remains,  
 22 resulting in an adverse effect. While mitigation is available under Mitigation Measure CUL-4 to  
 23 reduce this effect, it cannot guarantee that this effect would be avoided entirely, therefore this effect  
 24 remains adverse.

25 **NEPA Effects:** Buried human remains may be damaged by this alternative because such remains  
 26 may occur either in isolation or as part of identified and previously unidentified archaeological  
 27 resources where construction will occur. This effect would be adverse.

28 **CEQA Conclusion:** This impact would be significant. The project area is sensitive for buried human  
 29 remains. Construction would likely result in disturbance of these features. Disturbance of human  
 30 remains, including remains interred outside of cemeteries is considered a significant impact in the  
 31 CEQA Appendix G checklist; therefore disturbance of these remains would result in a significant  
 32 effect. Mitigation measures would reduce the severity of this impact, but not to a less-than-  
 33 significant level because mitigation would not guarantee that these features could be discovered and  
 34 treated in advance of construction; the scale of construction makes it technically and economically  
 35 infeasible to perform the level of sampling necessary to identify all such resources prior to  
 36 construction. Therefore, this impact is considered significant and unavoidable.

37 **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if**  
 38 **Such Resources Are Discovered during Construction**

39 Please refer to Mitigation Measure CUL-4 as described under Alternative 1A.

1 **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic**  
 2 **Architectural/Built-Environment Resources Resulting from Construction Activities**

3 Built-environment resources that may be affected by this alternative include resources identified  
 4 and evaluated in inventory efforts conducted for other projects and resources identified in surveys  
 5 for the BDCP. Some of resources are considered historic properties for the purposes of this analysis  
 6 because they meet the criteria in the NRHP regulations (36 CFR 60.4), as described below. For the  
 7 similar reasons some are considered historical resources under CEQA. As identified in Appendix  
 8 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-11, a total of 24  
 9 built-environment resources have the potential to be directly or indirectly affected by construction  
 10 of this alternative. The specific nature and location of the impact mechanism for each affected  
 11 resource is also described in Table 18B-11. The affected resources have been evaluated for the  
 12 NRHP and CRHR. The basis for the eligibility recommendations for each resource is provided in  
 13 Appendix 18B, Section 18B.1.2, *Built Environment Resource Descriptions*.

14 **Discussion of Anticipated Effects on Identified and Accessible Resources**

15 Direct and indirect effects would result from construction of intakes, RTM storage areas,  
 16 transmission lines, access roads, and other ground-disturbing features. The exact effect mechanism  
 17 for each resource is described in Appendix 18B, *Identified Resources Potentially Affected by the BDCP*  
 18 *Alternatives*, in Table 18B-11. Facility redesign to avoid direct impacts on historic architectural  
 19 resources is preferred as mitigation if possible. However, it is unlikely that all identified resources  
 20 can be avoided because of the scale of the BDCP and the need to balance avoidance of other  
 21 important environmental resources such as wetlands, natural communities, and special-status  
 22 species habitat. These effects would materially impair the resources within the meaning of CEQA  
 23 and result in adverse effects within the meaning of Section 106 because they would diminish the  
 24 characteristics that convey the significance of the resources. Some direct demolition and indirect  
 25 effects such as setting changes are likely to occur even with mitigation. Therefore, these effects  
 26 would be adverse.

27 **NEPA Effects:** This alternative would result in direct and indirect effects on NRHP and CRHR eligible  
 28 built environment resources. These alterations may diminish the integrity of these resources. For  
 29 these reasons this effect would be adverse.

30 **CEQA Conclusion:** Several identified historic-era built-environment resources have been identified  
 31 in the footprint of this alternative (24 individual resources, as described in Appendix 18B, *Identified*  
 32 *Resources Potentially Affected by the BDCP Alternatives*, Table 18B-11). These resources have been  
 33 evaluated for the CRHR and qualify as historical resources under CEQA. Construction of conveyance  
 34 facilities may require demolition of the historic built-environment resources. Construction may also  
 35 result in permanent indirect effects such as changes to the setting. Direct demolition or changes to  
 36 the setting would be material alterations because they would either remove the resource or alter the  
 37 resource character, resulting in an inability of the resource to convey its significance. For these  
 38 reasons this would be a significant effect. Mitigation described below may reduce these effects, but  
 39 cannot guarantee they would be entirely avoided. The scale of the BDCP and the constraints  
 40 imposed by other environmental resources make avoidance of all significant effects unlikely. For  
 41 these reasons this impact remains significant and unavoidable even with implementation of the  
 42 following mitigation measures.

1           **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and implement a Built**  
2           **Environment Treatment Plan**

3           Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 1A.

4           **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic**  
5           **Architectural/Built-Environment Resources Resulting from Construction Activities**

6           The footprint of this alternative is sensitive for unidentified and unevaluated built-environment  
7           resources that may have significance and integrity for the same reasons described under Alternative  
8           1A. Approximately 71 unevaluated built-environment resources have been identified that may be  
9           subject to direct or indirect effects as a result of the construction of this alternative (ICF 2012, see  
10          tables of inaccessible properties and associated maps).

11          **Anticipated Effects**

12          Construction may result in direct demolition of these resources, damage through vibration, or  
13          indirect effects such as changes to the setting. While mitigation is available to reduce these effects,  
14          this mitigation cannot guarantee that all effects would be avoided because mitigation cannot  
15          guarantee that eligible resources would be avoided and that adverse changes to the setting would  
16          not occur. Construction has the potential to directly or indirectly damage built-environment  
17          resources through demolition or introduction of new inconsistent features into the setting. These  
18          changes would impair the ability of the resources to convey their significance because the character  
19          defining elements or setting of the resource would be lost. Therefore, impacts on these resources  
20          may be adverse.

21          **NEPA Effects:** This alternative may result in direct modification or indirect changes to the setting for  
22          inaccessible and NRHP and CRHR-eligible built environment resources. These changes may diminish  
23          the integrity of these resources. For these reasons, this effect would be adverse.

24          **CEQA Conclusion:** The study area is sensitive for built-environment resources that have not yet  
25          been recorded and evaluated because the majority of the area is legally inaccessible. Inventory  
26          efforts have not gathered complete information in these inaccessible areas. Many of these resources  
27          are likely to be associated with important historical themes or persons, or possess high creative  
28          values; therefore, they are likely to have significance under CEQA and the NHPA. Because many of  
29          these resources remain intact and retain their rural agricultural setting they are also likely to have  
30          integrity under CEQA and the NHPA. Therefore, many are likely to qualify as historic properties or  
31          historical resources under the NHPA and CEQA. Construction of conveyance facilities may require  
32          demolition of the historic built-environment resources. Construction may also result in permanent  
33          indirect effects such as changes to the setting. Direct demolition or changes to the setting would be  
34          material alterations because they would either remove the resource or alter the resource character,  
35          resulting in an inability of the resource to convey its significance. For these reasons this would be a  
36          significant effect. Mitigation described below may reduce these effects, but cannot guarantee they  
37          would be entirely avoided. The scale of the BDCP and the constraints imposed by other  
38          environmental resources make avoidance of all significant effects unlikely. For these reasons this  
39          impact remains significant and unavoidable even with implementation of the following mitigation  
40          measures.

1           **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 2           **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 3           **Develop Treatment to Resolve or Mitigate Adverse Impacts**

4           Please refer to Mitigation Measure CUL-6 under Alternative 1A.

5           **Impact CUL-7: Effects of Other Conservation Measures on Cultural Resources**

6           This impact describes the potential effects of other conservation measures at a program level of  
 7           detail, with the exception of *CM1 Water Facilities and Operation*. This impact is substantially similar  
 8           to Impact CUL-7 as discussed under Alternative 1A because the nature of the affected resources,  
 9           scope of activities, and geographic area of effects are generally similar. These measures would result  
 10          in effects on cultural resources when ground-disturbing work is performed to construct  
 11          improvements and enhance or restore natural communities. Direct effects would occur through  
 12          demolition or destruction of NRHP-, CRHR-, and/or local registry-eligible prehistoric and historic  
 13          archaeological sites, unique archaeological sites, TCPs, human remains, and built-environment  
 14          resources. Indirect effects may occur where changes to the setting alter the existing setting in a  
 15          manner that is inconsistent with the feeling and association of the resource. Because the ability of  
 16          the resources to convey their significance would be lost this effect would materially alter these  
 17          resources under CEQA and would be adverse under NEPA. For example, reclaimed agricultural  
 18          landscapes that are converted to habitat may no longer convey the themes of agriculture and  
 19          settlement, and thus would be inconsistent with remaining features associated with rural historic  
 20          landscapes created by reclamation, cultivation, and ranching.

21          Mitigation Measure CUL-7 below addresses this effect. However, because of the large acreages of  
 22          land included in all conservation measures that would be implemented under this alternative, it is  
 23          unlikely that all effects on NRHP-, CRHR-, and /or local registry-eligible resources and unique  
 24          archaeological sites could be avoided. Therefore, this impact would be adverse.

25          **NEPA Effects:** Implementation of conservation measures will result in ground disturbing work and  
 26          introduction of new infrastructure to the Plan Area. These physical modifications may result in  
 27          direct effects on NRHP and CRHR eligible resources. These changes may therefore reduce the  
 28          integrity of these resources. For these reasons these effects would be adverse.

29          **CEQA Conclusion:** Construction and implementation of conservation measures would result in  
 30          ground-disturbing work that could alter the significant characteristics of NRHP, CRHR, and/or local  
 31          registry-eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and  
 32          built-environment resources such as historic architectural structures and rural historic landscapes.  
 33          The same construction may damage unique archaeological sites. This construction would likely  
 34          result in materially adverse changes for the following reasons.

- 35          ● Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
 36          contain data useful in research, thus diminishing or destroying the basis for the significance of  
 37          the resource.
- 38          ● Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
 39          built-environment resources, resulting in an inability of the resource to convey its significance.
- 40          ● Ground-disturbing construction may either directly demolish or change the setting of TCPs  
 41          resulting in an inability of the resource to convey its significance.
- 42          ● Ground-disturbing construction may inadvertently disturb human remains.

1 The alteration of a resource that changes the characteristics that convey its significance is a material  
 2 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
 3 CEQA under the Appendix G checklist. Because this construction would materially alter these  
 4 categories of resources and disturb human remains it would result in a significant impact. Mitigation  
 5 is available to reduce these impacts by identifying and evaluating resources, avoiding resources  
 6 where possible, and developing treatment where avoidance is not possible. In addition construction  
 7 would be monitored. However, because of the acreage associated with the proposed restoration  
 8 under conservation measures, as well as the multiple constraints associated with other  
 9 environmental resources that require mitigation or avoidance, it is unlikely that all cultural  
 10 resources could be avoided. Therefore, this impact remains significant and unavoidable.

11 **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
 12 **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
 13 **Implementation of CM2-21**

14 Please see Mitigation Measure CUL-7 under Impact CUL-7 in the discussion of Alternative 1A

15 **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Other**  
 16 **Conservation Measures with Plans and Policies**

17 Constructing the proposed water conveyance facilities (CM1) and implementing CM2-CM21 could  
 18 result in the potential for incompatibilities with plans and policies adopted to protect the cultural  
 19 resources of the Delta. A number of plans and policies that coincide with the study area provide  
 20 guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local*  
 21 *Plans, Policies, and Regulations*. This overview of plan and policy compatibility evaluates whether  
 22 Alternative 6A is compatible or incompatible with these policies, rather than whether impacts are  
 23 adverse or not adverse or significant or less than significant. Because Alternative 6A would result in  
 24 the same kinds of effects as Alternative 1A, this alternative is only compatible with some of the land  
 25 use policies that govern the Plan Area. For policies that emphasize preservation or mitigation the  
 26 BDCP will be compatible with these policies because significant cultural resources will be avoided  
 27 where feasible, and mitigation will be implemented to reduce effects where avoidance and  
 28 preservation is not feasible. For policies that emphasize preservation the BDCP is incompatible in  
 29 some instances because multiple constraints governing the location of proposed facilities makes  
 30 preservation of all significant cultural resources unlikely. It should be noted that, as described in  
 31 Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local land use  
 32 regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 33 environment.

34 **NEPA Effects:** Because federal agencies are not regulated by local land use policy, implementation of  
 35 Alternative 6A would not result in a conflict with local land use laws for the purposes of NEPA.

36 **CEQA Conclusion:** The Plan Area is governed by cultural resource management policies adopted by  
 37 the various counties with jurisdiction in this region. For policies that emphasize preservation or  
 38 mitigation the BDCP will be compatible with these policies because DWR and appropriate federal  
 39 agencies will implement cultural resource management practices that will identify significant  
 40 resources, preserve such resources where feasible, and complete mitigation to reduce significant  
 41 effects where preservation is not feasible. For policies that emphasize preservation the BDCP is  
 42 incompatible in some instances because multiple constraints governing the location of proposed  
 43 facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as

1 described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local  
 2 land use regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 3 environment.

#### 4 **18.3.5.12 Alternative 6B—Isolated Conveyance with East Alignment and** 5 **Intakes 1–5 (15,000 cfs; Operational Scenario D)**

##### 6 **Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of** 7 **Conveyance Facilities**

##### 8 **Identified Resources**

9 Record searches at the CHRIS and inventory efforts for the BDCP have identified 17 previously  
 10 recorded archaeological sites in the footprint of this alternative (Appendix 18B, *Identified Resources*  
 11 *Potentially Affected by the BDCP Alternatives*, Table 18B-1). Detailed site descriptions summarizing  
 12 available information regarding these resources, are provided in Appendix 18B, Section 18B.1.1,  
 13 *Archaeological Site Descriptions*. These sites are distributed more heavily towards the northern and  
 14 southern end of the alignment. Seven of these sites have human remain documented as part of the  
 15 deposit.

##### 16 **Significance of Identified Archaeological Resources**

17 The resources affected by this alternative have likely have significance and integrity within the  
 18 meaning of the NRHP and CRHR for the same reasons described above under Alternative 1B.

##### 19 **Anticipated Effects on Identified Resources**

20 Ground-disturbing construction is likely to disturb the deposits and thus materially alter their  
 21 ability to convey their significance. Much of the data potential in archaeological resources exists in  
 22 the spatial associations of different artifacts and other cultural material. Where artifacts that have  
 23 known associations with particular time periods occur adjacent to other material such as faunal  
 24 bone or plant remains from subsistence activity, the proximity of the materials allows an inference  
 25 as to the age of the subsistence remains, thereby allowing researchers to infer particular subsistence  
 26 strategies during different prehistoric periods. Intrusive ground-disturbing construction, vibration,  
 27 and other physical disturbance may disrupt these associations and thus disrupt the qualities for  
 28 which the sites may qualify as historical resources or historic properties. In addition, because not all  
 29 identified resources are legally accessible, these resources may be significant for other reasons than  
 30 their data potential. Indirect effects such as introduction of changes to the setting associated with  
 31 construction of new features or creation of new sources of noise (also a change to the setting) may  
 32 diminish the basis for the significance of these resources. For these reasons, construction has the  
 33 potential to materially impair these resources under CEQA and to adversely affect the resources as  
 34 defined by Section 106 of the NHPA. This effect would be adverse.

35 **NEPA Effects:** Construction may disturb NRHP and CRHR-eligible archaeological resources and  
 36 damage these resources. This damage may impair the integrity of these resources and thus reduce  
 37 their ability to convey their significance. For these reasons this effect would be adverse.

38 **CEQA Conclusion:** Construction of conveyance facilities would affect 17 identified archaeological  
 39 resources that occur in the footprint of this alternative. DWR identified these resources and finds  
 40 that they are likely to qualify as historical resources under CEQA (see the individual site descriptions

1 in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*); these resources thus have the  
 2 potential to qualify as historical resources. Therefore, these sites are considered historic resources  
 3 for the purposes of CEQA. This impact would be significant because construction could materially  
 4 alter or destroy the potential of these resources to yield information useful in archaeological  
 5 research, the basis for the significance of these resources, through excavation and disruption of the  
 6 spatial associations that contain meaningful information. Identified but currently inaccessible  
 7 resources may also be significant under other register criteria; indirect effects such as introduction  
 8 of new inconsistent changes to the setting may also diminish the significance of these resources.  
 9 Mitigation Measure CUL-1 would reduce this impact by recovering scientifically important material  
 10 prior to construction through the sensitive area, but would not guarantee that all of the scientifically  
 11 important material would be retrieved because feasible archaeological excavation only typically  
 12 retrieves a sample of the deposit, and portions of the site may remain after treatment with  
 13 important information. Construction could damage these remaining portions of the deposit.  
 14 Therefore, this impact is significant and unavoidable.

15 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
 16 **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
 17 **Archaeological Sites**

18 Please refer to Mitigation Measure CUL-1 under Alternative 1A.

19 **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory**  
 20 **Efforts**

21 This impact is generally similar to Impact CUL-2 described under Alternative 1B. This alternative is  
 22 sensitive for previously unidentified archaeological resources that are likely to be significant and to  
 23 have integrity for the same reasons as described under Alternative 1B. It should be noted however,  
 24 that the eastern canal would cross more sensitive soil formations and result in continuous ground-  
 25 disturbance that may have a slightly greater potential to affect prehistoric archaeological resources  
 26 compared to Alternative 1B and Alternative 1C. Figure 18A-1 in Appendix 18A, *Archaeological*  
 27 *Resources Sensitivity Assessment*, depicts the eastern canal relative to archaeologically sensitive soil  
 28 formations. The general sensitivity for historic-era archaeological resources is similar to Alternative  
 29 1B.

30 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 31 resources by disrupting the spatial associations that convey data useful in research or changing the  
 32 setting such that the resource no longer contains its significance. These impacts would thus  
 33 materially impair these resources within the meaning of CEQA and adversely affect the resources  
 34 within the meaning of Section 106 of the NHPA because this disturbance would impair the ability of  
 35 these resources to yield data useful in research. The locations of ground-disturbing features such as  
 36 the canal, access roads, pumping plants, borrow areas and concrete batch plants are depicted in  
 37 Mapbook Figure M3-2 in Chapter 3, *Description of Alternatives*. While Mitigation Measure CUL-2  
 38 would reduce these effects, it cannot guarantee all effects would be avoided because relocation of  
 39 proposed facilities to avoid all resources is unlikely. These effects would remain adverse.

40 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 41 sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
 42 their integrity. For these reasons this effect would be adverse.

1 **CEQA Conclusion:** The footprint for this alternative is sensitive for both prehistoric and historic-era  
 2 resources that cannot be identified at this time because much of the footprint is not legally  
 3 accessible. Because many of these resources are likely to have data useful in prehistoric and historic  
 4 archaeological research, as well as the integrity to convey this significance, they are likely to qualify  
 5 as historical resources or unique archaeological sites under CEQA or historic properties under the  
 6 Section 106 of the NHPA. Ground-disturbing construction may materially alter the significance of  
 7 these resources by disrupting the spatial associations that could yield important data, resulting in a  
 8 significant effect. While mitigation is available (Mitigation Measure CUL-2), this mitigation cannot  
 9 guarantee that all eligible or significant resources would be preserved in place, or that all important  
 10 data would be retrieved before construction destroys these resources. The scale of the BDCP,  
 11 investment into existing designs, and the presence of other important environmental resources such  
 12 as habitat, natural communities, and wetlands that should be avoided are constraints on the  
 13 flexibility and feasibility of avoidance. For these reasons this impact is significant and unavoidable.

14 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of**  
 15 **Archaeological Resources**

16 Please refer to Mitigation Measure CUL-2 as described under Alternative 1A.

17 **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory**  
 18 **Efforts**

19 Appendix 18A, *Archaeological Resources Sensitivity Assessment*, presents an overview of the  
 20 sensitivity of the Plan Area for previously unidentified archaeological resources and demonstrates  
 21 that additional prehistoric and historic-era sites that have not yet been identified are almost certain  
 22 to occur in the portion of the Plan Area where this alternative would be constructed. This sensitivity  
 23 and the potential impact mechanisms are substantially similar to the sensitivity and impact  
 24 mechanism described for Alternative 1B. It should be noted however, that the eastern canal would  
 25 cross more sensitive soil formations and result in continuous ground-disturbance that may have a  
 26 slightly greater potential to affect prehistoric archaeological resources compared to Alternative 1A  
 27 and Alternative 1C. Figure 18A-1 in Appendix 18A depicts the eastern canal relative to  
 28 archaeologically sensitive soil formations. The general sensitivity for historic-era archaeological  
 29 resources is similar to Alternative 1A.

30 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 31 resources by disrupting the spatial associations that convey data useful in research or changing the  
 32 setting such that the resource no longer contains its significance. These impacts would thus  
 33 materially impair these resources within the meaning of CEQA and adversely affect the resources  
 34 within the meaning of Section 106 of the NHPA because this disturbance would impair the ability of  
 35 these resources to yield data useful in research. Mitigation Measure CUL-3 would reduce these  
 36 effects, but cannot guarantee that all effects would be avoided because inadvertent disturbance of  
 37 some resources is inevitable given the scale of the proposed construction. These effects would  
 38 therefore remain adverse.

39 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 40 sites that also may not necessarily be identified prior to construction. While cultural resource  
 41 inventories will be completed once legal access is secured, no inventory can ensure that all  
 42 resources are identified prior to construction. Because these sites may qualify for the NRHP or

1 CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
2 adverse.

3 **CEQA Conclusion:** This impact would be significant. Construction has the potential to disturb  
4 previously unidentified archaeological sites qualifying as historical resources, historic properties, or  
5 unique archaeological resources. Because direct excavation, compaction, or other disturbance may  
6 disrupt the spatial associations that contain scientifically useful information it would alter the  
7 potential basis for eligibility, thus materially altering the resource and resulting in a significant  
8 effect. Because these resources would not be identified prior to construction, they cannot be  
9 recorded and effects cannot be managed through construction treatment. Mitigation Measures CUL-  
10 3 would reduce but not entirely avoid the potential for this impact, by implementing construction  
11 worker training, monitoring and discovery protocols. However, because archaeological resources  
12 may not be identified prior to disturbance through these measures, the effect cannot be entirely  
13 avoided. Therefore, this impact would remain significant and unavoidable.

14 **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
15 **Perform Training of Construction Workers, and Conduct Construction Monitoring**

16 Please refer to Mitigation Measure CUL-3 as described under Alternative 1A.

17 **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

18 The footprint of this alternative is sensitive for buried human remains that may occur in isolation,  
19 rather than as part of prehistoric or historic archaeological sites. This sensitivity and the impact  
20 mechanisms are substantially similar to the sensitivity and impact mechanisms described under  
21 Alternative 1B. However, because the eastern canal crosses more sensitive soil formations and may  
22 result in greater continuous ground disturbance than 1A and Alternative 1C, the potential for  
23 impacts on buried human remains may be slightly higher than described for Alternative 1A and 1C.

24 Ground-disturbing construction has the potential to damage and disinter buried human remains,  
25 resulting in an adverse effect. While mitigation is available under Mitigation Measure CUL-4 to  
26 reduce this effect, it cannot guarantee that this effect would be avoided entirely, therefore this effect  
27 remains adverse.

28 **NEPA Effects:** Buried human remains may be damaged by this alternative because such remains  
29 may occur either in isolation or as part of identified and previously unidentified archaeological  
30 resources where construction will occur. This effect would be adverse.

31 **CEQA Conclusion:** This impact would be significant. The project area is sensitive for buried human  
32 remains. Construction would likely result in disturbance of these features. Disturbance of human  
33 remains, including remains interred outside of cemeteries is considered a significant impact in the  
34 CEQA Appendix G checklist; therefore disturbance of these remains would result in a significant  
35 effect. Mitigation measures would reduce the severity of this impact, but not to a less-than-  
36 significant level because mitigation would not guarantee that these features could be discovered and  
37 treated in advance of construction; the scale of construction makes it technically and economically  
38 infeasible to perform the level of sampling necessary to identify all such resources prior to  
39 construction. Therefore, this impact is considered significant and unavoidable.

1           **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if**  
 2           **Such Resources Are Discovered during Construction**

3           Please refer to Mitigation Measure CUL-4 as described under Alternative 1A.

4           **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic**  
 5           **Architectural/Built-Environment Resources Resulting from Construction Activities**

6           Built-environment resources that may be affected by this alternative include resources identified  
 7           and evaluated in inventory efforts conducted for other projects and resources identified in surveys  
 8           for the BDCP. Some of resources are considered historic properties for the purposes of this analysis  
 9           because they meet the criteria in the NRHP regulations (36 CFR 60.4), as described below. For the  
 10          similar reasons some are considered historical resources under CEQA. As identified in Appendix  
 11          18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-12, a total of 23  
 12          built-environment resources have the potential to be directly or indirectly affected by construction  
 13          of this alternative. The specific nature of the impact mechanism for each affected resource is also  
 14          described in Table 18B-12. The affected resources have been evaluated for the NRHP and CRHR. The  
 15          basis for the eligibility recommendations for each resource is provided in Appendix 18B, Section  
 16          18B.1.2, *Built Environment Resource Descriptions*.

17          **Discussion of Anticipated Effects on Identified and Accessible Resources**

18          Direct and indirect effects on identified and eligible resources will result from construction of  
 19          intakes, RTM storage areas, the canal itself, and transmission lines. The exact effect mechanism for  
 20          each resource is described in Appendix 18B, *Identified Resources Potentially Affected by the BDCP*  
 21          *Alternatives*, Table 18B-12. Facility redesign to avoid direct impacts on historic architectural  
 22          resources is preferred as mitigation if possible. However, it is unlikely that all identified resources  
 23          can be avoided because of the scale of the BDCP and the need to balance avoidance of other  
 24          important environmental resources such as wetlands, natural communities, and special-status  
 25          species habitat. These effects would materially impair the resources within the meaning of CEQA  
 26          and result in adverse effects within the meaning of Section 106 because they would diminish the  
 27          characteristics that convey the significance of the resources. Some direct demolition and indirect  
 28          effects such as setting changes are likely to occur even with mitigation. Therefore, these effects  
 29          would be adverse.

30          **NEPA Effects:** This alternative would result in direct and indirect effects on NRHP and CRHR eligible  
 31          built environment resources. These alterations may diminish the integrity of these resources. For  
 32          these reasons this effect would be adverse.

33          **CEQA Conclusion:** Several identified historic-era built-environment resources have been identified  
 34          in the footprint of this alternative (23 individual resources, as described in Appendix 18B, *Identified*  
 35          *Resources Potentially Affected by the BDCP Alternatives*, Table 18B-12). These resources have been  
 36          evaluated for the CRHR and qualify as historical resources under CEQA. Construction of conveyance  
 37          facilities may require demolition of the historic built-environment resources. Construction may also  
 38          result in permanent indirect effects such as changes to the setting. Direct demolition or changes to  
 39          the setting would be material alterations because they would either remove the resource or alter the  
 40          resource character, resulting in an inability of the resource to convey its significance. For these  
 41          reasons this would be a significant effect. Mitigation described below may reduce these effects, but  
 42          cannot guarantee they would be entirely avoided. The scale of the BDCP and the constraints  
 43          imposed by other environmental resources make avoidance of all significant effects unlikely. For

1 these reasons this impact remains significant and unavoidable even with implementation of the  
2 following mitigation measures.

3 **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and implement a Built**  
4 **Environment Treatment Plan**

5 Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 1A.

6 **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic**  
7 **Architectural/Built-Environment Resources Resulting from Construction Activities**

8 The footprint of this alternative is sensitive for unidentified and unevaluated built-environment  
9 resources that may have significance and integrity for the same reasons described under Alternative  
10 1B. Approximately 67 unevaluated built-environment resources have been identified that may be  
11 subject to direct or indirect effects as a result of the construction of this alternative (ICF 2012, see  
12 tables of inaccessible properties and associated maps).

13 **Anticipated Effects**

14 Construction may result in direct demolition of these resources, damage through vibration, or  
15 indirect effects such as changes to the setting. While mitigation is available to reduce these effects,  
16 this mitigation cannot guarantee that all effects would be avoided because mitigation cannot  
17 guarantee that eligible resources would be avoided and that adverse changes to the setting would  
18 not occur. Construction has the potential to directly or indirectly damage built-environment  
19 resources through demolition or introduction of new inconsistent features into the setting. These  
20 changes would impair the ability of the resources to convey their significance because the character  
21 defining elements or setting of the resource would be lost, resulting in a materially adverse change  
22 and adverse effect. Therefore, impacts on these resources may be adverse.

23 **NEPA Effects:** This alternative may result in direct modification or indirect changes to the setting for  
24 inaccessible and NRHP and CRHR-eligible built environment resources. These changes may diminish  
25 the integrity of these resources. For these reasons, this effect would be adverse.

26 **CEQA Conclusion:** The study area is sensitive for built-environment resources that have not yet  
27 been recorded and evaluated because the majority of the area is legally inaccessible. Inventory  
28 efforts have not gathered complete information in these inaccessible areas. Many of these resources  
29 are likely to be associated with important historical themes or persons, or possess high creative  
30 values; therefore, they are likely to have significance under CEQA and the NHPA. Because many of  
31 these resources remain intact and retain their rural agricultural setting they are also likely to have  
32 integrity under CEQA and the NHPA. Therefore, many are likely to qualify as historic properties or  
33 historical resources under the NHPA and CEQA. Construction of conveyance facilities may require  
34 demolition of the historic built-environment resources. Construction may also result in permanent  
35 indirect effects such as changes to the setting. Direct demolition or changes to the setting would be  
36 material alterations because they would either remove the resource or alter the resource character,  
37 resulting in an inability of the resource to convey its significance. For these reasons this would be a  
38 significant effect. Mitigation described below may reduce these effects, but cannot guarantee they  
39 would be entirely avoided. The scale of the BDCP and the constraints imposed by other  
40 environmental resources make avoidance of all significant effects unlikely. For these reasons this  
41 impact remains significant and unavoidable even with implementation of the following mitigation  
42 measures.

1           **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 2           **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 3           **Develop Treatment to Resolve or Mitigate Adverse Impacts**

4           Please refer to Mitigation Measure CUL-6 under Alternative 1A.

5           **Impact CUL-7: Effects of Other Conservation Measures on Cultural Resources**

6           This impact describes the potential effects of other conservation measures at a program level of  
 7           detail, with the exception of *CM1 Water Facilities and Operation*. This impact is substantially similar  
 8           to Impact CUL-7 as discussed under Alternative 1A because the nature of the affected resources,  
 9           scope of activities, and geographic area of effects are generally similar. These measures would result  
 10          in effects on cultural resources when ground-disturbing work is performed to construct  
 11          improvements and enhance or restore natural communities. Direct effects would occur through  
 12          demolition or destruction of NRHP-, CRHR-, and/or local registry-eligible prehistoric and historic  
 13          archaeological sites, unique archaeological sites, TCPs, human remains, and built-environment  
 14          resources. Indirect effects may occur where changes to the setting alter the existing setting in a  
 15          manner that is inconsistent with the feeling and association of the resource. Because the ability of  
 16          the resources to convey their significance would be lost this effect would materially alter these  
 17          resources under CEQA and would be adverse under NEPA. For example, reclaimed agricultural  
 18          landscapes that are converted to habitat may no longer convey the themes of agriculture and  
 19          settlement, and thus would be inconsistent with remaining features associated with rural historic  
 20          landscapes created by reclamation, cultivation, and ranching.

21          Mitigation Measure CUL-7 below addresses this effect. However, because of the large acreages of  
 22          land included in all conservation measures that would be implemented under this alternative, it is  
 23          unlikely that all effects on NRHP-, CRHR-, and /or local registry-eligible resources and unique  
 24          archaeological sites could be avoided. Therefore, this impact would be adverse.

25          **NEPA Effects:** Implementation of conservation measures will result in ground disturbing work and  
 26          introduction of new infrastructure to the Plan Area. These physical modifications may result in  
 27          direct effects on NRHP and CRHR eligible resources. These changes may therefore reduce the  
 28          integrity of these resources. For these reasons these effects would be adverse.

29          **CEQA Conclusion:** Construction and implementation of conservation measures would result in  
 30          ground-disturbing work that could alter the significant characteristics of NRHP, CRHR, and/or local  
 31          registry-eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and  
 32          built-environment resources such as historic architectural structures and rural historic landscapes.  
 33          The same construction may damage unique archaeological sites. This construction would likely  
 34          result in materially adverse changes for the following reasons.

- 35          ● Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
 36          contain data useful in research, thus diminishing or destroying the basis for the significance of  
 37          the resource.
- 38          ● Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
 39          built-environment resources, resulting in an inability of the resource to convey its significance.
- 40          ● Ground-disturbing construction may either directly demolish or change the setting of TCPs  
 41          resulting in an inability of the resource to convey its significance.
- 42          ● Ground-disturbing construction may inadvertently disturb human remains.

1 The alteration of a resource that changes the characteristics that convey its significance is a material  
 2 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
 3 CEQA under the Appendix G checklist. Because this construction would materially alter these  
 4 categories of resources and disturb human remains it would result in a significant impact. Mitigation  
 5 is available to reduce these impacts by identifying and evaluating resources, avoiding resources  
 6 where possible, and developing treatment where avoidance is not possible. In addition construction  
 7 would be monitored. However, because of the acreage associated with the proposed restoration  
 8 under conservation measures, as well as the multiple constraints associated with other  
 9 environmental resources that require mitigation or avoidance, it is unlikely that all cultural  
 10 resources could be avoided. Therefore, this impact remains significant and unavoidable.

11 **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
 12 **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
 13 **Implementation of CM2-21**

14 Please see Mitigation Measure CUL-7 under Impact CUL-7 in the discussion of Alternative 1A

15 **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Other**  
 16 **Conservation Measures with Plans and Policies**

17 Constructing the proposed water conveyance facilities (CM1) and implementing CM2-CM21 could  
 18 result in the potential for incompatibilities with plans and policies adopted to protect the cultural  
 19 resources of the Delta. A number of plans and policies that coincide with the study area provide  
 20 guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local*  
 21 *Plans, Policies, and Regulations*. This overview of plan and policy compatibility evaluates whether  
 22 Alternative 6B is compatible or incompatible with these policies, rather than whether impacts are  
 23 adverse or not adverse or significant or less than significant. Because Alternative 6B would result in  
 24 the same kinds of effects as Alternative 1A, this alternative is only compatible with some of the land  
 25 use policies that govern the Plan Area. For policies that emphasize preservation or mitigation the  
 26 BDCP will be compatible with these policies because significant cultural resources will be avoided  
 27 where feasible, and mitigation will be implemented to reduce effects where avoidance and  
 28 preservation is not feasible. For policies that emphasize preservation the BDCP is incompatible in  
 29 some instances because multiple constraints governing the location of proposed facilities makes  
 30 preservation of all significant cultural resources unlikely. It should be noted that, as described in  
 31 Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local land use  
 32 regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 33 environment.

34 **NEPA Effects:** Because federal agencies are not regulated by local land use policy, implementation of  
 35 Alternative 6B would not result in a conflict with local land use laws for the purposes of NEPA.

36 **CEQA Conclusion:** The Plan Area is governed by cultural resource management policies adopted by  
 37 the various counties with jurisdiction in this region. For policies that emphasize preservation or  
 38 mitigation the BDCP will be compatible with these policies because DWR and appropriate federal  
 39 agencies will implement cultural resource management practices that will identify significant  
 40 resources, preserve such resources where feasible, and complete mitigation to reduce significant  
 41 effects where preservation is not feasible. For policies that emphasize preservation the BDCP is  
 42 incompatible in some instances because multiple constraints governing the location of proposed  
 43 facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as

1 described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local  
 2 land use regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 3 environment.

### 4 **18.3.5.13 Alternative 6C—Isolated Conveyance with West Alignment and** 5 **Intakes W1–W5 (15,000 cfs; Operational Scenario D)**

#### 6 **Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of** 7 **Conveyance Facilities**

##### 8 **Identified Resources**

9 Record searches at the CHRIS and inventory efforts for the BDCP have identified 12 previously  
 10 recorded archaeological sites in the footprint of this alternative as described in Appendix 18B,  
 11 *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-1 (only 11 are  
 12 potentially register eligible). Detailed site descriptions summarizing available information regarding  
 13 these resources, are provided in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*.

14 These sites are distributed more heavily towards the northern and southern end of the alignment  
 15 where ground-disturbing effects of the western canal are concentrated.

##### 16 **Significance of Identified Archaeological Resources**

17 The resources affected by this alternative have likely have significance and integrity within the  
 18 meaning of the NRHP and CRHR for the same reasons described above under Alternative 1C. CA-Yol-  
 19 165H does not have sufficient integrity to convey significance and therefore does not qualify as an  
 20 historical resource or historic property.

##### 21 **Anticipated Effects on Identified Resources**

22 Ground-disturbing construction is likely to disturb the deposits and thus materially alter their  
 23 ability to convey their significance. Much of the data potential in archaeological resources exists in  
 24 the spatial associations of different artifacts and other cultural material. Where artifacts that have  
 25 known associations with particular time periods occur adjacent to other material such as faunal  
 26 bone or plant remains from subsistence activity, the proximity of the materials allows an inference  
 27 as to the age of the subsistence remains, thereby allowing researchers to infer particular subsistence  
 28 strategies during different prehistoric periods. Intrusive ground-disturbing construction, vibration,  
 29 and other physical disturbance may disrupt these associations and thus disrupt the qualities for  
 30 which the sites may qualify as historical resources or historic properties. In addition, because not all  
 31 identified resources are legally accessible, these resources may be significant for other reasons than  
 32 their data potential. Indirect effects such as introduction of changes to the setting associated with  
 33 construction of new features or creation of new sources of noise (also a change to the setting) may  
 34 diminish the basis for the significance of these resources. For these reasons, construction has the  
 35 potential to materially impair these resources under CEQA and to adversely affect the resources as  
 36 defined by Section 106 of the NHPA. This effect would be adverse.

37 **NEPA Effects:** Construction may disturb NRHP and CRHR-eligible archaeological resources and  
 38 damage these resources. This damage may impair the integrity of these resources and thus reduce  
 39 their ability to convey their significance. For these reasons this effect would be adverse.

1 **CEQA Conclusion:** Construction of conveyance facilities would affect 12 identified archaeological  
 2 resources that occur in the footprint of this alternative. DWR identified these resources and finds  
 3 that they are likely to qualify as historical resources under CEQA (see the individual site descriptions  
 4 in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*); these resources thus have the  
 5 potential to qualify as historical resources. Therefore, these sites are considered historic resources  
 6 for the purposes of CEQA. This impact would be significant because construction could materially  
 7 alter or destroy the potential of these resources to yield information useful in archaeological  
 8 research, the basis for the significance of these resources, through excavation and disruption of the  
 9 spatial associations that contain meaningful information. Identified but currently inaccessible  
 10 resources may also be significant under other register criteria; indirect effects such as introduction  
 11 of new inconsistent changes to the setting may also diminish the significance of these resources.  
 12 Mitigation Measure CUL-1 would reduce this impact by recovering scientifically important material  
 13 prior to construction through the sensitive area, but would not guarantee that all of the scientifically  
 14 important material would be retrieved because feasible archaeological excavation only typically  
 15 retrieves a sample of the deposit, and portions of the site may remain after treatment with  
 16 important information. Construction could damage these remaining portions of the deposit.  
 17 Therefore, this impact is significant and unavoidable.

18 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
 19 **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
 20 **Archaeological Sites**

21 Please refer to Mitigation Measure CUL-1 under Alternative 1A.

22 **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory**  
 23 **Efforts**

24 This impact is generally similar to Impact CUL-2 described under Alternative 1C. This alternative is  
 25 sensitive for previously unidentified archaeological resources that are likely to be significant and to  
 26 have integrity for the same reasons as described under Alternative 1C. It should be noted however,  
 27 that the western canal would cross more sensitive soil formations along the northern and southern  
 28 ends of the alignment compared to Alternative 1A and the eastern canal. The middle segment of this  
 29 alternative would make use of a subterranean tunnel that crosses low-sensitivity soil units. While  
 30 this alternative is thus sensitive for archaeological sites, it should be noted that the eastern canal  
 31 options would result in the construction of more structures and thus have even greater potential to  
 32 affect archaeological resources. Figure 18A-1 in Appendix 18A, *Archaeological Resources Sensitivity*  
 33 *Assessment*, depicts the western canal relative to archaeologically sensitive soil formations. The  
 34 general sensitivity for historic-era archaeological resources is similar to Alternative 1A.

35 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 36 resources by disrupting the spatial associations that convey data useful in research or changing the  
 37 setting such that the resource no longer contains its significance. The location of ground-disturbing  
 38 features such as intakes, the canal, tunnel segment, and borrow areas are depicted in Mapbook  
 39 Figure M3-3 in Chapter 3, *Description of Alternatives*. These impacts would thus materially impair  
 40 these resources within the meaning of CEQA and adversely affect the resources within the meaning  
 41 of Section 106 of the NHPA because this disturbance would impair the ability of these resources to  
 42 yield data useful in research. While Mitigation Measure CUL-2 would reduce these effects, it cannot  
 43 guarantee all effects would be avoided because relocation of proposed facilities to avoid all  
 44 resources is unlikely. These effects would remain adverse.

1 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 2 sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
 3 their integrity. For these reasons this effect would be adverse.

4 **CEQA Conclusion:** The footprint for this alternative is sensitive for both prehistoric and historic-era  
 5 resources that cannot be identified at this time because much of the footprint is not legally  
 6 accessible. Because many of these resources are likely to have data useful in prehistoric and historic  
 7 archaeological research, as well as the integrity to convey this significance, they are likely to qualify  
 8 as historical resources or unique archaeological sites under CEQA or historic properties under the  
 9 Section 106 of the NHPA. Ground-disturbing construction may materially alter the significance of  
 10 these resources by disrupting the spatial associations that could yield important data, resulting in a  
 11 significant effect. While mitigation is available (Mitigation Measure CUL-2), this mitigation cannot  
 12 guarantee that all eligible or significant resources would be preserved in place, or that all important  
 13 data would be retrieved before construction destroys these resources. The scale of the BDCP,  
 14 investment into existing designs, and the presence of other important environmental resources such  
 15 as habitat, natural communities, and wetlands that should be avoided are constraints on the  
 16 flexibility and feasibility of avoidance. For these reasons this impact is significant and unavoidable.

17 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of**  
 18 **Archaeological Resources**

19 Please refer to Mitigation Measure CUL-2 as described under Alternative 1A.

20 **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory**  
 21 **Efforts**

22 Appendix 18A, *Archaeological Resources Sensitivity Assessment*, presents an overview of the  
 23 sensitivity of the Plan Area for previously unidentified archaeological resources and demonstrates  
 24 that additional prehistoric and historic-era sites that have not yet been identified are almost certain  
 25 to occur in the portion of the Plan Area where this alternative would be constructed. This sensitivity  
 26 and the potential impact mechanisms are substantially similar to the sensitivity and impact  
 27 mechanism described for Alternative 1C. It should be noted however, that the western canal would  
 28 cross more sensitive soil formations along the northern and southern ends of the alignment  
 29 compared to the tunnel and eastern canal. The middle segment of this alternative would make use of  
 30 a subterranean tunnel that crosses low-sensitivity soil units. The overall sensitivity for prehistoric  
 31 archaeological resources may be slightly higher than the tunnel, but slightly lower than the eastern  
 32 canal, because of the relative proportion of high sensitivity geological formations. Figure 18A-1 in  
 33 Appendix 18A depicts the western canal relative to archaeologically sensitive soil formations. The  
 34 general sensitivity for historic-era archaeological resources is similar to the tunnel and eastern  
 35 canal.

36 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 37 resources by disrupting the spatial associations that convey data useful in research or changing the  
 38 setting such that the resource no longer contains its significance. These impacts would thus  
 39 materially impair these resources within the meaning of CEQA and adversely affect the resources  
 40 within the meaning of Section 106 of the NHPA because this disturbance would impair the ability of  
 41 these resources to yield data useful in research. Mitigation Measure CUL-3 would reduce these  
 42 effects, but cannot guarantee that all effects would be avoided because inadvertent disturbance of

1 some resources is inevitable given the scale of the proposed construction. These effects would  
2 therefore remain adverse.

3 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
4 sites that also may not necessarily be identified prior to construction. While cultural resource  
5 inventories will be completed once legal access is secured, no inventory can ensure that all  
6 resources are identified prior to construction. Because these sites may qualify for the NRHP or  
7 CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
8 adverse.

9 **CEQA Conclusion:** This impact would be significant. Construction has the potential to disturb  
10 previously unidentified archaeological sites qualifying as historical resources, historic properties, or  
11 unique archaeological resources. Because direct excavation, compaction, or other disturbance may  
12 disrupt the spatial associations that contain scientifically useful information it would alter the  
13 potential basis for eligibility, thus materially altering the resource and resulting in a significant  
14 effect. Because these resources would not be identified prior to construction, they cannot be  
15 recorded and effects cannot be managed through construction treatment. Mitigation Measures CUL-  
16 3 would reduce but not entirely avoid the potential for this impact, by implementing construction  
17 worker training, monitoring and discovery protocols. However, because archaeological resources  
18 may not be identified prior to disturbance through these measures, the effect cannot be entirely  
19 avoided. Therefore, this impact would remain significant and unavoidable.

20 **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
21 **Perform Training of Construction Workers, and Conduct Construction Monitoring**

22 Please refer to Mitigation Measure CUL-3 as described under Alternative 1A.

23 **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

24 The footprint of this alternative is sensitive for buried human remains that may occur in isolation,  
25 rather than as part of prehistoric or historic archaeological sites. This sensitivity and the impact  
26 mechanisms are substantially similar to the sensitivity and impact mechanisms described under  
27 Alternative 1C. However, because the western canal crosses more sensitive soil formations and may  
28 result in greater continuous ground disturbance than the tunnel option, the potential for impacts on  
29 buried human remains may be slightly higher than described for the tunnel option. Based on the  
30 relative proportion of geologically sensitive map units, the western canal may be slightly lower in  
31 sensitivity for buried human remains compared to the eastern canal.

32 Ground-disturbing construction has the potential to damage and disinter buried human remains,  
33 resulting in an adverse effect. While mitigation is available under Mitigation Measure CUL-4 to  
34 reduce this effect, it cannot guarantee that this effect would be avoided entirely, therefore this effect  
35 remains adverse.

36 **NEPA Effects:** Buried human remains may be damaged by this alternative because such remains  
37 may occur either in isolation or as part of identified and previously unidentified archaeological  
38 resources where construction will occur. This effect would be adverse.

39 **CEQA Conclusion:** This impact would be significant. The project area is sensitive for buried human  
40 remains. Construction would likely result in disturbance of these features. Disturbance of human  
41 remains, including remains interred outside of cemeteries is considered a significant impact in the  
42 CEQA Appendix G checklist; therefore disturbance of these remains would result in a significant

1 effect. Mitigation measures would reduce the severity of this impact, but not to a less-than-  
 2 significant level because mitigation would not guarantee that these features could be discovered and  
 3 treated in advance of construction; the scale of construction makes it technically and economically  
 4 infeasible to perform the level of sampling necessary to identify all such resources prior to  
 5 construction. Therefore, this impact is considered significant and unavoidable.

6 **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if**  
 7 **Such Resources Are Discovered during Construction**

8 Please refer to Mitigation Measure CUL-4 as described under Alternative 1A.

9 **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic**  
 10 **Architectural/Built-Environment Resources Resulting from Construction Activities**

11 Built-environment resources that may be affected by this alternative include resources identified  
 12 and evaluated in inventory efforts conducted for other projects and resources identified in surveys  
 13 for the BDCP. Some of resources are considered historic properties for the purposes of this analysis  
 14 because they meet the criteria in the NRHP regulations (36 CFR 60.4), as described below. For the  
 15 similar reasons some are considered historical resources under CEQA. As identified in Appendix  
 16 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-13, a total of 22  
 17 built-environment resources have the potential to be directly or indirectly affected by construction  
 18 of this alternative. The specific nature of the impact mechanism for each affected resource is also  
 19 described in Table 18B-13. The affected resources have been evaluated for the NRHP and CRHR. The  
 20 basis for the eligibility recommendations for each resource is provided in Appendix 18B, Section  
 21 18B.1.2, *Built Environment Resource Descriptions*.

22 **Discussion of Anticipated Effects on Identified and Accessible Resources**

23 Construction of intakes, transmission lines, the canal itself, and other ground-disturbing features  
 24 will result in direct and indirect effects on identified and eligible built-environment resources. The  
 25 exact effect mechanism for each resource is described in Appendix 18B, *Identified Resources*  
 26 *Potentially Affected by the BDCP Alternatives*, Table 18B-13. Facility redesign to avoid direct impacts  
 27 on historic architectural resources is preferred as mitigation if possible. However, it is unlikely that  
 28 all identified resources can be avoided because of the scale of the BDCP and the need to balance  
 29 avoidance of other important environmental resources such as wetlands, natural communities, and  
 30 special-status species habitat. These effects would materially impair the resources within the  
 31 meaning of CEQA and result in adverse effects within the meaning of Section 106 because they  
 32 would diminish the characteristics that convey the significance of the resources. Some direct  
 33 demolition and indirect effects such as setting changes are likely to occur even with mitigation.  
 34 Therefore, these effects would be adverse.

35 **NEPA Effects:** This alternative would result in direct and indirect effects on NRHP and CRHR eligible  
 36 built environment resources. These alterations may diminish the integrity of these resources. For  
 37 these reasons this effect would be adverse.

38 **CEQA Conclusion:** Several identified historic-era built-environment resources have been identified  
 39 in the footprint of this alternative (22 individual resources, as described in Appendix 18B, *Identified*  
 40 *Resources Potentially Affected by the BDCP Alternatives*, Table 18B-13). These resources have been  
 41 evaluated for the CRHR and qualify as historical resources under CEQA. Construction of conveyance  
 42 facilities may require demolition of the historic built-environment resources. Construction may also

1 result in permanent indirect effects such as changes to the setting. Direct demolition or changes to  
 2 the setting would be material alterations because they would either remove the resource or alter the  
 3 resource character, resulting in an inability of the resource to convey its significance. For these  
 4 reasons this would be a significant effect. Mitigation described below may reduce these effects, but  
 5 cannot guarantee they would be entirely avoided. The scale of the BDCP and the constraints  
 6 imposed by other environmental resources make avoidance of all significant effects unlikely. For  
 7 these reasons this impact remains significant and unavoidable even with implementation of the  
 8 following mitigation measures.

9 **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and implement a Built**  
 10 **Environment Treatment Plan**

11 Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 1A.

12 **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic**  
 13 **Architectural/Built-Environment Resources Resulting from Construction Activities**

14 The footprint of this alternative is sensitive for unidentified and unevaluated built-environment  
 15 resources that may have significance and integrity for the same reasons described under Alternative  
 16 1C. Approximately 74 unevaluated built-environment resources have been identified that may be  
 17 subject to direct or indirect effects as a result of the construction of this alternative (ICF 2012, see  
 18 tables of inaccessible properties and associated maps).

19 **Anticipated Effects**

20 Construction may result in direct demolition of these resources, damage through vibration, or  
 21 indirect effects such as changes to the setting. While mitigation is available to reduce these effects,  
 22 this mitigation cannot guarantee that all effects would be avoided because mitigation cannot  
 23 guarantee that eligible resources would be avoided and that adverse changes to the setting would  
 24 not occur. Construction has the potential to directly or indirectly damage built-environment  
 25 resources through demolition or introduction of new inconsistent features into the setting. These  
 26 changes would impair the ability of the resources to convey their significance because the character  
 27 defining elements or setting of the resource would be lost. Therefore, impacts on these resources  
 28 may be adverse.

29 **NEPA Effects:** This alternative may result in direct modification or indirect changes to the setting for  
 30 inaccessible and NRHP and CRHR-eligible built environment resources. These changes may diminish  
 31 the integrity of these resources. For these reasons, this effect would be adverse.

32 **CEQA Conclusion:** The study area is sensitive for built-environment resources that have not yet  
 33 been recorded and evaluated because the majority of the area is legally inaccessible. Inventory  
 34 efforts have not gathered complete information in these inaccessible areas. Many of these resources  
 35 are likely to be associated with important historical themes or persons, or possess high creative  
 36 values; therefore, they are likely to have significance under CEQA and the NHPA. Because many of  
 37 these resources remain intact and retain their rural agricultural setting they are also likely to have  
 38 integrity under CEQA and the NHPA. Therefore, many are likely to qualify as historic properties or  
 39 historical resources under the NHPA and CEQA. Construction of conveyance facilities may require  
 40 demolition of the historic built-environment resources. Construction may also result in permanent  
 41 indirect effects such as changes to the setting. Direct demolition or changes to the setting would be  
 42 material alterations because they would either remove the resource or alter the resource character,

1 resulting in an inability of the resource to convey its significance. For these reasons this would be a  
 2 significant effect. Mitigation described below may reduce these effects, but cannot guarantee they  
 3 would be entirely avoided. The scale of the BDCP and the constraints imposed by other  
 4 environmental resources make avoidance of all significant effects unlikely. For these reasons this  
 5 impact remains significant and unavoidable even with implementation of the following mitigation  
 6 measures.

7 **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 8 **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 9 **Develop Treatment to Resolve or Mitigate Adverse Impacts**

10 Please refer to Mitigation Measure CUL-6 under Alternative 1A.

11 **Impact CUL-7: Effects of Other Conservation Measures on Cultural Resources**

12 This impact describes the potential effects of other conservation measures at a program level of  
 13 detail, with the exception of *CM1 Water Facilities and Operation*. This impact is substantially similar  
 14 to Impact CUL-7 as discussed under Alternative 1C because the nature of the affected resources,  
 15 scope of activities, and geographic area of effects are generally similar. These measures would result  
 16 in effects on cultural resources when ground-disturbing work is performed to construct  
 17 improvements and enhance or restore natural communities. Direct effects would occur through  
 18 demolition or destruction of NRHP-, CRHR-, and/or local registry-eligible prehistoric and historic  
 19 archaeological sites, unique archaeological sites, TCPs, human remains, and built-environment  
 20 resources. Indirect effects may occur where changes to the setting alter the existing setting in a  
 21 manner that is inconsistent with the feeling and association of the resource. Because the ability of  
 22 the resources to convey their significance would be lost this effect would materially alter these  
 23 resources under CEQA and would be adverse under NEPA. For example, reclaimed agricultural  
 24 landscapes that are converted to habitat may no longer convey the themes of agriculture and  
 25 settlement, and thus would be inconsistent with remaining features associated with rural historic  
 26 landscapes created by reclamation, cultivation, and ranching.

27 Mitigation Measure CUL-7 below addresses this effect. However, because of the large acreages of  
 28 land included in all conservation measures that would be implemented under this alternative, it is  
 29 unlikely that all effects on NRHP-, CRHR-, and /or local registry-eligible resources and unique  
 30 archaeological sites could be avoided. Therefore, this impact would be adverse.

31 **NEPA Effects:** Implementation of conservation measures will result in ground disturbing work and  
 32 introduction of new infrastructure to the Plan Area. These physical modifications may result in  
 33 direct effects on NRHP and CRHR eligible resources. These changes may therefore reduce the  
 34 integrity of these resources. For these reasons these effects would be adverse.

35 **CEQA Conclusion:** Construction and implementation of conservation measures would result in  
 36 ground-disturbing work that could alter the significant characteristics of NRHP, CRHR, and/or local  
 37 registry-eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and  
 38 built-environment resources such as historic architectural structures and rural historic landscapes.  
 39 The same construction may damage unique archaeological sites. This construction would likely  
 40 result in materially adverse changes for the following reasons:

- 1 • Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
2 contain data useful in research, thus diminishing or destroying the basis for the significance of  
3 the resource.
- 4 • Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
5 built-environment resources, resulting in an inability of the resource to convey its significance.
- 6 • Ground-disturbing construction may either directly demolish or change the setting of TCPs  
7 resulting in an inability of the resource to convey its significance.
- 8 • Ground-disturbing construction may inadvertently disturb human remains.

9 The alteration of a resource that changes the characteristics that convey its significance is a material  
10 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
11 CEQA under the Appendix G checklist. Because this construction would materially alter these  
12 categories of resources and disturb human remains it would result in a significant impact. Mitigation  
13 is available to reduce these impacts by identifying and evaluating resources, avoiding resources  
14 where possible, and developing treatment where avoidance is not possible. In addition construction  
15 would be monitored. However, because of the acreage associated with the proposed restoration  
16 under conservation measures, as well as the multiple constraints associated with other  
17 environmental resources that require mitigation or avoidance, it is unlikely that all cultural  
18 resources could be avoided. Therefore, this impact remains significant and unavoidable.

19 **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
20 **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
21 **Implementation of CM2-21**

22 Please see Mitigation Measure CUL-7 under Impact CUL-7 in the discussion of Alternative 1A

23 **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Other**  
24 **Conservation Measures with Plans and Policies**

25 Constructing the proposed water conveyance facilities (CM1) and implementing CM2–CM21 could  
26 result in the potential for incompatibilities with plans and policies adopted to protect the cultural  
27 resources of the Delta. A number of plans and policies that coincide with the study area provide  
28 guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local*  
29 *Plans, Policies, and Regulations*. This overview of plan and policy compatibility evaluates whether  
30 Alternative 6C is compatible or incompatible with these policies, rather than whether impacts are  
31 adverse or not adverse or significant or less than significant. Because Alternative 6C would result in  
32 the same kinds of effects as Alternative 1C, this alternative is only compatible with some of the land  
33 use policies that govern the Plan Area. For policies that emphasize preservation or mitigation the  
34 BDCP will be compatible with these policies because significant cultural resources will be avoided  
35 where feasible, and mitigation will be implemented to reduce effects where avoidance and  
36 preservation is not feasible. For policies that emphasize preservation the BDCP is incompatible in  
37 some instances because multiple constraints governing the location of proposed facilities makes  
38 preservation of all significant cultural resources unlikely. It should be noted that, as described in  
39 Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local land use  
40 regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
41 environment.

1 **NEPA Effects:** Because federal agencies are not regulated by local land use policy, implementation of  
2 Alternative 6C would not result in a conflict with local land use laws for the purposes of NEPA.

3 **CEQA Conclusion:** The Plan Area is governed by cultural resource management policies adopted by  
4 the various counties with jurisdiction in this region. For policies that emphasize preservation or  
5 mitigation the BDCP will be compatible with these policies because DWR and appropriate federal  
6 agencies will implement cultural resource management practices that will identify significant  
7 resources, preserve such resources where feasible, and complete mitigation to reduce significant  
8 effects where preservation is not feasible. For policies that emphasize preservation the BDCP is  
9 incompatible in some instances because multiple constraints governing the location of proposed  
10 facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as  
11 described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local  
12 land use regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
13 environment.

### 14 **18.3.5.14 Alternative 7—Dual Conveyance with Pipeline/Tunnel, Intakes 2, 15 3, and 5, and Enhanced Aquatic Conservation (9,000 cfs; 16 Operational Scenario E)**

#### 17 **Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of 18 Conveyance Facilities**

##### 19 **Identified Resources**

20 Record searches at the CHRIS and inventory efforts for the BDCP have identified six previously  
21 recorded prehistoric archaeological sites in the footprint of this alternative (Appendix 18B,  
22 *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-1). Detailed site  
23 descriptions summarizing available information regarding these resources, are provided in  
24 Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*. Two of these sites have human  
25 remains documented as part of the deposit.

26 The resources are distributed evenly across the alignment, but are somewhat clustered where  
27 construction of large above-ground features would occur, such as the northern end of the alignment,  
28 at the intermediate forebay, and at the southern end of the alignment.

##### 29 **Significance of Identified Archaeological Resources**

30 The resources affected by this alternative have likely have significance and integrity within the  
31 meaning of the NRHP and CRHR for the same reasons described above under Alternative 1A.

##### 32 **Anticipated Effects on Identified Resources**

33 Ground-disturbing construction is likely to disturb the deposits and thus materially alter their  
34 ability to convey their significance. Much of the data potential in archaeological resources exists in  
35 the spatial associations of different artifacts and other cultural material. Where artifacts that have  
36 known associations with particular time periods occur adjacent to other material such as faunal  
37 bone or plant remains from subsistence activity, the proximity of the materials allows an inference  
38 as to the age of the subsistence remains, thereby allowing researchers to infer particular subsistence  
39 strategies during different prehistoric periods. Intrusive ground-disturbing construction, vibration,  
40 and other physical disturbance may disrupt these associations and thus disrupt the qualities for

1 which the sites may qualify as historical resources or historic properties. In addition, because not all  
 2 identified resources are legally accessible, these resources may be significant for other reasons than  
 3 their data potential. Indirect effects such as introduction of changes to the setting associated with  
 4 construction of new features or creation of new sources of noise (also a change to the setting) may  
 5 diminish the basis for the significance of these resources. For these reasons, construction has the  
 6 potential to materially impair these resources under CEQA and to adversely affect the resources as  
 7 defined by Section 106 of the NHPA. This effect would be adverse.

8 **NEPA Effects:** Construction may disturb NRHP and CRHR-eligible archaeological resources and  
 9 damage these resources. This damage may impair the integrity of these resources and thus reduce  
 10 their ability to convey their significance. For these reasons this effect would be adverse.

11 **CEQA Conclusion:** Construction of conveyance facilities would affect six identified archaeological  
 12 resources that occur in the footprint of this alternative. DWR identified these resources and finds  
 13 that they are likely to qualify as historical resources under CEQA (see the individual site descriptions  
 14 in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*); these resources thus have the  
 15 potential to qualify as historical resources. Therefore, these sites are considered historic resources  
 16 for the purposes of CEQA. This impact would be significant because construction could materially  
 17 alter or destroy the potential of these resources to yield information useful in archaeological  
 18 research, the basis for the significance of these resources, through excavation and disruption of the  
 19 spatial associations that contain meaningful information. Identified but currently inaccessible  
 20 resources may also be significant under other register criteria; indirect effects such as introduction  
 21 of new inconsistent changes to the setting may also diminish the significance of these resources.  
 22 Mitigation Measure CUL-1 would reduce this impact by recovering scientifically important material  
 23 prior to construction through the sensitive area, but would not guarantee that all of the scientifically  
 24 important material would be retrieved because feasible archaeological excavation only typically  
 25 retrieves a sample of the deposit, and portions of the site may remain after treatment with  
 26 important information. Construction could damage these remaining portions of the deposit.  
 27 Therefore, this impact is significant and unavoidable.

28 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
 29 **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
 30 **Archaeological Sites**

31 Please refer to Mitigation Measure CUL-1 under Alternative 1A.

32 **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory**  
 33 **Efforts**

34 This impact is substantially similar to Impact CUL-2 described under Alternative 1A. While the  
 35 intake locations would be reduced to three facilities, slightly reducing the potential for effects on  
 36 archaeological resources, the overall potential for effects on archaeological resources is similar.

37 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 38 resources by disrupting the spatial associations that convey data useful in research or changing the  
 39 setting such that the resource no longer contains its significance. The locations of various features  
 40 such as intakes, forebays, and tunnels shaft locations are depicted in Mapbook Figure M3-1 in  
 41 Chapter 3, *Description of Alternatives*. These impacts would thus materially impair these resources  
 42 within the meaning of CEQA and adversely affect the resources within the meaning of Section 106 of  
 43 the NHPA because this disturbance would impair the ability of these resources to yield data useful in

1 research. While Mitigation Measure CUL-2 would reduce these effects, it cannot guarantee all effects  
 2 would be avoided because relocation of proposed facilities to avoid all resources is unlikely. These  
 3 effects would remain adverse.

4 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 5 sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
 6 their integrity. For these reasons this effect would be adverse.

7 **CEQA Conclusion:** The footprint for this alternative is sensitive for both prehistoric and historic-era  
 8 resources that cannot be identified at this time because much of the footprint is not legally  
 9 accessible. Because many of these resources are likely to have data useful in prehistoric and historic  
 10 archaeological research, as well as the integrity to convey this significance, they are likely to qualify  
 11 as historical resources or unique archaeological sites under CEQA or historic properties under the  
 12 Section 106 of the NHPA. Ground-disturbing construction may materially alter the significance of  
 13 these resources by disrupting the spatial associations that could yield important data, resulting in a  
 14 significant effect. While mitigation is available (Mitigation Measure CUL-2), this mitigation cannot  
 15 guarantee that all eligible or significant resources would be preserved in place, or that all important  
 16 data would be retrieved before construction destroys these resources. The scale of the BDCP,  
 17 investment into existing designs, and the presence of other important environmental resources such  
 18 as habitat, natural communities, and wetlands that should be avoided are constraints on the  
 19 flexibility and feasibility of avoidance. For these reasons this impact is significant and unavoidable.

#### 20 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of** 21 **Archaeological Resources**

22 Please refer to Mitigation Measure CUL-2 as described under Alternative 1A.

#### 23 **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory** 24 **Efforts**

25 This impact is substantially similar to Impact CUL-3 described under Alternative 1A. While the  
 26 intake locations would be reduced to three facilities, slightly reducing the potential for effects on  
 27 archaeological resources, and thus the overall potential for effects on archaeological resources that  
 28 may not be identified through inventory is similar.

29 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 30 resources by disrupting the spatial associations that convey data useful in research or changing the  
 31 setting such that the resource no longer contains its significance. These impacts would thus  
 32 materially impair these resources within the meaning of CEQA and adversely affect the resources  
 33 within the meaning of Section 106 of the NHPA because this disturbance would impair the ability of  
 34 these resources to yield data useful in research. Mitigation Measure CUL-3 would reduce these  
 35 effects, but cannot guarantee that all effects would be avoided because inadvertent disturbance of  
 36 some resources is inevitable given the scale of the proposed construction. These effects would  
 37 therefore remain adverse.

38 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 39 sites that also may not necessarily be identified prior to construction. While cultural resource  
 40 inventories will be completed once legal access is secured, no inventory can ensure that all  
 41 resources are identified prior to construction. Because these sites may qualify for the NRHP or

1 CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
2 adverse.

3 **CEQA Conclusion:** This impact would be significant. Construction has the potential to disturb  
4 previously unidentified archaeological sites qualifying as historical resources, historic properties, or  
5 unique archaeological resources. Because direct excavation, compaction, or other disturbance may  
6 disrupt the spatial associations that contain scientifically useful information it would alter the  
7 potential basis for eligibility, thus materially altering the resource and resulting in a significant  
8 effect. Because these resources would not be identified prior to construction, they cannot be  
9 recorded and effects cannot be managed through construction treatment. Mitigation Measures CUL-  
10 3 would reduce but not entirely avoid the potential for this impact, by implementing construction  
11 worker training, monitoring and discovery protocols. However, because archaeological resources  
12 may not be identified prior to disturbance through these measures, the effect cannot be entirely  
13 avoided. Therefore, this impact would remain significant and unavoidable.

14 **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
15 **Perform Training of Construction Workers, and Conduct Construction Monitoring**

16 Please refer to Mitigation Measure CUL-3 as described under Alternative 1A.

17 **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

18 The footprint of this alternative is sensitive for buried human remains that may occur in isolation,  
19 rather than as part of prehistoric or historic archaeological sites. This sensitivity and the impact  
20 mechanisms are substantially similar to the sensitivity and impact mechanisms described under  
21 Alternative 1A. While the intake locations would be reduced to three facilities, slightly reducing the  
22 potential for effects on buried human remains, the overall potential for effects on buried human  
23 remains is similar.

24 Ground-disturbing construction has the potential to damage and disinter buried human remains,  
25 resulting in an adverse effect. While mitigation is available under Mitigation Measure CUL-4 to  
26 reduce this effect, it cannot guarantee that this effect would be avoided entirely, therefore this effect  
27 remains adverse.

28 **NEPA Effects:** Buried human remains may be damaged by this alternative because such remains  
29 may occur either in isolation or as part of identified and previously unidentified archaeological  
30 resources where construction will occur. This effect would be adverse.

31 **CEQA Conclusion:** This impact would be significant. The project area is sensitive for buried human  
32 remains. Construction would likely result in disturbance of these features. Disturbance of human  
33 remains, including remains interred outside of cemeteries is considered a significant impact in the  
34 CEQA Appendix G checklist; therefore disturbance of these remains would result in a significant  
35 effect. Mitigation measures would reduce the severity of this impact, but not to a less-than-  
36 significant level because mitigation would not guarantee that these features could be discovered and  
37 treated in advance of construction; the scale of construction makes it technically and economically  
38 infeasible to perform the level of sampling necessary to identify all such resources prior to  
39 construction. Therefore, this impact is considered significant and unavoidable.

1           **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if**  
 2           **Such Resources Are Discovered during Construction**

3           Please refer to Mitigation Measure CUL-4 as described under Alternative 1A.

4           **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic**  
 5           **Architectural/Built-Environment Resources Resulting from Construction Activities**

6           Built-environment resources that may be affected by this alternative include resources identified  
 7           and evaluated in inventory efforts conducted for other projects and resources identified in surveys  
 8           for the BDCP. Some of resources are considered historic properties for the purposes of this analysis  
 9           because they meet the criteria in the NRHP regulations (36 CFR 60.4), as described below. For the  
 10          similar reasons some are considered historical resources under CEQA. As identified in Appendix  
 11          18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-14, a total of 19  
 12          built-environment resources have the potential to be directly or indirectly affected by construction  
 13          of this alternative. The specific nature and location of the impact mechanism for each affected  
 14          resource is also described in Table 18B-14. The affected resources have been evaluated for the  
 15          NRHP and CRHR. The basis for the eligibility recommendations for each resource is provided in  
 16          Appendix 18B, in Section 18B.1.2, *Built Environment Resource Descriptions*.

17          **Discussion of Anticipated Effects on Identified and Accessible Resources**

18          Construction of intakes, transmission lines and other features will result in direct and indirect  
 19          effects on identified and eligible built-environment resources. The exact effect mechanism for each  
 20          resource is described in Appendix 18B, *Identified Resources Potentially Affected by the BDCP*  
 21          *Alternatives*, Table 18B-14. Facility redesign to avoid direct impacts on historic architectural  
 22          resources is preferred as mitigation if possible. However, it is unlikely that all identified resources  
 23          can be avoided because of the scale of the BDCP and the need to balance avoidance of other  
 24          important environmental resources such as wetlands, natural communities, and special-status  
 25          species habitat. These effects would materially impair the resources within the meaning of CEQA  
 26          and result in adverse effects within the meaning of Section 106 because they would diminish the  
 27          characteristics that convey the significance of the resources. Some direct demolition and indirect  
 28          effects such as setting changes are likely to occur even with mitigation. Therefore, these effects  
 29          would be adverse.

30          **NEPA Effects:** This alternative would result in direct and indirect effects on NRHP and CRHR eligible  
 31          built environment resources. These alterations may diminish the integrity of these resources. For  
 32          these reasons this effect would be adverse.

33          **CEQA Conclusion:** Several identified historic-era built-environment resources have been identified  
 34          in the footprint of this alternative (19 individual resources, as described in Appendix 18B, *Identified*  
 35          *Resources Potentially Affected by the BDCP Alternatives*, Table 18B-14). These resources have been  
 36          evaluated for the CRHR and qualify as historical resources under CEQA. Construction of conveyance  
 37          facilities may require demolition of the historic built-environment resources. Construction may also  
 38          result in permanent indirect effects such as changes to the setting. Direct demolition or changes to  
 39          the setting would be material alterations because they would either remove the resource or alter the  
 40          resource character, resulting in an inability of the resource to convey its significance. For these  
 41          reasons this would be a significant effect. Mitigation described below may reduce these effects, but  
 42          cannot guarantee they would be entirely avoided. The scale of the BDCP and the constraints  
 43          imposed by other environmental resources make avoidance of all significant effects unlikely. For

1 these reasons this impact remains significant and unavoidable even with implementation of the  
2 following mitigation measures.

3 **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and implement a Built**  
4 **Environment Treatment Plan**

5 Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 1A.

6 **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic**  
7 **Architectural/Built-Environment Resources Resulting from Construction Activities**

8 The footprint of this alternative is sensitive for unidentified and unevaluated built-environment  
9 resources that may have significance and integrity for the same reasons described under Alternative  
10 1A. Approximately 71 unevaluated built-environment resources have been identified that may be  
11 subject to direct or indirect effects as a result of the construction of this alternative (ICF 2012, see  
12 tables of inaccessible properties and associated maps).

13 **Anticipated Effects**

14 Construction may result in direct demolition of these resources, damage through vibration, or  
15 indirect effects such as changes to the setting. While mitigation is available to reduce these effects,  
16 this mitigation cannot guarantee that all effects would be avoided because mitigation cannot  
17 guarantee that eligible resources would be avoided and that adverse changes to the setting would  
18 not occur. Construction has the potential to directly or indirectly damage built-environment  
19 resources through demolition or introduction of new inconsistent features into the setting. These  
20 changes would impair the ability of the resources to convey their significance because the character  
21 defining elements or setting of the resource would be lost. Therefore, impacts on these resources  
22 may be adverse.

23 **NEPA Effects:** This alternative may result in direct modification or indirect changes to the setting for  
24 inaccessible and NRHP and CRHR-eligible built environment resources. These changes may diminish  
25 the integrity of these resources. For these reasons, this effect would be adverse.

26 **CEQA Conclusion:** The study area is sensitive for built-environment resources that have not yet  
27 been recorded and evaluated because the majority of the area is legally inaccessible. Inventory  
28 efforts have not gathered complete information in these inaccessible areas. Many of these resources  
29 are likely to be associated with important historical themes or persons, or possess high creative  
30 values; therefore, they are likely to have significance under CEQA and the NHPA. Because many of  
31 these resources remain intact and retain their rural agricultural setting they are also likely to have  
32 integrity under CEQA and the NHPA. Therefore, many are likely to qualify as historic properties or  
33 historical resources under the NHPA and CEQA. Construction of conveyance facilities may require  
34 demolition of the historic built-environment resources. Construction may also result in permanent  
35 indirect effects such as changes to the setting. Direct demolition or changes to the setting would be  
36 material alterations because they would either remove the resource or alter the resource character,  
37 resulting in an inability of the resource to convey its significance. For these reasons this would be a  
38 significant effect. Mitigation described below may reduce these effects, but cannot guarantee they  
39 would be entirely avoided. The scale of the BDCP and the constraints imposed by other  
40 environmental resources make avoidance of all significant effects unlikely. For these reasons this  
41 impact remains significant and unavoidable even with implementation of the following mitigation  
42 measures.

1           **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 2           **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 3           **Develop Treatment to Resolve or Mitigate Adverse Impacts**

4           Please refer to Mitigation Measure CUL-6 under Alternative 1A.

5           **Impact CUL-7: Effects of Other Conservation Measures on Cultural Resources**

6           This impact describes the potential effects of other conservation measures at a program level of  
 7           detail, with the exception of *CM1 Water Facilities and Operation*. This impact is substantially similar  
 8           to Impact CUL-7 as discussed under Alternative 1A because the nature of the affected resources,  
 9           scope of activities, and geographic area of effects are generally similar. These measures would result  
 10          in effects on cultural resources when ground-disturbing work is performed to construct  
 11          improvements and enhance or restore natural communities. Direct effects would occur through  
 12          demolition or destruction of NRHP-, CRHR-, and/or local registry-eligible prehistoric and historic  
 13          archaeological sites, unique archaeological sites, TCPs, human remains, and built-environment  
 14          resources. Indirect effects may occur where changes to the setting alter the existing setting in a  
 15          manner that is inconsistent with the feeling and association of the resource. Because the ability of  
 16          the resources to convey their significance would be lost this effect would materially alter these  
 17          resources under CEQA and would be adverse under NEPA. For example, reclaimed agricultural  
 18          landscapes that are converted to habitat may no longer convey the themes of agriculture and  
 19          settlement, and thus would be inconsistent with remaining features associated with rural historic  
 20          landscapes created by reclamation, cultivation, and ranching.

21          Mitigation Measure CUL-7 below addresses this effect. However, because of the large acreages of  
 22          land included in all conservation measures that would be implemented under this alternative, it is  
 23          unlikely that all effects on NRHP-, CRHR-, and /or local registry-eligible resources and unique  
 24          archaeological sites could be avoided. Therefore, this impact would be adverse.

25          **NEPA Effects:** Implementation of conservation measures will result in ground disturbing work and  
 26          introduction of new infrastructure to the Plan Area. These physical modifications may result in  
 27          direct effects on NRHP and CRHR eligible resources. These changes may therefore reduce the  
 28          integrity of these resources. For these reasons these effects would be adverse.

29          **CEQA Conclusion:** Construction and implementation of conservation measures would result in  
 30          ground-disturbing work that could alter the significant characteristics of NRHP, CRHR, and/or local  
 31          registry-eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and  
 32          built-environment resources such as historic architectural structures and rural historic landscapes.  
 33          The same construction may damage unique archaeological sites. This construction would likely  
 34          result in materially adverse changes for the following reasons:

- 35          ● Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
 36          contain data useful in research, thus diminishing or destroying the basis for the significance of  
 37          the resource, and;
- 38          ● Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
 39          built-environment resources, resulting in an inability of the resource to convey its significance,  
 40          and;
- 41          ● Ground-disturbing construction may either directly demolish or change the setting of TCPs  
 42          resulting in an inability of the resource to convey its significance.

- Ground-disturbing construction may inadvertently disturb human remains.

The alteration of a resource that changes the characteristics that convey its significance is a material alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under CEQA under the Appendix G checklist. Because this construction would materially alter these categories of resources and disturb human remains it would result in a significant impact. Mitigation is available to reduce these impacts by identifying and evaluating resources, avoiding resources where possible, and developing treatment where avoidance is not possible. In addition construction would be monitored. However, because of the acreage associated with the proposed restoration under conservation measures, as well as the multiple constraints associated with other environmental resources that require mitigation or avoidance, it is unlikely that all cultural resources could be avoided. Therefore, this impact remains significant and unavoidable.

**Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural Resource Mitigation Measures for Cultural Resource Impacts Associated with Implementation of CM2-21**

Please see Mitigation Measure CUL-7 under Impact CUL-7 in the discussion of Alternative 1A

**Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Plans and Policies**

Constructing the proposed water conveyance facilities (CM1) and implementing CM2–CM21 could result in the potential for incompatibilities with plans and policies adopted to protect the cultural resources of the Delta. A number of plans and policies that coincide with the study area provide guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local Plans, Policies, and Regulations*. This overview of plan and policy compatibility evaluates whether Alternative 7 is compatible or incompatible with these policies, rather than whether impacts are adverse or not adverse or significant or less than significant. Because Alternative 7 would result in the same kinds of effects as Alternative 1A, this alternative is only compatible with some of the land use policies that govern the Plan Area. For policies that emphasize preservation or mitigation the BDCP will be compatible with these policies because significant cultural resources will be avoided where feasible, and mitigation will be implemented to reduce effects where avoidance and preservation is not feasible. For policies that emphasize preservation the BDCP is incompatible in some instances because multiple constraints governing the location of proposed facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local land use regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the environment.

**NEPA Effects:** Because federal agencies are not regulated by local land use policy, implementation of Alternative 7 would not result in a conflict with local land use laws for the purposes of NEPA.

**CEQA Conclusion:** The Plan Area is governed by cultural resource management policies adopted by the various counties with jurisdiction in this region. For policies that emphasize preservation or mitigation the BDCP will be compatible with these policies because DWR and appropriate federal agencies will implement cultural resource management practices that will identify significant resources, preserve such resources where feasible, and complete mitigation to reduce significant effects where preservation is not feasible. For policies that emphasize preservation the BDCP is incompatible in some instances because multiple constraints governing the location of proposed

1 facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as  
 2 described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local  
 3 land use regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 4 environment.

### 5 **18.3.5.15 Alternative 8—Dual Conveyance with Pipeline/Tunnel, Intakes 2,** 6 **3, and 5, and Increased Delta Outflow (9,000 cfs; Operational** 7 **Scenario F)**

#### 8 **Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of** 9 **Conveyance Facilities**

##### 10 **Identified Resources**

11 Record searches at the CHRIS and inventory efforts for the BDCP have identified six previously  
 12 recorded archaeological sites in the footprint of this alternative (Appendix 18B, *Identified Resources*  
 13 *Potentially Affected by the BDCP Alternatives*, Table 18B-1). Detailed site descriptions summarizing  
 14 available information regarding these resources, are provided in Appendix 18B, Section 18B.1.1,  
 15 *Archaeological Site Descriptions*. Two of these sites have human remains documented as part of the  
 16 deposit.

17 The resources are distributed evenly across the alignment, but are somewhat clustered where  
 18 construction of large above-ground features would occur, such as the northern end of the alignment,  
 19 at the intermediate forebay, and at the southern end of the alignment.

##### 20 **Significance of Identified Archaeological Resources**

21 The resources affected by this alternative have likely have significance and integrity within the  
 22 meaning of the NRHP and CRHR for the same reasons described above under Alternative 1A.

##### 23 **Anticipated Effects on Identified Resources**

24 Ground-disturbing construction is likely to disturb the deposits and thus materially alter their  
 25 ability to convey their significance. Much of the data potential in archaeological resources exists in  
 26 the spatial associations of different artifacts and other cultural material. Where artifacts that have  
 27 known associations with particular time periods occur adjacent to other material such as faunal  
 28 bone or plant remains from subsistence activity, the proximity of the materials allows an inference  
 29 as to the age of the subsistence remains, thereby allowing researchers to infer particular subsistence  
 30 strategies during different prehistoric periods. Intrusive ground-disturbing construction, vibration,  
 31 and other physical disturbance may disrupt these associations and thus disrupt the qualities for  
 32 which the sites may qualify as historical resources or historic properties. In addition, because not all  
 33 identified resources are legally accessible, these resources may be significant for other reasons than  
 34 their data potential. Indirect effects such as introduction of changes to the setting associated with  
 35 construction of new features or creation of new sources of noise (also a change to the setting) may  
 36 diminish the basis for the significance of these resources. For these reasons, construction has the  
 37 potential to materially impair these resources under CEQA and to adversely affect the resources as  
 38 defined by Section 106 of the NHPA. This effect would be adverse.

1 **NEPA Effects:** Construction may disturb NRHP and CRHR-eligible archaeological resources and  
 2 damage these resources. This damage may impair the integrity of these resources and thus reduce  
 3 their ability to convey their significance. For these reasons this effect would be adverse.

4 **CEQA Conclusion:** Construction of conveyance facilities would affect six identified archaeological  
 5 resources that occur in the footprint of this alternative. DWR identified these resources and finds  
 6 that they are likely to qualify as historical resources under CEQA (see the individual site descriptions  
 7 in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*); these resources thus have the  
 8 potential to qualify as historical resources. Therefore, these sites are considered historic resources  
 9 for the purposes of CEQA. This impact would be significant because construction could materially  
 10 alter or destroy the potential of these resources to yield information useful in archaeological  
 11 research, the basis for the significance of these resources, through excavation and disruption of the  
 12 spatial associations that contain meaningful information. Identified but currently inaccessible  
 13 resources may also be significant under other register criteria; indirect effects such as introduction  
 14 of new inconsistent changes to the setting may also diminish the significance of these resources.  
 15 Mitigation Measure CUL-1 would reduce this impact by recovering scientifically important material  
 16 prior to construction through the sensitive area, but would not guarantee that all of the scientifically  
 17 important material would be retrieved because feasible archaeological excavation only typically  
 18 retrieves a sample of the deposit, and portions of the site may remain after treatment with  
 19 important information. Construction could damage these remaining portions of the deposit.  
 20 Therefore, this impact is significant and unavoidable.

21 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
 22 **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
 23 **Archaeological Sites**

24 Please refer to Mitigation Measure CUL-1 under Alternative 1A.

25 **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory**  
 26 **Efforts**

27 This impact is substantially similar to Impact CUL-2 described under Alternative 1A. While the  
 28 intake locations would be reduced to three facilities, slightly reducing the potential for effects on  
 29 archaeological resources that have yet to be identified, the overall potential for effects on these  
 30 kinds of resources is similar.

31 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 32 resources by disrupting the spatial associations that convey data useful in research or changing the  
 33 setting such that the resource no longer contains its significance. The locations of various features  
 34 such as intakes, forebays, and tunnels shaft locations are depicted in Mapbook Figure M3-1 in  
 35 Chapter 3, *Description of Alternatives*. These impacts would thus materially impair these resources  
 36 within the meaning of CEQA and adversely affect the resources within the meaning of Section 106 of  
 37 the NHPA because this disturbance would impair the ability of these resources to yield data useful in  
 38 research. While Mitigation Measure CUL-2 would reduce these effects, it cannot guarantee all effects  
 39 would be avoided because relocation of proposed facilities to avoid all resources is unlikely. These  
 40 effects would remain adverse.

41 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 42 sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
 43 their integrity. For these reasons this effect would be adverse.

1 **CEQA Conclusion:** The footprint for this alternative is sensitive for both prehistoric and historic-era  
 2 resources that cannot be identified at this time because much of the footprint is not legally  
 3 accessible. Because many of these resources are likely to have data useful in prehistoric and historic  
 4 archaeological research, as well as the integrity to convey this significance, they are likely to qualify  
 5 as historical resources or unique archaeological sites under CEQA or historic properties under the  
 6 Section 106 of the NHPA. Ground-disturbing construction may materially alter the significance of  
 7 these resources by disrupting the spatial associations that could yield important data, resulting in a  
 8 significant effect. While mitigation is available (Mitigation Measure CUL-2), this mitigation cannot  
 9 guarantee that all eligible or significant resources would be preserved in place, or that all important  
 10 data would be retrieved before construction destroys these resources. The scale of the BDCP,  
 11 investment into existing designs, and the presence of other important environmental resources such  
 12 as habitat, natural communities, and wetlands that should be avoided are constraints on the  
 13 flexibility and feasibility of avoidance. For these reasons this impact is significant and unavoidable.

14 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of**  
 15 **Archaeological Resources**

16 Please refer to Mitigation Measure CUL-2 as described under Alternative 1A.

17 **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory**  
 18 **Efforts**

19 This impact is substantially similar to Impact CUL-3 described under Alternative 1A. While the  
 20 intake locations would be reduced to three facilities, slightly reducing the potential for effects on  
 21 archaeological resources, and thus the overall potential for effects on archaeological resources is  
 22 similar.

23 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
 24 resources by disrupting the spatial associations that convey data useful in research or changing the  
 25 setting such that the resource no longer contains its significance. These impacts would thus  
 26 materially impair these resources within the meaning of CEQA and adversely affect the resources  
 27 within the meaning of Section 106 of the NHPA because this disturbance would impair the ability of  
 28 these resources to yield data useful in research. Mitigation Measure CUL-3 would reduce these  
 29 effects, but cannot guarantee that all effects would be avoided because inadvertent disturbance of  
 30 some resources is inevitable given the scale of the proposed construction. These effects would  
 31 therefore remain adverse.

32 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
 33 sites that also may not necessarily be identified prior to construction. While cultural resource  
 34 inventories will be completed once legal access is secured, no inventory can ensure that all  
 35 resources are identified prior to construction. Because these sites may qualify for the NRHP or  
 36 CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
 37 adverse.

38 **CEQA Conclusion:** This impact would be significant. Construction has the potential to disturb  
 39 previously unidentified archaeological sites qualifying as historical resources, historic properties, or  
 40 unique archaeological resources. Because direct excavation, compaction, or other disturbance may  
 41 disrupt the spatial associations that contain scientifically useful information it would alter the  
 42 potential basis for eligibility, thus materially altering the resource and resulting in a significant  
 43 effect. Because these resources would not be identified prior to construction, they cannot be

1 recorded and effects cannot be managed through construction treatment. Mitigation Measures CUL-  
 2 3 would reduce but not entirely avoid the potential for this impact, by implementing construction  
 3 worker training, monitoring and discovery protocols. However, because archaeological resources  
 4 may not be identified prior to disturbance through these measures, the effect cannot be entirely  
 5 avoided. Therefore, this impact would remain significant and unavoidable.

6 **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
 7 **Perform Training of Construction Workers, and Conduct Construction Monitoring**

8 Please refer to Mitigation Measure CUL-3 as described under Alternative 1A.

9 **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

10 The footprint of this alternative is sensitive for buried human remains that may occur in isolation,  
 11 rather than as part of prehistoric or historic archaeological sites. This sensitivity and the impact  
 12 mechanisms are substantially similar to the sensitivity and impact mechanisms described under  
 13 Alternative 1A. While the intake locations would be reduced to three facilities, slightly reducing the  
 14 potential for effects on buried human remains, the overall potential for effects on buried human  
 15 remains is similar.

16 Ground-disturbing construction has the potential to damage and disinter buried human remains,  
 17 resulting in an adverse effect. While mitigation is available under Mitigation Measure CUL-4 to  
 18 reduce this effect, it cannot guarantee that this effect would be avoided entirely, therefore this effect  
 19 remains adverse.

20 **NEPA Effects:** Buried human remains may be damaged by this alternative because such remains  
 21 may occur either in isolation or as part of identified and previously unidentified archaeological  
 22 resources where construction will occur. This effect would be adverse.

23 **CEQA Conclusion:** This impact would be significant. The project area is sensitive for buried human  
 24 remains. Construction would likely result in disturbance of these features. Disturbance of human  
 25 remains, including remains interred outside of cemeteries is considered a significant impact in the  
 26 CEQA Appendix G checklist; therefore disturbance of these remains would result in a significant  
 27 effect. Mitigation measures would reduce the severity of this impact, but not to a less-than-  
 28 significant level because mitigation would not guarantee that these features could be discovered and  
 29 treated in advance of construction; the scale of construction makes it technically and economically  
 30 infeasible to perform the level of sampling necessary to identify all such resources prior to  
 31 construction. Therefore, this impact is considered significant and unavoidable.

32 **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if**  
 33 **Such Resources Are Discovered during Construction**

34 Please refer to Mitigation Measure CUL-4 as described under Alternative 1A.

35 **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic**  
 36 **Architectural/Built-Environment Resources Resulting from Construction Activities**

37 Built-environment resources that may be affected by this alternative include resources identified  
 38 and evaluated in inventory efforts conducted for other projects and resources identified in surveys  
 39 for the BDCP. Some of resources are considered historic properties for the purposes of this analysis  
 40 because they meet the criteria in the NRHP regulations (36 CFR 60.4), as described below. For the

1 similar reasons some are considered historical resources under CEQA. As identified in Appendix  
 2 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-15, a total of 19  
 3 built-environment resources have the potential to be directly or indirectly affected by construction  
 4 of this alternative. The specific nature and location of the impact mechanism for each affected  
 5 resource is also described in Table 18B-15. The affected resources have been evaluated for the  
 6 NRHP and CRHR. The basis for the eligibility recommendations for each resource is provided in  
 7 Appendix 18B, in Section 18B.1.2, *Built Environment Resource Descriptions*.

#### 8 **Discussion of Anticipated Effects on Identified and Accessible Resources**

9 Construction of intakes, transmission lines, and other features will result in direct and indirect  
 10 effects on identified and eligible built-environment resources. The exact effect mechanism for each  
 11 resource is described in Appendix 18B, *Identified Resources Potentially Affected by the BDCP*  
 12 *Alternatives*, Table 18B-15. Facility redesign to avoid direct impacts on historic architectural  
 13 resources is preferred as mitigation if possible. However, it is unlikely that all identified resources  
 14 can be avoided because of the scale of the BDCP and the need to balance avoidance of other  
 15 important environmental resources such as wetlands, natural communities, and special-status  
 16 species habitat. These effects would materially impair the resources within the meaning of CEQA  
 17 and result in adverse effects within the meaning of Section 106 because they would diminish the  
 18 characteristics that convey the significance of the resources. Some direct demolition and indirect  
 19 effects such as setting changes are likely to occur even with mitigation. Therefore, these effects  
 20 would be adverse.

21 **NEPA Effects:** This alternative would result in direct and indirect effects on NRHP and CRHR eligible  
 22 built environment resources. These alterations may diminish the integrity of these resources. For  
 23 these reasons this effect would be adverse.

24 **CEQA Conclusion:** Several identified historic-era built-environment resources have been identified  
 25 in the footprint of this alternative (19 individual resources, as described in Appendix 18B, *Identified*  
 26 *Resources Potentially Affected by the BDCP Alternatives*, Table 18B-15). These resources have been  
 27 evaluated for the CRHR and qualify as historical resources under CEQA. Construction of conveyance  
 28 facilities may require demolition of the historic built-environment resources. Construction may also  
 29 result in permanent indirect effects such as changes to the setting. Direct demolition or changes to  
 30 the setting would be material alterations because they would either remove the resource or alter the  
 31 resource character, resulting in an inability of the resource to convey its significance. For these  
 32 reasons this would be a significant effect. Mitigation described below may reduce these effects, but  
 33 cannot guarantee they would be entirely avoided. The scale of the BDCP and the constraints  
 34 imposed by other environmental resources make avoidance of all significant effects unlikely. For  
 35 these reasons this impact remains significant and unavoidable even with implementation of the  
 36 following mitigation measures.

#### 37 **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and implement a Built** 38 **Environment Treatment Plan**

39 Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 1A.

1 **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic**  
 2 **Architectural/Built-Environment Resources Resulting from Construction Activities**

3 The footprint of this alternative is sensitive for unidentified and unevaluated built-environment  
 4 resources that may have significance and integrity for the same reasons described under Alternative  
 5 1A. Approximately 71 unevaluated built-environment resources have been identified that may be  
 6 subject to direct or indirect effects as a result of the construction of this alternative (ICF 2012, see  
 7 tables of inaccessible properties and associated maps).

8 **Anticipated Effects**

9 Construction may result in direct demolition of these resources, damage through vibration, or  
 10 indirect effects such as changes to the setting. While mitigation is available to reduce these effects,  
 11 this mitigation cannot guarantee that all effects would be avoided because mitigation cannot  
 12 guarantee that eligible resources would be avoided and that adverse changes to the setting would  
 13 not occur. Construction has the potential to directly or indirectly damage built-environment  
 14 resources through demolition or introduction of new inconsistent features into the setting. These  
 15 changes would impair the ability of the resources to convey their significance because the character  
 16 defining elements or setting of the resource would be lost. Therefore, impacts on these resources  
 17 may be adverse.

18 **NEPA Effects:** This alternative may result in direct modification or indirect changes to the setting for  
 19 inaccessible and NRHP and CRHR-eligible built environment resources. These changes may diminish  
 20 the integrity of these resources. For these reasons, this effect would be adverse.

21 **CEQA Conclusion:** The study area is sensitive for built-environment resources that have not yet  
 22 been recorded and evaluated because the majority of the area is legally inaccessible. Inventory  
 23 efforts have not gathered complete information in these inaccessible areas. Many of these resources  
 24 are likely to be associated with important historical themes or persons, or possess high creative  
 25 values; therefore, they are likely to have significance under CEQA and the NHPA. Because many of  
 26 these resources remain intact and retain their rural agricultural setting they are also likely to have  
 27 integrity under CEQA and the NHPA. Therefore, many are likely to qualify as historic properties or  
 28 historical resources under the NHPA and CEQA. Construction of conveyance facilities may require  
 29 demolition of the historic built-environment resources. Construction may also result in permanent  
 30 indirect effects such as changes to the setting. Direct demolition or changes to the setting would be  
 31 material alterations because they would either remove the resource or alter the resource character,  
 32 resulting in an inability of the resource to convey its significance. For these reasons this would be a  
 33 significant effect. Mitigation described below may reduce these effects, but cannot guarantee they  
 34 would be entirely avoided. The scale of the BDCP and the constraints imposed by other  
 35 environmental resources make avoidance of all significant effects unlikely. For these reasons this  
 36 impact remains significant and unavoidable even with implementation of the following mitigation  
 37 measures.

38 **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 39 **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 40 **Develop Treatment to Resolve or Mitigate Adverse Impacts**

41 Please refer to Mitigation Measure CUL-6 under Alternative 1A.

## 1 **Impact CUL-7: Effects of Other Conservation Measures on Cultural Resources**

2 This impact describes the potential effects of other conservation measures at a program level of  
 3 detail, with the exception of *CM1 Water Facilities and Operation*. This impact is substantially similar  
 4 to Impact CUL-7 as discussed under Alternative 1A because the nature of the affected resources,  
 5 scope of activities, and geographic area of effects are generally similar. These measures would result  
 6 in effects on cultural resources when ground-disturbing work is performed to construct  
 7 improvements and enhance or restore natural communities. Direct effects would occur through  
 8 demolition or destruction of NRHP-, CRHR-, and/or local registry-eligible prehistoric and historic  
 9 archaeological sites, unique archaeological sites, TCPs, human remains, and built-environment  
 10 resources. Indirect effects may occur where changes to the setting alter the existing setting in a  
 11 manner that is inconsistent with the feeling and association of the resource. Because the ability of  
 12 the resources to convey their significance would be lost this effect would materially alter these  
 13 resources under CEQA and would be adverse under NEPA. For example, reclaimed agricultural  
 14 landscapes that are converted to habitat may no longer convey the themes of agriculture and  
 15 settlement, and thus would be inconsistent with remaining features associated with rural historic  
 16 landscapes created by reclamation, cultivation, and ranching.

17 Mitigation Measure CUL-7 below addresses this effect. However, because of the large acreages of  
 18 land included in all conservation measures that would be implemented under this alternative, it is  
 19 unlikely that all effects on NRHP-, CRHR-, and /or local registry-eligible resources and unique  
 20 archaeological sites could be avoided. Therefore, this impact would be adverse.

21 **NEPA Effects:** Implementation of conservation measures will result in ground disturbing work and  
 22 introduction of new infrastructure to the Plan Area. These physical modifications may result in  
 23 direct effects on NRHP and CRHR eligible resources. These changes may therefore reduce the  
 24 integrity of these resources. For these reasons these effects would be adverse.

25 **CEQA Conclusion:** Construction and implementation of conservation measures would result in  
 26 ground-disturbing work that could alter the significant characteristics of NRHP, CRHR, and/or local  
 27 registry-eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and  
 28 built-environment resources such as historic architectural structures and rural historic landscapes.  
 29 The same construction may damage unique archaeological sites. This construction would likely  
 30 result in materially adverse changes for the following reasons.

- 31 ● Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
 32 contain data useful in research, thus diminishing or destroying the basis for the significance of  
 33 the resource.
- 34 ● Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
 35 built-environment resources, resulting in an inability of the resource to convey its significance.
- 36 ● Ground-disturbing construction may either directly demolish or change the setting of TCPs  
 37 resulting in an inability of the resource to convey its significance.
- 38 ● Ground-disturbing construction may inadvertently disturb human remains.

39 The alteration of a resource that changes the characteristics that convey its significance is a material  
 40 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
 41 CEQA under the Appendix G checklist. Because this construction would materially alter these  
 42 categories of resources and disturb human remains it would result in a significant impact. Mitigation  
 43 is available to reduce these impacts by identifying and evaluating resources, avoiding resources

1 where possible, and developing treatment where avoidance is not possible. In addition construction  
 2 would be monitored. However, because of the acreage associated with the proposed restoration  
 3 under conservation measures, as well as the multiple constraints associated with other  
 4 environmental resources that require mitigation or avoidance, it is unlikely that all cultural  
 5 resources could be avoided. Therefore, this impact remains significant and unavoidable.

6 **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
 7 **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
 8 **Implementation of CM2-21**

9 Please see Mitigation Measure CUL-7 under Impact CUL-7 in the discussion of Alternative 1A

10 **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Other**  
 11 **Conservation Measures with Plans and Policies**

12 Constructing the proposed water conveyance facilities (CM1) and implementing CM2–CM21 could  
 13 result in the potential for incompatibilities with plans and policies adopted to protect the cultural  
 14 resources of the Delta. A number of plans and policies that coincide with the study area provide  
 15 guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local*  
 16 *Plans, Policies, and Regulations*. This overview of plan and policy compatibility evaluates whether  
 17 Alternative 8 is compatible or incompatible with these policies, rather than whether impacts are  
 18 adverse or not adverse or significant or less than significant. Because Alternative 8 would result in  
 19 the same kinds of effects as Alternative 1A, this alternative is only compatible with some of the land  
 20 use policies that govern the Plan Area. For policies that emphasize preservation or mitigation the  
 21 BDCP will be compatible with these policies because significant cultural resources will be avoided  
 22 where feasible, and mitigation will be implemented to reduce effects where avoidance and  
 23 preservation is not feasible. For policies that emphasize preservation the BDCP is incompatible in  
 24 some instances because multiple constraints governing the location of proposed facilities makes  
 25 preservation of all significant cultural resources unlikely. It should be noted that, as described in  
 26 Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local land use  
 27 regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 28 environment.

29 **NEPA Effects:** Because federal agencies are not regulated by local land use policy, implementation of  
 30 Alternative 8 would not result in a conflict with local land use laws for the purposes of NEPA.

31 **CEQA Conclusion:** The Plan Area is governed by cultural resource management policies adopted by  
 32 the various counties with jurisdiction in this region. For policies that emphasize preservation or  
 33 mitigation the BDCP will be compatible with these policies because DWR and appropriate federal  
 34 agencies will implement cultural resource management practices that will identify significant  
 35 resources, preserve such resources where feasible, and complete mitigation to reduce significant  
 36 effects where preservation is not feasible. For policies that emphasize preservation the BDCP is  
 37 incompatible in some instances because multiple constraints governing the location of proposed  
 38 facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as  
 39 described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local  
 40 land use regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 41 environment.

1 **18.3.5.16 Alternative 9—Through Delta/Separate Corridors (15,000 cfs;**  
 2 **Operational Scenario G)**

3 **Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of**  
 4 **Conveyance Facilities**

5 **Identified Resources**

6 Record searches at the CHRIS and inventory efforts for the BDCP have identified four previously  
 7 recorded archaeological sites in the footprint of this alternative as indicated in Appendix 18B,  
 8 *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-1. Individual site  
 9 descriptions are provided in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*.

10 **Significance of Identified Archaeological Resources**

11 The site record for CA-SAC-47 describes a site measuring 30 meters by 90 meters across. The sparse  
 12 record only indicates that Dr. Robert Heizer removed artifacts from the site to a museum. The size of  
 13 the deposit is consistent with expectations for a midden site. The site record does indicate that the  
 14 erosion and damage to the site is “slight.” The site record for CA-SAC-75 describes a midden deposit  
 15 distributed in a linear form extending north-south for approximately 400 meters. The deposit at CA-  
 16 SAC-249 contains human remains, obsidian and chert debitage, chert projectile points, fire-cracked  
 17 rock, mortar and pestle fragments, and glass beads. This prehistoric deposit was recorded in 1962,  
 18 with no subsequent update to the site record. The site record indicates that the site contains shell,  
 19 bone, burnt clay objects in a deposit spanning approximately 12 meters by 3 meters. The site record  
 20 indicates some loss of integrity through surface grading for agriculture. The historic archaeological  
 21 deposit recorded at CA-SJo-232-H consists of historic cultural debris containing the remains of  
 22 agricultural equipment, old stoves, glass, ceramic and metal. The site measures approximately 350  
 23 feet across (dimensions for historic resources are typically given in standard increments, the site  
 24 spans 107 meters). The deposit was associated with several standing structures at the time of the  
 25 last site record update (1991), which may have subsequently collapsed; the structures appear to be  
 26 leaning in the available photographs. Because these materials and deposits may yield information  
 27 useful in prehistoric and historic research they likely have significance under the fourth criterion for  
 28 the CRHR and the NRHP. If these sites retain sufficient integrity to convey this significance they may  
 29 qualify as historical resources or historic properties.

30 **Anticipated Effects on Identified Resources**

31 The exact location of these resources cannot be disclosed because such disclosure might lead to  
 32 damage. However CA-SAC-47 and CA-SAC-75 occur near a potential work areas. If the site  
 33 boundaries actually extend into the work areas, ground-disturbing construction, staging, or other  
 34 activity may damage this resource. The mapped location of CA-SAC-249 coincides with the footprint  
 35 of proposed channel enlargement. Ground-disturbing construction may thus damage this resource.  
 36 The mapped boundaries of CA-SJo-232-H coincide with the location of an operable barrier.  
 37 Construction of this feature may disturb and damage the resource.

38 Much of the data potential in archaeological resources exists in the spatial associations of different  
 39 artifacts and other cultural material. Where artifacts that have known associations with particular  
 40 time periods occur adjacent to other material such as faunal bone or plant remains from subsistence  
 41 activity, the proximity of the materials allows an inference as to the age of the subsistence remains,  
 42 thereby allowing researchers to infer particular subsistence strategies during different prehistoric

1 periods. Intrusive ground-disturbing construction, vibration, and other physical disturbance may  
 2 disrupt these associations and thus disrupt the qualities for which the sites may qualify as historical  
 3 resources or historic properties. In addition, because not all identified resources are legally  
 4 accessible, these resources may be significant for other reasons than their data potential. Indirect  
 5 effects such as introduction of changes to the setting associated with construction of new features or  
 6 creation of new sources of noise (also a change to the setting) may diminish the basis for the  
 7 significance of these resources. For these reasons, construction has the potential to materially  
 8 impair these resources under CEQA and to adversely affect the resources as defined by Section 106  
 9 of the NHPA. This effect would be adverse.

10 **NEPA Effects:** Construction may disturb NRHP and CRHR-eligible archaeological resources and  
 11 damage these resources. This damage may impair the integrity of these resources and thus reduce  
 12 their ability to convey their significance. For these reasons this effect would be adverse.

13 **CEQA Conclusion:** Construction of conveyance facilities would affect four identified archaeological  
 14 resources that occur in the footprint of this alternative. DWR identified these resources and finds  
 15 that they are likely to qualify as historical resources under CEQA (see the individual site descriptions  
 16 in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*); these resources thus have the  
 17 potential to qualify as historical resources. Therefore, these sites are considered historic resources  
 18 for the purposes of CEQA. This impact would be significant because construction could materially  
 19 alter or destroy the potential of these resources to yield information useful in archaeological  
 20 research, the basis for the significance of these resources, through excavation and disruption of the  
 21 spatial associations that contain meaningful information. Identified but currently inaccessible  
 22 resources may also be significant under other register criteria; indirect effects such as introduction  
 23 of new inconsistent changes to the setting may also diminish the significance of these resources.  
 24 Mitigation Measure CUL-1 would reduce this impact by recovering scientifically important material  
 25 prior to construction through the sensitive area, but would not guarantee that all of the scientifically  
 26 important material would be retrieved because feasible archaeological excavation only typically  
 27 retrieves a sample of the deposit, and portions of the site may remain after treatment with  
 28 important information. Construction could damage these remaining portions of the deposit.  
 29 Therefore, this impact is significant and unavoidable.

30 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
 31 **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
 32 **Archaeological Sites**

33 Please refer to Mitigation Measure CUL-1 for Alternative 1A, above.

34 **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory**  
 35 **Efforts**

36 An inventory for the majority of the footprint for this alternative has not been conducted because  
 37 the footprint is not currently legally accessible (see Appendix 4A, *Summary of Survey Data Collection*  
 38 *by Department of Water Resources to Obtain Information Regarding Baseline Conditions in Areas That*  
 39 *Could Be Affected by BDCP*). Furthermore, complete evaluation of all potentially affected resources  
 40 associated with this alternative may require destructive test excavation in advance of any final  
 41 decision regarding the selection of the alternative. Because several prehistoric archaeological sites  
 42 qualifying as historical resources have been identified in the footprint of this alternative, the  
 43 remaining portion of the footprint for this conveyance feature is sensitive for previously

1 unidentified archaeological resources. Record searches at the relevant information centers of the  
2 CHRIS reviewed the mapped location of previous cultural resource inventories in the footprint of  
3 this alternative and the vicinity. This map review revealed that a cultural resources inventory has  
4 never been conducted in the majority of the footprint for Alternative 9. The presence of three  
5 archaeological sites that qualify as historical resources and historic properties in the portion of the  
6 footprint that has been previously inspected provides a sample of the likely density and occurrence  
7 of resources in the remaining footprint. For this reason, additional prehistoric archaeological  
8 resources are likely to be found in the portion of the footprint where surveys have not been  
9 conducted, once access is available and such studies can be completed.

10 In addition to prehistoric archaeological resources, the BDCP area is sensitive for historic-era  
11 archaeological resources. It is likely that previously unidentified historic archaeological sites occur  
12 in the footprint of this alternative because of the intensity of human activity in the Plan Area during  
13 the historic era, as described in Section 18.1.6, *Historic-Era Setting*.

14 Prehistoric sites in the Plan Area tend to be large and rich in material remains, including human  
15 burials and associated ornaments and beads. Habitation debris also often contains both floral and  
16 faunal material that can be used for both radiocarbon dating and analysis regarding subsistence  
17 strategies. In addition, the large scale of typical prehistoric archaeological resources suggests  
18 portions of these deposits will remain with sufficient integrity to convey research information.  
19 Therefore, these sites are likely to qualify as historical resources or unique archaeological resources  
20 under CEQA and historic properties under Section 106 of the NHPA.

21 Historic sites are likely to be associated with the historic-era themes of settlement, reclamation,  
22 agriculture, and flood management in the Delta region. Because the reclamation and agricultural  
23 development of the Delta region provided part of the economic base for the development of  
24 surrounding urban centers, these historic themes are significant at both a state and national level. In  
25 addition, the intensity of historic activity in the Delta region suggests that many of these resources  
26 are likely to retain sufficient integrity to convey this significance. Therefore, these sites are likely to  
27 qualify as historical resources or unique archaeological resources under CEQA and historic  
28 properties under Section 106 of the NHPA.

29 Absent mitigation, ground-disturbing construction is likely to physically damage many of these  
30 resources by disrupting the spatial associations that convey data useful in research or changing the  
31 setting such that the resource no longer contains its significance. The locations of ground-disturbing  
32 features such as borrow and spoil areas, control structures, and pumping plants are depicted in  
33 Mapbook Figure M3-5 in Chapter 3, *Description of Alternatives*. These impacts would thus materially  
34 impair these resources within the meaning of CEQA and adversely affect the resources within the  
35 meaning of Section 106 of the NHPA. These effects would be adverse.

36 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
37 sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
38 their integrity. For these reasons this effect would be adverse.

39 **CEQA Conclusion:** The footprint for this alternative is sensitive for both prehistoric and historic-era  
40 resources that cannot be identified at this time because much of the footprint is not legally  
41 accessible. Because many of these resources are likely to have data useful in prehistoric and historic  
42 archaeological research, as well as the integrity to convey this significance, they are likely to qualify  
43 as historical resources or unique archaeological sites under CEQA or historic properties under the  
44 Section 106 of the NHPA. Ground-disturbing construction may materially alter the significance of

1 these resources by disrupting the spatial associations that could yield important data, resulting in a  
 2 significant effect. While mitigation is available (Mitigation Measure CUL-2), this mitigation cannot  
 3 guarantee that all eligible or significant resources would be preserved in place, or that all important  
 4 data would be retrieved before construction destroys these resources. The scale of the BDCP,  
 5 investment into existing designs, and the presence of other important environmental resources such  
 6 as habitat, natural communities, and wetlands that should be avoided are constraints on the  
 7 flexibility and feasibility of avoidance. For these reasons this impact is significant and unavoidable.

8 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of**  
 9 **Archaeological Resources**

10 Please refer to Mitigation Measure CUL-2 for Alternative 1A, above.

11 **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory**  
 12 **Efforts**

13 Appendix 18A, *Archaeological Resources Sensitivity Assessment*, presents an overview of the  
 14 sensitivity of the Plan Area for previously unidentified archaeological resources and demonstrates  
 15 that additional prehistoric and historic-era sites that have not yet been identified are almost certain  
 16 to occur in the portion of the Plan Area where this alternative would be constructed. While surveys  
 17 will be completed for the footprint, once access is available, such surveys cannot guarantee that all  
 18 sites will be identified prior to construction. The rapid rate of at which alluvium and sediment  
 19 accumulates in the Delta region, and the geologically unstable nature of the floodplain and riverbank  
 20 environments in which these resources may occur makes it likely that numerous sites occur buried  
 21 below surface soils. Cultural resource inventory efforts cannot always identify such resources, even  
 22 with intermittent surface excavation designed to reveal sites with little or no surface manifestation  
 23 because exhaustive sampling to identify every resource is economically and technically infeasible.  
 24 These sites may also occur buried at the depth at which tunnel boring operations would be  
 25 performed.

26 Many of these unidentified prehistoric resources are likely to qualify as historical resources, historic  
 27 properties, or unique archaeological resources because prehistoric sites in the Delta region tend to  
 28 be large and contain a rich material culture. In particular, burial features tend to be associated with  
 29 numerous shell ornaments, charmstones, and associated grave goods. Habitation components often  
 30 contain abundant faunal and floral remains that elucidate prehistoric adaptations such as  
 31 subsistence methods.

32 In addition to prehistoric archaeological resources, the BDCP area is sensitive for historic-era  
 33 archaeological resources. Archaeological debris found in historic era archaeological sites activity is  
 34 likely to be associated with significant themes such as agriculture, reclamation, and settlement of the  
 35 Delta region. The size of the BDCP area and the intensity of historic activity suggest that some of  
 36 these resources may qualify as historical resources, historic properties, or unique archaeological  
 37 resources.

38 Ground-disturbing work may disturb and damage these resources before they can be identified and  
 39 avoided during monitoring efforts required under Mitigation Measure CUL-3. This damage and  
 40 disturbance may materially impair these resources within the meaning of CEQA or adversely affect  
 41 the resources within the meaning of Section 106 because this disturbance would impair the ability  
 42 of these resources to yield data useful in research. While Mitigation Measure CUL-3 would reduce

1 the potential for this impact, it would not guarantee the impact would be avoided entirely.  
2 Therefore, this impact is adverse.

3 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
4 sites that also may not necessarily be identified prior to construction. While cultural resource  
5 inventories will be completed once legal access is secured, no inventory can ensure that all  
6 resources are identified prior to construction. Because these sites may qualify for the NRHP or  
7 CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
8 adverse.

9 **CEQA Conclusion:** This impact would be significant. Construction has the potential to disturb  
10 previously unidentified archaeological sites qualifying as historical resources, historic properties, or  
11 unique archaeological resources. Because direct excavation, compaction, or other disturbance may  
12 disrupt the spatial associations that contain scientifically useful information it would alter the  
13 potential basis for eligibility, thus materially altering the resource and resulting in a significant  
14 effect. Because these resources would not be identified prior to construction, they cannot be  
15 recorded and effects cannot be managed through construction treatment. Mitigation Measures CUL-  
16 3 would reduce but not entirely avoid the potential for this impact, by implementing construction  
17 worker training, monitoring and discovery protocols. However, because archaeological resources  
18 may not be identified prior to disturbance through these measures, the effect cannot be entirely  
19 avoided. Therefore, this impact would remain significant and unavoidable.

20 **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
21 **Perform Training of Construction Workers, and Conduct Construction Monitoring**

22 Please refer to Mitigation Measure CUL-3, above, for Alternative 1A.

23 **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

24 The footprint of this alternative is sensitive for buried human remains that may occur in isolation,  
25 rather than as part of prehistoric or historic archaeological sites. Historic and prehistoric human  
26 remains have been discovered as isolated interments rather than as part of larger sites. Because  
27 these isolated resources are not associated with larger deposits, their distribution and depth cannot  
28 be estimated. Construction of this alternative would require ground-disturbing work that may  
29 damage previously unidentified human remains, resulting in direct effects on these resources. While  
30 inventory and monitoring efforts are prescribed above under Mitigation Measures CUL-2 and CUL-3,  
31 the large acreages subject to disturbance under this alternative make exhaustive sampling to  
32 identify all buried and isolated human remains technically and economically infeasible. For these  
33 reasons the potential remains that such resources may be damaged or exposed before they can be  
34 discovered through inventory or monitoring. This effect would be adverse.

35 **NEPA Effects:** Buried human remains may be damaged by this alternative because such remains  
36 may occur either in isolation or as part of identified and previously unidentified archaeological  
37 resources where construction will occur. This effect would be adverse.

38 **CEQA Conclusion:** This impact would be significant. The project area is sensitive for buried human  
39 remains. Construction would likely result in disturbance of these features. Disturbance of human  
40 remains, including remains interred outside of cemeteries is considered a significant impact in the  
41 CEQA Appendix G checklist; therefore disturbance of these remains would result in a significant  
42 effect. Mitigation measures would reduce the severity of this impact, but not to a less-than-

1 significant level because mitigation would not guarantee that these features could be discovered and  
 2 treated in advance of construction; the scale of construction makes it technically and economically  
 3 infeasible to perform the level of sampling necessary to identify all such resources prior to  
 4 construction. Therefore, this impact is considered significant and unavoidable.

5 **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if**  
 6 **Such Resources Are Discovered during Construction**

7 Please refer to Mitigation Measure CUL-4, above, for Alternative 1A.

8 **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic**  
 9 **Architectural/Built-Environment Resources Resulting from Construction Activities**

10 Built-environment resources that may be affected by this alternative include resources identified  
 11 and evaluated in inventory efforts conducted for other projects and resources identified in surveys  
 12 for the BDCP. Some of resources are considered historic properties for the purposes of this analysis  
 13 because they meet the criteria in the NRHP regulations (36 CFR 60.4), as described below. For the  
 14 similar reasons some are considered historical resources under CEQA. As identified in Appendix  
 15 18B, *Identified Resources Potentially Affected by the BDCP Alternatives*, Table 18B-16, a total of 13  
 16 built-environment resources have the potential to be directly or indirectly affected by construction  
 17 of this alternative. The specific nature and location of the impact mechanism for each affected  
 18 resource is also described in Table 18B-16. The affected resources have been evaluated for the  
 19 NRHP and CRHR. The basis for the eligibility recommendations for each resource is provided in  
 20 Appendix 18B, in Section 18B.1.2, *Built Environment Resource Descriptions*.

21 **Discussion of Anticipated Effects on Identified and Accessible Resources**

22 Construction of transmission lines, canals leading to operable barriers, and intakes, and other  
 23 features have the potential to result in direct and indirect effects on built-environment resources.  
 24 The exact effect mechanism for each resource is described in Appendix 18B, *Identified Resources*  
 25 *Potentially Affected by the BDCP Alternatives*, Table 18B-16. Facility redesign to avoid direct impacts  
 26 on historic architectural resources is preferred as mitigation if possible. However, it is unlikely that  
 27 all identified resources can be avoided because of the scale of the BDCP and the need to balance  
 28 avoidance of other important environmental resources such as wetlands, natural communities, and  
 29 special-status species habitat. These effects would materially impair the resources within the  
 30 meaning of CEQA and result in adverse effects within the meaning of Section 106 because they  
 31 would diminish the characteristics that convey the significance of the resources. Some direct  
 32 demolition and indirect effects such as setting changes are likely to occur even with mitigation.  
 33 Therefore, these effects would be adverse.

34 **NEPA Effects:** This alternative would result in direct and indirect effects on NRHP and CRHR eligible  
 35 built environment resources. These alterations may diminish the integrity of these resources. For  
 36 these reasons this effect would be adverse.

37 **CEQA Conclusion:** Several identified historic-era built-environment resources have been identified  
 38 in the footprint of this alternative (13 individual resources, as described in Appendix 18B, *Identified*  
 39 *Resources Potentially Affected by the BDCP Alternatives*, Table 18B-16). These resources have been  
 40 evaluated for the CRHR and qualify as historical resources under CEQA. Construction of conveyance  
 41 facilities may require demolition of the historic built-environment resources. Construction may also  
 42 result in permanent indirect effects such as changes to the setting. Direct demolition or changes to

1 the setting would be material alterations because they would either remove the resource or alter the  
 2 resource character, resulting in an inability of the resource to convey its significance. For these  
 3 reasons this would be a significant effect. Mitigation described below may reduce these effects, but  
 4 cannot guarantee they would be entirely avoided. The scale of the BDCP and the constraints  
 5 imposed by other environmental resources make avoidance of all significant effects unlikely. For  
 6 these reasons this impact remains significant and unavoidable even with implementation of the  
 7 following mitigation measures.

8 **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and implement a Built**  
 9 **Environment Treatment Plan**

10 Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 1A

11 **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic**  
 12 **Architectural/Built-Environment Resources Resulting from Construction Activities**

13 The footprint of this alternative is sensitive for unidentified and unevaluated built-environment  
 14 resources that may have significance and integrity for the same reasons described under Alternative  
 15 1A. Approximately 29 unevaluated built-environment resources have been identified that may be  
 16 subject to direct or indirect effects as a result of the construction of this alternative (ICF 2012, see  
 17 tables of inaccessible properties and associated maps).

18 **Anticipated Effects**

19 Construction may result in direct demolition of these resources, damage through vibration, or  
 20 indirect effects such as changes to the setting. While mitigation is available to reduce these effects,  
 21 this mitigation cannot guarantee that all effects would be avoided because mitigation cannot  
 22 guarantee that eligible resources would be avoided and that adverse changes to the setting would  
 23 not occur. Construction has the potential to directly or indirectly damage built-environment  
 24 resources through demolition or introduction of new inconsistent features into the setting. These  
 25 changes would impair the ability of the resources to convey their significance because the character  
 26 defining elements or setting of the resource would be lost. Therefore, impacts on these resources  
 27 may be adverse.

28 **NEPA Effects:** This alternative may result in direct modification or indirect changes to the setting for  
 29 inaccessible and NRHP and CRHR-eligible built environment resources. These changes may diminish  
 30 the integrity of these resources. For these reasons, this effect would be adverse.

31 **CEQA Conclusion:** The study area is sensitive for built-environment resources that have not yet  
 32 been recorded and evaluated because the majority of the area is legally inaccessible. Inventory  
 33 efforts have not gathered complete information in these inaccessible areas. Many of these resources  
 34 are likely to be associated with important historical themes or persons, or possess high creative  
 35 values; therefore, they are likely to have significance under CEQA and the NHPA. Because many of  
 36 these resources remain intact and retain their rural agricultural setting they are also likely to have  
 37 integrity under CEQA and the NHPA. Therefore, many are likely to qualify as historic properties or  
 38 historical resources under the NHPA and CEQA. Construction of conveyance facilities may require  
 39 demolition of the historic built-environment resources. Construction may also result in permanent  
 40 indirect effects such as changes to the setting. Direct demolition or changes to the setting would be  
 41 material alterations because they would either remove the resource or alter the resource character,  
 42 resulting in an inability of the resource to convey its significance. For these reasons this would be a

1 significant effect. Mitigation described below may reduce these effects, but cannot guarantee they  
 2 would be entirely avoided. The scale of the BDCP and the constraints imposed by other  
 3 environmental resources make avoidance of all significant effects unlikely. For these reasons this  
 4 impact remains significant and unavoidable even with implementation of the following mitigation  
 5 measures.

6 **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 7 **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 8 **Develop Treatment to Resolve or Mitigate Adverse Impacts**

9 Please refer to Mitigation Measure CUL-6 under Alternative 1A.

10 **Impact CUL-7: Effects of Other Conservation Measures on Cultural Resources**

11 This impact describes the potential effects of other conservation measures at a program level of  
 12 detail, with the exception of *CM1 Water Facilities and Operation*. The following conservation  
 13 measures would not result in impacts on cultural resources because they consist of changes to  
 14 existing activities, or planning and regulatory actions that do not have the potential to result in  
 15 ground-disturbing work with effects on cultural resources.

- 16 • *CM11: Natural Communities Enhancement and Management*
- 17 • *CM12: Methylmercury Management*
- 18 • *CM13: Invasive Aquatic Vegetation Control*
- 19 • *CM14: Stockton Deep Water Ship Channel Dissolved Oxygen Levels*
- 20 • *CM15: Predator Control*
- 21 • *CM16: Nonphysical Fish Barriers*
- 22 • *CM17: Illegal Harvest Reduction*
- 23 • *CM19: Urban Stormwater Treatment*
- 24 • *CM20: Recreational Users Invasive Species Program*
- 25 • *CM21: Nonproject Diversions*

26 Implementation of the remaining conservation measures could result in effects on prehistoric and  
 27 historic archaeological resources, as well as TCPs and the built environment because the scope of  
 28 conservation actions includes large areas of land, and the areas identified for potential restoration  
 29 or other conservation actions are sensitive for cultural resources, including prehistoric and historic  
 30 archaeological sites as well as human remains, architectural resources, and rural historic  
 31 landscapes. Specific conservation actions that would result in foreseeable ground-disturbing work  
 32 that could alter or impair the significance of NRHP-, CRHR-, or local registry-eligible cultural  
 33 resources are listed below.

- 34 • *CM2: Yolo Bypass Fisheries Enhancement*
- 35 • *CM3: Natural Communities Protection and Restoration*
- 36 • *CM4: Tidal Natural Communities Restoration*
- 37 • *CM5: Seasonally Inundated Floodplain Restoration*

- 1       • *CM6: Channel Margin Enhancement*
- 2       • *CM7: Riparian Natural Community Restoration*
- 3       • *CM8: Grassland Natural Community Restoration*
- 4       • *CM9: Vernal Pool Complex Restoration*
- 5       • *CM10: Nontidal Marsh Restoration*
- 6       • *CM18: Conservation Hatcheries*

7       These measures would result in effects on cultural resources when ground-disturbing work is  
 8       performed to construct improvements and enhance or restore natural communities. Direct effects  
 9       would occur through demolition or destruction of NRHP-, CRHR-, and/or local registry-eligible  
 10       prehistoric and historic archaeological sites, unique archaeological sites, TCPs, human remains, and  
 11       built-environment resources. Indirect effects may occur where changes to the setting alter the  
 12       existing setting in a manner that is inconsistent with the feeling and association of the resource. For  
 13       example, reclaimed agricultural landscapes that are converted to habitat may no longer convey the  
 14       themes of agriculture and settlement, and thus would be inconsistent with remaining features  
 15       associated with rural historic landscapes created by reclamation, cultivation, and ranching. These  
 16       effects would be material alterations and adverse effects because they would diminish or destroy  
 17       the ability of these resources to convey their significance.

18       Because of the large acreages of land included in all conservation measures that would be  
 19       implemented under this alternative, it is unlikely that all effects on NRHP-, CRHR-, and /or local  
 20       registry-eligible resources and unique archaeological sites could be avoided. Therefore, this impact  
 21       would be adverse. Mitigation Measure CUL-7 below addresses this effect.

22       **NEPA Effects:** Implementation of conservation measures will result in ground disturbing work and  
 23       introduction of new infrastructure to the Plan Area. These physical modifications may result in  
 24       direct effects on NRHP and CRHR eligible resources. These changes may therefore reduce the  
 25       integrity of these resources. For these reasons these effects would be adverse.

26       **CEQA Conclusion:** Construction and implementation of conservation measures would result in  
 27       ground-disturbing work that could alter the significant characteristics of NRHP, CRHR, and/or local  
 28       registry-eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and  
 29       built-environment resources such as historic architectural structures and rural historic landscapes.  
 30       The same construction may damage unique archaeological sites. This construction would likely  
 31       result in materially adverse changes for the following reasons.

- 32       • Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
 33       contain data useful in research, thus diminishing or destroying the basis for the significance of  
 34       the resource.
- 35       • Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
 36       built-environment resources, resulting in an inability of the resource to convey its significance.
- 37       • Ground-disturbing construction may either directly demolish or change the setting of TCPs  
 38       resulting in an inability of the resource to convey its significance.
- 39       • Ground-disturbing construction may inadvertently disturb human remains.

1 The alteration of a resource that changes the characteristics that convey its significance is a material  
 2 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
 3 CEQA under the Appendix G checklist. Because this construction would materially alter these  
 4 categories of resources and disturb human remains it would result in a significant impact. Mitigation  
 5 is available to reduce these impacts by identifying and evaluating resources, avoiding resources  
 6 where possible, and developing treatment where avoidance is not possible. In addition construction  
 7 would be monitored. However, because of the acreage associated with the proposed restoration  
 8 under conservation measures, as well as the multiple constraints associated with other  
 9 environmental resources that require mitigation or avoidance, it is unlikely that all cultural  
 10 resources could be avoided. Therefore, this impact remains significant and unavoidable.

11 **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
 12 **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
 13 **Implementation of CM2-21**

14 Please refer to Mitigation Measure CUL-7 above, for Alternative 1A.

15 **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Other**  
 16 **Conservation Measures with Plans and Policies**

17 Constructing the proposed water conveyance facilities (CM1) and implementing CM2-CM21 could  
 18 result in the potential for incompatibilities with plans and policies adopted to protect the cultural  
 19 resources of the Delta. A number of plans and policies that coincide with the study area provide  
 20 guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local*  
 21 *Plans, Policies, and Regulations*. This overview of plan and policy compatibility evaluates whether  
 22 Alternative 9 is compatible or incompatible with these policies, rather than whether impacts are  
 23 adverse or not adverse or significant or less than significant. Because Alternative 9 would result in  
 24 the same kinds of effects as Alternative 1A, this alternative is only compatible with some of the land  
 25 use policies that govern the Plan Area. For policies that emphasize preservation or mitigation the  
 26 BDCP will be compatible with these policies because significant cultural resources will be avoided  
 27 where feasible, and mitigation will be implemented to reduce effects where avoidance and  
 28 preservation is not feasible. For policies that emphasize preservation the BDCP is incompatible in  
 29 some instances because multiple constraints governing the location of proposed facilities makes  
 30 preservation of all significant cultural resources unlikely. It should be noted that, as described in  
 31 Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local land use  
 32 regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 33 environment.

34 **NEPA Effects:** Because federal agencies are not regulated by local land use policy, implementation of  
 35 Alternative 0 would not result in a conflict with local land use laws for the purposes of NEPA.

36 **CEQA Conclusion:** The Plan Area is governed by cultural resource management policies adopted by  
 37 the various counties with jurisdiction in this region. For policies that emphasize preservation or  
 38 mitigation the BDCP will be compatible with these policies because DWR and appropriate federal  
 39 agencies will implement cultural resource management practices that will identify significant  
 40 resources, preserve such resources where feasible, and complete mitigation to reduce significant  
 41 effects where preservation is not feasible. For policies that emphasize preservation the BDCP is  
 42 incompatible in some instances because multiple constraints governing the location of proposed  
 43 facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as

1 described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local  
 2 land use regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 3 environment.

## 4 **18.3.6 Effects and Mitigation Approaches—Alternatives 4A,** 5 **2D, and 5A**

### 6 **18.3.6.1 No Action Alternative Early Long-Term**

7 The effects of the No Action Alternative (ELT) would be similar to the effects described for the No  
 8 Action Alternative (LLT) in Section 18.3.5.1. Activities occurring within the Plan Area under the No  
 9 Action Alternative (ELT) that could affect prehistoric and historic archaeological sites, buried human  
 10 remains, and built-environment resources would be similar to those described under Existing  
 11 Conditions. These activities include ongoing programs implemented by federal, state, and local  
 12 agencies and non-profit groups, as well as projects that are permitted or assumed to be completed  
 13 during the early long-term period. This includes restoration actions occurring within the Yolo  
 14 Bypass and the restoration of 8,000 acres of intertidal habitat in the Delta and Suisun Marsh being  
 15 driven by the 2008 and 2009 U.S. Fish and Wildlife Service and National Marine Fisheries Service  
 16 Biological Opinions.

17 Because the No Action Alternative (ELT) implementation period would be shorter, the magnitude of  
 18 the ground disturbing activities that could adversely affect prehistoric and historic archaeological  
 19 sites, buried human remains, and built-environment resources would be less than those expected  
 20 under the No Action Alternative (LLT). However, adverse impacts on these cultural resources could  
 21 still occur over the early long-term period as a result of ground disturbing activities within the Plan  
 22 Area due to the planned restoration activities described above, and other actions such as flood  
 23 control and roadway improvements.

24 **CEQA Conclusion:** Under the No Action Alternative (ELT) activities will occur within the Plan Area  
 25 that include disturbing lands that could contain prehistoric and historic archaeological sites, buried  
 26 human remains, and built-environment resources. Land use changes within the Plan Area, including  
 27 habitat restoration projects, could result in loss of these cultural resources, although to a lesser  
 28 degree than under the No Action Alternative (LLT) because fewer acres would be disturbed. Because  
 29 prehistoric and historic archaeological sites, buried human remains, and built-environment  
 30 resources are known to occur within the Plan Area, actions occurring under the No Action  
 31 Alternative (ELT) could result in disturbance to and potentially significant impacts on these cultural  
 32 resources. These potential impacts are considered significant and unavoidable because mitigation  
 33 measures for archaeological and built-environment effects do not always fully reduce impacts to a  
 34 less-than-significant level.

1 **18.3.6.2 Alternative 4A—Dual Conveyance with Modified**  
 2 **Pipeline/Tunnel and Intakes 2, 3, and 5 (9,000 cfs; Operational**  
 3 **Scenario H)**

4 **Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of**  
 5 **Conveyance Facilities**

6 The extent of identified archaeological sites within the area that could be affected by construction of  
 7 Alternative 4A conveyance facilities are the same as described for Alternative 4. This encompasses  
 8 the 10 previously recorded archaeological sites occurring in the footprint of the conveyance facility.  
 9 Site descriptions summarizing available information regarding these resources, are provided in  
 10 Appendix 18B, *Identified Cultural Resources Potentially Affected by the BDCP Alternatives*, Section  
 11 18B.1.1, *Archaeological Site Descriptions*.

12 The significance of the identified archaeological sites are the same as described for Alternative 4.  
 13 Because many of these resources are large (typically in excess of 30 meters across), they are each  
 14 likely to contain sufficient integrity to yield artifacts in their original associations in a manner that  
 15 will convey the significance themes outlined in the Alternative 4 discussion. These resources are  
 16 likely to qualify as historical resources or unique archaeological resources under CEQA and historic  
 17 properties under the NHPA.

18 The mechanisms that could affect archaeological sites would be identical to those described for  
 19 Alternative 4. These resources occur within the footprint of both temporary work areas and  
 20 permanent surface impacts and would be subject to the same types of disturbance described under  
 21 Alternative 4. Construction of the water conveyance facilities has the potential to materially impair  
 22 these resources under CEQA and to adversely affect the resources as defined by Section 106 of the  
 23 NHPA.

24 **NEPA Effects:** Construction may disturb and damage NRHP- and CRHR-eligible archaeological  
 25 resources. This effect is considered adverse because the damage may impair the integrity of these  
 26 resources and thus reduce their ability to convey their significance.

27 **CEQA Conclusion:** Construction of conveyance facilities would affect 10 identified archaeological  
 28 resources that occur in the footprint of this alternative. DWR identified these resources and found  
 29 that they are likely to qualify as historical resources or unique archaeological resources under CEQA  
 30 (see the individual site descriptions in Appendix 18B, *Identified Cultural Resources Potentially*  
 31 *Affected by the BDCP Alternatives*, Section 18B.1.1, *Archaeological Site Descriptions*). This impact  
 32 would be significant because construction could materially alter or destroy the physical integrity of  
 33 the resource and/or their potential to yield information useful in archaeological research through  
 34 excavation and disruption of the spatial associations that contain meaningful information. Identified  
 35 but currently inaccessible resources may also be significant under other register criteria; indirect  
 36 effects such as introduction of inconsistent changes to the setting may also diminish the significance  
 37 of these resources. Mitigation Measure CUL-1 would reduce this impact, by recovering data at  
 38 affected significant archaeological sites and by monitoring and protecting resources during  
 39 construction. However, this measure would not ensure preservation of the physical integrity of the  
 40 resources or ensure that all of the scientifically important material would be retrieved because  
 41 feasible archaeological excavation only typically retrieves a sample of the deposit, and portions of  
 42 the site containing important information may remain after treatment. The impact on identified

1 archaeological sites is considered significant and unavoidable because construction could damage  
2 the remaining portions of the deposit.

3 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
4 **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
5 **Archaeological Sites**

6 Please see Mitigation Measure CUL-1 under Impact CUL-1 in the discussion of Alternative 4.

7 **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory**  
8 **Efforts**

9 The potential effects of constructing water conveyance facilities on archaeological sites identified  
10 through future inventories would be the same as described for Alternative 4. These future impacts  
11 could occur because most of the area crossed by the proposed water conveyance facility is not  
12 currently legally accessible and as such has not been surveyed for the presence of archaeological  
13 sites. As with Alternative 4, Alternative 4A would also require extensive geotechnical testing that  
14 could damage or destroy archaeological sites. Although the majority of the footprint of the water  
15 conveyance facility has not been surveyed, sensitive resources have been located within and near  
16 the portions of the alignment that have been surveyed. For this reason, additional archaeological  
17 resources are likely to be found in the portion of the footprint where surveys have not yet been  
18 conducted. For the reason enumerated under Alternative 4, these sites are likely to qualify as  
19 historical resources or unique archaeological resources under CEQA and historic properties under  
20 Section 106 of the NHPA.

21 The potential effects on historic sites under Alternative 4A would be the same as those disclosed for  
22 Alternative 4. In summary, historic sites are likely to be associated with the historic-era themes of  
23 settlement, reclamation, agriculture, and flood management in the Delta region and as such  
24 contributed to the economic base for developing urban centers. These historic sites are likely to  
25 qualify as historical resources or unique archaeological resources under CEQA and historic  
26 properties under Section 106 of the NHPA.

27 Absent mitigation, ground-disturbing construction would likely physically damage many of these  
28 resources by disrupting the spatial associations that convey data useful in research or changing the  
29 setting such that the resource no longer contains its significance. These impacts would materially  
30 impair these resources within the meaning of CEQA and adversely affect the resources within the  
31 meaning of Section 106 of the NHPA. These effects would be adverse.

32 **NEPA Effects:** This alternative has the potential to damage previously unidentified archaeological  
33 sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
34 their integrity. For these reasons this effect would be adverse.

35 **CEQA Conclusion:** The footprint for this alternative is sensitive for both prehistoric and historic-era  
36 resources that cannot be identified at this time because much of the footprint is not legally  
37 accessible. Because many of these resources are likely to have prehistoric and historic significance,  
38 they are likely to qualify as historical resources or unique archaeological sites under CEQA or  
39 historic properties under the Section 106 of the NHPA. Ground-disturbing construction may  
40 materially alter the significance of these resources by altering their character-defining features,  
41 resulting in a significant effect. Mitigation Measure CUL-2 would address the impacts of both  
42 prehistoric and historic resources through conducting inventories, evaluating significance, and

1 proposing treatment of archaeological and historic resources as well as monitoring during the  
 2 construction phase. However, this mitigation cannot guarantee that all eligible or significant  
 3 resources would be preserved in place, or that all important information would be retrieved before  
 4 construction destroys these resources. The scale of the project, investment into existing designs, and  
 5 the presence of other important environmental resources such as habitat, natural communities, and  
 6 wetlands that should be avoided are constraints on the flexibility and feasibility of avoidance. For  
 7 these reasons this impact would be significant and unavoidable.

8 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of**  
 9 **Archaeological Resources**

10 Please see Mitigation Measure CUL-2 under Impact CUL-2 in the discussion of Alternative 4.

11 **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory**  
 12 **Efforts**

13 The potential effects of construction of the water conveyance facilities on archaeological sites that  
 14 may not be identified during inventory efforts would be the same as described for Alternative 4. The  
 15 effects on archaeological resources would be the same because the design of the water conveyance  
 16 facilities and construction methods and duration would be identical for both alternatives. As  
 17 described for Alternative 4, although surveys will be completed for the water conveyance footprint,  
 18 such surveys cannot guarantee that all sites will be identified prior to construction.

19 Ground-disturbing activities occurring under Alternative 4A, including the construction of surface  
 20 features such as intakes, subterranean tunnel boring operations, and access may disturb and  
 21 damage these resources before they can be identified and avoided during monitoring efforts  
 22 required under Mitigation Measure CUL-3. This damage and disturbance may materially impair  
 23 these resources within the meaning of CEQA or adversely affect the resources within the meaning of  
 24 Section 106 because this disturbance would impair the ability of these resources to yield  
 25 information useful in research. While Mitigation Measure CUL-3 would reduce the potential for this  
 26 impact, it would not guarantee the impact would be avoided entirely. Therefore, this impact would  
 27 be adverse.

28 **NEPA Effects:** Constructing Alternative 4A has the potential to damage previously unidentified  
 29 archaeological sites that also may not necessarily be identified prior to construction. While cultural  
 30 resource inventories will be completed once legal access is secured, no inventory can ensure that all  
 31 resources are identified prior to construction. Because these sites may qualify for the NRHP or  
 32 CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
 33 adverse.

34 **CEQA Conclusion:** This impact on archaeological resources not identified during inventory efforts  
 35 would be considered significant for the same reasons described for Alternative 4. Construction has  
 36 the potential to disturb previously unidentified archaeological sites qualifying as historical  
 37 resources or unique archaeological resources, for CEQA purposes, or historic properties, for NRHP  
 38 purposes. Mitigation Measure CUL-3 would reduce but not entirely avoid the potential for this  
 39 impact, by implementing construction worker training, monitoring, and discovery protocols. This  
 40 impact would remain significant and unavoidable because archaeological resources may not be  
 41 identified prior to disturbance.

1           **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
 2           **Perform Training of Construction Workers, and Conduct Construction Monitoring**

3           Please see Mitigation Measure CUL-3 under Impact CUL-3 in the discussion of Alternative 4.

4           **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

5           Effects on buried human remains during construction occurring under Alternative 4A would be the  
 6           same as described for Alternative 4. As described in greater detail for Alternative 4, the footprint of  
 7           the water conveyance facilities is sensitive for buried historic and prehistoric human remains. While  
 8           inventory and monitoring efforts are prescribed by Mitigation Measures CUL-2 and CUL-3, the large  
 9           land area subject to disturbance under Alternative 4A make exhaustive sampling to identify all  
 10          buried and isolated human remains technically and economically infeasible. For these reasons the  
 11          potential remains that such resources may be damaged or exposed before they can be discovered  
 12          through inventory or monitoring. This effect would be adverse.

13          **NEPA Effects:** Buried human remains may be damaged by constructing Alternative 4A because such  
 14          remains may occur either in isolation or as part of identified and previously unidentified  
 15          archaeological resources where construction will occur. This effect would be adverse.

16          **CEQA Conclusion:** Damage to buried human remains during construction would be considered a  
 17          significant impact for the same reasons described for Alternative 4. The project area is sensitive for  
 18          buried human remains and construction of Alternative 4A would likely result in disturbance of these  
 19          features. Disturbance of human remains, including remains interred outside of cemeteries is  
 20          considered a significant impact in the State CEQA Guidelines Appendix G checklist. Mitigation  
 21          Measure CUL-4 would reduce the severity of this impact by following state and federal guidelines,  
 22          including notifying the county coroner and the NAHC, if human remains are discovered during  
 23          construction. This impact would be considered significant and unavoidable, because mitigation  
 24          would not guarantee that these features could be discovered and treated in advance of construction  
 25          and the scale of construction makes it technically and economically infeasible to perform the level of  
 26          sampling necessary to identify all such resources prior to construction.

27           **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if**  
 28           **Such Resources Are Discovered during Construction**

29           Please see Mitigation Measure CUL-4 under Impact CUL-4 in the discussion of Alternative 4.

30           **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic**  
 31           **Architectural/Built-Environment Resources Resulting from Construction Activities**

32           Effects of constructing the water conveyance facilities on built-environment resources under  
 33           Alternative 4A would be identical to those described for Alternative 4. As described in greater detail  
 34           under Alternative 4 and Appendix 18B, *Identified Cultural Resources Potentially Affected by the BDCP*  
 35           *Alternatives*, a total of 10 built-environment resources have the potential to be directly or indirectly  
 36           affected by constructing the water conveyance facilities. These effects would materially impair the  
 37           resources within the meaning of CEQA and result in adverse effects within the meaning of Section  
 38           106 because they would diminish the characteristics that convey the significance of the resources.

39           **NEPA Effects:** This alternative would result in direct and indirect effects on NRHP and CRHR eligible  
 40           built environment resources. These alterations may diminish the integrity of these resources. For  
 41           these reasons this effect would be adverse.

1 **CEQA Conclusion:** Alternative 4A would result in the same impacts on identified historic-era built-  
 2 environment resources that are described for Alternative 4. The impacts on the 10 built-  
 3 environment resources are considered significant because construction may require demolition or  
 4 alter the character of the resource to such a degree that each resource may no longer be able to  
 5 convey its significance. Mitigation Measure CUL-5 would reduce the impact by implementing a built  
 6 environment treatment plan that includes preparing an HSR, assessing preconstruction conditions,  
 7 implementing protection measures, and preparing HABS/HAER/HALS records, or equivalent  
 8 documentation, for CRHR and NRHP-eligible historic buildings and structures that will be  
 9 demolished. The impact on historic-era built-environment resources would remain significant and  
 10 unavoidable because even with mitigation, the scale of the project and the constraints imposed by  
 11 other environmental resources make avoidance of all significant effects unlikely.

12 **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and Implement a Built**  
 13 **Environment Treatment Plan**

14 Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 4.

15 **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic**  
 16 **Architectural/Built-Environment Resources Resulting from Construction Activities**

17 Effects of constructing the water conveyance facilities on unidentified and unevaluated historic  
 18 architectural and built-environment resources under Alternative 4A would be identical to those  
 19 described for Alternative 4. As described in detail for Alternative 4, although DWR does not have  
 20 legal access to the majority of the footprint for the water conveyance, historical documentation  
 21 suggests numerous additional resources occur in the footprint of the water conveyance facilities  
 22 that have not been identified or which cannot currently be accessed and evaluated. Construction  
 23 may result in direct demolition of these resources, damage through vibration, or indirect effects  
 24 such as changes to the setting.

25 The resources may exhibit significance under both CEQA (State CEQA Guidelines Section  
 26 15064.5[a][3]) and the NRHP (30 CFR 60.4). In addition, because many of the historic-era structures  
 27 in the Delta region are intact, and retain their rural agricultural setting, many of these resources are  
 28 likely to have integrity within the meaning of CEQA and the NRHP (14 California Code of Regulations  
 29 [CCR] Section 4852[c], 30 CFR 60.4). Because many unidentified resources are likely to have  
 30 significance and integrity, they may qualify as historical resources under CEQA and historic  
 31 properties under Section 106 of the NHPA.

32 **NEPA Effects:** This alternative may result in direct modification or indirect changes to the setting for  
 33 inaccessible and NRHP and CRHR-eligible resources. These changes may diminish the integrity of  
 34 these resources. For these reasons, this effect would be adverse.

35 **CEQA Conclusion:** Alternative 4A would result in the same impacts on unidentified and unevaluated  
 36 historic architectural and built-environment resources that are described for Alternative 4.  
 37 Construction may also result in permanent indirect effects such as changes to the setting. Direct  
 38 demolition or changes to the setting would be material alterations because they would either  
 39 remove the resource or alter the resource character, resulting in an inability of the resource to  
 40 convey its significance. Many of these resources are likely to qualify as historic properties or  
 41 historical resources under the NHPA and CEQA. Mitigation Measure CUL-6 would reduce these  
 42 impacts by requiring surveys be conducted on previously inaccessible properties to determine if  
 43 constructing the water conveyance facilities would adversely affect the properties and if so, the

1 development and implementation of treatment plans. The scale of the project and the constraints  
 2 imposed by other environmental resources make avoidance of all significant effects unlikely. For  
 3 these reasons this impact remains significant and unavoidable even with implementation of the  
 4 following mitigation measure.

5 **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 6 **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 7 **Develop Treatment to Resolve or Mitigate Adverse Impacts**

8 Please see Mitigation Measure CUL-6 under Impact CUL-6 in the discussion of Alternative 4S.

9 **Impact CUL-7: Effects of Environmental Commitments on Cultural Resources**

10 Implementing Environmental Commitments at part of Alternative 4A would result in impacts on  
 11 cultural resources similar in kind to those of Alternative 4. The extent of these impacts under  
 12 Alternative 4A would be much less than under Alternative 4, however, because the total acreage that  
 13 would be affected by the restoration actions within the Plan Area would be substantially less.

14 The following Environmental Commitments would not result in impacts on cultural resources  
 15 because they consist of changes to existing activities, or planning and regulatory actions that would  
 16 not require ground-disturbing work with effects on cultural resources.

- 17 • *Environmental Commitment 11: Natural Communities Enhancement*
- 18 • *Environmental Commitment 12: Methylmercury Management*
- 19 • *Environmental Commitment 15: Localized Reduction of Predatory Fishes*
- 20 • *Environmental Commitment 16: Nonphysical Fish Barrier*

21 Implementation of the remaining Environmental Commitments could result in impacts on cultural  
 22 resources because they involve ground-disturbing activities:

- 23 • *Environmental Commitment 3: Natural Communities Protection and Restoration*
- 24 • *Environmental Commitment 4: Tidal Natural Communities Restoration*
- 25 • *Environmental Commitment 6: Channel Margin Enhancement*
- 26 • *Environmental Commitment 7: Riparian Natural Community Restoration*
- 27 • *Environmental Commitment 8: Grassland Natural Community Restoration*
- 28 • *Environmental Commitment 9: Vernal Pool and Alkali Seasonal Wetland Complex Restoration*
- 29 • *Environmental Commitment 10: Nontidal Marsh Restoration*

30 These Environmental Commitments would result in effects on cultural resources when ground-  
 31 disturbing work is performed to construct improvements and enhance or restore natural  
 32 communities. Similar to Alternative 4, direct effects would occur through demolition or destruction  
 33 of NRHP-, CRHR-, and/or local registry-eligible prehistoric and historic archaeological sites, unique  
 34 archaeological resources, TCPs, human remains, and built-environment resources. In addition,  
 35 indirect effects may occur where changes to the setting alter the existing setting in a manner that is  
 36 inconsistent with the feeling and association of the resource. Because the ability of the resources to  
 37 convey their significance would be lost this effect would materially alter these resources under  
 38 CEQA and would be adverse under NEPA. For example, reclaimed agricultural landscapes that are

1 converted to habitat may no longer convey the themes of agriculture and settlement, and thus would  
 2 be inconsistent with remaining features associated with rural historic landscapes created by  
 3 reclamation, cultivation, and ranching.

4 Mitigation Measure CUL-7 below addresses the impact on cultural resources as a result of  
 5 implementing the Environmental Commitments. Because of the large acreages of land included in all  
 6 these components, it is unlikely that all effects on NRHP-, CRHR-, and /or local registry-eligible  
 7 resources and unique archaeological resources could be avoided. Therefore, this impact would be  
 8 adverse.

9 **NEPA Effects:** Implementation of Environmental Commitments would result in ground-disturbing  
 10 work and introduction of new infrastructure to the project area. These physical modifications may  
 11 result in direct effects on NRHP and CRHR-eligible resources. These changes may therefore reduce  
 12 the integrity of these resources. For these reasons these effects would be adverse.

13 **CEQA Conclusion:** Implementation of Environmental Commitments would require ground-  
 14 disturbing activities that could alter the significant characteristics of NRHP-, CRHR-, and/or local  
 15 registry-eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and  
 16 built-environment resources such as historic architectural structures and rural historic landscapes.  
 17 The same construction may damage unique archaeological sites. This construction would likely  
 18 result in materially adverse changes for the following reasons.

- 19 ● Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
 20 contain information useful in research, thus diminishing or destroying the basis for the  
 21 significance of the resource.
- 22 ● Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
 23 built-environment resources, resulting in an inability of the resource to convey its significance.
- 24 ● Ground-disturbing construction may either directly demolish or change the setting of TCPs  
 25 resulting in an inability of the resource to convey its significance.
- 26 ● Ground-disturbing construction may inadvertently disturb human remains.

27 The alteration of a resource that changes the characteristics that convey its significance is a material  
 28 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
 29 CEQA under the CEQA Guidelines Appendix G checklist. Because this construction would materially  
 30 alter these categories of resources and disturb human remains it would result in a significant  
 31 impact. Mitigation Measure CUL-7 would reduce these impacts by identifying and evaluating  
 32 resources, avoiding resources where possible, and developing treatment where avoidance is not  
 33 possible. In addition, construction would be monitored. However, because of the acreage that could  
 34 be disturbed as a result of implementing the components, as well as the multiple constraints  
 35 associated with other environmental resources that require mitigation or avoidance, it is unlikely  
 36 that all cultural resources could be avoided. Therefore, this impact remains significant and  
 37 unavoidable.

38 **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
 39 **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
 40 **Implementation of Environmental Commitments 3, 4, 6-12, 15, and 16**

41 Please see Mitigation Measure CUL-7 under Impact CUL-7 in the discussion of Alternative 4.

1       **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Environmental**  
 2       **Commitments with Plans and Policies**

3       Similar to Alternative 4, constructing the proposed water conveyance facilities and implementing  
 4       Environmental Commitments under Alternative 4A could result in the potential for incompatibilities  
 5       with plans and policies adopted to protect the cultural resources of the Delta. A number of plans and  
 6       policies that coincide with the study area provide guidance for protection of cultural resources as  
 7       overviewed in Section 18.2.3, *Regional and Local Plans, Policies, and Regulations*. The policies include  
 8       the Alameda County East Area Plan, Contra Costa County General Plan, San Joaquin County General  
 9       Plan, Sacramento County General Plan, Solano County General Plan, and the Yolo County General  
 10       Plan. A detailed summary of the policies is provided in the discussion of Alternative 4. Similar to  
 11       Alternative 4, the construction of the water conveyance facilities and Environmental Commitments  
 12       under Alternative 4A would be compatible with the cultural resource protection policies indicated in  
 13       the Alameda County East Area Plan, San Joaquin County General Plan, Yolo County General Plan, and  
 14       potentially incompatible with the Contra Costa County General Plan, Sacramento County General  
 15       Plan, and Solano County General Plan. Similar to Alternative 4, restoration actions under Alternative  
 16       4A would be compatible with policies that emphasize mitigation and incompatible with policies that  
 17       emphasize preservation.

18       As described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to  
 19       local land use regulations. Furthermore, policy incompatibility by itself is not a physical impact on  
 20       the environment.

21       **NEPA Effects:** Because federal agencies are not regulated by local land use policy, the alternative  
 22       would not result in a conflict with local land use laws.

23       **CEQA Conclusion:** As under Alternative 4, the Plan Area under Alternative 4A is governed by  
 24       cultural resource management policies adopted by the various counties with jurisdiction in this  
 25       region. For policies that emphasize preservation or mitigation, Alternative 4A will be compatible  
 26       with these policies because DWR and appropriate federal agencies will implement cultural resource  
 27       management practices that will identify significant resources, preserve such resources where  
 28       feasible, and complete mitigation to reduce significant effects where preservation is not feasible. For  
 29       policies that emphasize preservation, the project is incompatible in some instances because multiple  
 30       constraints governing the location of proposed facilities makes preservation of all significant  
 31       cultural resources unlikely. It should be noted that, as described in Chapter 13, *Land Use*, Section  
 32       13.2.3, state and federal agencies are not subject to local land use regulations. Furthermore, policy  
 33       incompatibility by itself is not a physical impact on the environment.

34       **18.3.6.3           Alternative 2D—Dual Conveyance with Modified**  
 35       **Pipeline/Tunnel and Intakes 1, 2, 3, 4, and 5 (15,000 cfs;**  
 36       **Operational Scenario B)**

37       **Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of**  
 38       **Conveyance Facilities**

39       The extent of identified archaeological sites within the area that could be affected by construction of  
 40       Alternative 2D conveyance facilities is similar to that described for Alternative 4. This encompasses  
 41       10 previously recorded archeological sites occurring in the footprint, nine of which (all but CA-SAC-  
 42       21) occur in the footprint of Alternative 4 and one of which (CA-SAC-328) does not. Site descriptions

1 summarizing available information regarding these resources, are provided in Appendix 18B,  
2 *Identified Cultural Resources Potentially Affected by BDCP Alternatives*, Section 18B.1.1,  
3 *Archaeological Site Descriptions*.

4 Despite the difference in which archaeological sites occur in this alternative as compared to  
5 Alternative 4, the significance of the identified archeological sites for this alternative is the same as  
6 described for Alternative 4. Because many of these resources are large (typically in excess of 30  
7 meters across), they are each likely to contain sufficient integrity to yield artifacts in their original  
8 associations in a manner that will convey the significance themes outlined in the Alternative 4  
9 discussion in Section 18.3.5.9. These resources are likely to qualify as historical resources or unique  
10 archaeological resources under CEQA and historic properties under the NRHP.

11 The mechanisms that could impact archeological sites under Alternative 2D would be similar to  
12 those described for Alternative 4. These resources occur within the footprint of both temporary  
13 work areas and permanent surface impacts and would be subject to the same types of disturbance  
14 described under Alternative 4. Construction of the water conveyance facilities has the potential to  
15 materially impair these resources under CEQA and to adversely affect the resources as defined by  
16 Section 106 of the NHPA.

17 **NEPA Effects:** Construction may disturb and damage NRHP and CRHR-eligible archaeological  
18 resources. This effect is considered adverse because the damage may impair the integrity of these  
19 resources and thus reduce their ability to convey their significance.

20 **CEQA Conclusion:** Construction of conveyance facilities would affect identified archaeological  
21 resources that occur in the footprint of this alternative. DWR identified these resources and found  
22 that they are likely to qualify as historical resources or unique archaeological resources under CEQA  
23 (see the individual site descriptions in Appendix 18B, *Identified Cultural Resources Potentially*  
24 *Affected by the BDCP Alternatives*, Section 18B.1.1, *Archaeological Site Descriptions*). This impact  
25 would be significant because construction could materially alter or destroy the physical integrity of  
26 the resources and/or their potential to yield information useful in archaeological research through  
27 excavation and disruption of the spatial associations that contain meaningful information. Identified  
28 but currently inaccessible resources may also be significant under other register criteria; indirect  
29 effects such as introduction of inconsistent changes to the setting may also diminish the significance  
30 of these resources. Mitigation Measure CUL-1 would reduce this impact, by recovering data at  
31 affected significant archaeological sites and by monitoring and protecting resources during  
32 construction. However, this measure would not ensure preservation of the physical integrity of the  
33 resources or ensure that all of the scientifically important material would be retrieved because  
34 feasible archaeological excavation only typically retrieves a sample of the deposit, and portions of  
35 the site containing important information may remain after treatment. The impact on identified  
36 archaeological sites is considered significant and unavoidable because construction could damage  
37 the remaining portions of the deposit.

38 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
39 **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
40 **Archaeological Sites**

41 Please see Mitigation Measure CUL-1 under Impact CUL-1 in the discussion of Alternative 4.

## 1 **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory** 2 **Efforts**

3 The potential effects of constructing water conveyance facilities on archaeological sites identified  
4 through future inventories would be greater under Alternative 2D when compared to Alternative 4  
5 because Alternative 2D entails five intakes as opposed to three under Alternative 4, and Alternative  
6 2D would also require more geotechnical testing (which has potential to damage or destroy  
7 archaeological sites) than Alternative 4. The larger footprint and greater amount of geotechnical  
8 testing of Alternative 2D compared to Alternative 4 results in a greater potential for the presence of  
9 archaeological sites for Alternative 2D. These future impacts could occur because most of the area  
10 crossed by the proposed water conveyance facility is not currently legally accessible and as such has  
11 not been surveyed for the presence of archaeological sites. Although the majority of the footprint of  
12 the water conveyance facility has not been surveyed, sensitive resources have been located within  
13 and near the portions of the alignment that have been surveyed. For this reason, additional  
14 prehistoric archaeological resources are likely to be found in the portion of the footprint where  
15 surveys have not yet been conducted. For the reason enumerated under Alternative 4, these sites  
16 are likely to qualify as historical resources or unique archaeological resources under CEQA and  
17 historic properties under Section 106 of the NHPA.

18 The potential effects on historic sites under Alternative 2D would be greater than those disclosed for  
19 Alternative 4 due to the larger footprint of Alternative 2D. In summary, historic sites are likely to be  
20 associated with the historic-era themes of settlement, reclamation, agriculture, and flood  
21 management in the Delta region and as such contributed to the economic base for developing urban  
22 centers. These historic sites are likely to qualify as historical resources or unique archaeological  
23 resources under CEQA and historic properties under Section 106 of the NHPA.

24 Absent mitigation, ground-disturbing construction would likely physically damage many of these  
25 resources by disrupting the spatial associations that convey data useful in research or changing the  
26 setting such that the resource no longer contains its significance. These impacts would materially  
27 impair these resources within the meaning of CEQA and adversely affect the resources within the  
28 meaning of Section 106 of the NHPA. These effects would be adverse.

29 **NEPA Effects:** Alternative 2D has the potential to damage previously unidentified archaeological  
30 sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
31 their integrity. For these reasons this effect would be adverse.

32 **CEQA Conclusion:** The footprint for Alternative 2D is sensitive for both prehistoric and historic-era  
33 resources that cannot be identified at this time because much of the footprint is not legally  
34 accessible. Because many of these resources are likely to have data useful in prehistoric and historic  
35 archaeological research, as well as the integrity to convey this significance, they are likely to qualify  
36 as historical resources or unique archaeological sites under CEQA or historic properties under  
37 Section 106 of the NHPA. Ground-disturbing construction may materially alter the significance of  
38 these resources by disrupting the spatial associations that could yield important data, resulting in a  
39 significant effect. Mitigation Measure CUL-2 would address the impacts of both prehistoric and  
40 historic resources through conducting inventories, evaluating significance, and proposing treatment  
41 of archeological and historic resources as well as monitoring during the construction phase.  
42 However, this mitigation cannot guarantee that all eligible or significant resources would be  
43 preserved in place, or that all important data would be retrieved before construction destroys these  
44 resources. The scale of the project, investment into existing designs, and the presence of other

1 important environmental resources such as habitat, natural communities, and wetlands that should  
 2 be avoided are constraints on the flexibility and feasibility of avoidance. For these reasons this  
 3 impact is significant and unavoidable.

4 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of**  
 5 **Archaeological Resources**

6 Please see Mitigation Measure CUL-2 under Impact CUL-2 in the discussion of Alternative 4.

7 **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory**  
 8 **Efforts**

9 The potential effects of construction of the water conveyance facilities on archaeological sites that  
 10 may not be identified during inventory efforts under Alternative 2D would be greater when  
 11 compared to Alternative 4 because of the larger footprint. Although surveys will be completed for  
 12 the water conveyance footprint, such surveys cannot guarantee that all sites will be identified prior  
 13 to construction because of limited visibility at the time of the surveys and/or the limited nature of  
 14 subsurface investigations.

15 Ground-disturbing activities occurring under Alternative 2D, including the construction of surface  
 16 features such as intakes, subterranean tunnel boring operations, and access may disturb and  
 17 damage these resources before they can be identified and avoided during monitoring efforts  
 18 required under Mitigation Measure CUL-3. This damage and disturbance may materially impair  
 19 these resources within the meaning of CEQA or adversely affect the resources within the meaning of  
 20 Section 106 because this disturbance would impair the ability of these resources to yield data useful  
 21 in research. While Mitigation Measure CUL-3 would reduce the potential for this impact, it would not  
 22 guarantee the impact would be avoided entirely. Therefore, this impact is adverse.

23 **NEPA Effects:** Constructing Alternative 2D has the potential to damage previously unidentified  
 24 archaeological sites that also may not necessarily be identified prior to construction. While cultural  
 25 resource inventories will be completed once legal access is secured, no inventory can ensure that all  
 26 resources are identified prior to construction. Because these sites may qualify for the NRHP or  
 27 CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
 28 adverse.

29 **CEQA Conclusion:** This impact on archaeological resources not identified during inventory efforts  
 30 would be considered significant for the same reasons described for Alternative 4. Construction has  
 31 the potential to disturb previously unidentified archaeological sites qualifying as historical  
 32 resources, unique archaeological resources, or historic properties. Mitigation Measure CUL-3 would  
 33 reduce but not entirely avoid the potential for this impact, by implementing construction worker  
 34 training, monitoring and discovery protocols. This impact would remain significant and unavoidable  
 35 because all archaeological resources may not be identified prior to disturbance.

36 **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
 37 **Perform Training of Construction Workers, and Conduct Construction Monitoring**

38 Please see Mitigation Measure CUL-3 under Impact CUL-3 in the discussion of Alternative 4.

#### 1 **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

2 Effects on buried human remains during construction of Alternative 2D would be greater than  
 3 Alternative 4 because of the larger footprint. As described in greater detail for Alternative 4, the  
 4 footprint of the water conveyance facilities is sensitive for buried historic and prehistoric human  
 5 remains. While inventory and monitoring efforts are prescribed by Mitigation Measures CUL-2 and  
 6 CUL-3, the large land area subject to disturbance under Alternative 2D makes exhaustive sampling  
 7 to identify all buried and isolated human remains technically and economically infeasible and the  
 8 nature of the proposed tunneling activity also prohibits prior identification efforts. For these  
 9 reasons the potential remains that such resources may be damaged or exposed before they can be  
 10 discovered through inventory or monitoring.

11 **NEPA Effects:** Buried human remains may be damaged by constructing Alternative 2D because such  
 12 remains may occur either in isolation or as part of identified and previously unidentified  
 13 archaeological resources where construction will occur. This effect would be adverse.

14 **CEQA Conclusion:** Damage to buried human remains during construction of Alternative 2D would  
 15 be considered a significant impact for the same reasons described for Alternative 4. The project area  
 16 is sensitive for buried human remains and construction of Alternative 2D would likely result in  
 17 disturbance of these features. Disturbance of human remains, including remains interred outside of  
 18 cemeteries is considered a significant impact in the CEQA Appendix G checklist. Mitigation Measure  
 19 CUL-4 would reduce the severity of this impact by following state and federal guidelines, including  
 20 notifying the county coroner and NAHC, if human remains are discovered during construction. This  
 21 impact is considered significant and unavoidable, because mitigation would not guarantee that these  
 22 features could be discovered and treated in advance of construction and the scale of construction  
 23 makes it technically and economically infeasible to perform the level of sampling necessary to  
 24 identify all such resources prior to construction.

#### 25 **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if** 26 **Such Resources Are Discovered during Construction**

27 Please see Mitigation Measure CUL-4 under Impact CUL-4 in the discussion of Alternative 4.

#### 28 **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic** 29 **Architectural/Built-Environment Resources Resulting from Construction Activities**

30 Effects of constructing the water conveyance facilities on built-environment resources under  
 31 Alternative 2D would be greater than those described for Alternative 4 in Section 18.3.5.9. As  
 32 described in greater detail in Appendix 18B, *Identified Cultural Resources Potentially Affected by the*  
 33 *BDCP Alternatives*, a total of 10 built-environment resources have the potential to be directly or  
 34 indirectly affected by constructing the water conveyance facilities. These effects would materially  
 35 impair the resources within the meaning of CEQA and result in adverse effects within the meaning of  
 36 Section 106 because they would diminish the characteristics that convey the significance of the  
 37 resources.

38 **NEPA Effects:** Alternative 2D would result in direct and indirect effects on NRHP and CRHR eligible  
 39 built environment resources. These alterations may diminish the integrity of these resources. For  
 40 these reasons this effect would be adverse.

1 **CEQA Conclusion:** Alternative 2D could result in greater impacts on identified historic-era built-  
 2 environment resources than described for Alternative 4 in Section 18.3.5.9. The impacts on built-  
 3 environment resources are considered significant because construction may require demolition or  
 4 alter the character of the resource to such a degree that each resource may no longer be able to  
 5 convey its significance. Mitigation measure CUL-5 would reduce the impact by implementing a built  
 6 environment treatment plan that includes preparing an HSR, assessing preconstruction conditions,  
 7 implementing protection measures, and preparing HABS/HAER/HALS records, or equivalent  
 8 documentation, for CRHR and NRHP-eligible historic buildings and structures that will be  
 9 demolished. The impact on historic-era built-environment resources would remain significant and  
 10 unavoidable because even with mitigation, the scale of the project and the constraints imposed by  
 11 other environmental resources make avoidance of all significant effects unlikely.

12 **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and Implement a Built**  
 13 **Environment Treatment Plan**

14 Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 4.

15 **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic**  
 16 **Architectural/Built-Environment Resources Resulting from Construction Activities**

17 Effects of constructing the water conveyance facilities on unidentified and unevaluated historic  
 18 architectural and built-environment resources under Alternative 2D would likely be greater than  
 19 those described for Alternative 4 in Section 18.3.5.9 because the footprint of the water conveyance  
 20 facility would be greater. As described in detail for Alternative 4, although DWR does not have legal  
 21 access to the majority of the footprint for the water conveyance, historical documentation suggests  
 22 numerous additional resources occur in the footprint of the water conveyance facilities that have  
 23 not been identified or which cannot currently be accessed and evaluated. Construction may result in  
 24 direct demolition of these resources, damage through vibration, or indirect effects such as changes  
 25 to the setting.

26 The resources may exhibit significance under both CEQA (State CEQA Guidelines Section  
 27 15064.5[a][3]) and the NRHP (30 CFR 60.4). In addition, because many of the historic-era structures  
 28 in the Delta region are intact, and retain their rural agricultural setting, many of these resources are  
 29 likely to have integrity within the meaning of CEQA and the NRHP (14 CCR Section 4852[c], 30 CFR  
 30 60.4). Because many unidentified resources are likely to have significance and integrity, they may  
 31 qualify as historical resources under CEQA and historic properties under Section 106 of the NHPA.

32 **NEPA Effects:** Alternative 2D may result in direct modification or indirect changes to the setting for  
 33 inaccessible and NRHP and CRHR-eligible resources. These changes may diminish the integrity of  
 34 these resources. For these reasons, this effect would be adverse.

35 **CEQA Conclusion:** Alternative 2D may result in greater impacts on unidentified and unevaluated  
 36 historic architectural and built-environment resources than described for Alternative 4.  
 37 Construction may also result in permanent indirect effects such as changes to the setting. Direct  
 38 demolition or changes to the setting would be material alterations because they would either  
 39 remove the resource or alter the resource character, resulting in an inability of the resource to  
 40 convey its significance. Many of these resources are likely to qualify as historic properties or  
 41 historical resources under the NHPA and CEQA. Mitigation measure CUL-6 would reduce these  
 42 impacts by requiring surveys be conducted on previously inaccessible properties to determine if  
 43 constructing the water conveyance facilities would impact the properties and if so, requiring the

1 development and implementation of treatment plans. The scale of the project and the constraints  
 2 imposed by other environmental resources make avoidance of all significant effects unlikely. For  
 3 these reasons this impact remains significant and unavoidable even with implementation of the  
 4 following mitigation measures.

5 **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 6 **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 7 **Develop Treatment to Resolve or Mitigate Adverse Impacts**

8 Please see Mitigation Measure CUL-6 under Impact CUL-6 in the discussion of Alternative 4.

9 **Impact CUL-7: Effects of Environmental Commitments on Cultural Resources**

10 Implementing Environmental Commitments at part of Alternative 2D would result in impacts on  
 11 cultural resources similar to those described under Alternative 4, although the extent of these  
 12 impacts under Alternative 2D would be much less than under Alternative 4 because the total  
 13 acreage that would be affected by the habitat restoration and enhancement activities would be  
 14 substantially less.

15 The following Environmental Commitments would not result in impacts on cultural resources  
 16 because they consist of changes to existing activities, or planning and regulatory actions that would  
 17 not require ground-disturbing work with effects on cultural resources.

- 18 • *Environmental Commitment 11: Natural Communities Enhancement*
- 19 • *Environmental Commitment 12: Methylmercury Management*
- 20 • *Environmental Commitment 15: Localized Reduction of Predatory Fishes*
- 21 • *Environmental Commitment 16: Nonphysical Fish Barrier*

22 Implementation of the remaining Environmental Commitments could result in impacts on cultural  
 23 because they involve ground-disturbing activities:

- 24 • *Environmental Commitment 3: Natural Communities Protection and Restoration*
- 25 • *Environmental Commitment 4: Tidal Natural Communities Restoration*
- 26 • *Environmental Commitment 6: Channel Margin Enhancement*
- 27 • *Environmental Commitment 7: Riparian Natural Community Restoration*
- 28 • *Environmental Commitment 8: Grassland Natural Community Restoration*
- 29 • *Environmental Commitment 9: Vernal Pool and Alkali Seasonal Wetland Complex Restoration*
- 30 • *Environmental Commitment 10: Nontidal Marsh Restoration*

31 These Environmental Commitments would result in effects on cultural resources when ground-  
 32 disturbing work is performed to construct improvements and enhance or restore natural  
 33 communities. Similar to Alternative 4, direct effects would occur through demolition or destruction  
 34 of NRHP-, CRHR-, and/or local registry-eligible prehistoric and historic archaeological sites, unique  
 35 archaeological resources, TCPs, human remains, and built-environment resources. In addition,  
 36 indirect effects may occur where changes to the setting alter the existing setting in a manner that is  
 37 inconsistent with the feeling and association of the resource. Because the ability of the resources to  
 38 convey their significance would be lost, this effect would materially alter these resources under

1 CEQA and would be adverse under NEPA. For example, reclaimed agricultural landscapes that are  
 2 converted to habitat may no longer convey the themes of agriculture and settlement, and thus would  
 3 be inconsistent with remaining features associated with rural historic landscapes created by  
 4 reclamation, cultivation, and ranching.

5 Mitigation Measure CUL-7 below addresses the impact on cultural resources as a result of  
 6 implementing the Environmental Commitments. Because of the large acreages of land included in  
 7 these commitments, it is unlikely that all effects on NRHP-, CRHR-, and /or local registry-eligible  
 8 resources and unique archaeological resources could be avoided. Therefore, this impact would be  
 9 adverse.

10 **NEPA Effects:** Implementation of Environmental Commitments would result in ground-disturbing  
 11 work and introduction of new infrastructure to the project area. These physical modifications may  
 12 result in direct effects on NRHP and CRHR-eligible resources and therefore reduce the integrity of  
 13 these resources. For these reasons these effects would be adverse.

14 **CEQA Conclusion:** Implementing Environmental Commitments would require ground-disturbing  
 15 activities that could alter the significant characteristics of NRHP-, CRHR-, and/or local registry-  
 16 eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and built-  
 17 environment resources such as historic architectural structures and rural historic landscapes. The  
 18 same construction may damage unique archaeological resources. This construction would likely  
 19 result in materially adverse changes for the following reasons.

- 20 ● Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
 21 contain data useful in research, thus diminishing or destroying the basis for the significance of  
 22 the resource.
- 23 ● Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
 24 built-environment resources, resulting in an inability of the resource to convey its significance.
- 25 ● Ground-disturbing construction may either directly demolish or change the setting of TCPs  
 26 resulting in an inability of the resource to convey its significance.
- 27 ● Ground-disturbing construction may inadvertently disturb human remains.

28 The alteration of a resource that changes the characteristics that convey its significance is a material  
 29 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
 30 Appendix G of the State CEQA Guidelines. Because this construction would materially alter these  
 31 categories of resources and disturb human remains it would result in a significant impact. Mitigation  
 32 Measure CUL-7 would reduce these impacts by identifying and evaluating resources, avoiding  
 33 resources where possible, and developing treatment where avoidance is not possible. In addition,  
 34 construction would be monitored. However, because of the large acreage that could be disturbed as  
 35 a result of implementing the components, as well as the multiple constraints associated with other  
 36 environmental resources that require mitigation or avoidance, it is unlikely that all cultural  
 37 resources could be avoided. Therefore, this impact remains significant and unavoidable.

38 **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
 39 **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
 40 **Implementation of Environmental Commitments 3, 4, 6, 7, 9-12, 15, and 16**

41 Please see Mitigation Measure CUL-7 under Impact CUL-7 in the discussion of Alternative 4.

1 **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Environmental**  
 2 **Commitments with Plans and Policies**

3 Similar to Alternative 4 (as described in Section 18.3.5.9), constructing the proposed water  
 4 conveyance facilities and implementing Environmental Commitments under Alternative 2D could  
 5 result in the potential for incompatibilities with plans and policies adopted to protect the cultural  
 6 resources of the Delta. A number of plans and policies that coincide with the study area provide  
 7 guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local*  
 8 *Plans, Policies, and Regulations*. The policies include the Alameda County East Area Plan, Contra  
 9 Costa County General Plan, San Joaquin County General Plan, Sacramento County General Plan,  
 10 Solano County General Plan, and the Yolo County General Plan. A detailed summary of the policies is  
 11 provided in Alternative 4. Similar to Alternative 4, the construction of the water conveyance  
 12 facilities and Environmental Commitments under Alternative 2D would be compatible with the  
 13 cultural resource protection policies indicated in the Alameda County East Area Plan, San Joaquin  
 14 County General Plan, Yolo County General Plan and potentially incompatible with the Contra Costa  
 15 County General Plan, Sacramento County General Plan and Solano County General Plan. Similar to  
 16 Alternative 4, restoration actions under Alternative 2D would be compatible with policies that  
 17 emphasize mitigation and incompatible with policies that emphasize preservation.

18 It should be noted that, as described in *Land Use*, Section 13.2.3, state and federal agencies are not  
 19 subject to local land use regulations. Furthermore, policy incompatibility, by itself is not a physical  
 20 impact on the environment.

21 **NEPA Effects:** Because federal agencies are not regulated by local land use policy, implementation of  
 22 Alternative 2D would not result in a conflict with local land use laws.

23 **CEQA Conclusion:** As with Alternative 4 in Section 18.3.5.9, constructing the proposed water  
 24 conveyance facilities under Alternative 2D is governed by cultural resource management policies  
 25 adopted by the various counties with jurisdiction in this region. For policies that emphasize  
 26 preservation or mitigation, Alternative 2D would be compatible with these policies because DWR  
 27 and appropriate federal agencies would implement cultural resource management practices that  
 28 would identify significant resources, preserve such resources where feasible, and complete  
 29 mitigation to reduce significant effects where preservation is not feasible. For policies that  
 30 emphasize preservation, the project is incompatible in some instances because multiple constraints  
 31 governing the location of proposed facilities makes preservation of all significant cultural resources  
 32 unlikely. It should be noted that, as described in Chapter 13, *Land Use*, Section 13.2.3, state and  
 33 federal agencies are not subject to local land use regulations. Furthermore, policy incompatibility, by  
 34 itself is not a physical impact on the environment.

35 **18.3.6.4 Alternative 5A—Dual Conveyance with Modified**  
 36 **Pipeline/Tunnel and Intake 2 (3,000 cfs; Operational Scenario C)**

37 **Impact CUL-1: Effects on Identified Archaeological Sites Resulting from Construction of**  
 38 **Conveyance Facilities**

39 Alternative 5A would include the same physical/structural components as Alternative 4, except the  
 40 number of Sacramento River intakes would be reduced to one, located near Clarksburg (Intake 2).  
 41 Constructing the water conveyance facilities under Alternative 5A would result in impacts on  
 42 identified archaeological sites similar to those disclosed under Alternative 4 in Section 18.3.5.9,

1 except only seven of the ten previously recorded archeological sites occurring in the footprint of the  
 2 Alternative 4 conveyance facility occur in the footprint of the Alternative 5A conveyance facility—  
 3 CA-SAC-21, CA-SAC-62, and CA-SAC-328 are not located in the Alternative 5A footprint. Site  
 4 descriptions summarizing available information regarding these resources, are provided in  
 5 Appendix 18B, *Identified Cultural Resources Potentially Affected by the BDCP Alternatives*, Section  
 6 18B.1.1, *Archaeological Site Descriptions*.

7 Despite the difference in the number of archaeological sites that occur in this alternative when  
 8 compared to Alternative 4, the significance of the identified archeological sites is the same as  
 9 described for Alternative 4. Because many of these resources are large (typically in excess of 30  
 10 meters across), they are each likely to contain sufficient integrity to yield artifacts in their original  
 11 associations in a manner that will convey the significance themes outlined in the Alternative 4  
 12 discussion in Section 18.3.5.9. These resources are likely to qualify as historical resources or unique  
 13 archaeological resources under CEQA and historic properties under the NRHP.

14 The mechanisms that could impact archeological sites under Alternative 5A, would be similar to  
 15 those described for Alternative 4. These resources occur within the footprint of both temporary  
 16 work areas and permanent surface impacts and would be subject to the same types of disturbance  
 17 described under Alternative 4. Construction of the water conveyance facilities has the potential to  
 18 materially impair these resources under CEQA and to adversely affect the resources as defined by  
 19 Section 106 of the NHPA.

20 **NEPA Effects:** Construction may disturb and damage NRHP and CRHR-eligible archaeological  
 21 resources. This effect is considered adverse because the damage may impair the integrity of these  
 22 resources and thus reduce their ability to convey their significance

23 **CEQA Conclusion:** Construction of conveyance facilities would affect identified archaeological  
 24 resources that occur in the footprint of this alternative. DWR identified these resources and found  
 25 that they are likely to qualify as historical resources or unique archaeological resources under CEQA  
 26 (see the individual site descriptions in Appendix 18B, *Identified Cultural Resources Potentially*  
 27 *Affected by the BDCP Alternatives*, Section 18B.1.1, *Archaeological Site Descriptions*). This impact  
 28 would be significant because construction could materially alter or destroy the potential of these  
 29 resources to yield information useful in archaeological research through excavation and disruption  
 30 of the spatial associations that contain meaningful information. Identified but currently inaccessible  
 31 resources may also be significant under other register criteria; indirect effects such as introduction  
 32 of inconsistent changes to the setting may also diminish the significance of these resources.  
 33 Mitigation Measure CUL-1 would reduce this impact, by recovering data at affected significant  
 34 archaeological sites and by monitoring and protecting resources during construction. However, this  
 35 measure would not ensure that all of the scientifically important material would be retrieved  
 36 because feasible archaeological excavation only typically retrieves a sample of the deposit, and  
 37 portions of the site containing important information may remain after treatment. The impact on  
 38 identified archaeological sites is considered significant and unavoidable because construction could  
 39 damage the remaining portions of the deposit.

40 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
 41 **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
 42 **Archaeological Sites**

43 Please see Mitigation Measure CUL-1 under Impact CUL-1 in the discussion of Alternative 4.

## 1 **Impact CUL-2: Effects on Archaeological Sites to Be Identified through Future Inventory** 2 **Efforts**

3 The potential effects of constructing water conveyance facilities on archaeological sites identified  
4 through future inventories would be less under Alternative 5A when compared to Alternative 4,  
5 because Alternative 5A entails one intake as opposed to three under Alternative 4, and Alternative  
6 5A would require less geotechnical testing (which has potential to damage or destroy archaeological  
7 sites) than Alternative 4. The smaller footprint and lesser amount of geotechnical testing of  
8 Alternative 5A compared to Alternative 4 results in a lower potential for the presence of  
9 archaeological sites for Alternative 5A. These future impacts could occur because most of the area  
10 crossed by the proposed water conveyance facility is not currently legally accessible and as such has  
11 not been surveyed for the presence of archaeological sites. Although the majority of the footprint of  
12 the water conveyance facility has not be surveyed, sensitive resources have been located within and  
13 near the portions of the alignment that have been surveyed. For this reason, additional prehistoric  
14 archaeological resources are likely to be found in the portion of the footprint where surveys have  
15 not yet been conducted. For the reason enumerated under Alternative 4, these sites are likely to  
16 qualify as historical resources or unique archaeological resources under CEQA and historic  
17 properties under Section 106 of the NHPA.

18 The potential effects on historic sites under Alternative 5A would be less than those disclosed for  
19 Alternative 4 due to the smaller footprint of Alternative 5A. Historic sites are likely to be associated  
20 with the historic-era themes of settlement, reclamation, agriculture, and flood management in the  
21 Delta region and as such contributed to the economic base for developing urban centers. These  
22 historic sites are likely to qualify as historical resources or unique archaeological resources under  
23 CEQA and historic properties under Section 106 of the NHPA.

24 Absent mitigation, ground-disturbing construction would likely physically damage many of these  
25 resources by disrupting the spatial associations that convey data useful in research or changing the  
26 setting such that the resource no longer contains its significance. These impacts would materially  
27 impair these resources within the meaning of CEQA and adversely affect the resources within the  
28 meaning of Section 106 of the NHPA. These effects would be adverse.

29 **NEPA Effects:** Alternative 5A has the potential to damage previously unidentified archaeological  
30 sites. Because these sites may qualify for the NRHP or CRHR, damage to these sites may diminish  
31 their integrity. For these reasons this effect would be adverse.

32 **CEQA Conclusion:** The footprint for Alternative 5A is sensitive for both prehistoric and historic-era  
33 resources that cannot be identified at this time because much of the footprint is not legally  
34 accessible. Because many of these resources are likely to have data useful in prehistoric and historic  
35 archaeological research, as well as the integrity to convey this significance, they are likely to qualify  
36 as historical resources or unique archaeological sites under CEQA or historic properties under  
37 Section 106 of the NHPA. Ground-disturbing construction may materially alter the significance of  
38 these resources by disrupting the spatial associations that could yield important data, resulting in a  
39 significant effect. Mitigation Measure CUL-2 would address the impacts of both prehistoric and  
40 historic resources through conducting inventories, evaluating significance, and proposing treatment  
41 of archeological and historic resources as well as monitoring during the construction phase.  
42 However, this mitigation cannot guarantee that all eligible or significant resources would be  
43 preserved in place, or that all important data would be retrieved before construction destroys these  
44 resources. The scale of the project, investment into existing designs, and the presence of other

1 important environmental resources such as habitat, natural communities, and wetlands that should  
 2 be avoided are constraints on the flexibility and feasibility of avoidance. For these reasons this  
 3 impact is significant and unavoidable.

4 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of**  
 5 **Archaeological Resources**

6 Please see Mitigation Measure CUL-2 under Impact CUL-2 in the discussion of Alternative 4.

7 **Impact CUL-3: Effects on Archaeological Sites That May Not Be Identified through Inventory**  
 8 **Efforts**

9 The potential effects of construction of the water conveyance facilities on archaeological sites that  
 10 may not be identified during inventory efforts under Alternative 5A would be less when compared  
 11 to Alternative 4 because of the smaller footprint. As described for Alternative 4, although surveys  
 12 will be completed for the water conveyance footprint, such surveys cannot guarantee that all sites  
 13 will be identified prior to construction.

14 Ground-disturbing activities occurring under Alternative 5A, including the construction of surface  
 15 features such as intakes, subterranean tunnel boring operations, and access may disturb and  
 16 damage these resources before they can be identified and avoided during monitoring efforts  
 17 required under Mitigation Measure CUL-3. This damage and disturbance may materially impair  
 18 these resources within the meaning of CEQA or adversely affect the resources within the meaning of  
 19 Section 106 because this disturbance would impair the ability of these resources to yield data useful  
 20 in research. While Mitigation Measure CUL-3 would reduce the potential for this impact, it would not  
 21 guarantee the impact would be avoided entirely. Therefore, this impact is adverse.

22 **NEPA Effects:** Constructing Alternative 5A has the potential to damage previously unidentified  
 23 archaeological sites that also may not necessarily be identified prior to construction. While cultural  
 24 resource inventories will be completed once legal access is secured, no inventory can ensure that all  
 25 resources are identified prior to construction. Because these sites may qualify for the NRHP or  
 26 CRHR, damage to these sites may diminish their integrity. For these reasons this effect would be  
 27 adverse.

28 **CEQA Conclusion:** This impact on archaeological resources not identified during inventory efforts  
 29 would be considered significant for the same reasons described for Alternative 4. Construction has  
 30 the potential to disturb previously unidentified archaeological sites qualifying as historical  
 31 resources, unique archaeological resources, or historic properties. Mitigation Measure CUL-3 would  
 32 reduce but not entirely avoid the potential for this impact, by implementing construction worker  
 33 training, monitoring and discovery protocols. This impact would remain significant and unavoidable  
 34 because all archaeological resources may not be identified prior to disturbance.

35 **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
 36 **Perform Training of Construction Workers, and Conduct Construction Monitoring**

37 Please see Mitigation Measure CUL-3 under Impact CUL-3 in the discussion of Alternative 4.

38 **Impact CUL-4: Effects on Buried Human Remains Damaged during Construction**

39 Effects on buried human remains during construction occurring of Alternative 5A would likely be  
 40 less than Alternative 4 because of the smaller footprint. As described in greater detail for Alternative

1 4, the footprint of the water conveyance facilities is sensitive for buried historic and prehistoric  
 2 human remains. While inventory and monitoring efforts are prescribed by Mitigation Measures CUL-  
 3 2 and CUL-3, the large land area subject to disturbance under Alternative 5A make exhaustive  
 4 sampling to identify all buried and isolated human remains technically and economically infeasible.  
 5 For these reasons the potential remains that such resources may be damaged or exposed before  
 6 they can be discovered through inventory or monitoring. This effect would be adverse.

7 **NEPA Effects:** Buried human remains may be damaged by constructing Alternative 5A because such  
 8 remains may occur either in isolation or as part of identified and previously unidentified  
 9 archaeological resources where construction will occur. This effect would be adverse.

10 **CEQA Conclusion:** Damage to buried human remains during construction of Alternative 5A would be  
 11 considered a significant impact for the same reasons described for Alternative 4. The project area is  
 12 sensitive for buried human remains and construction of Alternative 5A would likely result in  
 13 disturbance of these features. Disturbance of human remains, including remains interred outside of  
 14 cemeteries is considered a significant impact. Mitigation Measure CUL-4 would reduce the severity  
 15 of this impact by following state and federal guidelines, including notifying the county coroner and  
 16 NAHC, if human remains are discovered during construction. This impact is considered significant  
 17 and unavoidable, because mitigation would not guarantee that these features could be discovered  
 18 and treated in advance of construction and the scale of construction makes it technically and  
 19 economically infeasible to perform the level of sampling necessary to identify all such resources  
 20 prior to construction.

21 **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if**  
 22 **Such Resources Are Discovered during Construction**

23 Please see Mitigation Measure CUL-4 under Impact CUL-4 in the discussion of Alternative 4.

24 **Impact CUL-5: Direct and Indirect Effects on Eligible and Potentially Eligible Historic**  
 25 **Architectural/Built-Environment Resources Resulting from Construction Activities**

26 Effects of constructing the water conveyance facilities on built-environment resources under  
 27 Alternative 5A would be less than those described for Alternative 4 in Section 18.3.5.9 due to the  
 28 smaller construction footprint. As described in greater detail under Alternative 4 and Appendix 18B,  
 29 *Identified Cultural Resources Potentially Affected by the BDCP Alternatives*, a total of 10 built-  
 30 environment resources have the potential to be directly or indirectly affected by constructing the  
 31 water conveyance facilities. These effects would materially impair the resources within the meaning  
 32 of CEQA and result in adverse effects within the meaning of Section 106 because they would  
 33 diminish the characteristics that convey the significance of the resources.

34 **NEPA Effects:** Alternative 5A would result in direct and indirect effects on NRHP and CRHR eligible  
 35 built environment resources. These alterations may diminish the integrity of these resources. For  
 36 these reasons this effect would be adverse.

37 **CEQA Conclusion:** Alternative 5A could result in fewer impacts on identified historic-era built-  
 38 environment resources than described for Alternative 4. The impacts on the built-environment  
 39 resources are considered significant because construction may require demolition or alter the  
 40 character of the resource to such a degree that each resource may no longer be able to convey its  
 41 significance. Mitigation measure CUL-5 would reduce the impact by implementing a built-  
 42 environment treatment plan that includes preparing an HSR, assessing preconstruction conditions,

1 implementing protection measures, and preparing HABS/HAER/HALS records, or equivalent  
 2 documentation, for CRHR and NRHP-eligible historic buildings and structures that will be  
 3 demolished. The impact on historic-era built-environment resources would remain significant and  
 4 unavoidable because even with mitigation, the scale of the project and the constraints imposed by  
 5 other environmental resources make avoidance of all significant effects unlikely.

6 **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and Implement a Built**  
 7 **Environment Treatment Plan**

8 Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 4.

9 **Impact CUL-6: Direct and Indirect Effects on Unidentified and Unevaluated Historic**  
 10 **Architectural/Built-Environment Resources Resulting from Construction Activities**

11 Effects of constructing the water conveyance facilities on unidentified and unevaluated historic  
 12 architectural and built-environment resources under Alternative 5A would be less than those  
 13 described for Alternative 4 because the footprint of the water conveyance facility would be smaller.  
 14 As described in detail for Alternative 4, although DWR does not have legal access to the majority of  
 15 the footprint for the water conveyance, historical documentation suggests numerous additional  
 16 resources occur in the footprint of the water conveyance facilities that have not been identified or  
 17 which cannot currently be accessed and evaluated. Construction may result in direct demolition of  
 18 these resources, damage through vibration, or indirect effects such as changes to the setting.

19 The resources may exhibit significance under both CEQA (State CEQA Guidelines Section  
 20 15064.5[a][3]) and the NRHP (30 CFR 60.4). In addition, because many of the historic-era structures  
 21 in the Delta region are intact, and retain their rural agricultural setting, many of these resources are  
 22 likely to have integrity within the meaning of CEQA and the NRHP (14 CCR Section 4852[c], 30 CFR  
 23 60.4). Because many unidentified resources are likely to have significance and integrity, they may  
 24 qualify as historical resources under CEQA and historic properties under Section 106 of the NHPA.

25 **NEPA Effects:** Alternative 5A may result in direct modification or indirect changes to the setting for  
 26 inaccessible and NRHP- and CRHR-eligible resources. These changes may diminish the integrity of  
 27 these resources. For these reasons, this effect would be adverse.

28 **CEQA Conclusion:** Alternative 5A may result in fewer impacts on unidentified and unevaluated  
 29 historic architectural and built-environment resources than described for Alternative 4.  
 30 Construction may also result in permanent indirect effects such as changes to the setting. Direct  
 31 demolition or changes to the setting would be material alterations because they would either  
 32 remove the resource or alter the resource character, resulting in an inability of the resource to  
 33 convey its significance. Many of these resources are likely to qualify as historic properties or  
 34 historical resources under the NHPA and CEQA. Mitigation measure CUL-6 would reduce these  
 35 impacts by requiring surveys be conducted on previously inaccessible properties to determine if  
 36 constructing the water conveyance facilities would adversely impact the properties, and, if so, CUL-6  
 37 would develop and implement treatment plans. The scale of the project and the constraints imposed  
 38 by other environmental resources make avoidance of all significant effects unlikely. For these  
 39 reasons this impact remains significant and unavoidable even with implementation of the following  
 40 mitigation measures.

1           **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 2           **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 3           **Develop Treatment to Resolve or Mitigate Adverse Impacts**

4           Please see Mitigation Measure CUL-6 under Impact CUL-6 in the discussion of Alternative 4.

5           **Impact CUL-7: Effects of Other Environmental Commitments on Cultural Resources**

6           Implementing Environmental Commitments at part of Alternative 5A would result in impacts on  
 7           cultural resources similar to those described under Alternative 4, although the extent of these  
 8           impacts under Alternative 5A would be much less than under Alternative 4 because the total acreage  
 9           that would be affected by the habitat restoration and enhancement activities would be substantially  
 10          less.

11          The following Environmental Commitments would not result in impacts on cultural resources  
 12          because they consist of changes to existing activities, or planning and regulatory actions that would  
 13          not require ground-disturbing work with effects on cultural resources.

- 14          • *Environmental Commitment 11: Natural Communities Enhancement*
- 15          • *Environmental Commitment 12: Methylmercury Management*
- 16          • *Environmental Commitment 15: Localized Reduction of Predatory Fishes*
- 17          • *Environmental Commitment 16: Nonphysical Fish Barrier*

18          Implementation of the remaining Environmental Commitments could result in impacts on cultural  
 19          because they involve ground-disturbing activities:

- 20          • *Environmental Commitment 3: Natural Communities Protection and Restoration*
- 21          • *Environmental Commitment 4: Tidal Natural Communities Restoration*
- 22          • *Environmental Commitment 6: Channel Margin Enhancement*
- 23          • *Environmental Commitment 7: Riparian Natural Community Restoration*
- 24          • *Environmental Commitment 8: Grassland Natural Community Restoration*
- 25          • *Environmental Commitment 9: Vernal Pool and Alkali Seasonal Wetland Complex Restoration*
- 26          • *Environmental Commitment 10: Nontidal Marsh Restoration*

27          These Environmental Commitments would result in effects on cultural resources when ground-  
 28          disturbing work is performed to construct improvements and enhance or restore natural  
 29          communities. Similar to Alternative 4, direct effects would occur through demolition or destruction  
 30          of NRHP-, CRHR-, and/or local registry-eligible prehistoric and historic archaeological sites, unique  
 31          archaeological resources, TCPs, human remains, and built-environment resources. In addition,  
 32          indirect effects may occur where changes to the setting alter the existing setting in a manner that is  
 33          inconsistent with the feeling and association of the resource. Because the ability of the resources to  
 34          convey their significance would be lost, this effect would materially alter these resources under  
 35          CEQA and would be adverse under NEPA. For example, reclaimed agricultural landscapes that are  
 36          converted to habitat may no longer convey the themes of agriculture and settlement, and thus would  
 37          be inconsistent with remaining features associated with rural historic landscapes created by  
 38          reclamation, cultivation, and ranching.

1 Mitigation Measure CUL-7 below addresses the impact on cultural resources as a result of  
 2 implementing the Environmental Commitments. Because of the large acreages of land included in  
 3 these commitments, it is unlikely that all effects on NRHP-, CRHR-, and /or local registry-eligible  
 4 resources and unique archaeological resources could be avoided. Therefore, this impact would be  
 5 adverse.

6 **NEPA Effects:** Implementation of Environmental Commitments would result in ground disturbing  
 7 work and introduction of new infrastructure to the project area. These physical modifications may  
 8 result in direct effects on NRHP and CRHR-eligible resources and therefore reduce the integrity of  
 9 these resources. For these reasons these effects would be adverse.

10 **CEQA Conclusion:** Implementing Environmental Commitments would require ground-disturbing  
 11 activities that could alter the significant characteristics of NRHP-, CRHR-, and/or local registry-  
 12 eligible cultural resources, including prehistoric and historic archaeological sites, TCPs, and built-  
 13 environment resources such as historic architectural structures and rural historic landscapes. The  
 14 same construction may damage unique archaeological resources. This construction would likely  
 15 result in materially adverse changes for the following reasons.

- 16 • Ground-disturbing construction in archaeological sites disrupts the spatial associations that  
 17 contain data useful in research, thus diminishing or destroying the basis for the significance of  
 18 the resource.
- 19 • Ground-disturbing construction may either directly demolish or indirectly affect the setting of  
 20 built-environment resources, resulting in an inability of the resource to convey its significance.
- 21 • Ground-disturbing construction may either directly demolish or change the setting of TCPs  
 22 resulting in an inability of the resource to convey its significance.
- 23 • Ground-disturbing construction may inadvertently disturb human remains.

24 The alteration of a resource that changes the characteristics that convey its significance is a material  
 25 alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under  
 26 Appendix G of the State CEQA Guidelines. Because this construction would materially alter these  
 27 categories of resources and disturb human remains it would result in a significant impact. Mitigation  
 28 Measure CUL-7 would reduce these impacts by identifying and evaluating resources, avoiding  
 29 resources where possible, and developing treatment where avoidance is not possible. In addition,  
 30 construction would be monitored. However, because of the acreage that could be disturbed as a  
 31 result of implementing the components, as well as the multiple constraints associated with other  
 32 environmental resources that require mitigation or avoidance, it is unlikely that all cultural  
 33 resources could be avoided. Therefore, this impact remains significant and unavoidable.

34 **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
 35 **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
 36 **Implementation of Environmental Commitments 3, 4, 6, 7, 9–12, 15, and 16**

37 Please see Mitigation Measure CUL-7 under Impact CUL-7 in the discussion of Alternative 4.

38 **Impact CUL-8: Compatibility of the Proposed Water Conveyance Facilities and Environmental**  
 39 **Commitments with Plans and Policies**

40 Similar to Alternative 4 (as described in Section 18.3.5.9), constructing the proposed water  
 41 conveyance facilities and implementing Environmental Commitments under Alternative 5A could

1 result in the potential for incompatibilities with plans and policies adopted to protect the cultural  
 2 resources of the Delta. A number of plans and policies that coincide with the study area provide  
 3 guidance for protection of cultural resources as overviewed in Section 18.2.3, *Regional and Local*  
 4 *Plans, Policies, and Regulations*. The policies include the Alameda County East Area Plan, Contra  
 5 Costa County General Plan, San Joaquin County General Plan, Sacramento County General Plan,  
 6 Solano County General Plan, and the Yolo County General Plan. A detailed summary of the policies is  
 7 provided in Alternative 4. Similar to Alternative 4, the construction of the water conveyance  
 8 facilities and Environmental Commitments under Alternative 5A would be compatible with the  
 9 cultural resource protection policies indicated in the Alameda County East Area Plan, San Joaquin  
 10 County General Plan, Yolo County General Plan and potentially incompatible with the Contra Costa  
 11 County General Plan, Sacramento County General Plan and Solano County General Plan. Similar to  
 12 Alternative 4, restoration actions under Alternative 5A would be compatible with policies that  
 13 emphasize mitigation and incompatible with policies that emphasize preservation.

14 It should be noted that, as described in Chapter 13, Section 13.2.3, state and federal agencies are not  
 15 subject to local land use regulations. Furthermore, policy incompatibility by itself is not a physical  
 16 impact on the environment.

17 **NEPA Effects:** Because federal agencies are not regulated by local land use policy, implementation of  
 18 Alternative 5A would not result in a conflict with local land use laws.

19 **CEQA Conclusion:** As with Alternative 4, constructing the proposed water conveyance facilities  
 20 under Alternative 5A is governed by cultural resource management policies adopted by the various  
 21 counties with jurisdiction in this region. For policies that emphasize preservation or mitigation,  
 22 Alternative 5A would be compatible with these policies because DWR and appropriate federal  
 23 agencies would implement cultural resource management practices that would identify significant  
 24 resources, preserve such resources where feasible, and complete mitigation to reduce significant  
 25 effects where preservation is not feasible. For policies that emphasize preservation, the project is  
 26 incompatible in some instances because multiple constraints governing the location of proposed  
 27 facilities makes preservation of all significant cultural resources unlikely. It should be noted that, as  
 28 described in Chapter 13, *Land Use*, Section 13.2.3, state and federal agencies are not subject to local  
 29 land use regulations. Furthermore, policy incompatibility, by itself is not a physical impact on the  
 30 environment.

### 31 18.3.7 Cumulative Analysis

32 This cumulative impact analysis considers projects that could affect cultural resources within the  
 33 same timeframe as the action alternatives, which could result in cumulative effects on cultural  
 34 resources. Although cultural resources typically manifest as discrete archaeological sites, structures,  
 35 or residences, the combination of projects in the region can result in a cumulative loss of these  
 36 resources, associated archaeological data and examples of significant historical themes and  
 37 instances of significant engineering or design. In addition, for rural historic landscapes, historic  
 38 districts, and other cultural resources that cover large geographic areas, the combined effects of  
 39 numerous projects at disparate locations can potentially result in a loss of integrity that diminishes  
 40 the quality of the individual resources. This section presents the range of reasonably foreseeable  
 41 projects plans and programs that when combined with project alternatives could result in  
 42 significant cumulative effects on cultural resources. The analysis presents the potential cumulative  
 43 effects of other reasonably foreseeable projects that are implemented under No Action Alternative  
 44 conditions. An analysis of potential concurrent project effects is also presented to address

1 conveyance facility effects that may coincide with other restoration or mitigation elements that  
2 were analyzed separately for some of the action alternatives. This discussion discloses potential  
3 combined effects of alternative components to ensure that the magnitude of potential alternatives  
4 effects is addressed fully. Finally, an analysis of the effects of cumulative projects when combined  
5 with action alternatives is presented.

6 The projects, plans and programs that would occur within the same timeframe as the action  
7 alternatives could collectively result in the cumulative loss of cultural resources. Some of the types of  
8 cumulative projects that could have effects on cultural resources include levee repair and maintenance,  
9 restoration projects, infrastructure improvements and development projects.

10 Levee programs involve repair and maintenance of existing project levees in the Delta. The  
11 construction of upgrades and repair of existing levees require ground-disturbing work that has the  
12 potential to result in adverse effects on archaeological resources, built-environment structures, and  
13 large landscape-level cultural resources such as historic districts, rural historic landscapes, and  
14 TCPs. These effects typically occur when construction of setback levees or widening of existing levee  
15 prisms disturbs landside archaeological resources, or where borrow activity necessary to provide  
16 fill material disturbs the same resources. In addition, maintenance and repair projects can result in  
17 the demolition of structures and residences that form portions of rural historic landscapes  
18 associated with themes of reclamation and agriculture. Where deep cutoff walls are constructed  
19 through existing levee prisms, buried archaeological resources may be damaged or destroyed.

20 Restoration projects that occur near waterways or require inundation to enhance wetland and  
21 riparian vegetation can have adverse effects on archaeological resources, and may require  
22 demolition of structures and residences in the Delta.

23 Infrastructure projects such as the California High-Speed Rail System, Sacramento to Merced  
24 Section, will require ground-disturbing construction along linear corridors where new rail service is  
25 placed, resulting in potential disturbance of archaeological resources and demolition of built-  
26 environment resources. Human remains may be encountered and disturbed where they occur as  
27 part of larger archaeological sites, or also as discrete burials.

28 Development and plan buildout under general plan blueprints results in the conversion of raw land  
29 and the associated disturbance of archaeological resources, buried human remains, and, in some  
30 cases, demolition of existing built environment structures and residences.

31 Although project proponents will implement typical mitigation and avoidance measures for most if  
32 not all of the cumulative projects, unavoidable effects on cultural resources will nonetheless occur  
33 because it is not always feasible to avoid effects on resources. Treatment such as data recovery or  
34 documentation cannot replace the lost resource and therefore would not reduce impacts to less-  
35 than-significant levels. In addition, archaeological resources are often encountered and damaged  
36 inadvertently during construction because these resources cannot be identified before construction  
37 takes place.

38 A summary of the projects considered as part of the cumulative analysis is provided below in Table  
39 18-2. The complete set of cumulative projects is provided in Appendix 3D, *Defining Existing*  
40 *Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions.*

1 **Table 18-2. Effects on Cultural Resources from Projects, Plans and Programs Considered for**  
 2 **Cumulative Analysis**

Agency	Program/Project	Status	Description of Program/Project	Effects on Cultural Resources
California Department of Water Resources and Solano County Water Agency	North Bay Aqueduct Alternative Intake Project	Planned action	This project will construct an alternative intake on the Sacramento River and a new segment of pipeline to connect it to the North Bay Aqueduct system.	Construction of an alternative intake could disturb existing cultural resources.
Reclamation District 2093	Liberty Island Conservation Bank	Planned action	This project includes the restoration of inaccessible, flood prone land zoned as agriculture but not actively farmed, to area enhancement of wildlife resource.	Changes in land cover may expedite the decay of existing cultural resources.
California High Speed Rail Authority and Federal Railroad Administration	California High-Speed Rail System, Sacramento to Merced Section	Briefing on Initial Alternatives completed. Sacramento to Merced section is part of Phase 2.	Development of new high-speed rail service.	High-speed rail service could disturb or destroy sensitive cultural resources.
Bureau of Reclamation	Delta-Mendota Canal/California Aqueduct Intertie	Completed in 2012.	New project facilities include a pipeline and pumping plant that could disturb cultural resources occurring in the path of these features.	NA
California Department of Water Resources and Bureau of Reclamation	State Water Project and Central Valley Project maintenance throughout Plan Area	Continuing actions	Repair and maintenance activities.	Maintenance activities could disturb or destroy sensitive cultural resources.
CALFED Levee Stability Program	Existing project levees in the Delta	Continuing actions	Protection of resources in the Delta through maintenance and improvement of existing levees may disturb or demolish cultural resources.	Levee improvement activities could disturb or destroy sensitive cultural resources.
California Department of Water Resources, Bureau of Reclamation, California Department of Fish and Wildlife	Suisun Marsh Habitat Management, Preservation, and Restoration Plan	Planned Action	Develop a regional plan for Suisun Marsh that balances implementation of the CALFED Program, the Suisun Marsh Preservation Agreement, and other management and restoration programs within the Suisun Marsh in a manner responsive to the concerns of stakeholders and based upon voluntary participation by private landowners.	Land-disturbing activities could disturb or destroy sensitive cultural resources.

Agency	Program/Project	Status	Description of Program/Project	Effects on Cultural Resources
Semitropic Water Storage District	Delta Wetlands Project	Planned action	Wildlife enhancement on Delta islands may demolish cultural resources or expedite decay of cultural resources.	Land-disturbing activities could disturb or destroy sensitive cultural resources.
California Department of Water Resources	Dutch Slough Tidal Marsh Restoration Project	Currently under study	Restoration 1,178 acre site located in the South Delta to tidal marsh habitat.	Land-disturbing activities could disturb or destroy sensitive cultural resources.
California Department of Water Resources and Suisun Mash Preservation Agreement agencies	Miens Landing Restoration	Currently under study	Restoration of duck clubs to tidal marsh.	Land-disturbing activities could disturb or destroy sensitive cultural resources.
California Department of Water Resources	Cache Slough Area Restoration	Currently under study	Restoration of lands within the Cache Slough Complex located in the Delta	Land-disturbing activities could disturb or destroy sensitive cultural resources. This project is examined as part of the BDCP alternatives and effects further described in the BDCP.
Department of Water Resources	California Water Action Plan	Initiated in January 2014	This plan lays out a roadmap for the next 5 years for actions that would fulfill 10 key themes. In addition, the plan describes certain specific actions and projects that call for improved water management throughout the state.	Potential for effects on archaeological and historic resources from water infrastructure projects implemented under this plan.
Delta Conservancy	California EcoRestore	Initiated in 2015	This program will accelerate and implement a suite of Delta restoration actions for up to 30,000 acres of fish and wildlife habitat by 2020.	Potential for effects on archaeological and historic resources from construction of restoration actions.

1

### 2 18.3.7.1 Cumulative Effects of the No Action Alternative

3 The Delta region is rich in prehistoric and historic-era cultural resources. These resources include  
4 prehistoric and historic archaeological sites, buried human remains, and built-environment  
5 resources. Subsidence, levee failure, and climate change all have the potential to increase the  
6 inundation and erosion of cultural resources that currently occur on the landside of existing flood  
7 management structures. Ongoing SWP/CVP operations include both levee repair and habitat  
8 restoration and conservation activities. Where specific projects will result in ground-disturbing  
9 construction these actions have the potential to result in effects on cultural resources through direct  
10 excavation into such resources or the introduction of new inconsistent features such as setback  
11 levees, borrow areas, or other landside features that may not be consistent with the rural  
12 agricultural setting. The plans, programs, and projects that would occur under the No Action  
13 Alternative in combined with cumulative projects, collectively will result in adverse effects on  
14 cultural resources. For example, Yolo County concludes in the General Plan Update EIR that plan

1 buildout will result in significant and unavoidable effects on cultural resources (County of Yolo  
 2 2009b:546). Similarly, levee repairs performed in the Delta region are likely to contribute to effects  
 3 on archaeological and built-environment resources and buried human remains because the Delta is  
 4 sensitive for such resources, and construction of such improvements would require ground-  
 5 disturbing work. Habitat restoration in Suisun Marsh or elsewhere necessary to comply with federal  
 6 biological opinions could also contribute to effects on archaeological and built-environment  
 7 resources and buried human remains. Although mitigation may be implemented as a part of these  
 8 ongoing projects, which would reduce their effects, or manage significant effects through treatment,  
 9 such treatment typically does not reduce impacts on cultural resources to less than adverse.

10 The Delta and vicinity is within a highly active seismic area, with a generally high potential for major  
 11 future earthquake events along nearby and/or regional faults, and with the probability for such  
 12 events increasing over time. Based on the location, extent and non-engineered nature of many  
 13 existing levee structures in the Delta area, the potential for significant damage to, or failure of, these  
 14 structures during a major local seismic event is generally moderate to high. In the instance of a large  
 15 seismic event, levees constructed on liquefiable foundations are expected to experience large  
 16 deformations (in excess of 10 feet) under a moderate to large earthquake in the region (see  
 17 Appendix 3E, *Potential Seismic and Climate Change Risks to SWP/CVP Water Supplies*, for more  
 18 detailed discussion). Reclaiming land or rebuilding levees after a catastrophic event due to climate  
 19 change or a seismic event could result in the destruction of cultural resources.

20 Overall the potential exists for adverse cumulative effects on cultural resources under No Action  
 21 Alternative conditions because ongoing projects, plans and programs will have the potential to effect  
 22 known and unknown cultural resources. Although some of these effects may be reduced by  
 23 requirements to avoid or minimize impacts, the potential for substantial cumulative risks to cultural  
 24 resources under No Action Alternative conditions would continue to exist even with these  
 25 requirements because mitigation measures often do not fully reduce these effects.

### 26 **18.3.7.2 Concurrent Project Effects**

27 Construction of the water conveyance facilities under Alternatives 1A through 9 would have adverse  
 28 impacts on cultural resources including archaeological sites, buried human remains, TCPs, and  
 29 historic architecture/built environment resources. These impacts would be largely attributable to  
 30 the large amount of construction activity and land disturbance that would be required to implement  
 31 each alternative. Mitigation Measures CUL-1 through CUL-7 would reduce the impact that would  
 32 result from Alternatives 1A through 9, but not to a less-than-significant level because disturbance  
 33 cannot be avoided to complete construction of the water conveyance facilities and monitoring all  
 34 construction activities is infeasible. Operation and maintenance of the water conveyance facilities  
 35 would not adversely impact cultural resources because extensive ground disturbing activities would  
 36 not be required.

37 Implementing CM2–CM4 and CM6–CM11 under the BDCP alternatives, or Environmental  
 38 Commitments 3, 4, and 6–11 under Alternatives 4A, 2D and 5A, would adversely impact cultural  
 39 resources as a result of construction activities required to implement the restoration actions.  
 40 Implementing Mitigation Measures CUL-1 through CUL-7 would reduce these impacts, but not to a  
 41 less-than-significant level because construction of restoration features would include disturbance to  
 42 the land surface and damage or destroy unknown archaeological sites or buried human remains.

1 The combined impact of constructing the water conveyance facility with implementing proposed  
 2 restoration actions would result in a significant impact on cultural resources because ground  
 3 disturbing activities could occur simultaneously. Implementing Mitigation Measures CUL-1 through  
 4 CUL-7 would reduce these combined impacts, but not to a less-than-significant level.

5 Although the concurrent effects on cultural resources that would result from implementation of  
 6 Alternatives 4A, 2D, and 5A would not be reduced to a less-than-significant level by Mitigation  
 7 Measures CUL-1 through CUL-7, these effects would be reduced when compared with the BDCP  
 8 alternatives because of the much lesser amount of restoration proposed under Alternatives 4A, 2D,  
 9 and 5A.

### 10 **18.3.7.3 Cumulative Effects of the Action Alternatives**

#### 11 **Impact CUL-9: Potential for the Action Alternatives to Contribute to the Cumulative Loss of** 12 **Cultural Resources in the Plan Area**

13 The action alternatives vary in terms of location and scale of construction. Tunnel alternatives  
 14 would avoid some surface resources where tunnels would replace canals, but would require  
 15 construction of large intakes, RTM storage areas, and associated features. Alternatives that would  
 16 result in construction of an eastern or western canal would also require construction of large intake  
 17 features along the northern end of proposed alignments and would require excavation and borrow  
 18 activities along the entire footprint. Alternative 9 would have a smaller footprint, but also has the  
 19 potential to result in significant and unavoidable effects on cultural resources. All action alternatives  
 20 have the potential to result in the following categories of impacts.

- 21 • Demolition or destruction of identified and identifiable archaeological and built-environment  
 22 resources that qualify as historical resources, unique archaeological sites, or historic properties.
- 23 • Demolition or destruction of archeological sites that qualify as historical resources, unique  
 24 archaeological resources, and historic properties that cannot feasibly be identified in advance of  
 25 construction.
- 26 • Demolition or destruction of buried human remains that occur cannot be feasibly be identified  
 27 in advance of construction.

28 Because the action alternatives would generate these effects the potential exists for substantial loss  
 29 of cultural resources in the Plan Area. Mitigation Measures CUL-1 through CUL-7 are available to  
 30 reduce this effect, but effects would not likely be reduce fully for all impacts.

31 **NEPA Effects:** Construction of water conveyance facilities and implementing other conservation  
 32 measures would result in an adverse effect on cultural resources through earth-moving and other  
 33 ground-disturbing activities required to complete each project within the Delta Region. In addition  
 34 to the projects listed in Table 18-2, other projects proposed within the Delta Region would also  
 35 contribute to the damage or destruction of cultural resources by increasing the amount of ground  
 36 disturbance. The combined effect of any action alternative with the projects listed in Table 18-2,  
 37 would result in an adverse cumulative effect on cultural resources even with implementation of  
 38 feasible mitigation measures. These effects include destruction of identified and identifiable  
 39 archaeological and built-environment resources that qualify as historical resources, unique  
 40 archaeological resources, or historic properties; and also destruction or disturbance of cultural  
 41 resources that cannot feasibly be identified in advance of construction—buried human remains,

1 TCPs, and archaeological sites that qualify as historical resources, unique archaeological resources,  
2 or historic properties.

3 Although Alternatives 4A, 2D, and 5A would result in fewer acres converted under Environmental  
4 Commitments, each includes extensive surface and subsurface disturbances that, when combined  
5 with other cumulative projects, would result in adverse effects on cultural resources. Adverse effects  
6 on archaeological and historic resources could be reduced by implementing Mitigation Measures  
7 CUL-1 through CUL-7.

8 **CEQA Conclusion:** Constructing the water conveyance facilities and implementing restoration  
9 measures under the action alternatives would result in significant impacts on cultural resources  
10 within the Delta Region. Construction activities, including surface and subsurface disturbance, could  
11 result in damage or destruction of cultural resources. This impact would be exacerbated when  
12 combined with other ground disturbing projects in the Delta Region as summarized in Table 18-2  
13 and are considered a significant cumulative impact on Delta cultural resources because of the  
14 potential to affect sensitive archaeological and historic resources. The impact that action  
15 alternatives would have on cultural resources would be cumulatively considerable because of the  
16 extensive surface and subsurface disturbance these alternatives would involve when compared to  
17 the other projects listed. Mitigation Measures CUL-1 through CUL-7 would reduce these impacts of  
18 the action alternatives but not to a less-than-significant level. Therefore, this cumulative impact on  
19 cultural resources is considered significant and unavoidable.

20 **Mitigation Measure CUL-1: Prepare a Data Recovery Plan and Perform Data Recovery**  
21 **Excavations on the Affected Portion of the Deposits of Identified and Significant**  
22 **Archaeological Sites**

23 Please see Mitigation Measure CUL-1 under Impact CUL-1 in the discussion of Alternative 1A.

24 **Mitigation Measure CUL-2: Conduct Inventory, Evaluation, and Treatment of**  
25 **Archaeological Resources**

26 Please see Mitigation Measure CUL-2 under Impact CUL-2 in the discussion of Alternative 1A.

27 **Mitigation Measure CUL-3: Implement an Archaeological Resources Discovery Plan,**  
28 **Perform Training of Construction Workers, and Conduct Construction Monitoring**

29 Please see Mitigation Measure CUL-3 under Impact CUL-3 in the discussion of Alternative 1A.

30 **Mitigation Measure CUL-4: Follow State and Federal Law Governing Human Remains if**  
31 **Such Resources Are Discovered during Construction**

32 Please see Mitigation Measure CUL-4 under Impact CUL-4 in the discussion of Alternative 1A.

33 **Mitigation Measure CUL-5: Consult with Relevant Parties, Prepare and implement a Built**  
34 **Environment Treatment Plan**

35 Please see Mitigation Measure CUL-5 under Impact CUL-5 in the discussion of Alternative 1A.

1       **Mitigation Measure CUL-6: Conduct a Survey of Inaccessible Properties to Assess**  
 2       **Eligibility, Determine if These Properties Will Be Adversely Impacted by the Project, and**  
 3       **Develop Treatment to Resolve or Mitigate Adverse Impacts**

4       Please see Mitigation Measure CUL-6 under Impact CUL-6 in the discussion of Alternative 1A.

5       **Mitigation Measure CUL-7: Conduct Cultural Resource Studies and Adopt Cultural**  
 6       **Resource Mitigation Measures for Cultural Resource Impacts Associated with**  
 7       **Implementation of CM2-21**

8       Please see Mitigation Measure CUL-7 under Impact CUL-7 in the discussion of Alternative 1A.

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