

## Environmental Commitments, AMMs, and CMs

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*Note to Reviewers: This section has gone through substantial revisions. While appendices being produced in Appendix A are typically shown in redline to indicate changes that have been made since the Draft EIR/EIS, the Lead Agencies believe that a track change version would not further public review of it, and in fact, would make this Appendix less comprehensible and as a result, impede a thorough review. We suggest that interested readers review Appendix 3B in its entirety.*

### 3B.1 Effectiveness of Environmental Commitments

This appendix presents environmental commitments that are incorporated into all of the action alternatives (i.e., all alternatives except for the No Action/No Project Alternative). Like the formal mitigation measures prescribed in the Draft EIR/EIS, these environmental commitments, which sometimes take the form of best management practices (BMPs), were intended to avoid or minimize potential adverse effects (a NEPA term) and potential significant impacts (a CEQA term). Table 3B-1 in Appendix 3B identifies each environmental impact (e.g., Impact WQ-31, Impact SOILS-1, etc.) to which particular commitments were relevant, so that readers would know which impacts would be rendered less severe by implementing these commitments.

The State CEQA Guidelines instruct lead agencies, in their EIRs, to “distinguish between the measures which are proposed by project proponents to be included in the project and other measures proposed by the lead, responsible or trustee agency or other persons[.]”<sup>1</sup>The NEPA Regulations adopted by the Council on Environmental Quality similarly instruct federal lead agencies to include within their EISs “appropriate mitigation measures not already included in the proposed action or alternatives.”<sup>2</sup> For many kinds of projects, particularly those involving private applicants seeking governmental approvals subject to CEQA or NEPA, there is an important distinction between mitigation measures that are proposed by the applicant or are part of the project, and mitigation measures that are recommended by the lead agency or other agencies. CEQA case law highlights this distinction by noting that proposed mitigation measures found in an EIR are only “‘suggestions which may or may not be adopted by decision makers’”.<sup>3</sup> At the time of project approval these decision makers have the option, if supported by substantial evidence, of rejecting proposed mitigation measures as infeasible.<sup>4</sup> Under CEQA, there is also an important distinction between mitigation measures that a lead agency could impose and measures that would have to be imposed, if at all, by one or more responsible agencies.<sup>5</sup>

With these distinctions in mind, DWR, as both CEQA lead agency and a project proponent, elected to clearly distinguish between environmental commitments and mitigation measures. The emphasis on environmental commitments was intended to reassure readers that DWR was unambiguously

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<sup>1</sup> State CEQA Guidelines, § 15126.4[a][1][A].

<sup>2</sup> 40 CFR § 1502.14[f]. See also *id.*, § 1502.16[h].

<sup>3</sup> See *Native Sun/Lyon Communities v. City of Escondido* (1993) 15 Cal.App.4th 892, 908

<sup>4</sup> Cal. Pub. Resources Code, § 21081[a][3].

<sup>5</sup> Compare Cal. Pub. Resources Code, § 21081[a][1] with *id.*, § 21081[a][2].

1 committed to carrying out a large number of practices or BMPs that would be effective either in  
2 reducing significant environmental effects to less-than-significant or less-than-adverse levels or in  
3 reducing the severity of such impacts to some substantial degree. By labeling these practices  
4 *environmental commitments* rather than *mitigation measures*, DWR intended to dispel any concern  
5 that the practices and BMPs designated as environmental commitments might be rejected as  
6 infeasible at the time of project approval or could not be imposed by the Lead Agencies but rather  
7 had to await action by state responsible agencies or federal permitting agencies.

8 Both DWR and the federal Lead Agencies were aware that, in many instances, the environmental  
9 commitments functioned as *de facto* mitigation measures. The Draft EIR/EIS is therefore written  
10 with a recognition that, where appropriate and necessary, its text should explain how the  
11 environmental commitments would function, and whether particular commitments would or would  
12 not be effective in reducing various significant or adverse effects to less-than-significant or less-  
13 than-adverse levels. The Lead Agencies intended that, when read together with Table 3B-1 in  
14 Appendix 3B, these textual passages would provide sufficient explanation and evidence to justify  
15 reliance on the environmental commitments as feasible means to reduce the severity of  
16 environmental effects.

17 Despite these efforts in the Draft EIR/EIS, which was issued for public review in December 2013,  
18 several commenters have asserted that the document does not comply with the requirements  
19 subsequently announced by the California Court of Appeal in a January 2014 decision known as  
20 *Lotus v. Department of Transportation*.<sup>6</sup> That case generally lays out principles that CEQA lead  
21 agencies should follow with respect to “‘avoidance, minimization and/or mitigation measures’ that  
22 ‘have been incorporated into the project to avoid and minimize impacts as well as to mitigate  
23 expected impacts.’”<sup>7</sup> In general, lead agencies must not simply assume, without analysis, that such  
24 project features will be effective in avoiding or minimizing significant environmental effects. Rather,  
25 such project features should be discussed in a manner similar to that required for formally proposed  
26 mitigation measures. In other words, for the significant environmental effects at issue, the EIR  
27 should do the following: state whether, in the absence of such features, impacts would be significant;  
28 and explain, in light of the applicable significance thresholds, whether the project features would or  
29 would not be sufficient to render the effects less than significant.<sup>8</sup> Such project features should also  
30 be made enforceable through some means at the time of project approval.<sup>9</sup>

31 In response to comments contending that DWR, as lead agency, had failed to “comply” with the *Lotus*  
32 decision, DWR along with the Bureau of Reclamation, as federal lead agency, have modified  
33 Appendix 3B as part of this RDEIR/SDEIS. In addition to the refinements made to some of the  
34 environmental commitments, Appendix 3B as modified now includes, after each specific  
35 environmental commitment, one or more narrative discussions explaining both how it reduces the  
36 severity of environmental effects and whether the level of impact reduction is sufficient to render  
37 the effects less than significant. This approach provides a succinct presentation and analysis of each  
38 environmental commitment’s effectiveness in reducing environmental impacts in a comprehensive  
39 and understandable manner without reproducing all the original Draft EIR/EIS impact discussions  
40 that reference environmental commitments. The Lead Agencies are cognizant of the size of the Draft

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<sup>6</sup> 223 Cal.App.4th 645.

<sup>7</sup> 223 Cal.App.4th 650.

<sup>8</sup> Id. at p. 656.

<sup>9</sup> Id. at p. 656.

1 EIR/EIS, which was the subject of many comments on the document, and opted to take an approach  
2 intended to minimize the burdens placed on readers.

3 Additionally, in recognition of the fact that many of the Avoidance and Minimization Measures  
4 (AMMs) that were initially proposed as a part of the project, as well as certain Conservation  
5 Measures (CMs) are utilized by the action alternatives to mitigate effects, those AMMs and CMs<sup>10</sup>,  
6 which also serve as *de facto* mitigation for various resource impacts within this document have been  
7 added to this appendix. Subsequently, this appendix has been renamed to reflect the addition of this  
8 discussion.

## 9 **3B.2 Environmental Commitments**

10 As part of the planning and environmental assessment process, the project proponents will  
11 incorporate the following environmental commitments and best management practices (BMPs) into  
12 the action alternatives to avoid or minimize potential adverse effects (a NEPA term) and potential  
13 significant impacts (a CEQA term). The project proponents will implement these environmental  
14 commitments as part of the project construction activities. In other words, these commitments will  
15 be satisfied even if not separately imposed by the permitting agencies. If permitting agencies impose  
16 additional measures or modifications, those will also be adhered to as part of the permit(s). The  
17 project proponents will coordinate planning, engineering, design and construction, operation, and  
18 maintenance phases of the alternative with the appropriate agencies.

19 An environmental permitting coordinator will consult with permitting agencies and local agencies to  
20 ensure that the environmental commitments described in this appendix are implemented. Where  
21 applicable, DWR will follow a local agency's policies where DWR determines such policies to be  
22 appropriate and feasible. As CEQA Lead Agency, DWR will include these commitments in the  
23 Mitigation Monitoring and Reporting Plan for the project to ensure implementation of the  
24 commitments during project construction and operation.

25 The following environmental commitments have been incorporated into the action alternatives and  
26 apply to the water conveyance facilities (Conservation Measure [CM]) as well as the other  
27 conservation components (CM2–CM21), as applicable. As such, they will not be restated in the  
28 impact analysis for each resource chapter but instead will be incorporated by reference. The project  
29 proponents will ensure that these measures are implemented depending on the location of  
30 construction and surrounding land uses. Table 3B-1 summarizes resource area impacts associated  
31 with environmental commitment(s).

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<sup>10</sup> For the new alternatives presented in the RDEIR/SDEIS, these CMs are now referred to as “Environmental Commitments” with numbers that correspond to the parallel BDCP Conservation Measures. This discussion should be considered to apply to these Environmental Commitments as well, even though only the terminology for the HCP alternatives is utilized.

1 **Table 3B-1. Summary of Environmental Commitments**

Environmental Commitments	Chapter/Resource	Alternative	Impact	
Perform Geotechnical Studies	Ch. 7 Groundwater	1A-9 (except where noted)	Impact GW-3	Impact GEO-11 (1B, 1C, 2B, 2C, 6B, 6C only)
	Ch. 9 Geology		Impact GW-5	
	Ch. 10 Soils		Impact GEO-2	
			Impact GEO-3	
			Impact GEO-4	
			Impact GEO-5	
			Impact GEO-6	
			Impact GEO-7	
			Impact GEO-8	
			Impact GEO-9	
		Impact GEO-10	Impact SOILS-3	
			Impact SOILS-4	Impact SOILS-8
			Impact SOILS-9	
Conform with Applicable Design Standards and Building Codes	Ch. 7 Groundwater	1A-9 (except where noted)	Impact GW-5	Impact GEO-11 (1B, 1C, 2B, 2C, 6B, 6C only)
	Ch. 9 Geology		Impact GEO-1	
	Ch. 10 Soils		Impact GEO-2	
			Impact GEO-3	
			Impact GEO-4	
			Impact GEO-5	
			Impact GEO-6	
			Impact GEO-7	
			Impact GEO-8	
			Impact GEO-9	
		Impact GEO-10	Impact GEO-12	
			Impact GEO-13	Impact GEO-14
			Impact GEO-15	Impact SOILS-3
			Impact SOILS-4	Impact SOILS-8
			Impact SOILS-9	
Electrical Power Guidelines	Ch. 12 Terrestrial Resources	1A-8	Impact BIO-21	
	Ch. 25 Public Health		Impact BIO-68	
			Impact BIO-71	
			Impact BIO-173	
			Impact PH-4	
		Impact PH-10		
Electrical Power Line Support Placement	Ch. 14 Agricultural Resources	1A-9	Impact AG-1	
	Ch. 17 Aesthetics and Visual Resources		Impact AES-6	

Environmental Commitments	Chapter/Resource	Alternative	Impact	
Develop and Implement Stormwater Pollution Prevention Plans	Ch. 7 Groundwater	1A-9	Impact GW-3	Impact AQUA-163
	Ch. 8 Water Quality		Impact WQ-31	Impact AQUA-164
	Ch. 10 Soils		Impact SOILS-1	Impact AQUA-169
	Ch. 11 Fish and Aquatic Resources		Impact SOILS-6	Impact AQUA-181
			Impact AQUA-1	Impact AQUA-182
	Ch. 12 Terrestrial Biological Resources		Impact AQUA-2	Impact AQUA-187
			Impact AQUA-7	Impact AQUA-199
	Ch. 15 Recreation		Impact AQUA-19	Impact AQUA-200
	Ch. 20 Public Services and Utilities		Impact AQUA-20	Impact AQUA-205
			Impact AQUA-25	Impact AQUA-146
	Ch. 24 Hazards and Hazardous Material		Impact AQUA-37	Impact BIO-3
			Impact AQUA-38	Impact BIO-5
	Ch. 25 Public Health		Impact AQUA-43	Impact BIO-8
			Impact AQUA-44	Impact BIO-11
	Ch. 28 Environmental Justice (Impact HAZ-2)		Impact AQUA-55	Impact BIO-14
			Impact AQUA-56	Impact BIO-17
			Impact AQUA-61	Impact BIO-20
			Impact AQUA-62	Impact BIO-23
			Impact AQUA-73	Impact BIO-26
			Impact AQUA-74	Impact BIO-28
Impact AQUA-79		Impact BIO-31		
Impact AQUA-89		Impact REC-4		
Impact AQUA-91		Impact REC-9		
Impact AQUA-92		Impact UT-4		
Impact AQUA 97		Impact HAZ-1		
Impact AQUA-109		Impact HAZ-2		
Impact AQUA-110		Impact HAZ-6		
Impact AQUA-115	Impact HAZ-7			
Impact AQUA-127	Impact PH-3			
Impact AQUA-128	Impact PH-7			
Impact AQUA-145	Impact PH-9			
Impact AQUA-151				

Environmental Commitments	Chapter/Resource	Alternative	Impact	
Develop and Implement Erosion and Sediment Control Plans	Ch. 8 Water Quality	1A-9	Impact WQ-31	Impact AQUA-110
	Ch. 9 Geology and Seismicity		Impact GEO-15	Impact AQUA-115
	Ch. 10 Soils		Impact SOILS-1	Impact AQUA-127
	Ch. 11 Fish and Aquatic Resources		Impact SOILS-6	Impact AQUA-128
			Impact AQUA-1	Impact AQUA-145
	Ch. 15 Recreation		Impact AQUA-2	Impact AQUA-146
	Ch. 16 Socioeconomics		Impact AQUA-7	Impact AQUA-151
			Impact AQUA-19	Impact AQUA-163
	Ch. 20 Public Services and Utilities		Impact AQUA-20	Impact AQUA-164
			Impact AQUA-37	Impact AQUA-169
	Ch. 25 Public Health		Impact AQUA-38	Impact AQUA-181
			Impact AQUA-43	Impact AQUA-182
			Impact AQUA-44	Impact AQUA-187
			Impact AQUA-55	Impact AQUA-199
			Impact AQUA-56	Impact AQUA-200
			Impact AQUA-61	Impact AQUA-205
			Impact AQUA-62	Impact REC-4
			Impact AQUA-73	Impact REC-9
			Impact AQUA-74	Impact ECON-3
			Impact AQUA-79	Impact ECON-15
Impact AQUA-89	Impact UT-4			
Impact AQUA-91	Impact PH-3			
Impact AQUA-92	Impact PH-7			
Impact AQUA-97	Impact PH-9			
Impact AQUA-109				

Environmental Commitments	Chapter/Resource	Alternative	Impact	
Develop and Implement Fish Rescue and Salvage Plans	Ch. 11 Fish and Aquatic Resources	1A-9	Impact AQUA-1	Impact AQUA-110
			Impact AQUA-2	Impact AQUA-115
	Ch. 15 Recreation		Impact AQUA-7	Impact AQUA-127
	Impact AQUA-19		Impact AQUA-128	
	Impact AQUA-20		Impact AQUA-145	
	Impact AQUA-37		Impact AQUA-146	
	Impact AQUA-38		Impact AQUA-151	
	Impact AQUA-43		Impact AQUA-163	
	Impact AQUA-55		Impact AQUA-164	
	Impact AQUA-56		Impact AQUA-169	
	Impact AQUA-61		Impact AQUA-181	
	Impact AQUA-73		Impact AQUA-182	
	Impact AQUA-74		Impact AQUA-187	
	Impact AQUA-79		Impact AQUA-199	
	Impact AQUA-91		Impact AQUA-200	
	Impact AQUA-92		Impact AQUA-205	
	Impact AQUA-97	Impact REC-4		
	Impact AQUA-109			
Develop and Implement a Barge Operations Plan	Ch. 11 Fish and Aquatic Resources	1A-9	Impact AQUA-1	Impact AQUA-97
			Impact AQUA-2	Impact AQUA-109
	Ch. 15 Recreation		Impact AQUA-7	Impact AQUA-110
	Ch. 24 Hazards and Hazardous Material		Impact AQUA-19	Impact AQUA-145
	Impact AQUA-20		Impact AQUA-146	
	Impact AQUA-37		Impact AQUA-151	
	Impact AQUA-38		Impact AQUA-163	
	Impact AQUA-43		Impact AQUA-164	
	Impact AQUA-55		Impact AQUA-169	
	Impact AQUA-56		Impact AQUA-181	
	Impact AQUA-61		Impact AQUA-182	
	Impact AQUA-73		Impact AQUA-187	
	Impact AQUA-74		Impact AQUA-199	
	Impact AQUA-79		Impact AQUA-200	
	Impact AQUA-91		Impact AQUA-205	
			Impact AQUA-92	Impact REC-4
	Impact AQUA-115	Impact REC-9		
	Impact AQUA-127	Impact HAZ-1		
	Impact AQUA-128			

Environmental Commitments	Chapter/Resource	Alternative	Impact	
Construction Equipment Exhaust Reduction Plan	Ch. 17 Aesthetics and Visual Resources Ch. 22 Air Quality and GHG Emissions Ch. 28 Environmental Justice (Impact AES-1, Alt 9; Impact AQ-9)	1A-9 (except where noted)	Impact AES-1	Impact AQ-16
			Impact AQ-1 (1C, 2C, 6C only)	Impact AQ-17 (Alt 1A)
			Impact AQ-2	Impact AQ-18
			Impact AQ-3	Impact AQ-20
			Impact AQ-4	Impact ECON-3
			Impact AQ-9	Impact ECON-5
			Impact AQ-10	Impact ECON-9
			Impact AQ-11	Impact ECON-11
			Impact AQ-12	Impact ECON-15
DWR Construction Best Management Practices to Reduce GHG Emissions <ul style="list-style-type: none"> <li>• Preconstruction and Final Design BMPs</li> <li>• Construction BMPs</li> </ul>	Ch. 20 Public Services and Utilities Ch. 22 Air Quality and GHG Emissions	1A-9	Impact UT-5	
			Impact AQ-16	
			Impact AQ-20	
			Impact ECON-15	
			Impact NOI-1	
			Impact NOI-2	
Develop and Implement Noise Abatement Plan <ul style="list-style-type: none"> <li>• Construction and Maintenance Noise</li> <li>• Operation Noise</li> </ul>	Ch. 15 Recreation Ch. 16 Socioeconomics Ch. 23 Noise Ch. 28 Environmental Justice (Impact ECON-3; Impacts NOI-1, NOI-2, NOI-4)	1A-9	Impact REC-2	Impact ECON-9
			Impact REC-4	Impact ECON-15
			Impact REC-9	Impact NOI-1
			Impact REC-10	Impact NOI-2
			Impact ECON-3	Impact NOI-4
			Impact ECON-5	



Environmental Commitments	Chapter/Resource	Alternative	Impact		
Develop and Implement Hazardous Materials Management Plans	Ch. 11 Fish and Aquatic Resources	1A-9	Impact AQUA-1	Impact AQUA-128	
			Impact AQUA-2	Impact AQUA-145	
	Ch. 15 Recreation		Impact AQUA-7	Impact AQUA-146	
	Ch. 16 Socioeconomics		Impact AQUA-19	Impact AQUA-151	
	Ch. 20 Public Services and Utilities		Impact AQUA-20	Impact AQUA-163	
	Ch. 24 Hazards and Hazardous Material		Impact AQUA-37	Impact AQUA-164	
	Ch. 28 Environmental Justice (Impact HAZ-2)			Impact AQUA-38	Impact AQUA-169
				Impact AQUA-43	Impact AQUA-181
				Impact AQUA-44	Impact AQUA-182
				Impact AQUA-55	Impact AQUA-187
				Impact AQUA-56	Impact AQUA-199
				Impact AQUA-61	Impact AQUA-200
				Impact AQUA-62	Impact AQUA-205
				Impact AQUA-73	Impact REC-4
				Impact AQUA-74	Impact REC-9
				Impact AQUA-79	Impact ECON-3
			Impact AQUA-89	Impact ECON-15	
			Impact AQUA-91	Impact UT-1	
			Impact AQUA-92	Impact UT-8	
			Impact AQUA-97	Impact HAZ-1	
	Impact AQUA-109	Impact HAZ-2			
	Impact AQUA-110	Impact HAZ-6			
	Impact AQUA-115	Impact HAZ-7			
		Impact AQUA-127			

Environmental Commitments	Chapter/Resource	Alternative	Impact	
Develop and Implement Spill Prevention, Containment, and Countermeasure Plans	Ch. 8 Water Quality	1A-9	Impact WQ-31	Impact AQUA-164
	Ch. 11 Fish and Aquatic Resources		Impact AQUA-1	Impact AQUA-169
	Ch. 12 Terrestrial Biological Resources		Impact AQUA-2	Impact AQUA-181
	Ch. 15 Recreation		Impact AQUA-7	Impact AQUA-182
	Ch. 20 Public Services and Utilities		Impact AQUA-19	Impact AQUA-187
	Ch. 24 Hazards and Hazardous Material		Impact AQUA-20	Impact AQUA-199
	Ch. 28 Environmental Justice (Impact HAZ-2)		Impact AQUA-37	Impact AQUA-200
			Impact AQUA-38	Impact AQUA-205
			Impact AQUA-43	Impact BIO-3
			Impact AQUA-44	Impact BIO-5
			Impact AQUA-55	Impact BIO-8
			Impact AQUA-56	Impact BIO-11
			Impact AQUA-61	Impact BIO-14
			Impact AQUA-62	Impact BIO-17
			Impact AQUA-73	Impact BIO-20
			Impact AQUA-74	Impact BIO-23
			Impact AQUA-79	Impact BIO-26
			Impact AQUA-89	Impact BIO-28
			Impact AQUA-91	Impact BIO-31
			Impact AQUA-92	Impact REC-4
	Impact AQUA-97	Impact REC-9		
	Impact AQUA-109	Impact UT-1		
	Impact AQUA-110	Impact UT-8		
	Impact AQUA-115	Impact HAZ-1		
	Impact AQUA-127	Impact HAZ-2		
	Impact AQUA-128	Impact HAZ-6		
	Impact AQUA-145	Impact HAZ-7		
	Impact AQUA-146			
	Impact AQUA-151			
	Impact AQUA-163			
Develop and Implement a Fire Prevention and Control Plan	Ch. 16 Socioeconomics	1A-9	Impact ECON-3	
	Ch. 20 Public Services and Utilities		Impact ECON-15	
	Ch. 24 Hazards and Hazardous Material		Impact UT-1	
			Impact UT-8	
			Impact HAZ-5	
			Impact HAZ-7	

Environmental Commitments	Chapter/Resource	Alternative	Impact	
Develop and Implement Mosquito Management Plans	Ch. 16 Socioeconomics	1A-9	Impact ECON-3	
	Ch. 25 Public Health		Impact ECON-9	
			Impact ECON-15	
			Impact PH-1	
			Impact PH-5	
Conduct Environmental Training	Ch. 11 Fish and Aquatic Resources	1A-9	Impact AQUA-38	Impact AQUA-145
			Impact AQUA-43	Impact AQUA-146
	Ch. 15 Recreation		Impact AQUA-44	Impact AQUA-151
	Ch. 18 Cultural Resources		Impact AQUA-55	Impact AQUA-163
	Ch. 27 Paleontological Resources		Impact AQUA-56	Impact AQUA-164
			Impact AQUA-61	Impact AQUA-169
			Impact AQUA-62	Impact AQUA-181
			Impact AQUA-73	Impact AQUA-182
			Impact AQUA-74	Impact AQUA-187
			Impact AQUA-79	Impact AQUA-199
			Impact AQUA-89	Impact AQUA-200
			Impact AQUA-91	Impact AQUA-205
			Impact AQUA-92	Impact REC-4
			Impact AQUA-97	Impact REC-9
			Impact AQUA-109	Impact CUL-3
	Impact AQUA-110	Impact PALEO-1		
	Impact AQUA-115	Impact PALEO-2		
	Impact AQUA-127	Impact PALEO-3		
	Impact AQUA-128			
Provide Construction Site Security	Ch. 20 Public Services and Utilities	1A-9	Impact UT-1	
			Impact UT-8	
Fugitive Dust Control	Ch. 17 Aesthetics and Visual Resources	1A-9 (except where noted)	Impact AES-1	Impact AQ-10
• Basic Fugitive Dust Control Measures	Ch. 22 Air Quality and Greenhouse Gas (GHG) Emissions		Impact AQ-1 (1C, 2C, 6C only)	Impact AQ-11
• Enhanced Fugitive Dust Control Measures for Land Disturbance	Ch. 28 Environmental Justice (Impact AES-1, Alt 9; Impact AQ-9)		Impact AQ-2	Impact AQ-12
• Measures for Entrained Road Dust			Impact AQ-3	Impact AQ-13
• Measures for Concrete Batching			Impact AQ-4	Impact AQ-18
		Impact AQ-9	Impact AQ-20	

Environmental Commitments	Chapter/Resource	Alternative	Impact	
Disposal and Reuse of Spoils, Reusable Tunnel Material (RTM), and Dredged Material <ul style="list-style-type: none"> <li>• Material Storage Site Determination</li> <li>• Material Storage Site Preparation</li> <li>• Draining, Chemical Characterization, and Treatment</li> <li>• Material Reuse Plans</li> <li>• Potential Environmental Effects</li> </ul>	Ch. 8 Water Quality	1A-9	Impact WQ-31	Impact AQUA-128
	Ch. 10 Soils		Impact SOILS-2	Impact AQUA-145
	Ch. 11 Fish and Aquatic Resources		Impact AQUA-1	Impact AQUA-146
	Ch. 12 Terrestrial Biological Resources		Impact AQUA-2	Impact AQUA-151
	Ch. 13 Land Use		Impact AQUA-6	Impact AQUA-163
	Ch. 14 Agricultural Resources		Impact AQUA-7	Impact AQUA-164
	Ch. 15 Recreation		Impact AQUA-19	Impact AQUA-169
	Ch. 16 Socioeconomics		Impact AQUA-20	Impact AQUA-181
	Ch. 20 Public Services and Utilities		Impact AQUA-24	Impact AQUA-182
	Ch. 24 Hazards and Hazardous Material		Impact AQUA-37	Impact AQUA-187
			Impact AQUA-38	Impact AQUA-199
			Impact AQUA-43	Impact AQUA-200
			Impact AQUA-44	Impact AQUA-205
			Impact AQUA-55	Impact BIO-5
			Impact AQUA-56	Impact BIO-8
			Impact AQUA-61	Impact BIO-176
			Impact AQUA-62	Impact LU-1
			Impact AQUA-73	Impact AG-1
			Impact AQUA-74	Impact REC-1 (Alt 4)
			Impact AQUA-79	Impact REC-2
	Impact AQUA-89	Impact REC-4		
	Impact AQUA-91	Impact REC-9		
	Impact AQUA-92	Impact ECON-6		
	Impact AQUA-97	Impact UT-5		
	Impact AQUA-109	Impact HAZ-1		
	Impact AQUA-110	Impact HAZ-6		
	Impact AQUA-115	Impact HAZ-7		
	Impact AQUA-127			
Provide Notification of Maintenance Activities in Waterways	Ch. 15 Recreation	1A-9	Impact REC-3	
	Ch. 16 Socioeconomics		Impact REC-7	
			Impact ECON-3	
			Impact ECON-5	
			Impact ECON-9	
			Impact ECON-11	
	Impact ECON-15			

Environmental Commitments	Chapter/Resource	Alternative	Impact	
Selenium Management	Ch. 8 Water Quality	1A-9	Impact WQ-26	Impact BIO-89
	Ch. 11 Fish and Aquatic Resources		Impact AQUA-116	Impact BIO-102
			Impact BIO-56	Impact BIO-119
	Ch.12 Terrestrial Resources		Impact BIO-59	Impact BIO-120
			Impact BIO-61	Impact BIO-123
			Impact BIO-63	Impact BIO-129b
			Impact BIO-65	Impact BIO-133
			Impact BIO-67	Impact BIO-136
			Impact BIO-68	Impact BIO-147
		Impact BIO-71	Impact BIO-183	
	Impact BIO-74			

1

## 2 **3B.2.1 Geotechnical Studies**

### 3 **3B.2.1.1 Geotechnical Investigations**

4 Subsurface investigations will be performed along the water conveyance alignment and at facility  
5 locations and material borrow areas. The main issues of concern in the Delta include stability of  
6 canal embankments and levees, liquefaction of Delta soils (particularly loose, saturated sands),  
7 seepage through coarse-grained soils, settlement of embankments and structures, subsidence, and  
8 soil bearing capacity. The investigations will explore a wide variety of soil types in the Delta that  
9 include peat, sands, silts and clays. The work to be performed will include a subsurface investigation  
10 program to provide information required to support the design and construction of the water  
11 conveyance facilities. Geotechnical investigations will be conducted to characterize existing soils and  
12 to select appropriate foundation types, lateral supports, and stabilization methods that shall be  
13 implemented to ensure that the facilities are constructed to withstand design loads and to abide by  
14 applicable state and federal regulations. These investigations will build on information previously  
15 gathered in geotechnical data reports (California Department of Water Resources 2010a, 2010b,  
16 2011, 2013) and conceptual engineering reports (California Department of Water Resources, April  
17 2015). Information to be gathered will consider common industry standards including the American  
18 Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures, American  
19 Society of Testing of Materials, Division of Safety of Dams, California Department of Transportation,  
20 California Department of Water Resources, California Building Code (CBC), and USACE Design and  
21 Construction of Levees. The geotechnical investigation will also include a small-scale environmental  
22 screening to assess the presence or absence of dissolved gases to help guide tunnel ventilation and  
23 soil disposal considerations. This commitment is related to AMM28, Geotechnical Studies, described  
24 in Appendix 3.C. of the BDCP.

25 The spacing of soil boring and test locations likely will average about 1,000 feet along proposed  
26 canal and tunnel alignments and approximately 100 to 200 feet at intakes, pumping plants, forebays,  
27 siphons, and other hydraulic structures.

1 Site-specific geotechnical studies are expected to include the following, as appropriate.

- 2 • Observing, recording, collecting, and testing subsurface materials obtained during site-specific  
3 geotechnical exploration.
- 4 • Standard penetration tests (drilling and sampling), cone penetration tests, geophysical tests, and  
5 other in-situ soil tests, slug tests, aquifer/pumping tests, and trench test pits to observe, record,  
6 and evaluate subsurface conditions.
- 7 • Installing wells and monitoring groundwater elevations and soil permeability for use in  
8 assessing liquefaction and dewatering characteristics.
- 9 • Performing geotechnical laboratory testing on select samples to evaluate engineering and other  
10 properties of collected soils.
- 11 • Preparing geotechnical data reports to document observations and findings of subsurface  
12 investigations and tests.
- 13 • Preparing geotechnical baseline and/or other reports to describe expected construction  
14 conditions and provide design and construction recommendations.

15 As described in Chapter 3, Section 3.6.1.10, DWR has developed a Draft Geotechnical Exploration  
16 Plan (Phase 2) for the Alternative 4 conveyance alignment (MPTO). The geotechnical investigation  
17 plan provides additional details regarding the rationale, investigation methods and locations, and  
18 criteria for obtaining subsurface soil information and laboratory test data (California Department of  
19 Water Resources 2014). The proposed exploration is designed as a two-part program (Phases 2a  
20 and 2b) to collect geotechnical data. The two-part program will allow refinement of the second part  
21 of the program to respond to findings from the first part. The proposed subsurface exploration will  
22 focus on geotechnical considerations of the following aspects of water conveyance facility  
23 development: engineering considerations, construction-related considerations, permitting and  
24 regulatory requirements, and seismic characterization considerations.

25 Data obtained from the geotechnical investigations will be used to support the development of a  
26 geological model for the selected alternative, characterize ground conditions within the water  
27 conveyance alignments and as necessary for the implementation of habitat restoration and  
28 enhancement actions, and aid in the avoidance of geologic risks associated with the construction of  
29 the water conveyance facilities. Data from these investigations, which would occur at several sites  
30 within the water conveyance construction footprint of the selected alternative, would help identify  
31 and/or inform the following.

- 32 • the types of soil avoidance or soil stabilization measures that should be implemented to ensure  
33 that the proposed facilities are constructed to withstand subsidence and settlement, soil  
34 corrosivity, and to conform to applicable state and federal standards.
- 35 • the extent and type of ground improvement that may be required to facilitate support of tunnel  
36 shafts, control groundwater at the locations of the shafts, prevent development of undesired  
37 tunnel-induced surface settlements and provide pre-defined zones for tunnel boring machine  
38 (TBM) maintenance interventions.
- 39 • the potential risk of settlement and subsequent collapse of excavations
- 40 • additional design provisions and mitigation needed due to the potential presence of dissolved  
41 gas along the water conveyance alignments

1 *Explanation of effectiveness:* Based on these findings, engineering solutions to any potentially  
 2 hazardous conditions, such as ground failure, expansive, corrosive and compressible soils, and  
 3 dissolved gas within soils, will be incorporated in the final designs of the proposed facilities,  
 4 consistent with the codes and standard requirements of federal, state and local oversight agencies.  
 5 Accordingly, otherwise potentially adverse effects/significant impacts (i.e., those related to the  
 6 potential loss of property, personal injury or death) related to these hazardous conditions will be  
 7 reduced and/or avoided based on adherence to these standards.

### 8 **3B.2.1.2 Settlement Monitoring and Response Program**

9 Localized settlement can occur during construction and tunneling. Settlement above tunnels is  
 10 usually in response to ground loss at the tunnel face, voids created around the tunnel during mining,  
 11 and/or stress redistribution around the excavated tunnel. The magnitude of risk for ground  
 12 settlement depends on the excavated diameter of the tunnel, the amount of ground cover above the  
 13 tunnel, excavation methods, workmanship, details of tunnel construction, and the geotechnical  
 14 properties of the ground. Settlement risk is mitigated through selection of equipment and means  
 15 and methods of construction.

16 Based on the preliminary data regarding Delta ground conditions, it is assumed that an earth  
 17 pressure balancing TBM will likely be used for tunneling. These machines rely on the excavated soil,  
 18 under confinement of a cutterhead chamber, to balance earth and hydrostatic pressures. The  
 19 pressure is maintained by a screw conveyer in which a soil plug provides the seal and excavated soil  
 20 is removed through the screw onto the conveyor.

21 Should geotechnical reports indicate high settlement risk in certain areas, pre-excavation ground  
 22 stabilization treatment will be performed ahead of the TBM. Utilization of an Earth Pressure  
 23 Balanced TBM and implementation of a well planned and executed ground stabilization program  
 24 will mitigate potential for ground settlement due to tunnel construction. Ground stabilization  
 25 methods and settlement monitoring programs will be evaluated during design, with requirements  
 26 for ground stabilization and settlement monitoring specified during construction. Construction  
 27 contracts will include prescriptive specification requirements for settlement monitoring at sensitive  
 28 features, such as levees—to ensure that tunneling-induced settlement remains within specified  
 29 limits. These requirements shall be consistent with common industry standards such as those found  
 30 in the Regulatory Setting section of Chapter 9, *Geology and Seismicity*.

31 *Explanation of effectiveness:* This environmental commitment, which includes geotechnical  
 32 investigations and settlement monitoring and response programs, will assist in BMPs, including this  
 33 environmental commitment, would be implemented to minimize dewatering impacts to the extent  
 34 practicable. To prevent structural failure, design-level geotechnical studies would be prepared by a  
 35 geotechnical engineer licensed in the state of California during project design. The studies would  
 36 further assess site-specific conditions at and near all the project facility locations, including seismic  
 37 activity, soil liquefaction, and other potential geologic and soil-related hazards. The studies would  
 38 provide the basis for designing the conveyance features to withstand the peak ground acceleration  
 39 caused by fault movement in the region. The geotechnical report will contain site-specific  
 40 evaluations of the seismic hazard affecting the project, and will identify portions of the project site  
 41 containing seismic hazards. The report will also identify any known off-site seismic hazards that  
 42 could adversely affect the site in the event of an earthquake and make recommendations for  
 43 appropriate mitigation as required by 14 CCR 3724(a). The California-registered civil engineer or

1 California-certified engineering geologist's recommended measures to address this hazard would  
2 conform to applicable design.

3 In the absence of compliance with these geotechnical studies, the risks associated with structural  
4 failure, and personal injury, death or loss of property as a result of construction activities would be  
5 higher, which could result in a significant impact. However, it is unlikely that implementation of this  
6 environmental commitment alone would ensure less-than-significant geology- and seismicity-  
7 related impacts. Other environmental commitments, such as such design codes, guidelines, and  
8 standards, such as the California Building Code and resource agency and professional engineering  
9 specifications, and the Division of Safety of Dams Guidelines for Use of the Consequence Hazard  
10 Matrix and Selection of Ground Motion Parameters, DWR's Division of Flood Management  
11 *FloodSAFE Urban Levee Design Criteria*, and USACE's *Engineering and Design—Earthquake Design  
12 and Evaluation for Civil Works Projects* would also be implemented to help reduce the severity of  
13 these impacts to a less-than-significant level. Conformance to these and other applicable design  
14 specifications and standards would ensure that the impacts related to risk such as ground  
15 movement and structural failure would not jeopardize the integrity of the levees, conveyance  
16 facilities, and other features constructed for this project.

### 17 **3B.2.2 Conform with Applicable Design Standards and** 18 **Building Codes**

19 The project proponents will ensure that the standards, guidelines, and codes listed below (or the  
20 most current applicable version at the time of implementation), which establish minimum design  
21 criteria and construction requirements for tunnels, canals, levees, pipelines, excavations and  
22 shoring, pumping stations, grading, and foundations, bridges, access roads, structures, and other  
23 facilities, will be followed by the project engineers, where applicable, in the design of project  
24 facilities and will be included as minimum standards in the construction specifications. This  
25 commitment is related to AMM29, Design Standards and Building Codes, described in BDCP  
26 Appendix 3.C. Additionally, during construction, the California Occupational Safety and Health Act of  
27 1973, as administered by California Occupational Safety and Health Administration (Cal/OSHA), will  
28 be followed as a minimum standard to protect workers. The project proponents will ensure that the  
29 identified design standards are treated as the minimum standard for design and construction, unless  
30 more stringent requirements are enacted or promulgated. The minimum design and construction  
31 requirements act as performance standards for engineers and construction contractors. Because the  
32 design and construction parameters of these codes and standards are intended to reduce the  
33 potential for structural damage or risks to human health due to the geologic and seismic conditions  
34 that exist within the Plan Area and the surrounding region, their use is considered an environmental  
35 commitment of the agencies implementing the proposed project.

36 The project engineers will follow standards, guidelines, and code requirements that are legally  
37 mandated. Proposed design standards include, but may not be limited to, the following:

- 38 • American Association of State Highway and Transportation Officials (AASHTO) Guide  
39 Specifications for LRFD (load and resistance factor) Seismic Bridge Design, 1st Edition, 2009.
- 40 • American Railway Engineering and Maintenance-of-Way Association Manual for Railway  
41 Engineering, Volume 2, Chapter 9, Seismic Design for Railway Structures, 2008.



- 1       • American Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures,  
2       ASCE-7-10, 20.10
- 3       • California Building Code, 2010 (Title 24 California Code of Regulations).
- 4       • California Department of Transportation (Caltrans) Seismic Design Criteria, Version 1.6, Nov  
5       2010.
- 6       • California Code of Regulations, Title 8.
- 7       • DWR Division of Safety of Dams Guidelines for Use of the Consequence-Hazard Matrix and  
8       Selection of Ground Motion Parameters, 2002.
- 9       • DWR Division of Safety of Dams Guidelines for the Design and Construction of Small  
10       Embankment Dams
- 11       • DWR Division of Flood Management FloodSAFE Urban Levee Design Criteria, May 2012.
- 12       • DWR Division of Engineering State Water Project – Seismic Loading Criteria Report, Sept 2012.
- 13       • DWR Delta Seismic Design, June 2012.
- 14       • Federal Highway Administration Seismic Retrofitting Manual for Highways Structures, Parts 1  
15       and 2, 2006.
- 16       • State of California Sea-Level Rise Task Force of the Coastal and Ocean Working Group of the  
17       California Climate Action Team (CO-CAT), Sea-Level Rise Interim Guidance Document, 2010.
- 18       • U.S. Army Corps of Engineers (USACE) (Corps, CESP-K-ED-G), Geotechnical Levee Practice, SOP  
19       EDG-03, 2004.
- 20       • USACE Design and Construction of Levees, EM 1110-2-1913, 2000.
- 21       • USACE Engineering and Design, Earthquake Design and Evaluation for Civil Works Projects, ER  
22       1110-2-1806, 1995.
- 23       • USACE Engineering and Design – Earthquake Design and Evaluation of Concrete Hydraulic  
24       Structures, EM 1110-2-6053, 2007.
- 25       • USACE Engineering and Design – General Design and Construction Considerations for Earth and  
26       Rock-Fill Dams, EM 1110-2-2300, 2004.
- 27       • USACE Engineering and Design – Response Spectra and Seismic Analysis for Concrete Hydraulic  
28       Structures, EM 1110-2-6050, 1999.
- 29       • USACE Engineering and Design – Stability Analysis of Concrete Structures, EM 1110-2-2100,  
30       2005.
- 31       • USACE Engineering and Design – Structural Design and Evaluation of Outlet Works, EM 1110-2-  
32       2400, 2003.
- 33       • USACE Engineering and Design – Time-History Dynamic Analysis of Concrete Hydraulic  
34       Structure, EM 1110-2-6051, 2003.
- 35       • USACE Slope Stability, EM 1110-2-1902, 2003.
- 36       • USACE Engineering and Design - Settlement Analysis, EM 1110-1-1904, 1990.
- 37       • USACE Engineering and Design - Design of Pile Foundations, EM 1110-2-2906, 1991.

- 1 • U.S. Department of the Interior and U.S. Geological Survey (USGS) Climate Change and Water  
2 Resources Management: A Federal Perspective, Circular 1331.

3 *Explanation of effectiveness:* These building codes and design standards represent performance  
4 standards that are recommended or must be met by engineers and construction contractors, and are  
5 often subject to monitoring by state and local agencies. Conformance with these federal and state  
6 design standards, guidelines and building codes, as well as with the health and safety requirements  
7 of California Code of Regulations, Title 8, would avoid a significant impact involving potential risk of  
8 personal injury, death, structural damage, or loss of property due to the following.

- 9 • structural failure from strong seismic shaking during construction or operation of water  
10 conveyance features;
- 11 • settlement or collapse of excavations due to dewatering;
- 12 • ground settlement;
- 13 • seepage under forebay embankments;
- 14 • structural failure due to construction-related ground motions;
- 15 • rupture of a known earthquake fault during operation of water conveyance features;
- 16 • seismic-related ground failure during operations of water conveyance features;
- 17 • landslides and other slope instability during operation of water conveyance features;
- 18 • structural failure due to rupture of a known earthquake fault at project ROAs; and
- 19 • seismically-induced seiche or tsunami during operation of water conveyance features;

20 In the absence of compliance with these building codes, design standards, and health and safety  
21 requirements, the risks associated with personal injury, death or loss of property as a result of  
22 construction activities would be higher, which could result in a significant impact.

### 23 **3B.2.3 Electrical Power Guidelines**

24 This commitment is related to AMM30, *Transmission Line Design and Alignment Guidelines*,  
25 described in BDCP Appendix 3.C. The project proponents will procure design and construction of the  
26 proposed new transmission lines and appurtenances such as supports (poles and towers) and  
27 substations through electrical utility providers. The project proponents will specify that design and  
28 construction of power facilities be in accordance with electric and magnetic field (EMF) guidance  
29 adopted by the California Public Utility Commission, *EMF Design Guidelines for Electrical Facilities*  
30 (2006). The guidelines describe the routine magnetic field reduction measures that all regulated  
31 California electric utilities are to consider for new and upgraded transmission line and transmission  
32 substation construction. The guidelines include the following magnetic field reduction methods for  
33 new and upgraded electrical facilities.

- 34 • Increasing the distance from electrical facilities by:
  - 35 ○ Increasing structure height or trench depth.
  - 36 ○ Locating power lines closer to the centerline of the utility corridor.
- 37 • Reducing conductor (phase) spacing.
- 38 • Phasing circuits to reduce magnetic fields.

1 *Explanation of effectiveness:* Current scientific evidence does not show conclusively that EMF  
 2 exposure can increase health risks, and state and federal public health regulatory agencies have  
 3 determined that setting numeric exposure limits is not appropriate. However, in light of the  
 4 scientific uncertainty and public concern about potential public health impacts from EMF exposure,  
 5 the CPUC developed the EMF design guidelines, which are intended for new construction or major  
 6 reconstruction of electric utility transmission, substation, and distribution facilities. Based on this,  
 7 utility companies are required to consider the “low-cost, no-cost” EMF design guidelines (CPUC,  
 8 2006) in order to reduce potential health risks associated with power lines.

### 9 **3B.2.4 Electrical Power Line Support Placement**

10 This commitment is related to AMM30, Transmission Line Design and Alignment Guidelines,  
 11 described in BDCP Appendix 3.C. The Project proponents will contract with electric utilities to  
 12 provide primary power to designated locations for temporary and/or permanent power. The Project  
 13 proponents will request electric utilities to design and construct power transmission lines and the  
 14 locations of necessary appurtenances such as supports and substations to avoid sensitive terrestrial  
 15 and aquatic habitats to the maximum extent feasible. In cases where sensitive habitat cannot be  
 16 feasibly avoided, disturbance will be minimized to the greatest degree feasible. The Project  
 17 proponents will request electric utilities to design and construct power transmission lines and the  
 18 locations of necessary appurtenances to minimize take and encumbrance of agricultural lands. The  
 19 Project proponents will be responsible for ensuring that disturbed areas are returned to  
 20 preconstruction conditions, to the extent feasible, and property owners compensated for real  
 21 property losses.

22 The Project proponents will request electric utilities to design tower and pole placement and  
 23 location of substations to avoid existing structures and improvements to the extent feasible. In cases  
 24 where existing structures and improvements cannot be feasibly avoided, the Project proponents will  
 25 ensure that structures and improvements are relocated or the owner compensated for the loss and  
 26 ensure that disturbed areas are returned to preconstruction conditions. Where poles or towers are  
 27 to be constructed in agricultural areas, the Project proponents will request incorporation of the  
 28 following BMPs where feasible.

- 29 ● Select means and methods of construction to minimize crop damage.
- 30 ● Use single-pole structures instead of H-frame or other multiple-pole structures to reduce the  
 31 potential for interference with farm machinery, reduce land impacts, and minimize weed  
 32 encroachment issues.
- 33 ● Locate lines adjacent to roads and existing property lines to reduce property take and  
 34 encumbrance.
- 35 ● Use transmission structures with longer spans to clear longer sections of fields or sensitive  
 36 areas except in aerial spraying and seeding areas. In areas where aerial spraying and seeding are  
 37 common, install markers on the shield wires above the conductors.
- 38 ● Minimize the use of guy wires, and keep guy wires out of crop and hay lands. Place highly visible  
 39 shield guards on guy wires in farm vehicle and equipment traffic areas.
- 40 ● Locate new transmission lines along existing transmission line corridors.

41 *Explanation of effectiveness:* This environmental commitment (EC) will request electric utilities to  
 42 design and construct power transmission lines and other components so as to avoid sensitive

1 terrestrial and aquatic habitat to the maximum extent feasible. In cases where sensitive habitat  
 2 cannot be feasibly avoided, disturbance will be minimized to the greatest degree feasible. Habitat  
 3 loss would be reduced as a result of this commitment, but may not be fully avoided. In the absence of  
 4 this environmental commitment, in addition to other ECs, CMs, MMs, and AMMs, there would be a  
 5 greater potential for significant impacts to species habitat due to construction and placement of  
 6 power line facilities. Refer to Fish and Aquatics and Terrestrial impact analyses for more detail.

7 **3B.2.5 Develop and Implement Stormwater Pollution**  
 8 **Prevention Plans**

9 The Project proponents will be responsible for ensuring coverage under the Construction General  
 10 Permit for Construction and Land Disturbance Activities (Construction General Permit [CGP])  
 11 (Order 2010-0014-DWQ or any more recent version) issued from the State Water Resources Control  
 12 Board (SWRCB). The CGP requires the development and implementation of a stormwater pollution  
 13 prevention plan (SWPPP). This commitment is related to AMM3, Stormwater Pollution Prevention  
 14 Plan, described in BDCP Appendix 3.C. For the alternative selected, a series of separate but related  
 15 SWPPPs will be prepared by a Qualified SWPPP Developer (QSD) and will be implemented under the  
 16 supervision of a Qualified SWPPP Practitioner (QSP). As part of the procedure to gain coverage  
 17 under the CGP, the QSD will determine the “Risk Level” (Levels 1, 2, or 3, or Types 1, 2, or 3 for linear  
 18 underground/overhead projects) of the construction activities covered by a given SWPPP, which  
 19 involves an evaluation of the site’s “Sediment Risk” and “Receiving Water Risk.” The risk is  
 20 calculated separately for sediment and receiving water, with two risk categories for receiving water  
 21 (low and high) and three risk categories for sediment risk (low, medium, and high). The overall  
 22 project risk levels (1, 2, or 3) are then determined through a matrix, where Risk Level 1 applies to  
 23 projects with low receiving water and sediment risks, Risk Level 3 for projects with high receiving  
 24 water and sediment risks, and Risk Level 2 for all other combinations of sediment and receiving  
 25 water risks. These project risk levels determine the level of protection (i.e., the BMPs to be used) and  
 26 monitoring that is required for the project.

27 Table 3B-2 shows how varying sediment risk and receiving water risk combine to result in a given  
 28 Risk Level for a given construction site.

29 **Table 3B-2. Combined Risk Level Matrix**

		Sediment Risk		
		Low	Medium	High
Receiving Water Risk	Low	Level 1		Level 2
	High		Level 2	Level 3

30  
 31 The objectives of the SWPPPs will be to (1) identify pollutant sources associated with construction  
 32 activities and operations that may affect the quality of stormwater and (2) identify, construct, and  
 33 implement stormwater pollution prevention measures to reduce pollutants in stormwater  
 34 discharges during and after construction. The SWPPP will be kept onsite during construction  
 35 activity and operations and will be made available upon request to representatives of the San  
 36 Francisco Bay and Central Valley Regional Water Quality Control Boards.

1 In accordance with the CGP, the SWPPP will describe site topographic, soil, and hydrologic  
 2 characteristics; construction activities and schedule; construction materials to be used, including  
 3 sources of imported fill material, and other potential sources of pollutants at the construction site;  
 4 potential non-stormwater discharges (e.g., trench dewatering); erosion and sediment control  
 5 measures; “housekeeping” BMPs to be implemented; a BMP implementation schedule; a site and  
 6 BMP inspection schedule; and ongoing personnel training requirements. These provisions are  
 7 intended to prevent water quality degradation related to pollutant discharge to receiving waters  
 8 and to prevent or constrain changes to the pH of receiving waters. Performance standards specified  
 9 in the CGP will be met by implementing stormwater pollution prevention BMPs that are tailored to  
 10 specific site conditions, including the Risk Level of individual construction sites. These  
 11 environmental commitments mirror the requirements to gain and maintain coverage under the CGP.  
 12 The Project proponents will ensure consultation with the appropriate Regional Water Quality  
 13 Control Board or SWRCB to determine the appropriate aggregation of specific construction  
 14 activities, or groups of activities, to be authorized under the CGP.

15 It is anticipated that multiple SWPPPs will be prepared for project-related construction activities,  
 16 with a given SWPPP prepared to cover a particular water conveyance component (e.g., intermediate  
 17 forebay), groups of components (e.g., intakes), or construction activities associated with  
 18 conservation components. The risk level will be identified for each action covered by a specific  
 19 SWPPP.

- 20 ● The following list of BMPs are requirements common to all Risk Level sites; however, some  
 21 detail is provided in “Inspection and Monitoring” on various Risk Level requirements.
- 22 ● Erosion Control Measures.
  - 23 ○ Implement effective wind erosion BMPs, such as watering, application of soil  
 24 binders/tackifiers, and covering stockpiles.
  - 25 ○ Provide effective soil cover for inactive areas and all finished slopes and utility backfill  
 26 areas, such as seeding with a native seed mix, application of hydraulic mulch and bonded  
 27 fiber matrices, and installation of erosion control blankets and rock slope protection.
- 28 ● Sediment Control Measures.
  - 29 ○ Prevent transport of sediment at the construction site perimeter, toe of erodible slopes, soil  
 30 stockpiles, and into storm drains.
  - 31 ○ Capture sediment via sedimentation and stormwater detention facilities.
  - 32 ○ Reduce runoff velocity on exposed slopes.
  - 33 ○ Reduce off-site sediment tracking.
- 34 ● Management Measures for Construction Materials.
  - 35 ○ Cover and berm inactive stockpiled construction materials.
  - 36 ○ Store chemicals in watertight containers.
  - 37 ○ Minimize exposure of construction materials to stormwater.
  - 38 ○ Designate refueling and equipment inspection/maintenance locations.
  - 39 ○ Control of drift and runoff from areas treated with herbicides, pesticides, and other  
 40 chemicals that may be harmful to aquatic habitats.

- 1       ● Waste Management Measures.
  - 2           ○ Prevent off-site disposal or runoff of any rinse or wash waters.
  - 3           ○ Implement concrete and truck washout facilities and appropriately sized storage, treatment,
  - 4           and disposal practices.
  - 5           ○ Ensure the containment of sanitation facilities (e.g., portable toilets).
  - 6           ○ Clean or replace sanitation facilities (as necessary) and inspect regularly for leaks/spills.
  - 7           ○ Cover waste disposal containers during rain events and at end of every day.
  - 8           ○ Protect stockpiled waste material from wind and rain.
- 9       ● Construction Site Dewatering and Pipeline Testing Measures.
  - 10          ○ Reclaim site dewatering discharges to the extent practicable, or use for other construction
  - 11          purposes (e.g., land application for dust control).
  - 12          ○ Implement appropriate treatment and disposal of construction site dewatering from
  - 13          excavations to prevent discharges to surface waters, unless permitted by regulatory
  - 14          agencies to discharge to surface waters.
  - 15          ○ Dechlorinate pipeline test waters before discharging to surface waters.
- 16       ● Accidental Spill Prevention and Response Measures.
  - 17          ○ Provide equipment and materials necessary for cleanup of accidental spills onsite.
  - 18          ○ Clean up accidental spills and leaks immediately and dispose of properly.
  - 19          ○ Ensure that there are trained spill response personnel available.
- 20       ● Non-Stormwater Management Measures.
  - 21          ○ Control all non-stormwater discharges during construction.
  - 22          ○ Wash vehicles in such a manner as to prevent non-stormwater discharges to surface waters.
  - 23          ○ Clean streets in such a manner as to prevent non-stormwater discharges from reaching
  - 24          surface water.
  - 25          ○ Discontinue the application of any erodible landscape material during rain, or within 2 days
  - 26          before a forecasted rain event.
- 27       ● Inspection and Monitoring Common to all Risk Levels.
  - 28          ○ Ensure that all inspection, maintenance, repair, and sampling activities at the construction
  - 29          site will be performed or supervised by a QSP representing the discharger.
  - 30          ○ Develop and implement a written site-specific Construction Site Monitoring Program
  - 31          (CSMP).
- 32       ● Inspection, Monitoring, and Maintenance Activities Based on the Risk Level of the Construction
- 33       Site (as defined in the SWRCB CGP).
  - 34          ○ Risk Level 1 Sites:
    - 35           ● Perform weekly inspections of BMPs, and at least once each 24-hour period during
    - 36           extended storm events.

- 1           ● At least 2 business days (48 hours) prior to each anticipated qualifying rain event (a rain  
2 event producing 0.5 inch or more of precipitation), visually inspect: (a) stormwater  
3 drainage areas to identify any spills, leaks, or uncontrolled pollutant sources; (b) all  
4 BMPs to identify whether they have been properly implemented in accordance with the  
5 SWPPP; and (c) stormwater storage and containment areas to detect leaks and ensure  
6 maintenance of adequate freeboard.
- 7           ● Visually observe stormwater discharges at all discharge locations within two business  
8 days (48 hours) after each qualifying rain event and identify additional BMPs as  
9 necessary, and revise the SWPPP accordingly.
- 10          ● Conduct minimum quarterly visual inspections of each drainage area for the presence of  
11 (or indications of prior) unauthorized and authorized non-stormwater discharges and  
12 their sources.
- 13          ● Collect one or more samples of construction site effluent during any breach,  
14 malfunction, leakage, or spill observed within the construction site during a visual  
15 inspection which could result in the discharge of pollutants to surface waters that will  
16 not be visually detectable in stormwater.
- 17          ○ Risk Level 2 Sites:
- 18           ● Risk Level 2 dischargers will perform all of the same visual inspection, monitoring, and  
19 maintenance measure specified for Risk Level 1 dischargers.
- 20           ● At a minimum, Risk Level 2 dischargers will collect and analyze a minimum of three  
21 samples per day for pH and turbidity during qualifying rain events. The CGP also  
22 requires the discharger to revise the SWPPP and to immediately modify existing BMPs  
23 and/or implement new BMPs such that subsequent discharges are below the relevant  
24 Numeric Action Levels (NALs) specified by the CGP. It may be a violation of the CGP if  
25 the discharger fails to take corrective action to reduce the discharge below these NALs.
- 26           ● Dischargers who deploy Active Treatment Systems (ATS) on their site, or a portion on  
27 their site, will collect ATS effluent samples and measurements from the discharge pipe  
28 or another location representative of the nature of the discharge.
- 29           ● In the event that any effluent sample exceeds an applicable NAL, Risk Level 2  
30 dischargers shall submit all storm event sampling results to the State Water Board no  
31 later than 10 days after the conclusion of the storm event. The Regional Boards have the  
32 authority to require the submittal of an NAL Exceedance Report, which includes a  
33 description of the current BMPs associated with the effluent sample that exceeded the  
34 NAL and the proposed corrective actions taken.
- 35          ○ Risk Level 3 Sites:
- 36           ● Risk Level 3 dischargers will perform all of the same visual inspection, monitoring, and  
37 maintenance measure specified for Risk Level 1 and Risk Level 2 dischargers.
- 38           ● In the event that a Risk Level 3 discharger exceeds a numeric effluent limitation (NEL) of  
39 the CGP (i.e., pH and turbidity), and has a direct discharge into receiving waters, the  
40 discharger will subsequently sample receiving waters for all parameter(s) monitored in  
41 the discharge. An exceedance of an NEL is considered a violation of the CGP, and the  
42 discharger must electronically submit all storm event sampling results to the State and

1 Regional Water Boards via Stormwater Multiple Application and Report Tracking  
2 System (SMARTS) no later than 5 days after the conclusion of the storm event.

- 3 ● If disturbing 30 acres or more of the landscape and discharging directly into receiving  
4 waters, conduct a benthic macroinvertebrate bioassessment of receiving waters prior to  
5 and after commencement of construction activities to determine if significant  
6 degradation to the receiving water's biota has occurred. However, if commencement of  
7 construction is outside of an index period (i.e., the period of time during which  
8 bioassessment samples must be collected to produce results suitable for assessing the  
9 biological integrity of streams and rivers) for the site location, the discharger will  
10 participate in the State of California's Surface Water Ambient Monitoring Program  
11 (SWAMP), as described in Section 8.1.1.7 of Chapter 8, *Water Quality*.

12 The SWPPP will also specify the forms and records that must be uploaded to the SWRCB online  
13 SMARTS, such as quarterly non-stormwater inspection and annual compliance reports.

14 If the QSP determines the site is Risk Level 2 or 3, water sampling for pH and turbidity will be  
15 required and the SWPPP will specify sampling locations and schedule, sample collection and  
16 analysis procedures, and recordkeeping and reporting protocols. In accordance with the CGP  
17 numeric action level requirements, the project contractor's QSD will revise the SWPPP and modify  
18 existing BMPs or implement new BMPs when effluent monitoring indicates that daily average runoff  
19 pH is outside the range of 6.5 to 8.5 and that the daily average turbidity is greater than 250  
20 nephelometric turbidity units (NTUs). Such BMPs may include construction of sediment traps and  
21 sediment basins, use of 'Baker' or other type tanks, installation of rock slope protection, covering of  
22 active stockpiles in event of rain, constructing desilting basins, and use of ATS. The ability of other  
23 areas to withstand excessive erosion and sedimentation may be increased by applying additional  
24 mulching, bonded fiber matrices, and erosion control blankets; reseeding with a native seed mix;  
25 and installation of additional fiber rolls, silt fences, and gravel bag berms. The QSD may also specify  
26 changes in the manner and frequency of BMP inspection and maintenance activities. The  
27 determination of which BMP should be applied in a given situation is very site-specific. QSDs  
28 typically refer to the California Stormwater Quality Association's *Stormwater Best Management  
29 Practice Handbook Portal: Construction* or the similar Caltrans manual for selecting BMPs for  
30 particular site conditions.

31 Additionally, if a given construction component is Risk Level 3, for that component Project  
32 proponents will report to the SWRCB when effluent monitoring indicates that daily average runoff  
33 pH is outside the range of 6.0 to 9.0 or the daily average turbidity is greater than 500 NTUs. In the  
34 event that the turbidity NEL is exceeded, the Project proponents may also be required to sample and  
35 report to the SWRCB pH, turbidity, and suspended sediment concentration of receiving waters for  
36 the duration of construction.

37 The contractor will also conduct sampling of runoff effluent when a leak, spill, or other discharge of  
38 non-visible pollutants is detected.

39 The CGP has specific monitoring and action level requirements for the Risk Levels, which are  
40 summarized in Table 3B-3.



1 **Table 3B-3. SWPPP Monitoring and Action Requirements**

SWPPP Requirements	Risk Level/Type		
	1	2	3
Minimum Stormwater and Non-Stormwater BMPs	✓	✓	✓
Numeric Action Levels (NAL)			
NAL for pH: 6.5–8.5 pH units		✓	✓
NAL for turbidity: 250 NTU			
Numeric Effluent Limitations (NEL)			
NEL for pH: 6–9 pH units			✓
NEL for turbidity: 500 NTU			
Visual Monitoring (weekly; before, during, after rain events; non-stormwater)	✓	✓	✓
Runoff Monitoring		✓	✓
Receiving Water Monitoring			✓

BMP = best management practices  
 pH = potential hydrogen  
 NTU = nephelometric turbidity unit  
 Note: The SWRCB has suspended the applicability of NELs for pH and turbidity at Risk Level 3/LUP Type 3 construction sites. In addition, because receiving water monitoring is required only if the NELs are triggered, all receiving water monitoring requirements are also suspended. The Level 3/Type 3 NEL are presented here assuming that such NELs will be reinstated when project construction commences.

2

3 The QSD preparing a SWPPP may include in the SWPPP BMPs such as preservation of existing  
 4 vegetation, perimeter control, seeding, mulching, fiber roll and silt fence barriers, erosion control  
 5 blankets, protection of stockpiles, watering to control dust entrainment, rock slope protection,  
 6 tracking control, equipment refueling and maintenance, concrete and solid waste management, and  
 7 other measures to ensure compliance with the pH and turbidity level requirements defined by the  
 8 CGP. Partly because the potential adverse effect on receiving waters depends on location of a work  
 9 area relative to a waterway, the BMPs will be site-specific. For example, BMPs applied to level  
 10 island-interior sites will be different than BMPs applied to water-side levee conditions. The QSP will  
 11 be responsible for day-to-day implementation of the SWPPP, including BMP inspections,  
 12 maintenance, water quality sampling, and reporting to SWRCB. If the water quality sampling results  
 13 indicate an exceedance of NALs and NELs for pH and turbidity, as described above, the QSD will  
 14 modify the type and/or location of the BMPs by amending the SWPPP in order to reduce pH,  
 15 turbidity, and other contaminants to acceptable levels, consistent with CGP NALs and NELs and with  
 16 the water quality objectives and beneficial uses set forth in the Basin Plan.

17 *Explanation of effectiveness:* Construction, operation, and maintenance of the water conveyance  
 18 facilities, as well as activities involving construction or ground disturbance associated with  
 19 implementing other conservation measures, may result in increased erosion, sedimentation, and the  
 20 addition of pollutants to stormwater discharges. Depending on the severity of these effects,  
 21 significant impacts on surface and groundwater water quality, soils, fish, aquatic communities,  
 22 recreational fishing, public safety, and public services (wastewater treatment facilities) in the Plan  
 23 Area could result. Implementing site-specific SWPPPs would ensure the design, implementation,  
 24 management and maintenance of SWPPP BMPs minimize the amount of sediment and other  
 25 pollutants in stormwater discharges, and thereby avoid or reduce the severity of this impact.  
 26 However, it is unlikely that implementation of SWPPP BMPs alone would ensure less-than-

1 significant construction-related water quality impacts. Other environmental commitments (e.g., spill  
 2 prevention, containment, and countermeasure plans, and hazardous materials management plans),  
 3 would also be implemented to help reduce the severity of these impacts to a less-than-significant  
 4 level. Additionally, for some impacts where SWPPP BMPs would be relied upon, mitigation  
 5 measures would still be necessary to reduce a significant impact to less than significant (e.g., Impact  
 6 HAZ-1, Impact HAZ-6, and Impact REC-4).

### 7 **3B.2.6 Develop and Implement Erosion and Sediment** 8 **Control Plans**

9 The Project proponents commit to implementing measures as described below as part of the  
 10 construction activities. In accordance with these environmental commitments, the Project  
 11 proponents will ensure the preparation and implementation of erosion and sediment control plans  
 12 to control short-term and long-term erosion and sedimentation effects and to restore soils and  
 13 vegetation in areas damaged by construction activities. This commitment is related to AMM4,  
 14 Erosion and Sediment Control Plan, described in BDCP Appendix 3.C. It is anticipated that multiple  
 15 erosion and sediment control plans will be prepared for project-related construction activities, each  
 16 taking into account site-specific conditions such as proximity to surface water, erosion potential,  
 17 drainage, etc. The plans will include all the necessary CGP requirements regarding erosion control  
 18 and will specify BMPs for erosion and sediment control that are to be implemented during  
 19 construction activities. These BMPs will be incorporated into the SWPPPs (see *Develop and*  
 20 *Implement Stormwater Pollution Prevention Plans*).

21 Erosion control measures will include the following.

- 22 ● Install physical erosion control stabilization features (hydroseeding with native seed mix,  
 23 mulch, silt fencing, fiber rolls, sand bags, and erosion control blankets) to capture sediment and  
 24 control both wind and water erosion. Erosion control may not utilize plastic monofilament  
 25 netting or similar materials.
- 26 ● Keep emergency erosion-control supplies onsite at all times during construction, and have the  
 27 contractor(s) use these emergency stockpiles as needed. The Project proponents and/or the  
 28 contractors will ensure that supplies used from the emergency stockpiles are replaced within 48  
 29 hours. Project proponents will also ensure that materials used in construction of erosion control  
 30 methods will be removed from the work site and properly disposed when no longer needed.
- 31 ● Design grading to be compatible with adjacent areas and minimize potential for disturbance of  
 32 adjacent terrain and natural land features and minimize erosion in disturbed areas to the extent  
 33 feasible.
- 34 ● Divert runoff away from steep, denuded slopes, or other critical areas with barriers, berms,  
 35 ditches, or other facilities.
- 36 ● To the extent feasible, retain native trees and vegetation to help stabilize hillsides, retain  
 37 moisture, and reduce erosion.
- 38 ● Sequence clearing of native vegetation, and disturbance of soils to minimize overall time of soil  
 39 disturbance.

- 1       ● Sequence construction activities to mitigate erosion from rainfall events, runoff, or flooding, to  
2       the extent feasible.
- 3       ● Conduct site inspections (before, during, and after significant storm events) to ensure that  
4       control measures are intact and working properly and to correct problems as needed.
- 5       ● Install runoff and drainage control features (e.g., berms and swales, slope drains) as necessary  
6       to avoid and minimize erosion.

7       Sediment control measures will include:

- 8       ● Use detention ponds, silt traps, wattles, berms, barriers or similar measures to slow water  
9       velocity and retain sediment transported by onsite run on or runoff.
- 10      ● Collect and direct surface run on and runoff at non-erosive velocities to controlled drainage  
11      courses.
- 12      ● When ground disturbing activities are required adjacent surface water, wetlands, or aquatic  
13      habitat, the use of sediment and turbidity barriers, soil stabilization and revegetation of  
14      disturbed surfaces.
- 15      ● Prevent mud from being tracked onto public roadways by installing gravel on primary  
16      construction ingress/egress points, rumble plates, and/or truck tire washing.
- 17      ● Deposit or store excavated materials away from drainage courses and cover if left in place for  
18      more than 5 days or storm events are forecast within 48 hours.

19      After construction is complete, site-specific restoration efforts will include grading, post  
20      construction BMPs for erosion control, and revegetation. Revegetation will emphasize self-  
21      sustaining, local native plants, unless the owner of the property or an agency having jurisdiction  
22      requires a different but equally or more effective approach to restoring disturbed areas. All  
23      disturbed areas will be graded, with disturbed areas revegetated by seeding or other means. Once  
24      post construction BMPs are constructed and revegetation is appropriately established a Notice of  
25      Termination will be filed with the SWRCB.

26      *Explanation of effectiveness:* As previously described in Section 3B.4, *Develop and Implement*  
27      *Stormwater Pollution Prevention Plans*, construction, operation, and maintenance of the water  
28      conveyance facilities, as well as activities involving construction or ground disturbance associated  
29      with implementing other conservation measures, may result in increased erosion and  
30      sedimentation. Implementing site-specific erosion and sediment control plans as part of the SWPPPs  
31      would minimize or avoid erosion and sedimentation, which may otherwise have significant impacts  
32      on the resources identified in Table 3B-1 due to implementation of the project. For some potentially  
33      significant impacts (e.g., Impact SOILS-6), the implementation of the erosion control BMPs would  
34      ensure that the impact was less than significant because the measures described above would avoid  
35      accelerated erosion caused by land disturbance associated with implementation of the project.  
36      However, for other impacts (e.g., Impacts REC-4 and REC-9), erosion and sediment control BMPs  
37      would not be sufficient to reduce significant impact to a less-than-significant level and mitigation  
38      measures would be required.

## 3B.2.7 Develop and Implement Fish Rescue and Salvage Plans

Fish rescue operations will occur at any in-water construction site where dewatering and resulting isolation of fish may occur (e.g., when dewatering creates isolated pools within the stream channel). Fish Rescue and Salvage Plans will be developed by the DWR in coordination with fish agencies and will include detailed procedures for fish rescue and salvage to minimize the number of Chinook salmon, steelhead, green sturgeon, and other fish stranded during placement and removal of cofferdams at the intake construction sites. This commitment is related to AMM8, Fish Rescue and Salvage Plan, described in BDCP Appendix 3.C. The plans will identify the appropriate procedures for removing fish from the construction zone, and preventing fish from re-entering the construction zone during construction, or prior to dewatering. These plans will include detailed fish collection, holding, handling, and release procedures. These plans will be submitted to the appropriate resource agencies (CDFW, U.S. Fish and Wildlife Service [USFWS], and the National Marine Fisheries Service [NMFS]) for their review and acceptance.

The appropriate fish collection method will be determined by a qualified fish biologist for all species of interest, in consultation with the designated resource agency biologist, and based on site-specific conditions prior to dewatering the cofferdam. Contact information provided by NMFS, USFWS, and CDFW will be supplied to the biologist on-site. Prior to construction site dewatering, fish will be captured and relocated to minimize direct mortality and other forms of take. Capture, release, and relocation measures will be consistent with the general guidelines and procedures set forth in Chapter 9 of the most recent edition of the DFG *California Salmonid Stream Habitat Restoration Manual* (California Department of Fish and Game 2010) to minimize impacts to species. Collection methods may include use of seines (nets) and/or dip nets to collect and remove fish, and electrofishing techniques may also be permitted.

All fish rescue and salvage operations will be conducted under the guidance of a qualified fish biologist. These activities will occur as soon as possible after completion of the activity which results in fish being trapped.

Unless otherwise required by these permits, the project proponents, in undertaking construction at the construction sites, will provide the following.

- A minimum 7-day notice to the appropriate fish regulatory agencies, prior to an anticipated activity that could result in isolating fish, such as installation of a cofferdam.
- A minimum 48-hour notice to the appropriate fish regulatory agencies of dewatering activities that are expected to require fish rescue.
- Safe working access for the appropriate fish regulatory agency personnel to the construction site for the duration of implementation of the fish rescue plan.
- Temporary cessation of dewatering if fish rescue workers determine that water levels may drop too quickly to allow successful rescue of fish.
- A work site that is accessible and safe for fish-rescue workers.

Additional detail regarding qualifications of the fish rescue team, seining and dipnetting, electrofishing, and dewatering are provided in BDCP Appendix 3.C, under the description of AMM8, Fish Rescue and Salvage Plan.

1 In some cases it may not be possible to conduct a fish rescue because of inaccessibility for  
 2 electrofishing or seining to be conducted effectively, or where safety of field crews is compromised.  
 3 In these situations, the onsite fish biologist, in consultation with the designated resource agency  
 4 biologist, may determine that it is necessary to begin the dewatering process as a means of  
 5 facilitating fish rescue. Dewatering may occur until the onsite fish biologist determines that  
 6 conditions are made appropriate to conduct fish rescue operations. During the dewatering process,  
 7 a qualified biologist or fish rescue team will be onsite with the aim of ensuring that take of covered  
 8 fish is minimized to the maximum extent practicable. In the event that the on-site biologist  
 9 determines that there is a more practicable and effective means to minimize impacts than specified  
 10 in the Fish Rescue and Salvage Plan, the qualified biologist may propose such methods in lieu of  
 11 those found in the Fish Rescue and Salvage Plan.

12 If fish rescue cannot be attempted (e.g., because of safety), a visual survey from the bank will be  
 13 undertaken to document fish presence and the likely extent of effects. Binoculars will be used to  
 14 identify fish; however, this method may not be feasible, if water clarity is low.

15 The fish rescue team will notify the contractor when the fish rescue has been completed and that  
 16 dewatering can recommence. The results of the fish rescue and salvage operations (including date,  
 17 time, location, comments, method of capture, fish species, number of fish, approximate age,  
 18 condition, release location, and release time) will be reported to the appropriate resource agencies,  
 19 as specified in the pertinent permits.

20 *Explanation of effectiveness:* Implementation of this environmental commitment would minimize the  
 21 number of Chinook salmon, steelhead, green sturgeon, delta smelt, and other covered fish stranded  
 22 during project-related construction activities, especially during the placement and removal of  
 23 cofferdams at the intake construction sites. The effectiveness of fish salvage and rescue in  
 24 accomplishing this would be species-, site-, and method-specific, and mortality to fish species could  
 25 occur during rescue and release operations. It is not likely that implementation of this  
 26 environmental commitment alone would ensure less-than-significant construction-related impacts  
 27 on covered fish species because these impacts are multi-faceted (i.e., the result of both temporary  
 28 and permanent alteration of migration, spawning and rearing habitats due to underwater noise from  
 29 pile driving, changes in water quality due to potential hazardous materials spills and turbidity, for  
 30 example). Other environmental commitments (e.g., those requiring SWPPPs, spill prevention,  
 31 containment, and countermeasure plans, hazardous materials management plans, and barge  
 32 operations plan) would also be implemented to help reduce the severity of these impacts to a less-  
 33 than-significant level. Additionally, implementation of mitigation measures for significant impacts  
 34 on multiple fish species underwater noise due to pile driving would be relied upon to reduce these  
 35 impacts to a less-than-significant level (e.g., Impact AQUA-1, Impact AQUA-19, and Impact AQUA-  
 36 37).

### 37 **3B.2.8 Develop and Implement a Barge Operations Plan**

38 To address the following potential impacts on aquatic habitat and species from barge and tugboat  
 39 operations associated with CM1 construction, the Project proponents will ensure that a barge  
 40 operations plan is developed and implemented for each project that requires the use of a barge. This  
 41 commitment is related to AMM7, Barge Operations Plan, described in BDCP Appendix 3.C. This plan  
 42 will be developed and submitted by the construction contractors per standard DWR contract  
 43 specifications as part of the traffic plans required by those specifications (see Section 01570 of

1 standard DWR construction contracts<sup>11</sup>). The barge operations plan will be part of a comprehensive  
 2 traffic control plan coordinated with the Coast Guard for large channels. The comprehensive traffic  
 3 control plan will address traffic routes and machines used to deliver materials to and from the  
 4 barges, and the following.

- 5 • Bottom scour from propeller wash.
- 6 • Bank erosion or loss of submerged or emergent vegetation from propeller wash and/or  
 7 excessive wake.
- 8 • Accidental material spillage.
- 9 • Sediment and benthic (bottom-dwelling) community disturbance from accidental or intentional  
 10 barge grounding or deployment of barge spuds (extendable shafts for temporarily maintaining  
 11 barge position).
- 12 • Hazardous materials spills (e.g. fuel, oil, hydraulic fluids).
- 13 • Introduction of aquatic invasive species.

14 The plan will be developed to limit barge-related effects on aquatic species. The plan will include  
 15 provisions to minimize or reduce effects on aquatic species.

16 The plan will serve as a guide to barge operations and to a Biological Monitor who will evaluate  
 17 barge operations on a daily basis during construction with respect to stated performance measures.

18 Project proponents will ensure that the barge plan will be implemented by barge operators and kept  
 19 aboard all vessels operating at the project construction sites and barge landings.

### 20 **3B.2.8.1 Sensitive Resources**

21 This plan is intended to protect aquatic species and habitat in the vicinity of barge operations. The  
 22 plan will be developed to avoid barge-related effects on aquatic species; if and when avoidance is  
 23 not feasible, the plan will include provisions to minimize effects on aquatic species. The sensitive  
 24 resources potentially affected by barge maneuvering and anchoring in affected areas are listed  
 25 below.

- 26 • Sediments that could cause turbidity or changes in bathymetry, if disturbed.
- 27 • Bottom-dwelling (benthic) invertebrates that provide the prey base for a number of aquatic  
 28 species.
- 29 • Riparian vegetation that provides shade, cover, habitat structure, and organic nutrients to the  
 30 aquatic environment.
- 31 • Submerged aquatic vegetation that provides habitat structure and primary (plant) production.
- 32 • Transport and introduction of invasive aquatic species (plants, fish and animals).

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<sup>11</sup> In 2002 DWR developed standard specifications for contractors to follow when constructing projects. These specifications are designed to protect environmental resources, including air quality, at the project site. The contractor must meet all State and federal environmental statutes, rules, regulations, and policies enacted to protect the environmental resources and ensure that any significant environmental impacts of projects are identified and adequately mitigated. As part of this mitigation, contractors must develop and submit detailed plans including, but not limited to, an Air Quality Control Plan, Traffic and Noise Abatement Plan, and a Fire Prevention and Control Plan.

### 3B.2.8.2 Responsibilities

Construction contractors operating barges in the process of constructing the project's water conveyance facilities will be responsible for the following.

- Operating vessels safely and following this plan and other reasonable measures to minimize adverse effects on aquatic resources of the Delta.
- Reading, understanding, and following the barge operations plan.
- Reporting to the Project Biological Monitor any vessel grounding or other deviations from this plan that could have resulted in the disturbance of bottom sediments, damage to river banks, or loss of submerged, emergent, or riparian vegetation.
- Immediate reporting of material fuel or oil spills to the CDFW Office of Spill Prevention and Response (OSPR), the Project Biological Monitor, and DWR.
- Implementing all other relevant plans, including the Hazardous Materials Management Plans; SWPPPs; and the Spill Prevention, Containment, and Countermeasures Plans.

The Biological Monitor will be responsible for the following.

- Observing a sample of barge operation activities including loading and unloading at least one barge at each of the barge loading and unloading facilities.
- Same-day reporting to DWR of any observed problems with barge operations.
- Monitoring during construction will include observation of barge landing, loading, unloading, and departure of one or more barges at each active barge landing site; the condition of both river banks at each landing site, and visual inspection for invasive aquatic species on in-water equipment such as barges and small work boats. Annual reporting to DWR a summary of monitoring observations over the course of each construction year, including an evaluation of the plan performance measures. The annual report will also include a description of, and representative photographs and/or videos of, conditions of river banks and vegetation.
- The success of this plan in protecting aquatic resources will be assessed by a qualified biologist. The Biological Monitor will visit each intake and barge landing site to determine the extent of emergent and riparian vegetation, bank conditions, and general site conditions during the growing season prior to initiation of construction and then annually during construction and upon completion of construction.

### 3B.2.8.3 Barge Avoidance and Minimization Measures

The following measures will be implemented to ensure that the goal of minimizing impacts on aquatic resources from tugboat and barge operations will be achieved.

If deviations from these procedures are required to maintain the safety of vessels and crew, the Biological Monitor will be informed of the circumstances. If there appear to be impacts on water quality, habitats, fish, or wildlife, such impacts will be brought to the attention of DWR to ascertain and implement appropriate remedial measures as required.

### 1      **3B.2.8.3.1      Environmental Training**

2      Project proponents will ensure that tugboat pilots will implement this plan and to keep a copy of the  
3      plan aboard and accessible while working at these sites. Project proponents will ensure that all  
4      tugboat crew members responsible for piloting a vessel at either the intake or barge landing sites  
5      will read and agree to comply fully with this plan.

### 6      **3B.2.8.3.2      Dock Approach and Departure Protocol**

7      Project proponents will develop and implement a protocol for dock approach and departure to  
8      ensure the following.

- 9      ● Vessel operators will comply with all federal and state navigation regulations that apply to the  
10     Sacramento Delta.
- 11     ● All vessels will approach and depart from the intake and barge landing sites at dead slow to  
12     reduce vessel wake and propeller wash at the sites frequented by tug and barge traffic.
- 13     ● To minimize bottom disturbance, anchors and barge spuds will be used to secure vessels only  
14     when it is not possible to tie up.
- 15     ● Barge anchoring will be pre-planned to avoid sensitive resources: sediment issues, benthic  
16     invertebrates, riparian vegetation and submerged aquatic vegetation. Anchors will be lowered  
17     into place and not be allowed to drag across the channel bed.
- 18     ● Vessel operators will limit vessel speed as necessary to maintain wakes of less than 2 feet (66  
19     cm) at shore.
- 20     ● Vessel operators will avoid pushing stationary vessels up against the cofferdam, dock or other  
21     structures for extended periods since this could result in excessive directed propeller wash  
22     impinging on a single location. Barges will be tied up whenever possible to avoid the need to  
23     maintain stationary position by tugboat or by the use of barge spuds.
- 24     ● Barges will not be anchored where they will ground during low tides.
- 25     ● All tugboats will comply with U.S. Coast Guard regulations related to the prevention, notification,  
26     and cleanup of hazardous materials spills.
- 27     ● All vessels will keep an oil spill containment kit and spill prevention and response plan on-  
28     board.
- 29     ● In the event of a fuel spill, it will be reported immediately to the CDFW Office of Spills  
30     Prevention and Response: 800-852-7550 or 800-OILS-911 (800-645-7911).
- 31     ● When transporting loose materials (e.g., sand, aggregate), barges will use deck walls or take  
32     other containment measures to prevent loose materials from blowing or washing off of the deck.

### 33     **3B.2.8.4      Performance Measures**

34     Performance or effectiveness of the measures implemented under the barge operations plan will be  
35     assessed based on the results of the biological monitoring reports. The assessment will evaluate  
36     observations for the following indicators of impacts.

- 37     ● **Emergent vegetation loss.** The extent of emergent vegetation and the dominant species in such  
38     vegetation will be determined and mapped by GPS at and across the channel from each of the



1 intake and barge landing sites during the growing seasons prior to, during, and upon completion  
 2 of construction. The extent will be mapped as linear coverage along the landing and opposite  
 3 banks. In the event that the linear extent of emergent vegetation is found to have decreased by  
 4 20% or more following construction (or as otherwise conditioned by applicable Department of  
 5 Fish and Wildlife streambed alteration agreements), the position and nature of the change will  
 6 be evaluated for the probability that the loss was due to barge grounding, propeller wash, or  
 7 other effects related to barge operations. Adequate performance will be achieved if the linear  
 8 extent of riparian and emergent vegetation following construction is at least 80% of the  
 9 preconstruction extent (or as otherwise conditioned by applicable permits).

- 10 ● **Bank erosion and riparian vegetation loss.** The linear extent of bank erosion will be mapped  
 11 by GPS at each of the intake and barge landing sites prior to, during, and upon completion of  
 12 construction. Photos and written descriptions will be recorded for each area of eroded bank to  
 13 describe the extent of the erosion. In the event that the linear extent of eroded bank is found to  
 14 have increased by 20% or more following construction, the position and nature of the change  
 15 will be evaluated for the probability (low, moderate, or high) that the erosion was due to barge  
 16 grounding, propeller wash, or other effects related to barge operations. Pre- and post-  
 17 construction photographs will be compared to determine if riparian vegetation was also lost as a  
 18 result of the erosion. If barge operations were concluded to have eroded 20% or more of a bank,  
 19 project proponents would hire a qualified restoration specialist to restore the bank.
- 20 ● **Cargo containment.** The biological monitor will note the use of deck walls or other appropriate  
 21 containment measures during loading and unloading of sand, aggregate or other materials from  
 22 a barge at each landing site. Adequate performance will be achieved if appropriate measures are  
 23 in use during each observed loading and unloading. In the event that an accidental spill occurs in  
 24 spite of appropriate containment, the barge crew will describe the type, amount, and location of  
 25 the spill to the biological monitor. The biological monitor will make observations at the site of  
 26 the material spill and evaluate the potential impacts of the spill on biological resources for  
 27 evaluation of whether mitigation is required, and for inclusion in the annual monitoring report.  
 28 A harmful quantity is any quantity of discharged material that violates state water quality  
 29 standards. Any such impacts will be brought to the attention of the applicable resource agency  
 30 in order to ascertain and implement appropriate remedial measures.
- 31 ● **Fuels spill prevention.** Vessels operating in accordance with the Spill Prevention, Containment,  
 32 and Countermeasures Plan (a component of the Hazardous Materials Management Plan, refer to  
 33 Section 3B.5.7 below), and all applicable federal, State, and local safety and environmental laws  
 34 and policies governing commercial tugboat and barge operations, will be considered to be  
 35 performing adequately with regard to fuel spill prevention.
- 36 ● **Barge grounding.** Because barge grounding has the potential to disturb bottom sediments and  
 37 benthic organisms, as well as creating a temporary obstacle to fish passage, barges are not to be  
 38 grounded or anchored where falling tides are reasonably expected to cause grounding during  
 39 low tide. Performance will be considered adequate if no cases of vessel grounding occur.

40 *Explanation of effectiveness:* Development and implementation of a barge operations plan for  
 41 applicable project locations would help reduce the severity of construction-related impacts on  
 42 covered fish species and their habitat, water quality impacts due to inadvertent release of hazardous  
 43 materials, as well impacts on recreational fishing opportunities. These impacts would be minimized  
 44 primarily through the following measures, as described above: training of tugboat operators;  
 45 limiting vessel speed to minimize the effects of wake impinging on unarmored or vegetated banks

1 and the potential for vessel wake to strand small fish; limiting the direction and/or velocity of  
 2 propeller wash to minimize bottom scour and loss of aquatic vegetation; and adhering to all relevant  
 3 environmental guidelines, regulations and associated environmental commitments (including  
 4 HMMPs, SWPPPs, and SPCCPs). However, this environmental commitment alone would not be  
 5 sufficient to ensure less-than-significant impacts on aquatic and associated recreational resources.  
 6 In addition to other environmental commitments intended to minimize impacts on water quality,  
 7 certain impacts for which a barge operations plan would be relied upon, such as Impact REC-4 (long-  
 8 term reduction of recreational fishing opportunities as a result of construction the water  
 9 conveyance facilities), would still require mitigation measures to reduce a significant impact to less  
 10 than significant (e.g., Impact REC-2, and Impacts AQUA-1a and AQUA-1b).

### 11 **3B.2.9 Construction Equipment Exhaust Reduction Plan**

12 Prior to construction, Project proponents will develop a construction equipment exhaust reduction  
 13 plan to reduce criteria air pollutants from construction equipment. The reduction plan will be  
 14 provided to the appropriate Plan Area air districts for review prior to construction. Control  
 15 technology that achieves equivalent or greater reductions than those identified below may be  
 16 specified as new emissions reduction technologies become available and cost-effective.

#### 17 **3B.2.9.1 Off-Road Heavy-Duty Engines**

18 The reduction plan will require that equipment used to construct project facilities achieve fleet-wide  
 19 average criteria pollutant emissions rates for equipment greater than 50 horsepower that are  
 20 equivalent to the use of a model year 2013 fleet. Prior to construction start for each major project  
 21 feature, Project proponents will ensure model year 2013 emissions rates are achieved by developing  
 22 a-specific construction equipment exhaust reduction plan. Contractors may utilize a combination of  
 23 newer engines, aftermarket controls, and retrofits to achieve the fleet-wide average performance  
 24 standard. Potential strategies for achieving this fleet-wide average may include the following:

- 25 ● Electrification of equipment
- 26 ● Use of diesel particulate filters on non-electrified equipment.
- 27 ● Use of compressed natural gas (CNG).
- 28 ● Use of Tier 4 engines.

29 The Project proponents will quantitatively demonstrate, through equipment-specific modeling, that  
 30 fleet-wide average achieve criteria pollutant emissions rates for equipment greater than 50  
 31 horsepower that are equivalent to the use of a model year 2013 fleet have been achieved by the  
 32 selected equipment and aftermarket controls. As noted in Appendix 22A, *Air Quality Analysis*  
 33 *Methodology* (see Appendix A to RDEIR/SDEIS), the Air Quality analysis and Health Risk Assessment  
 34 have been performed based on model year 2013 emission factors obtained from the Sacramento  
 35 Metropolitan Air Quality Management District's (SMAQMD) Construction Mitigation Calculator. The  
 36 2013 model year emission factors for each equipment piece are built from the zero-hour emissions  
 37 rates, annual deterioration rates, and assumptions about engine operating hours.

38 In addition to the model year 2013 performance standard, the following best management practices  
 39 will be incorporated into the reduction plan.

- 1 • Minimize idling time either by shutting equipment off when not in use or limiting the time of  
2 idling to 3 minutes (5 minutes required by 13 CCR 2449[d][3], 2485). Provide clear signage that  
3 posts this requirement for workers at the entrances to the site.
- 4 • Maintain all construction equipment in proper working condition according to manufacturer's  
5 specifications. The equipment must be checked by an ASE- certified mechanic and determined to  
6 be running in proper condition before it is placed in operation.
- 7 • Ensure that emissions from all off-road diesel-powered equipment used on the project site do  
8 not exceed 40% opacity for more than 3 minutes in any 1 hour. Any equipment found to exceed  
9 40% opacity (or Ringelmann 2.0<sup>12</sup>) will be repaired immediately. Non-compliant equipment will  
10 be documented and a summary provided annually to the lead agency and air district with  
11 jurisdiction over the construction site. A visual inspection of all in-operation equipment will be  
12 made at least weekly by the contractor and witnessed monthly or more frequently by the  
13 proponent agency(ies), and a periodic summary of the visual survey results will be submitted by  
14 the contractor throughout the duration of the proposed project, except that the summary will  
15 not be required for any 30-day period in which no construction activity occurs. The summary  
16 will include the quantity and type of vehicles inspected, as well as the dates of each survey. The  
17 air districts or other officials may conduct periodic site inspections to determine compliance.  
18 Nothing in this measure will supersede other air district or state rules or regulations.

19 *Explanation of effectiveness:* These BMPs are proven, standard measures that minimize the  
20 generation of criteria air pollutants and GHG emission from construction equipment. Accordingly,  
21 implementation of the construction equipment exhaust plan would help reduce the severity of  
22 potential public health and climate change impacts from these project-related emissions. However,  
23 as discussed in Chapter 22, *Air Quality and Greenhouse Gases* (see Appendix A of this RDEIR/SDEIS),  
24 implementation of these BMPs alone would not be sufficient to reduce significant impacts to a less-  
25 than-significant level. For these impacts (e.g., Impacts AQ-1, AQ-2, AQ-3, AQ-9, and AQ-16)  
26 mitigation measures would be implemented to further minimize the severity of the impacts. Even  
27 then, the impacts for some alternatives would be significant and unavoidable (See Table ES-9, and  
28 Chapter 22 in the Draft EIR/EIS, and Sections 4.3.18, 4.4.18, 4.5.18 of this RDEIR/SDEIS for details).

### 29 **3B.2.9.2 Marine Vessels**

30 Prior to construction start for each major project feature, Project proponents will ensure that all  
31 marine vessels used to construct project facilities utilize EPA certified Tier 3 or newer engines. As  
32 noted in Appendix 22A, *Air Quality Analysis Methodology*, the air quality analysis and HRA have been  
33 performed based on model year 2010 emission factors (Tier 3 compliance for new engines)  
34 obtained from the ARB (2012b).

### 35 **3B.2.9.3 Heavy Duty Haul Trucks**

36 Prior to construction start for each major project feature Project proponents will ensure that all on-  
37 road heavy-duty diesel trucks with a gross vehicle weight rating of 19,500 pounds or greater used to  
38 construct project facilities comply with EPA 2007 on-road emission standards for PM<sub>10</sub> and NO<sub>x</sub>  
39 (0.01 g/bhp-hr and 0.20 g/bhp-hr, respectively). These PM<sub>10</sub> and NO<sub>x</sub> standards were phased in  
40 through the 2007 and 2010 model years on a percent of sales basis (50% of sales in 2007 to 2009  
41 and 100% of sales in 2010). As noted in Appendix 22A, *Air Quality Analysis Methodology*, the Air

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<sup>12</sup> Based on the Ringelmann scale, which measures the density of smoke in the air.

1 Quality analysis and Health Risk Assessment have been performed based on model year 2010  
2 emission factors obtained from the ARB's EMFAC2014 model.

### 3 **3B.2.9.4 Locomotives**

4 Prior to construction start for each major project feature Project proponents will ensure that all  
5 diesel tunneling locomotives used to construct project facilities utilize EPA certified Tier 4 or newer  
6 engines.

#### 7 *Explanation of effectiveness:*

8 This environmental commitment will reduce criteria air pollutants from construction equipment by  
9 including performance standards for newer and cleaner off-road equipment, marine vessels, and  
10 haul trucks, and requiring all tunneling locomotives to utilize Tier 4 engines. However, some  
11 impacts related to generation of criteria pollutants, such as PM<sub>10</sub>, ROG and NO<sub>x</sub> emissions, would  
12 still exceed air quality district thresholds and would remain significant and unavoidable. This  
13 environmental commitment would also lessen effects related to alteration in existing visual quality  
14 or character during construction of conveyance facilities, as described in Impact AES-1 of Chapter  
15 17, *Aesthetic and Visual Resources*. Earthmoving activities and associated heavy equipment and  
16 vehicles would be readily visible throughout operation of these sites and have the potential to create  
17 dust clouds that would attract attention from visual receptors and reduce the availability of short-  
18 range views. This commitment would reduce emissions of construction-related criteria pollutants,  
19 including basic and enhanced fugitive dust control measures and measures for entrained road dust  
20 to help reduce the creation of dust clouds that would negatively affect short-range views. However,  
21 this environmental commitment, along with mitigation measures, would still not reduce impacts  
22 fully, and impacts related to visual quality or character would remain significant and unavoidable.

### 23 **3B.2.10 DWR Construction Best Management Practices to** 24 **Reduce GHG Emissions**

25 Project proponents will implement the following applicable GHG reduction measures, which are  
26 outlined in DWR's Climate Action Plan.

#### 27 **3B.2.10.1 Preconstruction and Final Design BMPs**

28 Preconstruction and Final Design BMPs are designed to ensure that individual projects are  
29 evaluated and their unique characteristics taken into consideration when determining if specific  
30 equipment, procedures, or material requirements are feasible and efficacious for reducing GHG  
31 emissions from the project.

32 **BMP 1.** Evaluate project characteristics, including location, project work flow, site conditions, and  
33 equipment performance requirements, to determine whether specifications of the use of equipment  
34 with repowered engines, electric drive trains, or other high efficiency technologies are appropriate  
35 and feasible for the project or specific elements of the project.

36 **BMP 2.** Evaluate the feasibility and efficacy of performing on-site material hauling with trucks  
37 equipped with on-road engines.

38 **BMP 3.** Ensure that all economically feasible avenues have been explored for providing an electrical  
39 service drop to the construction site for temporary construction power. When generators must be

1 used, consider use of alternative fuels, such as propane or solar, to power generators to the  
2 maximum extent feasible, as specified in construction contracts.

3 **BMP 4.** Evaluate the feasibility and efficacy of producing concrete on-site and specify that batch  
4 plants be set up on-site or as close to the site as possible.

5 **BMP 5.** Evaluate the performance requirements for concrete used on the project and specify  
6 concrete mix designs that minimize GHG emissions from cement production and curing while  
7 preserving all required performance characteristics.

8 **BMP 6.** Limit deliveries of materials and equipment to the site to off peak traffic congestion hours.  
9 (This BMP is applicable only for deliveries of materials and equipment to the geotechnical  
10 exploration sites and transported on public roadways).

### 11 **3B.2.10.2 Construction BMPs**

12 Construction BMPs apply to all construction and maintenance projects that DWR completes or for  
13 which DWR issues contracts. All projects are expected to implement all Construction BMPs unless a  
14 variance is granted by the Division of Engineering Chief, Division of Operation and Maintenance  
15 Chief, or Division of Flood Management Chief, as applicable, and the variance is approved by the  
16 DWR CEQA Climate Change Committee. Variances will be granted when specific project conditions  
17 or characteristics make implementation of the BMP infeasible and where omitting the BMP will not  
18 be detrimental to the project's consistency with the Greenhouse Gas Reduction Plan (DWR's Climate  
19 Action Plan).

20 **BMP 7.** Minimize idling time by requiring that equipment be shut down after five minutes when not  
21 in use (as required by the State airborne toxics control measure [Title 13, Section 2485 of the  
22 California Code of Regulations]). Provide clear signage that posts this requirement for workers at  
23 the entrances to the site and provide a plan for the enforcement of this requirement.

24 **BMP 8.** Maintain all construction equipment in proper working condition and perform all  
25 preventative maintenance. Required maintenance includes compliance with all manufacturer's  
26 recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all  
27 engine and emissions systems in proper operating condition. Maintenance schedules shall be  
28 detailed in an Air Quality Control Plan prior to commencement of construction.

29 **BMP 9.** Implement tire inflation program on jobsite to ensure that equipment tires are correctly  
30 inflated. Check tire inflation when equipment arrives onsite and every two weeks for equipment that  
31 remains onsite. Check vehicles used for hauling materials offsite weekly for correct tire inflation.  
32 Procedures for the tire inflation program shall be documented in an Air Quality Management Plan  
33 prior to commencement of construction.

34 **BMP 10.** Develop a project specific ride share program to encourage carpools, shuttle vans, transit  
35 passes and/or secure bicycle parking for construction worker commutes.

36 **BMP 11.** Reduce electricity use in temporary construction offices by using high efficiency lighting  
37 and requiring that heating and cooling units be Energy Star compliant. Require that all contractors  
38 implement procedures for turning off computers, lights, air conditioners, heaters, and other  
39 equipment each day at close of business.

1 **BMP 12.** For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty  
 2 class 7 or class 8 semi-truck or 53-foot or longer box type trailer is used for hauling, a SmartWay<sup>26</sup>  
 3 certified truck will be used to the maximum extent feasible.

4 **BMP 13.** Minimize the amount of cement in concrete by specifying higher levels of cementitious  
 5 material alternatives, larger aggregate, longer final set times, or lower maximum strength where  
 6 appropriate.

7 **BMP 14.** Develop a project specific construction debris recycling and diversion program to achieve a  
 8 documented 50% diversion of construction waste.

9 **BMP 15.** Evaluate the feasibility of restricting all material hauling on public roadways to off-peak  
 10 traffic congestion hours. During construction scheduling and execution minimize, to the extent  
 11 possible, uses of public roadways that would increase traffic congestion.

12 *Explanation of effectiveness:* These preconstruction and construction BMPs were developed to  
 13 achieve GHG emissions reductions in accordance with meeting DWR's GHG emissions reduction  
 14 goals, which are detailed in the Climate Action Plan Phase I (California Department of Water  
 15 Resources 2012). Implementation of these BMPs as part of the project would help minimize the  
 16 generation of cumulative GHG emissions during construction of the proposed water conveyance  
 17 facilities by minimizing fuel consumption by construction equipment and transportation of  
 18 materials; reducing electricity consumption during construction; reducing the amount of landfill  
 19 material; and reducing emissions from cement production. However, as described in Chapter 22, any  
 20 substantial increase in construction-related GHG emissions above net zero (0) would result in a  
 21 significant impact, which would necessitate mitigation to reduce the impact to less than significant  
 22 (Mitigation Measure AQ 21: Develop and Implement a GHG Mitigation Program to Reduce  
 23 Construction Related GHG Emissions to Net Zero [0]).

## 24 **3B.2.11 Develop and Implement Noise Abatement Plan**

25 DWR and contractors hired to construct any conveyance components of the project will implement a  
 26 site-specific noise abatement plan to avoid or reduce potential construction-, maintenance-, and  
 27 operation-related noise impacts. This commitment is related to AMM31, Noise Abatement, and  
 28 AMM9, Underwater Sound Control and Abatement Plan, described in BDCP Appendix 3.C. As  
 29 applicable, the following components will be included in the plan.

### 30 **3B.2.11.1 Construction and Maintenance Noise**

31 The contractor will employ best practices to reduce construction noise.

- 32 ● Contracts shall specify that on-site construction noise levels will conform to mitigation measure  
 33 NOI-1a and 1b. Exceptions to this restriction may be permitted for back-up alarms, warning  
 34 horns and devices, and other similar noise-generating activities.
- 35 ● Contracts shall specify that on-site construction noise levels during nighttime hours (10:00 p.m.  
 36 to 7:00 a.m.) do not exceed relevant construction-related standards from local noise ordinances  
 37 at the nearest residential receptor to the extent feasible.
- 38 ● Limit impact pile driving to daytime hours (7 a.m. to 7 p.m.).
- 39 ● In the event of complaints by affected residents due to on-site construction noise generated  
 40 during nighttime hours, the contractor will monitor noise levels intermittently (between 10:00

1 p.m. and 7:00 a.m.) at the dwelling unit of the person lodging the complaint. In the event that  
 2 measured construction noise during nighttime hours exceeds 50 dBA interior  $L_{max}$  (70 dBA  
 3 exterior  $L_{max}$ ) or 5 dB above ambient noise, whichever is greater, at the dwelling unit, the  
 4 construction contractor will cease the construction activity causing the complaint in the area  
 5 until sound-attenuating mitigation measures, such as temporary sound barriers, are  
 6 implemented, such that nighttime construction noise at the dwelling unit is reduced to a level of  
 7 50 dBA interior  $L_{max}$  (70 dBA exterior  $L_{max}$ ) or 5 dB above ambient noise, whichever is greater.  
 8 Where the above-described strategies are ineffective in reducing noise to the identified levels,  
 9 exceptions to this commitment can be made for legally-mandated warning devices, such as back-  
 10 up alarms and warning horns.

- 11 • Locate, store, and maintain portable and stationary equipment as far as feasible from nearby  
 12 residents to ensure that such residents do not experience on-site construction noise at  
 13 unacceptable levels. Where ambient noise levels are less than 60 dBA and it is determined that  
 14 construction related noise will cause noise levels to exceed 60 dBA, or where the ambient noise  
 15 levels are greater than 60 dBA and it is determined that construction related noise will cause noise  
 16 levels to exceed the ambient level by 5 dBA, a temporary sound wall shall be constructed between  
 17 the sensitive area and the construction related noise source.
- 18 • To the extent feasible, route and schedule truck traffic in order to reduce construction noise  
 19 impacts and traffic noise levels at noise-sensitive land uses (e.g., schools, libraries, and places of  
 20 worship).
- 21 • To the extent feasible (e.g., where required by haul permits), limit off-site trucking activities  
 22 (e.g., deliveries, export of materials) to the hours of 7:00 a.m. to 10:00 p.m. to minimize noise  
 23 impacts on nearby residences.
- 24 • A vegetation screen or other type of screen will be installed or planted on the south side of Hood  
 25 Franklin Road along the length of Stone Lake's National Wildlife Refuge Property to reduce  
 26 disturbance to Greater Sandhill Cranes and to visitors

### 27 **3B.2.11.2 Operation Noise**

28 Pump station buildings will be designed and constructed such that operation noise levels at nearby  
 29 residential receptors do not exceed 50  $L_{eq}$  during daytime hours (7:00 a.m. to 10:00 p.m.) and 45  
 30 dBA  $L_{eq}$  during nighttime hours (10 p.m. to 7 a.m.). Acoustical measures such as terrain shielding,  
 31 pump enclosures, and acoustical building treatments will be incorporated into the facility design in  
 32 order to meet this performance standard.

33 *Explanation of effectiveness:* Implementation of the proposed project and other conservation  
 34 measures (CM2–CM21) would increase noise levels near construction and maintenance work areas  
 35 and from operation of some permanent project facilities. In some locations, the increases in noise  
 36 levels would exceed maximum daytime and nighttime noise thresholds and could adversely affect  
 37 sensitive land uses including residents, schools, hospitals, or similar facilities, as well as recreational  
 38 activities, such as fishing, waterfowl hunting, wildlife viewing, hiking, and environmental education  
 39 opportunities. Nighttime construction (e.g., conveyance tunnel construction and RTM work areas)  
 40 could affect residential areas and campgrounds. Pile-driving, drilling, and tunnel locomotives would  
 41 result in increased vibration or groundborne noise levels that could also exceed relevant vibration  
 42 thresholds and adversely affect nearby sensitive land uses or wildlife.

1 In addition, implementation of the action alternatives has the potential to result in changes to  
2 community character by increasing ambient noise levels that contribute to the rural quality of areas  
3 near the project. Under each alternative elevated noise levels could contribute to impacts on  
4 community cohesion by restricting mobility, reducing opportunities for maintaining face-to-face  
5 relationships or disrupting the functions of community organizations or community gathering  
6 places (e.g., schools, libraries, churches, chambers of commerce). In instances of more severe or  
7 long-term noise impacts, implementation of the project could contribute to localized abandonment  
8 of buildings.

9 Finally, the effect of exposing noise-sensitive land uses to noise increases, including groundborne  
10 vibration, above relevant thresholds is considered adverse, and because the noise and vibration  
11 effects of CM1 as well as some components of CM2–CM21 would occur in areas with meaningfully  
12 greater minority and low-income populations in Sacramento and San Joaquin Counties (under  
13 Alternative 4), there would be a disproportionate effect on these populations.

14 Elevated noise levels associated with construction of water conveyance facilities (CM1) would result  
15 in short-term and long-term impacts on water-dependent, water-enhanced, and land-based  
16 recreation sites, activities, and opportunities. Construction includes above-ground as well as  
17 underground tunneling and train/transport of workers and materials. Although the severity of the  
18 impact (noise level and duration of the construction) would vary depending on the project  
19 component under construction (e.g., intake structure, power transmission lines, access roads,  
20 borrow/spoil area, or other structures or type of work areas) and the proximity and type of  
21 recreational uses in the vicinity. Construction of CM2–CM21, although of lower intensity and shorter  
22 duration, also would have impacts from earthwork and site preparation for the restoration,  
23 enhancement, protection, and management of various natural community types resulting in  
24 increased noise levels that would affect nearby sensitive land uses or wildlife and related recreation.  
25 Maintenance of the water conveyance facilities and of the restoration areas and facilities would have  
26 similar, but shorter-term effects.

27 Impacts include degradation of the recreation setting, disturbances to fish and wildlife that affect  
28 wildlife viewing, sport-fishing (on-bank and by boat), boating, waterfowl hunting, photography,  
29 environmental education, or other related recreational opportunities. This lower-quality  
30 recreational experience in areas throughout the project area, and especially the Delta region, could  
31 lead to a decline in visits to Delta recreational sites, reduced recreation-related spending and  
32 potentially cause adverse social and economic effects on local recreation-related businesses.

33 Implementation of a Noise Abatement Plan, in combination with mitigation measures and AMMs,  
34 would reduce the severity of these impacts, although it would not reduce impacts to less-than-  
35 significant levels at all locations. The Noise Abatement Plan would result in implementation of  
36 measures to ensure construction noise levels do not exceed applicable local noise ordinance  
37 standards for daytime and nighttime noise levels, to the extent practicable. The Noise Abatement  
38 Plan would also reduce impacts by limiting pile driving to daytime and evening hours (no nighttime  
39 pile driving) and by locating portable and stationary equipment as far as possible from residential  
40 areas. Construction contractors also would route and schedule truck traffic and limit off-site  
41 trucking (hauling) activities to reduce noise-related impacts on nearby land uses. In locations where  
42 residents complain of excessive nighttime noise levels, the Noise Abatement Plan would call for  
43 noise level monitoring and reduction to a level of 50 dBA  $L_{max}$  or 5 dB above ambient noise,  
44 whichever is greater. These measures directly address the impact mechanisms described above, and



1 would reduce the severity of impacts caused by noise levels on noise-sensitive land uses and wildlife  
2 by reducing noise levels to those permitted by local ordinances or standards.

3 This environmental commitment in combination with Mitigation Measures NOI-1a and NOI-1b  
4 would reduce the impacts of intake construction on noise-sensitive land uses to less-than-significant  
5 levels. However, for other water conveyance facility elements, because not all construction-related  
6 noise levels can be kept below the noise standards during all types of construction activities or in all  
7 locations (i.e., pile driving, back-up alarms, and warning horns and devices), the environmental  
8 commitment, even in combination with mitigation measures, would not fully reduce the level of  
9 impact on noise-sensitive land uses, including recreation-related opportunities, to less than  
10 significant.

11 Similarly, although additional mitigation measures for vibration/groundborne noise, terrestrial  
12 biological resources, and aquatic resources, and AMMs are designed and would be implemented to  
13 minimize the impacts of elevated construction-related noise and groundborne vibration levels on  
14 sensitive land uses and wildlife, these impacts cannot be fully mitigated in all locations.

15 The Noise Abatement Plan, in combination with Mitigation Measure NOI-3, would also ensure pump  
16 station facilities would be designed so that operational noise levels would not exceed local noise  
17 standards and impacts on nearby sensitive land uses would be reduced to less than significant.

### 18 **3B.2.12 Develop and Implement Hazardous Materials** 19 **Management Plans**

20 The project proponents will ensure that each project contractor responsible for construction of a  
21 project facility or project will develop and implement a hazardous materials management plan  
22 (HMMP) before beginning construction. This commitment is related to AMM32, Hazardous Materials  
23 Management, described in BDCP Appendix 3.C. It is anticipated that multiple HMMPs will be  
24 prepared for the overall project construction activities, each taking into account site-specific  
25 conditions such as hazardous materials present on site and known historic site contamination. A  
26 database on known historic instances of contamination and results of any field inspections  
27 regarding the presence of hazardous chemicals will be maintained. The HMMPs will provide detailed  
28 information on the types of hazardous materials used or stored at all sites associated with the water  
29 conveyance facilities (e.g., intake pumping plants, maintenance facilities); phone numbers of  
30 applicable city, county, state, and federal emergency response agencies; primary, secondary, and  
31 final cleanup procedures; emergency-response procedures in case of a spill; and other applicable  
32 information. The plan will include appropriate practices to reduce the likelihood of a spill of toxic  
33 chemicals and other hazardous materials during construction and facilities operation and  
34 maintenance. A specific protocol for the proper handling and disposal of hazardous materials will be  
35 established before construction activities begin and will be implemented during project  
36 construction.

37 The HMMP will include, but not be limited to, the following measures or practices.

- 38 ● Fuel, oil, and other petroleum products will be stored only at designated sites.
- 39 ● Hazardous materials containment containers will be clearly labeled with the identity of the  
40 hazardous materials contained therein, handling and safety instructions, and emergency contact  
41 information.

- 1       • Storage, use, or transfer of hazardous materials in or near wet or dry streams will be consistent  
2       with the Fish and Game Code (Section 5650) and/or with the permission of California  
3       Department of Fish Wildlife (CDFW).
- 4       • Material Safety Data Sheets (MSDS) will be made readily available to the contractor's employees  
5       and other personnel at the work site.
- 6       • The accumulation and temporary storage of hazardous wastes will not exceed 90 days.
- 7       • Soils contaminated by spills or cleaning wastes will be contained and removed to an approved  
8       disposal site by an appropriately-certified hazardous waste disposal contractor.
- 9       • Hazardous waste generated at work sites, such as contaminated soil, will be segregated from  
10      other construction spoils and properly handled, hauled, and disposed of at an approved disposal  
11      facility by a licensed hazardous waste hauler in accordance with applicable law and regulations.  
12      The contractor will obtain permits required for such disposal.
- 13     • Emergency spill containment and cleanup kits will be located at the work site. The contents of  
14      the kit will be appropriate to the type and quantities of chemical or goods stored at the work  
15      site.

16      *Explanation of effectiveness:* Implementation of multiple, site-specific HMMPs during construction  
17      and operation of the water conveyance facilities (CM1), the habitat restoration and enhancement  
18      measures (CM2-CM11), as well as the measures to reduce stressors (CM12-CM21), would avoid or  
19      minimize the potentially significant impacts on the public and environment related to hazardous  
20      materials spills and improper storage and use of hazardous materials. Incorporation of the  
21      aforementioned HMMP measures or practices, as well as others, into the proposed project would  
22      safeguard public health and the environment from accidental releases of hazardous chemicals,  
23      including potentially contaminated soil, and fuel and oil, through advanced planning for material use  
24      and management, employee training, and spill prevention, management, and cleanup. Absent  
25      implementation of these basic BMPs and perhaps other more site-specific measures as part of the  
26      project, there would be a greater potential for improper storage, handling and use of hazardous  
27      materials, which could result in inadvertent releases of hazardous materials and associated adverse  
28      effects/significant impacts on the public and environment. Significant impacts on fish species, long-  
29      term recreational fishing opportunities and associated direct and indirect changes in community  
30      character from hazardous spills would be minimized, as would the demand for emergency or fire  
31      services.

### 32      **3B.2.13        Develop and Implement Spill Prevention,** 33      **Containment, and Countermeasure Plans**

34      It is anticipated that multiple Spill Prevention, Containment, and Countermeasure Plans (SPCCPs)  
35      will be prepared for project construction activities, each taking into account site-specific conditions.  
36      This commitment is related to AMM5, Spill Prevention, Containment, and Countermeasure Plan,  
37      described in BDCP Appendix 3.C. The SPCCPs will be developed in accordance with the regulatory  
38      requirements of Title 40 of the Code of Federal Regulations, Part 112 (40 CFR Part 112). 40 CFR Part  
39      112, or the Spill Prevention, Control, and Countermeasure Rule, includes requirements for oil spill  
40      prevention, preparedness, and response to prevent oil discharges to navigable waters and adjoining  
41      shorelines. The rule requires the preparation, amendment and implementation of SPCCPs for  
42      specific facilities. The SPCCPs will be developed and implemented to minimize effects from spills of

1 oil or oil-containing products<sup>13</sup> during project construction and operation. The SPCCPs will include  
 2 the following measures and practices.

- 3 • All necessary personnel will be trained in emergency response and spill containment  
 4 techniques, and will also be made aware of the pollution control laws, rules, and regulations  
 5 applicable to their work.
- 6 • Petroleum products will be stored in nonleaking containers at impervious storage sites from  
 7 which an accidental spill cannot escape.
- 8 • Absorbent pads, pillows, socks, booms, and other spill containment materials will be stored and  
 9 maintained at the hazardous materials storage sites for use in the event of an accidental spill.
- 10 • Contaminated absorbent pads, pillows, socks, booms, and other spill containment materials will  
 11 be placed in nonleaking sealed containers until transport to an appropriate disposal facility.
- 12 • When transferring oil or other hazardous materials from trucks to storage containers, absorbent  
 13 pads, pillows, socks, booms or other spill containment material will be placed under the transfer  
 14 area.
- 15 • Refueling of construction equipment will occur only in designated areas that will be a minimum  
 16 of 150 feet from surface waters and other sensitive habitats, such as wetlands.
- 17 • Equipment used in direct contact with water will be inspected daily for oil, grease, and other  
 18 petroleum products. All equipment must be cleaned of external petroleum products prior to  
 19 beginning work where contact with water may occur to prevent the release of such products to  
 20 surface waters.
- 21 • Oil-absorbent booms will be used when equipment is used in or immediately adjacent to waters.
- 22 • All reserve fuel supplies will be stored only within the confines of a designated staging area, to  
 23 be located a minimum of 150 feet from surface waters and other sensitive habitats, such as  
 24 wetlands.
- 25 • Fuel transfers will take place a minimum of 150 feet from surface waters and other sensitive  
 26 habitats, such as wetlands, and absorbent pads will be placed under the fuel transfer operation.
- 27 • Staging areas will be designed to contain contaminants such as oil, grease, fuel, and other  
 28 petroleum products so that should an accidental spill occur, they do not drain toward receiving  
 29 waters or storm drain inlets.
- 30 • All stationary equipment will be staged in appropriate staging areas and positioned over drip  
 31 pans.
- 32 • In the event of an accidental spill, personnel will identify and secure the source of the discharge  
 33 and contain the discharge with sorbents, sandbags, or other material from spill kits and will  
 34 contact appropriate regulatory authorities (e.g., National Response Center will be contacted if  
 35 the spill threatens navigable waters of the United States or adjoining shorelines, as well as other  
 36 appropriate response personnel).

37 Methods of cleanup may include the following.

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<sup>13</sup> "Oil" includes a variety of petroleum and non-petroleum based substances including gasoline, diesel fuel, motor oil, hydraulic fluid, aviation fuel, oil-based paint, oil-based paint thinner, roofing tar, and petroleum-based solvents.

- 1 • Physical—Physical methods for the cleanup of dry chemicals include the use of brooms, shovels,  
2 sweepers, or plows.
- 3 • Mechanical—Mechanical methods include, but may not be limited to, the use of vacuum cleaning  
4 systems and pumps.
- 5 • Chemical—Cleanups of material can be achieved with the use of appropriate chemical agents  
6 such as sorbents, gels, and foams.

7 *Explanation of effectiveness:* Implementation of multiple, site-specific SPCCPs during construction  
8 and operation of the water conveyance facilities, the habitat restoration and enhancement  
9 measures, as well as the conservation measures to reduce stressors, would reduce the severity of  
10 and/or avoid the potentially significant impacts on the public and environment related to spills of  
11 gasoline, diesel fuel, oil and other related substances. Absent implementation of these BMPs, there  
12 would be a greater potential for significant impacts on covered fish and terrestrial species, long-  
13 term recreational fishing opportunities, and the demand for emergency or fire services. However, it  
14 is unlikely that implementation of SPCCP BMPs alone would ensure less-than-significant  
15 construction-related water quality impacts. Other environmental commitments (e.g., SWPPPs and  
16 hazardous materials management plans), would also be implemented to help reduce the severity of  
17 these impacts to a less-than-significant level. Additionally, for some impacts where SWPPP BMPs  
18 would be relied upon, mitigation measures would still be necessary to reduce a significant impact to  
19 less than significant (e.g., Impact HAZ-1, Impact HAZ-6, and Impact REC-4).

### 20 **3B.2.14 Develop and Implement a Fire Prevention and** 21 **Control Plan**

22 The project proponents will develop and implement a fire prevention and control plan in  
23 consultation with the appropriate fire suppression agencies to verify that the necessary fire  
24 prevention and response methods are included in the plan. The plan will include fire prevention and  
25 suppression measures, and will consider the policies and standards in the affected jurisdictions.

26 At a minimum, the following components, as applicable, will be included in the plan. If a component  
27 is not applicable, DWR or its contractor will explain in the plan why that component or a portion  
28 thereof is not included in the plan.

- 29 • If a fire should start, the appropriate fire protection agencies responsible will be contacted  
30 immediately.
- 31 • Procedures and policies for controlling any fires that are on the work site, and other related fire  
32 prevention and control procedures developed in consultation with and fire protection agencies.
- 33 • Procedures for regular maintenance of safeguards installed on heat-producing equipment to  
34 prevent the accidental ignition of combustible materials.
- 35 • A list of all major potential fire hazards, proper handling and storage procedures for hazardous  
36 materials, potential ignition sources and their control, and the type of fire protection equipment  
37 necessary to control each potential major hazard.
- 38 • Smoking will be allowed only in areas designated for smoking, and these areas will be cleared of  
39 vegetation, or in enclosed vehicles. Cigarette butts are to be disposed of in car ashtrays or other  
40 approved disposal containers and dumped daily in a proper receptacle off the work site.

- 1 • The contractor will be responsible for maintaining appropriate fire suppression equipment at  
2 the work site including a water truck or fire truck with a water tank of at least 3,000 gallon  
3 capacity. Fire extinguishers, shovels and other firefighting equipment will be available at work  
4 sites and on appropriate construction equipment. The contractor will be required to ensure that  
5 each construction vehicle on the work site will be equipped with a minimum 20 pound (or two  
6 10 pound) fire extinguisher(s).
- 7 • At the work site, a sealed fire toolbox will be located at a point accessible in the event of fire.  
8 This fire toolbox will contain: one back-pack pump-type extinguisher filled with water, two axes,  
9 two McLeod fire tools, and shovels so that employees at the work site can be equipped to fight  
10 fire.
- 11 • Gasoline-powered construction equipment with catalytic converters will be equipped with  
12 shielding or other acceptable fire prevention features. Internal combustion engines will be  
13 equipped with spark arrestors.
- 14 • Welding sites will include fire prevention provisions.
- 15 • The contractor will maintain contact with local firefighting agencies throughout the fire season  
16 for updates on fire conditions, and such fire conditions will be communicated daily to the on-site  
17 employees of the contractor and subcontractors daily.

18 In addition to the plan, fire protection will conform to the State Fire Marshal requirements, and will  
19 be in full compliance with Cal/OSHA standards for fire safety and prevention. Road designs will be  
20 developed in consultation with the State Fire Marshal. Any fire hydrants will be located as deemed  
21 acceptable by the State Fire Marshal and are to meet State government standards. Fire protection  
22 using water will be provided by a potable water system either from the nearest municipal clean  
23 water conveyance system or from a self-contained filtration and treatment system that takes water  
24 from an adjacent waterway or a site well or tank.

25 *Explanation of effectiveness:* Construction, operation, and maintenance of the water conveyance  
26 facilities and several other conservation measures would involve the use of equipment and ignitable  
27 materials, and would involve activities that could potentially start fires. Were fires to occur,  
28 particularly substantial fires, they could create an additional demand for fire protection service, and  
29 emergency medical services, result in changes to community character, and increase the risk of  
30 personal injury, death, and substantial loss of property, any one of which would be considered a  
31 significant impact. Implementation of these fire prevention and control measures would reduce the  
32 potential for these impacts to occur as well as reduce the severity, and therefore significance, of fire-  
33 related impacts to a less-than significant level.

## 34 **3B.2.15 Prepare and Implement Mosquito Management** 35 **Plans**

### 36 **During Construction**

37 To aid in mosquito management and control during construction of the intakes, the project  
38 proponents will consult with appropriate Mosquito and Vector Control Districts (MVCDs).  
39 Consultation will occur with the following MVCDs: San Joaquin County Mosquito and Vector Control  
40 District and Sacramento-Yolo Mosquito and Vector Control District. This commitment is related to  
41 AMM33, Mosquito Management, described in BDCP Appendix 3.C. Consultation will occur before the

1 sedimentation basins, solids lagoons, modified Clifton Court Forebay, and the intermediate forebay  
 2 inundation area become operational. Once these components are operational, the project  
 3 proponents will consult again with the MVCDs to determine if mosquito populations are beyond  
 4 thresholds as defined in Mosquito Management Plan. The project proponents will then use mosquito  
 5 control techniques as applicable. Activities will be the responsibility of the project proponents, in  
 6 coordination with applicable MVCDs, and will include, but not be limited to:

- 7 ● Monitoring for mosquito vector species and population abundance during the high mosquito  
 8 season (June through September).
- 9 ● Introducing biological controls, such as mosquito fish, to sedimentation basins, solids lagoons,  
 10 modified Clifton Court Forebay, and the intermediate forebay inundation area, if mosquitoes are  
 11 present.
- 12 ● Introducing physical controls (e.g., discharging dewatered water more frequently or increasing  
 13 circulation) to sedimentation basins, solids lagoons, modified Clifton Court Forebay, and the  
 14 intermediate forebay inundation area if mosquitoes are present.

### 15 **During Restoration**

16 To aid in vector management and control, the construction contractors, with project proponents'  
 17 approval, will be required to develop mosquito management plans and consult with appropriate  
 18 MVCDs with respect to restoration and conservation activities within the Restoration Opportunity  
 19 Areas (ROAs). Consultation will occur with the following MVCDs: Alameda County Vector Control  
 20 Services District, Contra Costa Mosquito and Vector Control District, Sacramento-Yolo Mosquito and  
 21 Vector Control District, San Joaquin County Mosquito and Vector Control District, and Solano County  
 22 Mosquito Abatement District. Consultation will include, but may not be limited to, review of the  
 23 mosquito management plans and BMPs to be implemented at the restoration sites and review of  
 24 proposed mosquito monitoring efforts at restoration sites and assistance with monitoring efforts  
 25 where feasible. In addition, the project proponents will consult with the applicable MVCD during all  
 26 phases of restoration and conservation, including design, implementation, and operations. *The*  
 27 *Central Valley Joint Venture's Technical guide to Best Management Practices for Mosquito Control in*  
 28 *Managed Wetlands (Kwasny et al. 2004)* and the California Department of Public Health's *Best*  
 29 *Management Practices for Mosquito Control in California* (California Department of Public Health  
 30 2012), and other guidelines will be used to help design appropriate restoration and conservation  
 31 features to the extent feasible, consistent with the biological goals and objectives of the proposed  
 32 project. The mosquito management plans will address wetland design considerations, water  
 33 management practices, vegetation management, biological controls, and wetland maintenance.  
 34 BMPs included in the mosquito management plans will include (as applicable), but may not be  
 35 limited to:

- 36 ● Delayed or phased fall flooding—phased flooding involves flooding habitat throughout the fall  
 37 and winter in proportion to wildlife need and takes into consideration other wetland habitat  
 38 that may be available in surrounding areas.
- 39 ● Rapid fall flooding.
- 40 ● Maintain stable water levels.
- 41 ● Circulate water.
- 42 ● Use deep initial flooding.

- 1       • Subsurface irrigate.
- 2       • Utilize water sources with mosquito predators for flooding.
- 3       • Drain irrigation water into ditches or other water bodies with abundant mosquito predators.
- 4       • Employ vegetation management practices to reduce mosquito production in managed wetlands
- 5       (e.g., mowing, burning, discing of vegetation that serves as mosquito breeding substrate).
- 6       • Design wetlands and operations to be inhospitable to mosquitoes.
- 7       • Implement monitoring and sampling programs to detect early signs of mosquito population
- 8       problems.
- 9       • Use biological agents such as mosquito fish to limit larval mosquito populations.
- 10      • Use larvicides and adulticides, as necessary. If larvicides and adulticides are used, the effects of
- 11      these chemicals would need to be evaluated and a monitoring program established and
- 12      reviewed by fish and wildlife agencies to evaluate effects, if any, application would have on
- 13      macroinvertebrates and associated covered fish and wildlife species.

14      *Explanation of effectiveness:* Construction and operation of the water conveyance facilities and  
 15      restoration and enhancement of aquatic habitat (CM2-CM7, CM10 and CM11) would increase  
 16      surface water in the Plan Area and potentially provide suitable mosquito breeding habitat, which  
 17      would increase the public's risk of exposure to vector-borne diseases, which would be a significant  
 18      impact. These BMPs can effectively reduce mosquito populations through source reduction, habitat  
 19      modification, and biological and chemical control (California Department of Public Health 2012).  
 20      Implementation of these BMPs will reduce the risk of increasing vector-borne diseases in the Plan  
 21      Area and would therefore reduce this impact to a less-than-significant level.

### 22      **3B.2.16        Conduct Environmental Training**

23      Prior to construction, the project proponents will inform field management and construction  
 24      personnel of the need to avoid and protect sensitive resources. Training will be conducted during  
 25      preconstruction meetings so that construction personnel are aware of their responsibilities and the  
 26      importance of compliance. This commitment is related to AMM1, Worker Awareness Training,  
 27      described in BDCP Appendix 3.C. This training will be provided by qualified resource specialists  
 28      (e.g., certified biologists, and other specialists.) as specified by individual management plans and/or  
 29      mitigation plans.

30      Construction personnel will be educated on the types of sensitive resources located in the Plan Area  
 31      and the measures required to avoid impacts on these resources. Materials covered in the training  
 32      program will include environmental rules and regulations for the project construction activities and  
 33      requirements for limiting activities to approved work areas, timing restrictions, and avoidance of  
 34      sensitive resource areas.

35      Training seminars will be held to educate construction supervisors and managers on the following:

- 36      • The need for resource avoidance and protection.
- 37      • Important timing windows for covered species (i.e. timing of covered fish
- 38      migration/spawning/rearing, wildlife mating/nesting/fledging, plant flowering periods).

- 1 • Provide specific training related to the relevant AMMs that will be implemented during
- 2 construction for the protection of covered fish, wildlife and plant species, depending upon work
- 3 to be performed and location of the work (i.e., in-water, upland, wetland).
- 4 • Brief discussions of covered species and natural communities of concern.
- 5 • Boundaries of the work area.
- 6 • Exclusion and construction fencing methods.
- 7 • Roles and responsibilities.
- 8 • What to do when covered fish, wildlife or plants are encountered (including dead, injured,
- 9 stressed, or entrapped) in work areas.
- 10 • Staking methods to protect resources.
- 11 • Environmental commitments.
- 12 • Emergency procedures.
- 13 • Consequences of violations of the laws and regulations protecting resources.

14 A fact sheet or other supporting materials containing this information will be prepared and will be  
 15 distributed to construction supervisors and managers, along with a list of contacts (names, numbers,  
 16 and affiliations), prior to initiating construction activities. A representative will be appointed by the  
 17 project proponent to be the primary point of contact for any employee or contractor who might  
 18 inadvertently take a covered species, and the representative's name and telephone number  
 19 provided to the agencies.

20 If new construction personnel are added to the project, the contractor will ensure that the personnel  
 21 receive the mandatory training and sign a sheet indicating their attendance and completion of the  
 22 environmental training before starting work. The training sheets for new construction personnel  
 23 will be provided to the agencies, if requested.

24 *Explanation of effectiveness:* By ensuring that all construction personnel undergo pre-construction  
 25 environmental training regarding environmental rules and regulations applicable to construction  
 26 activities, requirements for limiting activities to approved work areas, timing restrictions, and  
 27 avoidance of sensitive aquatic and terrestrial resource areas, the severity of impacts, and  
 28 particularly direct impacts, on these resources could be avoided and minimized. However, this  
 29 environmental commitment alone would not be sufficient to reduce all construction-related  
 30 significant impacts on fish (and related recreational activities) and terrestrial biological resources  
 31 given that there are multiple impact mechanisms responsible for these impacts, many of which  
 32 would require not only the implementation of multiple environmental commitments but also the  
 33 implementation of mitigation measures in order to reduce impacts to a less-than-significant level.

### 34 **3B.2.17 Fugitive Dust Control**

35 Project proponents will implement basic and enhanced control measures at all construction and  
 36 staging areas to reduce construction-related fugitive dust. This commitment is related to AMM35,  
 37 Fugitive Dust Control, described in BDCP Appendix 3.C. The following measures are based on the  
 38 Sacramento Metropolitan Air Quality Management District's (SMAQMD's) CEQA guidelines, and are  
 39 in conformance with the Bay Area Air Quality Management District (BAAQMD), San Joaquin Valley



1 Air Pollution Control District (SJVAPCD), and Yolo Solano Air Quality Management District  
2 (YSAQMD) fugitive dust control requirements.

### 3 **3B.2.17.1 Basic Fugitive Dust Control Measures**

4 Project proponents will ensure that the following measures will be implemented to control dust  
5 during construction activities.

- 6 • Water will be applied to all exposed surfaces as reasonably necessary to prevent visible dust  
7 from leaving work areas. Frequency of watering will be increased during especially dry or windy  
8 periods or in areas with high construction activity. Exposed surfaces include (but are not  
9 limited to) soil piles, graded areas, unpaved parking areas, staging areas, and access roads. If  
10 water or other dust control measures cannot be implemented to unpaved access roads, vehicle  
11 speeds will be limited to 15 miles per hour on such road segments.
- 12 • Cover or maintain at least 2 feet of freeboard space on haul trucks transporting soil, sand, or  
13 other loose material on the site. Haul trucks transporting soil, sand, or other loose material that  
14 will be traveling along freeways or major roadways shall be covered.
- 15 • Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto  
16 adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- 17 • Disturbed areas should be promptly finished and/or protected and maintained in a manner to  
18 control fugitive dust. Mulch, dust palliative, soil binders, or other reasonable mitigation  
19 measures will be used in inactive areas.

### 20 **3B.2.17.2 Enhanced Fugitive Dust Control Measures for Land Disturbance**

21 Project proponents will ensure that the following measures will be implemented to control dust  
22 during soil disturbance activities.

- 23 • Water exposed soil with adequate frequency for continued moist soil. However, do not  
24 overwater to the extent that sediment flows off the site.
- 25 • Suspend excavation, grading, and/or demolition activity when wind speeds exceed 20 mph.
- 26 • Where appropriate, install wind breaks (e.g., plant trees, solid fencing) on windward side(s) of  
27 construction areas.
- 28 • Plant vegetative ground cover (native grass/plant seed) in disturbed areas as soon as  
29 reasonable after construction is completed. Water appropriately until vegetation is established.

### 30 **3B.2.17.3 Measures for Entrained Road Dust**

31 Project proponents will ensure that the following measures will be implemented to control  
32 entrained road dust from unpaved roads, for example dust kicked up from unpaved roadway  
33 surfaces.

- 34 • Install rattle plates, stabilized construction entrances/exits, wheel washers, or wash off all  
35 trucks, vehicles, and equipment leaving the site.
- 36 • Treat site accesses to a distance of 100 feet from the paved road with a 6 to 12-inch layer of  
37 wood chips, mulch, or gravel to reduce generation of road dust and track out onto public roads.

- Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The phone number of the District will also be visible to ensure compliance.

#### 3B.2.17.4 Measures for New Concrete Batching Plants

Project proponents will ensure that the following measures will be implemented to control dust during concrete batching activities.

- Apply water and/or chemical suppressants to reduce fugitive dust emissions from active storage piles and during aggregate and sand delivery, storage, and transfer.
- Use a hood system vented to a fabric filter/baghouse to reduce fugitive dust emissions during cement delivery and hopper and central mix loading.

*Explanation of effectiveness:* Implementation of basic and enhanced dust control measures, as well as measures for entrained road dust and concrete batching, would minimize or reduce the severity of air quality and visual impacts related to dust resulting from project land disturbing activities. Given the extent of earthmoving activities that would take place with implementation of the project, it is expected that a substantial amount of dust would be airborne. If *C. immitis* spores are present in this dust, sensitive receptors adjacent to construction areas could be at increased risk of inhaling these spores and developing Valley Fever, which would be a significant impact absent implementation of fugitive dust control. However, dust alone is not the only particulate matter that would cause potentially significant air quality effects (see Chapter 22), and therefore implementation of other environmental commitments (e.g., Construction Equipment Exhaust Reduction Plan), and in some cases, mitigation measures (e.g., Mitigation Measure AQ-1a and AQ-1b) would be required to reduce the severity of the impact (e.g., Impact AQ-1 and Impact AQ-2) to a less-than-significant level. Similarly, dust would not be the only factor contributing to the potential substantial alteration in existing visual quality or character during construction activities. Other effects such as vegetation removal, changes to topography through grading, and the addition of large-scale industrial structures (intakes and related facilities, would contribute to this impact. Accordingly, mitigation measures would be required to reduce this significant impact on visual resources to less than significant.

#### 3B.2.18 Disposal and Reuse of Spoils, Reusable Tunnel Material (RTM), and Dredged Material

In the course of constructing or operating project facilities, substantial quantities of material are likely to be removed from their existing locations based upon their properties or the need for excavation of particular features. Spoils refer to excavated native soils and are associated with construction of pumping plant facilities and other water conveyance features. Reusable tunnel material (RTM) refers to the mixture of saturated soils and biodegradable soil conditioners or additives that will be generated by tunneling operations and are appropriate for reuse based upon chemical characterization and physical properties. Dredged material refers to sediment removed from the bottom of a body of water for the purposes of in-water construction, or water conveyance, operation (e.g. sediment collected at intake sites), or storage requirements. The quantities of these materials generated by construction or operation of project facilities would vary depending on the alternative selected for implementation. See further discussion in Chapter 3, *Description of Alternatives*, Section 3.6.1. These materials will require handling, storage, and disposal, as well as

1 chemical characterization, prior to any reuse. Temporary storage areas will be designated for these  
 2 materials. However, to reduce the long-term effects on land use and potentially support  
 3 implementation of other project elements, the project proponents will develop site-specific plans for  
 4 the beneficial reuse of these materials, to the greatest extent feasible. This commitment is related to  
 5 AMM6; Disposal and Reuse of Spoils, Reusable Tunnel Material (RTM), and Dredged Material; and  
 6 AMM10; Restoration of Temporarily Affected Natural Communities; described in BDCP Appendix  
 7 3.C. A flowchart outlining the process for disposal and reuse of these materials is shown in Figure  
 8 3B-1.

### 9 **3B.2.18.1 Material Storage Site Determination**

10 Material refers to Spoils, RTM, sediment, and dredged material. These materials will be temporarily  
 11 stored in designated storage areas. Sediment collected at intake sites will be stored at solids lagoons  
 12 adjacent to sedimentation basins. Selection of designated storage areas will be based on, but not  
 13 limited to, the following criteria.

- 14 ● Material may be placed in project-designated borrow areas.
- 15 ● Areas for material storage will be located and average of no more than 10 miles from the  
 16 construction feature
- 17 ● Areas for material storage will not be located within 100 feet of existing residential or  
 18 commercial buildings.
- 19 ● Areas for material storage will not be located within 100 feet of a military facility.
- 20 ● Material will be located in areas where it will not interfere with existing roads, rail lines, or  
 21 infrastructure.
- 22 ● Placement of material in sensitive natural communities and habitat areas, such as surface  
 23 waters, wetlands, vernal pool complex, alkali seasonal wetland complex or grassland, native  
 24 grasslands, riparian areas, or crane roost sites, will be avoided or minimized to the extent  
 25 feasible, consistent with the biological goals and objectives of the project. If placement of  
 26 material in vernal pool complex or alkali seasonal wetland complex cannot be avoided, material  
 27 will not be placed within 250 feet of vernal pools or alkali seasonal wetlands (i.e., wetted acres  
 28 will be avoided by at least 250 feet).
- 29 ● Landowner concerns and preferences will be considered in designating sites for material  
 30 storage. DWR will consult directly with landowners to refine the storage area footprint to  
 31 further minimize impacts to surrounding land uses, including agricultural operations.
- 32 ● Where feasible, dredged material will be stored on higher elevation land that is set back from  
 33 surface water bodies a minimum of 150 feet. Upland disposal will help ensure that the material  
 34 will not be in direct contact with surface water prior to its draining, characterization, and  
 35 potential treatment.

36 Additional considerations have been made for the storage of RTM. For example, the proposed  
 37 locations of the storage areas for RTM have been designed to be close to where the material will be  
 38 brought to the surface, as well as close to where reuse is expected to occur. In some cases, storage  
 39 areas are located adjacent to barge landings to facilitate movement to other reuse locations in the  
 40 Delta.

41 The area required for material storage is flexible and will depend on several factors.

- 1 • The speed with which material is brought to the surface, stored, dried, tested, and moved to  
2 reuse locations will be important in determining the final size of storage areas. If material can be  
3 dried faster and moved offsite more quickly, less area will be needed at each location.
- 4 • The depth to which the material is stacked. Material that is stored in deeper piles will require  
5 less area but may dry more slowly, extending the time that is needed.
- 6 • The proportion of material at one storage area or another. There will be flexibility during  
7 construction to prioritize material storage in some areas as opposed to other areas, based on  
8 feasibility of reuse or minimization of impacts.

9 To preserve this flexibility during construction, the analysis assumes a range of storage area  
10 footprints that could be needed across different alternatives (based on different assumptions for the  
11 depth of material storage). It is anticipated that less or substantially less of the maximum storage  
12 area footprint would actually be required during the construction period. The assumptions used for  
13 Alternative 4 represent the maximum storage area that would be needed, which was also evaluated  
14 for the BDCP Effects Analysis. To illustrate the potential for smaller RTM storage areas under this  
15 alternative, a range of acreages is provided in relevant impact discussions, accounting for the factors  
16 listed above.

### 17 **3B.2.18.2 Material Storage Site Preparation**

18 A portion of the temporary sites selected for storage of spoils, RTM, and dredged material will be set  
19 aside for topsoil storage. The topsoil will be saved for reapplication to disturbed areas post  
20 construction. Suitable vegetative material from work site clearing will be chipped, stockpiled, and  
21 spread over disturbed soil areas for dust and erosion control purposes where feasible and  
22 appropriate and where such material does not contain seeds of nonnative species. Cleared areas will  
23 be grubbed as necessary to prepare the areas for grading or other construction activities. Rocks and  
24 other inorganic grubbed materials may be used to backfill borrow areas. The contractor will remove  
25 from the work site all debris, rubbish, and other materials not directed to be salvaged and dispose of  
26 them in an approved disposal site after obtaining all permits required.

### 27 **3B.2.18.3 Draining, Chemical Characterization, and Treatment**

28 RTM and associated decant liquid will undergo chemical characterization by the contractor(s) prior  
29 to reuse or discharge, respectively, to determine whether it will meet National Pollutant Discharge  
30 Elimination System (NPDES) and the Central Valley Regional Water Quality Control Board  
31 requirements. Should RTM decant liquid constituents exceed discharge limits, these tunneling  
32 byproducts will be treated to comply with NPDES permit requirements. Discharges from RTM  
33 draining operations will be conducted in such a way as to not cause erosion at the discharge point. If  
34 RTM liquid requires chemical treatment, chemical treatment will ensure that after treatment RTM  
35 liquid will be nontoxic to aquatic organisms.

36 While additives used to facilitate tunneling will be nontoxic and biodegradable, it is possible that  
37 some quantity of RTM will be deemed unsuitable for reuse. In such instances, the material will be  
38 disposed of at a site approved for disposal of such material. In the case of RTM, such requirements  
39 are anticipated to apply to less than 1% of the total volume of excavated material (or, 270,000 cubic  
40 yards).

41 Hazardous materials excavated during construction will be segregated from other construction  
42 spoils and properly handled and disposed in accordance with applicable federal, state, and local

1 regulations. Riverine or in-Delta sediment dredging and dredge material disposal activities may  
 2 involve potential contaminant discharges not addressed through typical NPDES or SWRCB CGP  
 3 processes. Construction of Dredge Material Disposal (DMD) sites will likely be subject to the SWRCB  
 4 CGP (Order No. 2009-0009-DWQ). The following list of best management practices (BMPs) is based  
 5 on information from the various regulatory programs that exist to manage dredging operations, and  
 6 will be implemented during handling and disposal of any potentially hazardous dredged material.

- 7 ● The project proponents will ensure the preparation and implementation of a pre-dredge  
 8 sampling and analysis plan (SAP) to be developed and submitted by the contractor(s) as part of  
 9 the water plan required per standard DWR contract specifications Section 01570. Prior to  
 10 initiating any dredging activity, the SAP will evaluate the presence of contaminants that may  
 11 impact water quality from the following discharge routes.
  - 12 ○ In-stream discharges during dredging.
  - 13 ○ Direct exposure to contaminants in the material through ingestion, inhalation or dermal  
 14 exposure.
  - 15 ○ Effluent (return flow) discharge from an upland disposal site.
  - 16 ○ Leachate from upland dredge material disposal that may affect groundwater or surface  
 17 water.
- 18 ● Conduct dredging within the allowable in-water “work windows” established by USFWS, NMFS,  
 19 and CDFW.
- 20 ● Conduct dredging activities in a manner that will not cause turbidity in the receiving water, as  
 21 measured in surface waters 300 feet down-current from the construction site, to exceed the  
 22 Basin Plan objectives beyond an approved averaging period by the Regional Water Quality  
 23 Control Boards (RWQCB) and CDFW. Existing threshold limits in the Basin Plan for turbidity  
 24 generation are as follows.
  - 25 ○ Where natural turbidity is between 0 and 5 NTUs, increases shall not exceed 1 NTU.
  - 26 ○ Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20%.
  - 27 ○ Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.
  - 28 ○ Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10%.
- 29 ● If turbidity generated during dredging exceeds implementation requirements for compliance  
 30 with the Basin Plan objectives, silt curtains will be utilized to control turbidity. Exceptions to  
 31 turbidity limits set forth in the Basin Plan may be allowed for dredging operations; in this case,  
 32 an allowable zone of dilution within which turbidity exceeds the limits will be defined and  
 33 prescribed in a discharge permit.
- 34 ● The DMD sites will be designed to contain all of the dredged material and all systems and  
 35 equipment associated with necessary return flows from the DMD site, including equipment to  
 36 handle, settle, and/or treat the water prior to return to the receiving water.
- 37 ● The dredged material disposal site will be designed by a California-licensed professional  
 38 engineer.
- 39 ● Two feet of freeboard above the 100-year flood event elevation will be maintained in all dredge  
 40 material disposal site settling pond(s).

- 1       • Dredging equipment will be kept out of riparian areas and dredge spoil will be disposed of  
2       outside of riparian corridors.

3       DMD sites will be constructed using appropriate BMPs (such as erosion and sediment control  
4       measures [see *Develop and Implement Stormwater Pollution Prevention Plans* for examples]) to  
5       prevent discharges of contaminated stormwater to surface waters or groundwater. Some of these  
6       BMPs may not be applicable to dredging activities that would occur as part of operation and  
7       maintenance of the sedimentation basins and solids lagoons at intake sites.

### 8       **3B.2.18.4       Material Reuse Plans**

9       Prior to construction, draining, and chemical characterization of spoil, RTM, and dredged material,  
10       the project proponents shall identify sites for reusing such materials to the greatest extent feasible,  
11       in connection with project construction activities, habitat restoration and protection activities, as  
12       well as potential beneficial uses associated with flood protection and management of groundwater  
13       levels within the Plan Area. The project proponents will undertake a thorough investigation to  
14       identify sites for the appropriate reuse of material, and, based on the properties of the material and  
15       in consultation with the project Implementation Office and other interested parties, the project  
16       proponents will identify the specific site for that material. Potential methods of reuse may include,  
17       but not be limited to, the following.

- 18       • Fill material for construction of embankments or building pads.  
19       • Fill material for levee maintenance.  
20       • Fill material for habitat restoration projects.  
21       • Fill material for roadway projects.  
22       • Localized subsidence reversal.  
23       • Material for flood response.  
24       • Material to fill project -related borrow areas.  
25       • Other beneficial means of reuse.

26       Material applied to reduce the localized effects of subsidence will be placed on lower elevation lands  
27       and lands adjacent to levees, in order to minimize effects on agricultural practices and improve  
28       levee stability. The material may be left in place and used as stockpile to assist in flood response.  
29       The feasibility of these approaches to reuse will depend upon the suitability of the material for each  
30       purpose based on testing of relevant properties. Site-specific factors such as local demand for  
31       materials and the ability to transport the materials would also be important considerations in  
32       assessing options for reuse. To the extent that the reuse of the materials for these purposes may lead  
33       to adverse environmental effects, such effects shall be addressed through site-specific  
34       environmental documents prepared under NEPA and CEQA, possibly including environmental  
35       documents for proposed habitat restoration projects where the materials can be used within such  
36       projects.

37       The project proponents will consult relevant parties, such as landowners, reclamation districts,  
38       flood protection agencies, federal and state agencies with jurisdiction in the Delta, and counties, in  
39       developing such site-specific spoil, RTM, and dredged material reuse plans. Where project  
40       proponents determine that it is appropriate that materials be used to prepare land at elevations  
41       suitable for project -related restoration or protection of habitat, the project proponents will

1 coordinate with the project Implementation Office in developing site-specific plans for transporting  
2 and applying the materials to restoration work sites.

3 Following removal of spoils, RTM, and dredged material from temporary storage sites, stockpiled  
4 topsoil at these areas will be reapplied, and disturbed areas will be returned, to the extent feasible,  
5 to preconstruction conditions, by carefully grading to re-establish surface conditions and elevations  
6 and reconstructing features such as irrigation and drainage facilities. Restoration of the RTM  
7 draining sites will be designed to prevent surface erosion and transport of sediment. Following  
8 these activities, the land will be suitable for returning to agricultural production, under the  
9 discretion of the landowner. Such areas may also be appropriate for the implementation of habitat  
10 restoration or protection in consideration of the proposed project's biological goals and objectives.

11 In some instances, it may be infeasible to transport and reuse spoil, RTM, or dredged materials for  
12 another use due to factors such as the distances and costs involved and/or any environmental  
13 effects associated with transport (e.g., unacceptable traffic concerns or levels of diesel emissions). In  
14 such instances, sites will be evaluated for the potential to reapply topsoil over the spoils, RTM, or  
15 dredged material and to continue or recommence agricultural activities. If, in consultation with  
16 landowners and any other interested parties, project proponents determine that continued use of  
17 the land for agricultural or habitat purposes will be infeasible, the potential for other productive  
18 uses of the land will be examined, including stockpile and staging areas for flood response or the  
19 potential for the site to host solar or wind power generation facilities (if deemed acceptable after  
20 any necessary environmental review). Such instances may require the acquisition of interests in the  
21 land and/or coordination with utilities or other entities; specific arrangements will be made on a  
22 case-by-case basis.

23 *Explanation of effectiveness:* Construction and maintenance of the water conveyance facilities, as  
24 well as implementation of other conservation measures related to habitat restoration and  
25 enhancement, would result in the production of RTM, spoils, and dredged material at various  
26 locations in the Plan Area. Handling, storage and disposal of these materials has the potential to  
27 result in significant impacts on water quality, visual resources, recreation, land use, agricultural  
28 resources, public services, and terrestrial habitat.

29 While RTM areas are considered permanent surface impacts for the purposes of impact analysis, it is  
30 anticipated that the RTM would be removed from these areas and reused, as appropriate, as bulking  
31 material for levee maintenance, as fill material for habitat restoration projects, or other beneficial  
32 means of reuse identified for the material. Implementation of this environmental commitment  
33 would provide for chemical characterization of RTM, which would ensure that the material will be  
34 disposed of at an appropriate disposal site or reused. Appropriate reuse of any spoils, dredged  
35 material, and RTM, as would be implemented through the material reuse plan(s), would reduce the  
36 need for long-term stockpiling/storage and would therefore reduce the severity of impacts to  
37 terrestrial habitat, land use, agriculture, public services, visual and recreation resources. Generally  
38 recognized BMPs for managing dredging operations and dredged materials would act as  
39 performance standards for minimizing water quality impacts, such as turbidity, that could adversely  
40 affect aquatic and recreation resources.

41 Although implementation of this environmental commitment would potentially substantially reduce  
42 the severity of impacts from RTM, spoils and dredged materials on several resources, this  
43 environmental commitment alone would not be sufficient to reduce significant impacts to a less-  
44 than-significant level. For example, turbidity effects related to construction of the water conveyance

1 facilities would also be reduced through implementation of other environmental commitments (e.g.,  
 2 erosion and sediment control plans and SWPPPs). In addition, for some impacts where this  
 3 environmental commitment would be relied upon, mitigation measures would still be necessary to  
 4 reduce a significant impact to less than significant. For example, to address potentially significant  
 5 alteration in the existing visual quality or character (Impact AES-1 [in part due to spoil/borrow and  
 6 RTM storage]), several mitigation measures would be implemented (e.g., AES-1a, AES-1b, AES-1d),  
 7 including Mitigation Measure AES-1c, *Develop and Implement a Spoil/Borrow and Reusable Tunnel*  
 8 *Material Area Management Plan*.

### 9 **Potential Environmental Effects of RTM Use**

10 It is anticipated that one or more of these disposal and reuse methods could be implemented on any  
 11 individual spoil, RTM, or dredged material site. Depending on which combination of these  
 12 approaches is selected, implementation of material reuse plans could create environmental impacts  
 13 requiring site-specific analysis under CEQA and/or NEPA. Many of these activities would require  
 14 trucks or barges to gather and haul materials from one section of the Plan Area to another. For  
 15 instance, reuse of material in the implementation of tidal habitat associated with CM4 could require  
 16 material to be transported to locations in the West Delta ROA (including Sherman and Twitchell  
 17 Islands) or the Cosumnes/Mokelumne ROA (including Glannvale Tract and McCormack-Williamson  
 18 Tract), among other areas. Locations for reuse in support of levee stability could include areas  
 19 protected by nonproject levees or where levee problems have been reported in the past, including  
 20 Staten Island, Bouldin Island, Empire Tract, Webb Tract, Bacon Island, or other places in the Delta.  
 21 While reuse locations near to the spoil or RTM areas would be preferred, such activity would  
 22 require use of local roadways, which could lead to short-term effects on traffic, noise levels, and air  
 23 quality. Similarly, earthwork and grading activities to restore sites to preconstruction conditions  
 24 and to apply the materials consistent with their reuse could create noise and effects on air quality  
 25 during the implementation of reuse plans.

26 If materials are applied for the purposes of flood protection, flood response, habitat restoration or  
 27 subsidence reversal, it is possible that existing topsoil could be overcovered and that Important  
 28 Farmland or farmland with habitat value for one or more covered species could be disturbed  
 29 temporarily or converted from active agricultural uses. Additionally, materials placed near levees  
 30 could affect drainage and/or irrigation infrastructure. If material is used for habitat restoration that  
 31 would have otherwise been implemented as part of the project, reuse of materials could offset the  
 32 need for fill materials from other sources. Such effects would be described in further detail in any  
 33 individual site-specific environmental review documents for habitat restoration activities.

34 Depending on the selected reuse strategies, however, implementation of spoil, RTM, and dredged  
 35 material reuse plans could also result in beneficial effects associated with flood protection and  
 36 response, habitat creation, and depth to groundwater in areas where the ground level is raised.

### 37 **3B.2.18.5 Disposal of RTM, Spoils, and Dredged Material**

38 A Sampling and Analysis Plan (SAP) will be developed for the disposal of RTM and Dredged  
 39 Materials. This SAP will be consistent with the U.S. Army Corps of Engineers (USACE) and U.S.  
 40 Environmental Protection Agency (USEPA) Public Notice 99-4 which provides guidance on SAPs as  
 41 well as reporting requirements for material test results (USACE and USEPA 1999).

42 Compliance with Section 13260(a) of the California Water Code, prior to disposal of RTM a Waste  
 43 Discharge Requirements (WDR) General Order will be issued by the appropriate RWQCB based on



1 submittal of a Report of Waste Discharge (RWD) by DWR (or authorized contractor[s]). The WDR  
 2 Order will require the Discharger to conduct chemical and physical testing of sediments to be  
 3 extracted prior to dredging, tunneling, etc. The WDR Order may also require supporting special  
 4 studies and technical reports. Project operations will be subject to this Order and associated  
 5 monitoring and reporting program.

6 For disposal of materials within the SFBRWQCB jurisdiction (Region 2) the SAP and results reports  
 7 will be submitted to the Dredged Material Management Office (DMMO). The Dredged Material  
 8 Management Office was created to fulfil the cooperative permitting framework goal of the Long  
 9 Term Management Strategy. The DMMO is made up of the participating LTMS agencies [the State  
 10 Water Resources Control Board (SWRCB); the San Francisco Regional Water Quality Control Board  
 11 (SFRWQCB); the San Francisco Bay Conservation and Development Commission (BCDC); the USACE,  
 12 South Pacific Division and San Francisco District; and the USEPA, Region 9], the State Lands  
 13 Commission, and the California Department of Fish and Game and is tasked with reviewing SAPs,  
 14 test results and permit applications (USACE and USEPA 1999). The DMMO is discussed further  
 15 under *Permitting* below.

16 To ensure that sediment accepted at the proposed sites meets state water quality standards, the  
 17 proposed project will adhere to testing requirements set forth by the DMMO agencies. Sediments  
 18 must be analyzed for contaminants prior to approval of each dredging project. The SFBRWQCB staff  
 19 will review sediment testing data from the project to evaluate its conformity with the dredged  
 20 material acceptance criteria provided in the WDR General Order which will be adopted for the  
 21 project by the SFBRWQCB on a site-specific basis.

22 Disposal of RTM, Spoils, and Dredge Material within the jurisdiction of the CVRWQCB (Region 5) will  
 23 be subject to the requirements identified by the SFBRWQCB for evaluation, screening, and disposal  
 24 as, at this time, the SFBRWQCB has developed more comprehensive and detailed guidelines for the  
 25 beneficial reuse of materials. For the purposes of evaluation in this document the requirements set  
 26 forth by the SFBRWQCB will be used as the criteria for disposal in both Region 2 and Region 5. WDR  
 27 General Orders will be issued by the respective RWQCB which will determine the final criteria and  
 28 requirements for RTM, Spoils, and Dredge Material Disposal (DMD).

### 29 **3B.2.18.5.1 Inland Disposal of Materials**

30 Inland- disposal of RTM, spoils, and dredge material will be subject to evaluation and testing as  
 31 described in the Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. -  
 32 Testing Manual (USEPA and USACE, 1998), also referred to as the "Inland Testing Manual" (ITM).  
 33 The ITM was prepared by the USEPA and the USACE as part of the Long-Term Management Strategy  
 34 and was developed to establish guidance for conducting testing of dredged materials and to assess  
 35 the potential for contaminant-related impacts associated with dredged material disposal in open  
 36 water (USEPA and USACE, 1998).

37 Material disposal within the baseline is regulated under Section 404 of the Clean Water Act (CWA)  
 38 and is subject to compliance with the CWA Section 404(b)(1) Guidelines. As described by the LTMS  
 39 Management Plan, July 2001, the baseline includes San Francisco Bay and adjacent waters of the  
 40 U.S., including wetlands. Sediment Quality Criteria (SQC) have not been developed for the Bay Area  
 41 that represent a single sediment chemical concentration below which disposal poses minimal risk to  
 42 the aquatic environment. LTMS agencies implemented a measure in 2001 stating that sediment  
 43 quality screening guidelines for various beneficial uses will be provided by the SFBRWQCB's

1 *Sediment Screening Criteria and Testing Requirement for Wetland Creation and Upland Beneficial*  
2 *Reuse.*

### 3 **3B.2.18.5.2 Wetland/Upland Material Disposal**

4 Wetland and upland beneficial reuse of RTM, spoils, and dredge material at restoration sites in  
5 Region 2 and 5 will be subject to evaluation and testing as required by the SFBRWQCB Waste  
6 Discharge Requirements Order which will be adopted for the project by the SFBRWQCB and  
7 CVRWQCB. The SFBRWQCB has developed a *Beneficial Reuse of Dredged Materials: Sediment*  
8 *Screening and Testing Guidelines* (Draft May 2000). This document aids in the screening and testing  
9 of dredged materials for beneficial reuse and outlines the anticipated requirements; however,  
10 permits for beneficial reuse will be site-specific for the reuse sites identified in the RTM plan for the  
11 proposed project. For the purposes of the proposed project it is assumed that RTM is subject to the  
12 same screening and testing guidelines as dredged materials.

13 These guidelines contain testing requirements and evaluation of test results for materials which are  
14 intended to be used in upland beneficial reuse environments such as habitat/wetland creation, levee  
15 maintenance/fill, and construction fill. The screening values which will be used by the SFBRWQCB  
16 and CVRWQCB to evaluate suitability of materials are contained within.

17 Sediment characterization will follow the protocols specified in the DMMO guidance document,  
18 *"Guidelines for Implementing the Inland Testing Manual in the San Francisco Bay Region"* (Corps  
19 Public Notice 01-01, or most current version) with the exception that the water column bioassay  
20 simulating in-bay unconfined aquatic disposal shall be replaced with the modified effluent elutriate  
21 test, as described in Appendix B of the Inland Testing Manual, for both water column toxicity and  
22 chemistry (DMMO suite of metals only) and the Water Board May 2000 staff report, *"Beneficial*  
23 *Reuse of Dredged Materials: Sediment Screening and Testing Guidelines,"* or most current revised  
24 version. SFRWQCB-recommended Sediment Chemistry Screening Guidelines for Beneficial Reuse to  
25 Dredged Material are contained in Table 3B-4.

### 26 **3B.2.18.5.3 RTM and Dredge Material Screening**

27 Sediment dredging sites would undergo initial screening and site evaluation to determine and  
28 identify any potential for contamination to be present as hazardous waste. Such screening may  
29 include review of site documentation, field reconnaissance surveys, historical aerial imagery, and  
30 potential in-water observation and analysis (e.g., visual survey, sediment sampling).

31 Potential presence of hazardous waste would be evaluated with appropriate sediment sampling and  
32 chemical characterization procedures. Confirmed presence of hazardous wastes would trigger the  
33 need for further planning and analysis of the extent of contamination, and appropriate removal and  
34 disposal at a licensed hazardous waste disposal facility.

### 35 **3B.2.18.5.4 Screening Criteria for Inland Disposal**

36 Sediment Quality Criteria (SQC) have not been developed for the Bay Area that represent a single  
37 sediment chemical concentration below which disposal poses minimal risk to the aquatic  
38 environment (LTMS 2001). The LTMS agencies plan to develop a Regional Implementation Manual  
39 (RIM) describing testing and analysis requirements for disposal of dredged material in the Bay Area.  
40 The RIM will include regional test protocols, contaminants of concern, appropriate species for  
41 bioassays, and quality assurance guidance. Sediment quality guidelines, new or modified testing

1 procedures, reference sites, and other testing and suitability-related information will be included as  
2 they become available. (LTMS, 2001)

3 To facilitate and promote beneficial reuse of dredged material, the LTMS agencies implemented the  
4 following measure in 2001:

5 *The SFBRWQCB will revise Sediment Screening Criteria and Testing Requirements for Wetland*  
6 *Creation and Upland Beneficial Reuse, which will provide guidelines on testing (including*  
7 *recommendations for reference sites) and sediment quality screening for various beneficial uses. A*  
8 *draft version of the revised document has been issued for public comment and, following the close of*  
9 *the comment period, will be revised and finalized through the formal administrative process.*(LTMS,  
10 2001)

11 The SFBRWQCB's *Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines*  
12 (Draft May 2000) is discussed below and provides the guidelines for testing and screening of  
13 sediment disposed of for wetland/upland beneficial uses and apply to inland disposal of sediment as  
14 well as. These screening guidelines are assumed to be adopted for testing and screening for disposal  
15 within the Region 5.

### 16 **3B.2.18.5.5 Screening Criteria**

17 Sediment characterization will follow the protocols specified in:

- 18 1) The DMMO guidance document, "*Guidelines for Implementing the Inland*  
19 *Testing Manual in the San Francisco Bay Region*" (Corps Public Notice 01-01, or most current  
20 version) with the exception that the water column bioassay simulating in-bay unconfined aquatic  
21 disposal shall be replaced with the modified effluent elutriate test, as described in Appendix B of the  
22 Inland Testing Manual, for both water column toxicity and chemistry (DMMO suite of metals only);  
23 and
- 24 2) SFBRWQCB Draft May 2000 staff report, "*Beneficial Reuse of Dredged Materials: Sediment*  
25 *Screening and Testing Guidelines*," or most current revised version.

26 Surface and foundation material are subject to acceptance criteria derived from the SFBRWQCB  
27 guidelines. Anticipated reuse options for RTM and dredge material for the proposed project include:

- 28 ● fill material for construction of embankments or building pads;
- 29 ● fill material for levee maintenance;
- 30 ● fill material for habitat restoration projects;
- 31 ● fill material for roadway projects;
- 32 ● localized subsidence reversal;
- 33 ● material for flood response;
- 34 ● material to fill project-related borrow areas; or
- 35 ● other beneficial means of reuse.

36 The SFBRWQCB guidelines identify two general classes of dredged material suitable for reuse.  
37 Dredged material, spoils, and RTM will be screened to determine if the material meets the wetland  
38 surface material screening values or the wetland foundation material screening values which will be

1 contained in the SFBRWQCB and CVRWQCB Water Quality Certification. Material which does not  
 2 meet the wetland surface material screening values but does meet the wetland foundation material  
 3 screening values will likely still be suitable for the upland reuse options listed above. The screening  
 4 criteria developed for the SFBRWQCB guidelines were based on statistical estimates of sediment  
 5 toxicity and ambient concentrations of chemicals found in the sediments of San Francisco Bay  
 6 (SFBRWQCB 2000).

7 Wetland surface material is material which is placed in the biotic zone during wetland creation and  
 8 exhibits bulk sediment concentrations that fall within the range of ambient conditions in the central  
 9 portions of San Francisco Bay. The screening guidelines for wetland surface material are the most  
 10 protective of sensitive potential biological receptors. Wetland surface material is not expected to  
 11 pose a threat to water quality or the aquatic environment (SFBRWQCB 2000).

12 Wetland foundation material is material used in wetland creation and restoration projects which is  
 13 covered by surface material and is not in contact with flora and fauna. These materials generally fall  
 14 within the range of ambient conditions typically found around the margins of the Bay. This material  
 15 is not of a quality that constitutes a hazardous or listed waste), but has potential for biological  
 16 effects and should not come in contact with sensitive potential biological receptors (SFBRWQCB  
 17 2000. The screening guidelines below (Table 3B-4) are intended to protect biological receptors from  
 18 adverse environmental effects during material placement or leachate after placement. Wetland  
 19 foundation material must be tested to ensure that any water that leaches through the material will  
 20 not adversely impact the aquatic environment. Final determination of sediment suitability for any  
 21 specific permit action, however, will be site-specific and will take into consideration placement of  
 22 foundation materials.

23 Material which does not meet the criteria for wetland surface material but does meet the criteria for  
 24 wetland foundation material may be used for upland purposes contingent upon the leaching  
 25 characteristics and evaluation of direct human contact with the material. Sediment for upland reuse  
 26 which involves continual human contact will need to be evaluated for constituents whose ambient  
 27 concentrations are not an issue for sediments in wetlands or water but would exceed the EPA  
 28 Region IX Preliminary Remediation Goals.

29 **Table 3B-4. Recommended Sediment Chemistry Screening Guidelines for Beneficial Reuse of Dredged**  
 30 **Material**

ANALYTE	Wetland Surface Material		Wetland Foundation Material	
	Concentration	Decision Basis	Concentration	Decision Basis
<b>METALS (mg/kg)</b>				
Arsenic	15.3	Ambient Values	70	ER-M
Cadmium	0.33	Ambient Values	9.6	ER-M
Chromium	112	Ambient Values	370	ER-M
Copper	68.1	Ambient Values	270	ER-M
Lead	43.2	Ambient Values	218	ER-M
Mercury	0.43	Ambient Values	0.7	ER-M
Nickel	112	Ambient Values	120	ER-M
Selenium	0.64	Ambient Values		
Silver	0.58	Ambient Values	3.7	ER-M
Zinc	158	Ambient Values	410	ER-M

ANALYTE	Wetland Surface Material		Wetland Foundation Material	
	Concentration	Decision Basis	Concentration	Decision Basis
<b>ORGANOCHLORINE PESTICIDES/PCBS (!lg/kg)</b>				
DDTS, sum	7.0	Ambient Values	46.1	ER-M
Chlordanes, sum	2.3	TEL	4.8	PEL
Dieldrin	0.72	TEL	4.3	PEL
Hexachlorocyclohexane, sum	0.78	Ambient Values		
Hexachlorobenzene	0.485	Ambient Values		
PCBs, sum	22.7	ER-L	180	ER-M
<b>POLYCYCLIC AROMATIC HYDROCARBONS (!lg/kg)</b>				
PAHs, total	3,390	Ambient Values	44,792	ER-M
Low molecular weight PAHs, sum	434	Ambient Values	3,160	ER-M
High molecular weight PAHs, sum	3,060	Ambient Values	9,600	ER-M
1-Methylnaphthalene	12.1	Ambient Values		
1-Methylphenanthrene	31.7	Ambient Values		
2,3,5-Trimethylnaphthalene	9.8	Ambient Values		
2,6-Dimethylnaphthalene	12.1	Ambient Values		
2-Methylnaphthalene	19.4	Ambient Values	670	ER-M
2-Methylphenanthrene		Ambient Values		
3-Methylphenanthrene		Ambient Values		
Acenaphthene	26.0	Ambient Values	500	ER-M
Acenaphthylene	88.0	Ambient Values	640	ER-M
Anthracene	88.0	Ambient Values	1,100	ER-M
Benz(a)anthracene	412	Ambient Values	1,600	ER-M
Benzo(a)pyrene	371	Ambient Values	1,600	ER-M
Benzo(e)pyrene	294	Ambient Values		
Benzo(b)fluoranthene	371	Ambient Values		
Benzo(g,h,i)perylene	310	Ambient Values		
Benzo(k)fluoranthene	258	Ambient Values		
Biphenyl	12.9	Ambient Values		
Chrysene	289	Ambient Values	2,800	ER-M
Dibenz(a,h)anthracene	32.7	Ambient Values	260	ER-M
Fluoranthene	514	Ambient Values	5,100	ER-M
Fluorene	25.3	Ambient Values	540	ER-M
Indeno(1,2,3-c,d)pyrene	382	Ambient Values		
Naphthalene	55.8	Ambient Values	2,100	ER-M
Perylene	145	Ambient Values		
Phenanthrene	237	Ambient Values	1,500	ER-M
Pyrene	665	Ambient Values	2,600	ER-M

Source: SFBRWQCB Guidelines 2000.

### 1      **3B.2.18.5.6      Draining of RTM, Spoils, and Dredge Material Disposal (DMD)**

2      RTM, dredge material, and associated decant liquid from RTM/DMD/wetland restoration sites will  
 3      undergo chemical characterization by the contractor(s) prior to reuse or discharge, respectively, to  
 4      determine whether it will meet the site specific National Pollutant Discharge Elimination System  
 5      (NPDES) and associated Regional Water Quality Control Board requirements. The RWQCB  
 6      requirements to be met are dependent upon the location determined in the Material Storage Site  
 7      Determination; this could be SFBRWQCB or CVRWQCB.

### 8      **3B.2.18.5.7      NPDES Requirements**

9      Water Quality Based Effluent Limits (WQBELs) will be determined by the appropriate RWQCB on a  
 10     site-specific basis. Effluent Limits are determined based upon: California Toxics Rule (40 CFR  
 11     Section 131.38); National Toxics Rule; Primary and Secondary MCLs (EPA Region 9 MCLs for  
 12     drinking water standards) and; Basin Plan Site-specific objectives (SFBRWQCB and CVRWQCB).

13     The most stringent criteria will be applied for WQBELs. Monthly average and daily maximum  
 14     effluent limits will be set by the RWQCB in the NPDES. Water quality objectives are achieved  
 15     primarily through adoption of water discharge requirements. If required, treatment systems will be  
 16     developed and implemented to reduce contaminant discharges to ensure compliance with the  
 17     NPDES permit terms and conditions for the RTM/DMD drainage.

### 18     **3B.2.18.5.8      Sediment and Water Quality Standards**

19     RTM and DM in-water disposal, upland disposal, and wetland restoration activities will be subject to  
 20     regulatory standards for surface water from direct discharge and DMD dewatering and drainage  
 21     return flows, and long-term operations-related discharges associated with groundwater leachate,  
 22     and stormwater runoff. Sediment surfaces will be regulated subject to sediment quality objectives  
 23     and policies.

24     Surface Water Quality Criteria/Objectives for CVRWQCB are contained in the *Water Quality Control*  
 25     *Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition* and in the *San Francisco*  
 26     *Bay Basin (Region 2) Water Quality Control Plan* for the SFBRWQB. These Basin Plans designate  
 27     beneficial uses, establish water quality objectives, contain implementation plans and policies for  
 28     protecting waters of the basin, and incorporate by reference, plans and policies adopted by the State  
 29     Water Resources Control Board (State Board).

30     The Delta waterways are listed pursuant to Clean Water Act (CWA) section 303(d) as impaired for  
 31     chlorpyrifos, DDT, diazinon, Group A pesticides, mercury, unknown toxicity and has recently been  
 32     listed for pathogens near the Port of Stockton turning basin. A portion of the Delta is listed for  
 33     electrical conductivity, and low dissolved oxygen causes impairment in the Stockton Deep Water  
 34     Ship Channel from Channel Point to Disappointment Slough.

35     The USEPA adopted the *National Toxics Rule* (NTR) on 5 February 1993 and the *California Toxics*  
 36     *Rule* (CTR) on 18 May 2000. These Rules contain water quality standards applicable to the proposed  
 37     project. The State Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface*  
 38     *Waters (SIP), Enclosed Bays, and Estuaries of California* (known as the State Implementation Plan)  
 39     which contains guidance on implementation of the *National Toxics Rule* and the *California Toxics*  
 40     *Rule*. The Basin Plans contain the "Policy for Application of Water Quality Objectives" that requires  
 41     consideration of published standards of other agencies in implementing narrative water quality

1 objectives. The CTR and NTR standards may be incorporated in waste discharge requirements  
 2 where appropriate to implement the Basin Plans consistent with the Policy for Application of Water  
 3 Quality Objectives.

4 At a minimum, water designated for domestic or municipal supply shall not contain concentrations  
 5 of chemical constituents in excess of the California maximum contaminant levels (MCLs) specified in  
 6 the following provisions of Title 22, California Code of Regulations: Tables 64431-A (Inorganic  
 7 Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section  
 8 64444, and Table 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits)  
 9 of Section 64449. The RWQCB may apply limits more stringent than MCLs to ensure that waters do  
 10 not contain chemical constituents in concentrations that adversely affect beneficial uses.

### 11 **Antidegradation Policy**

12 State Board Resolution No. 68-16 (“Statement of Policy with Respect to Maintaining High Quality  
 13 Waters in California”) requires that the Regional Board, in regulating the discharge of waste, must  
 14 maintain high quality waters of the state until it is demonstrated that any change in quality will be  
 15 consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial  
 16 uses, and will not result in water quality less than that described in the Regional Board’s policies  
 17 (e.g., quality that exceeds water quality objectives).

18 The discharges authorized by the WDR General Order will be consistent with State Board Resolution  
 19 68-16 and 40 CFR 131.12 (the federal antidegradation policy). The WDR General Order will  
 20 establish requirements that will result in best practicable treatment or control of the discharge to  
 21 assure that pollution or nuisance will not occur and that the discharges will not unreasonably affect  
 22 beneficial uses or result in water quality less than prescribed in the Basin Plans. The assimilative  
 23 capacity of the underlying soil should prevent degradation of groundwater from infiltration of  
 24 incidental waste constituents. The receiving water and groundwater limits determined in the WDR  
 25 General Order are intended to ensure that the assimilative capacity will not be exceeded. If the  
 26 discharge is causing such an increase, then the proposed project may be required to cease the  
 27 discharge, implement source control, change the method of disposal, or take other action to prevent  
 28 groundwater or surface water degradation.

### 29 **Sediment Quality Objectives**

30 RTM/DMD and wetland restoration activities also will consider the narrative sediment quality  
 31 objectives of the *Water Quality Control Plan for Enclosed Bays and Estuaries* adopted by the SWRCB  
 32 in April 2011. Implementation procedures for these objectives are under development.

### 33 **Permitting**

34 The following agencies also have jurisdiction over dredging and disposal projects:

- 35 1. California Department of Fish and Game
- 36 2. National Marine Fisheries Service
- 37 3. United States Fish and Wildlife Service
- 38 4. United States Army Corps of Engineers
- 39 5. State Lands Commission

- 1        6. SFBRWQCB/CVRWQCB (Location Dependent)
- 2        7. San Francisco Bay Conservation and Development Commission

3        **Permitting Agencies**

4        Numerous state and federal agencies regulate dredging and dredged material disposal in the Bay  
 5        Area. The primary state and federal agencies involved in permitting such projects are the San  
 6        Francisco Bay and Sacramento-San Joaquin Delta are the BCDC, SLC, SFBRWQCB, CVRWQCB, USACE,  
 7        and USEPA. These agencies established the DMMO to coordinate the regulatory processes for  
 8        dredging and disposal projects. Different laws and regulations govern their roles and  
 9        responsibilities, but often their purposes and goals overlap (Table 3B-5).

10       **Table 3B-5. Basis for Regulatory Authority and Mandates of Primary State and Federal Agencies with**  
 11       **Jurisdiction over Dredging and Dredged Material Disposal Projects in the San Francisco Bay Region**

USACE	USEPA	BCDC	SFBRWQCB/CVRWQCB	SLC
<b>Basis for Regulatory Authority</b>				
CWA MPRSA Rivers and Harbors Act of 1899	CWA MPRSA	McAteer-Retris Act Suisun Marsh Protection Act Coastal Zone Management Act	Porter Cologne Water Quality Control Act CWA	Ownership of State Lands
<b>Mandate Includes</b>				
Regulate placement of dredged or fill materials into waters of the U.S. Regulate transportation of dredged material for the purpose of ocean disposal Protect and maintain navigable capacity of nation’s waters	Maintain integrity of nation’s waters Oversee disposal of materials, including dredged material, into ocean water	Reduce Bay fill Protect and manage coastal zone resources	Protect the beneficial uses of waters of the state	Manage state’s sovereign lands for purposes consistent with the public trust.



USACE	USEPA	BCDC	SFBRWQCB/CVRWQCB	SLC
<b>Regulatory Authority of DMMO Agencies for Dredged Material Disposal Environments</b>				
<b><i>In-Bay</i></b>				
Department of the Army permit pursuant to CWA and Rivers and Harbors Act of 1899	CWA permit oversight	Permit, pursuant to McAtteer-Petris Act (MPA) or Suisun Marsh Preservation Act (SMPA), or federal consistency Determination (CD), pursuant to Coastal Zone Management Act (CZMA), for dredging and disposal	CWA Section 401 Water Quality Certification (WQC) or Waste Discharge Requirements (WDRs) pursuant to Porter-Cologne Water Quality Control Act	Permit or lease if disposal on state lands
<b><i>Wetland (existing) enhancement</i></b>				
Department of Army permit pursuant to CWA	CWA permit oversight	Permit, pursuant to MPA or SMPA, or CD, pursuant to CZMA, for dredging, permit or CD for disposal if site within BCDC jurisdiction	CWA Section 401 WQC or WDRs pursuant to Porter-Cologne Water Quality Control Act	Permit or lease if disposal on state lands
<b><i>Restoration of diked historic baylands</i></b>				
Department of the Army permit pursuant to Rivers and Harbors Act of 1899, and to CWA if disposal site in waters of the US	CWA permit oversight if disposal site in waters of the US	Permit, pursuant to MPA or SMPA, or CD, pursuant to CZMA, for dredging, permit or CD for disposal if site within BCDC jurisdiction	CWA Section 401 WQC or WDRs pursuant to Porter-Cologne Water Quality Control Act	Permit or lease if disposal on state lands
<b><i>Upland disposal (other than diked historic baylands, waters of the US)</i></b>				
Advisory, Department of Army permit pursuant to CWA for return flows to waters of US	Advisory, CWA permit oversight	Advisory	CWA Section 401 WQC or WDRs pursuant to Porter-Cologne Water Quality Control Act	Permit or lease if disposal on state lands
<b><i>Landfill</i></b>				
Advisory	Advisory	Advisory	CWA Section 401 WQC or WDRs pursuant to Porter-Cologne Water Quality Control Act	Permit or lease if disposal on state lands

Source: Long Term Management Strategy 2001.

## 1 DMMO

2 The DMMO does not issue permits; instead, it makes consensus-based recommendations to the  
3 member agencies on the adequacy of permit applications. This includes recommendations on the  
4 completeness of the permit applications, adequacy of sediment sampling and analysis plans, and  
5 suitability of sediments for proposed disposal environments. The member agencies may also  
6 recommend permit conditions to be included in individual member agency permits.

7 In the event a project-related dredging and disposal action does not fall under the jurisdiction of  
8 each of the DMMO member agency, it will still be reviewed by the DMMO, but only the agencies with  
9 regulatory authority participate in approving sediment sampling plans or making recommendations  
10 on sediment suitability. Agencies without regulatory authority will have the opportunity to review  
11 the project proposals in an advisory capacity only.

12 Project are initially reviewed by the DMMO and later move through the permitting processes of the  
13 individual agencies. The process for obtaining approvals has three phases: (1) suitability  
14 determination; (2) permit process; and (3) episode approval, described below. The DMMO is a  
15 comprehensive entry point for the permitting progress; however, applicants and permittees must  
16 obtain separate approval from the appropriate DMMO member agencies.

17 The DMMO member agencies determine suitability of the permit application by making a joint  
18 recommendation to the individual member agencies on whether the sediments to be dredged are  
19 appropriate, in terms of potential for environmental impacts, for the proposed disposal or reuse site.  
20 The recommendation is usually based on the results of sediment testing (LTMS 2001).

21 The project proponents will submit to the DMMO either a sediment Sampling and Analysis Plan  
22 (SAP), or a written request (with supporting information) requesting a "Tier I" exclusion from  
23 testing requirements based on factors such as previous testing history and physical characteristics  
24 of the material proposed for dredging.

25 The CWA Section 404(b)(1) guidelines provide the substantive criteria used by the USEPA, USACE,  
26 and SFBRWQCB in evaluating proposed discharges to waters of the U.S and fundamental to the CWA  
27 Section 404(b)(1) guidelines is the guideline that dredged or fill material should not be discharged  
28 into the aquatic ecosystem unless it can be demonstrated that such a discharge will not have an  
29 unacceptable adverse impact either individually or cumulatively on the ecosystem(s) of concern.

30 The DMMO will review the SAP to determine consistency with state and federal guidance on testing  
31 protocols and to determine whether the proposed testing program would provide the agencies with  
32 sufficient information to make a suitability determination of the material for disposal at a specific  
33 site. Upon review of a SAP, the DMMO will either approve the SAP, approve the SAP with conditions,  
34 or not approve the SAP (LTMS 2001).

35 Upon approval of the SAP, the project proponents will proceed with testing the sediments proposed  
36 for dredging.

37 The report of these testing results will be submitted to the DMMO for review, at which time the  
38 DMMO may recommend one of the following to their respective agencies:

- 39 ● **Sediments are suitable for the proposed disposal environment**, the applicant may proceed  
40 to the next phase (permit process) of authorization.

- 1     ● **Require further information, such as additional testing of sediments**, to make a  
2       recommendation, the applicant may provide the requested information or choose to alter the  
3       project in such a way that the agencies can make a determination without additional  
4       information.<sup>4</sup>
- 5     ● **Some or all of the sediments are not suitable for the proposed disposal environment**, the  
6       applicant may elect to not undertake or modify the project, such as by proposing another  
7       disposal location, and obtain a suitability determination for the modified project (often the  
8       suitability determination process can proceed more quickly for a modified project because of  
9       the availability of information from the original project proposal). (LTMS 2001).

10    The project proponents will conduct confirmation sampling of incoming dredged sediment to  
11    demonstrate that contaminant concentrations do not exceed the applicable numeric acceptance  
12    criteria in the Waste Discharge Permit. Surface grab samples will be collected from each sediment  
13    placement cell as it is being filled. The number of samples collected will be consistent with the  
14    volume-based frequency employed during the pre-dredge sediment testing program described in  
15    the Waste Discharge Permit. Potential minimum sediment sampling guidelines are presented in  
16    Table 3B-6.

17    **Table 3B-6. Minimum Sediment Sampling Guidelines**

Dredge Volume (cubic yards)	Total Number of Samples	Number of Samples per Composite	Total Number of Tests
5,000-20,000	4	4	1
20,000-100,000	8	4	2
100,000-200,000	12	4	3
200,000-300,000	16	4	4
300,000-400,000	20	4	5
400,000-500,000	24	4	6

Source: SFBRWCB Screening and Testing.

## 19    **Permits Required for Dredging and Material Disposal**

### 20    ***National Pollutant Discharge Elimination System***

21    Any project proposing to discharge pollutants into surface water must file a complete National  
22    Pollutant Discharge Elimination System (NPDES) permit application form with the appropriate  
23    RWQCB. The RWQCB requirements to be met are dependent upon the location determined in the  
24    Material Storage Site Determination.

### 25    ***Water Quality Certification under Section 401 of the CWA***

26    Under federal CWA Section 401 every applicant for a federal permit or license for any activity which  
27    may result in a discharge to a water body must obtain State Water Quality Certification that the  
28    proposed activity will comply with state water quality standards. Most Certifications are issued in  
29    connection with USACE Section 404 CWA permits for dredge and fill discharges.

1       **Section 404 CWA**

2       Section 404 of the Clean Water Act (CWA) establishes a program to regulate the discharge of  
3       dredged or fill material into waters of the United States, including wetlands. The proposed project  
4       will require a Section 404 permit before dredged or fill material may be discharged into waters of  
5       the United States, unless the activity is exempt from Section 404 regulation (e.g. certain farming and  
6       forestry activities).

7       The purpose of the program is to ensure that no discharge of dredged or fill material may be  
8       permitted if: (1) a practicable alternative exists that is less damaging to the aquatic environment or  
9       (2) the nation’s waters would be significantly degraded. During the permit application process, the  
10      project proponents will be required to demonstrate that that steps were taken to avoid impacts to  
11      wetlands, streams and other aquatic resources; that potential impacts were minimized; and that  
12      compensation will be provided for all remaining unavoidable impacts (USEPA 2015).

13      An individual permit will be required for any significant impacts as a result of the proposed project.  
14      Individual permits are reviewed by the USACE.

15      **Section 1602 Streambed Alteration Agreement**

16      A CDFW Section 1602 Streambed Alteration Agreement will be required for disposal of RTM, spoils,  
17      and Dredged Material. This permit governs proposed project activities that will modify the physical  
18      characteristics of the stream and activities that may affect fish and wildlife resource that use the  
19      stream and surrounding habitat. The proposed project will require a Master Agreement; this is an  
20      agreement for a duration longer than 5 years that is similar to a programmatic agreement.

21      **Potential State Lands Permit or Lease**

22      A Permit or Lease may be required for dredging on State land from the California State Lands  
23      Commission. For work in harbors and waterways, dredging permits are issued by the Commission.

24      **Suisun Marsh Preservation Act Permit**

25      The BCDC issues marsh development permits for any activity that qualifies as a marsh development  
26      within the primary management area of the Suisun Marsh. A project permit will be required for any  
27      new or maintenance dredging or for the disposal of dredged material within the BCDC’s jurisdiction.

28      **Section 10 Permit**

29      The proposed project will require a U.S. Army Corps of Engineers Section 10 permit (Rivers &  
30      Harbors Act) for dredging operations within waterways of the US and may require a Clean Water Act  
31      (CWA) Section 404 permit for the discharge of the “effluent” to surface waters. Each project requires  
32      a NPDES permit as well as a CWA Section 401 Water Quality Certification from the Regional Board.  
33      Such Certification will be issued; in conjunction with each approved “Notice of Applicability”. The  
34      federal permits must be obtained prior to discharge.

35      **Waste Discharge Requirements**

36      Projects proposing to use wetland foundation material are expected to require Waste Discharge  
37      Permits from the SFBRWQCB and CVRWQCB to ensure that there will be minimal risk of adverse  
38      impacts. The appropriate RWQCB will review the proposed project, then may grant or deny  
39      certification. Additionally, the RWQCB may choose to act under the authority of the state Porter

1 Cologne Water Quality Control Act. The RWCB would do this by issuing waste discharge  
2 requirements for the project in combination with the water quality certification.

3 Water quality certifications and waste discharge requirements often contain conditions to protect  
4 water resources. The proposed project will meet these conditions during the term of the permit.  
5 The San Francisco Bay Conservation and Development Commission (BCDC) also regulates dredging  
6 and disposal under the provisions of the McAteer-Petris Act. The RWQCB will implement these  
7 measures through its issuance of Waste Discharge Requirements and Water Quality Certifications  
8 under Section 401 of the Clean Water Act or other orders. In addition, the Water Board may require  
9 pre- and post-dredge surveys to determine disposal volumes and compliance with permit  
10 conditions.

11 Projects eligible for enrollment under the WDR General Order may also be subject to regulation by  
12 the California Department of Fish and Game, the National Marine Fisheries Service, the United States  
13 Fish and Wildlife Service, and the State Lands Commission.

#### 14 **Reusable Tunnel Material Testing Report Results**

15 Testing of RTM was conducted on samples collected during geotechnical investigations from 2009  
16 through 2012 (URS 2013). Environmental tests were conducted on identified baseline and  
17 conditioned soil samples. The results of the geotechnical, environmental, and planting suitability  
18 tests, RTM appears to be suitable for the above proposed beneficial uses following storage and  
19 drying. Consultation with the governing regulatory agency would be required to obtain the  
20 necessary approvals and permits. This study consisted of a limited number of samples and tests, and  
21 does not constitute a complete evaluation of RTM. RTM and associated decant liquid will undergo  
22 chemical characterization by the contractor(s) prior to reuse or discharge, respectively. The results  
23 of these tests can be found in the Reusable Tunnel Material Testing Report (DWR 2014).

#### 24 **Mitigation**

25 Mitigation measures for placement of RTM and Dredged Material is captured in the Mitigation  
26 Monitoring and Reporting plan.

### 27 **3B.2.19 Provide Notification of Maintenance Activities in** 28 **Waterways**

29 Before maintenance activities begin in waterways, project proponents will ensure the posting of  
30 information regarding the maintenance of any in-water project facilities (e.g., intakes for the water  
31 conveyance facility) at nearby affected Delta marinas and public launch ramps. This information will  
32 include maintenance site location(s), maintenance schedules, speed limits, and identification of no-  
33 wake zone and/or detours, where applicable. Information on detours would include site-specific  
34 details regarding any temporary partial channel closures, including contacting the U.S. Coast Guard,  
35 boating organizations, marina operators, city or county parks departments, and DPR, where  
36 applicable. This commitment is related to AMM36, Notification of Activities in Waterways, described  
37 in BDCP Appendix 3.C.

38 *Explanation of effectiveness:* Implementation of this environmental commitment would minimize the  
39 following: reduction in water-based recreation opportunities; changes in community character;  
40 effects on recreational economics as a result of maintenance of the water conveyance facilities; and  
41 changes in community character as a result of implementing CM2-CM21. Because the impact of

1 reducing water-based recreation opportunities would not be long-term, it would not be considered  
2 significant even in the absence of this environmental commitment.

### 3 **3B.2.20 Selenium Management**

4 The activities described in this environmental commitment require a series of actions to identify and  
5 evaluate potentially feasible actions to minimize conditions that promote bioaccumulation of  
6 selenium in restored areas. This commitment is related to AMM27, *Selenium Management*, described  
7 in BDCP Appendix 3.C.

8 This environmental commitment would include project proponents performing the following  
9 actions.

- 10 ● Before ground-breaking activities associated with site-specific restoration occurs, project  
11 proponents will retain a qualified water quality specialist, wildlife, or fisheries biologist with  
12 expertise in selenium management to develop a comprehensive Selenium Monitoring and  
13 Management Plan (SMMP). The SMMP will evaluate site-specific restoration conditions and  
14 include design elements that minimize conditions that could be conducive to increases of  
15 bioavailable selenium in restored areas. As part of the SMMP, the qualified specialist will assess  
16 whether, in light of site-specific conditions, the proposed restoration project could cause  
17 potentially significant increases in bioavailable selenium due to increased residence time for  
18 water-borne selenium within inundated portions of the restoration area. If any such potentially  
19 significant effects are identified, the SMMP shall include a Mitigation Plan that includes  
20 components that will reduce levels of bioavailable selenium such that the affected water body  
21 (or portion of a water body) would not be expected to cause measurably higher body burdens in  
22 aquatic organisms, thus reducing those effects to less-than-significant levels. The design  
23 elements would be integrated into site-specific restoration designs based on site conditions,  
24 community type (tidal marsh, nontidal marsh, floodplain), and potential organic forms of  
25 selenium in water. Specific approaches that are intended to avoid or minimize potential  
26 increases in selenium bioavailability at future restoration sites could include the following:
  - 27 ○ Minimizing bioavailable selenium concentrations associated with anoxic or near-anoxic  
28 conditions by reducing the amount of organic material at a restoration site (however, where  
29 this measure could limit the benefit of restoration areas by limiting the amount of carbon  
30 they supply to the Delta as a whole, it would run directly counter to the goals and objectives  
31 of the project, so it should not be implemented in such a way that it reduces the benefits to  
32 the Delta ecosystem provided by restoration areas), and
  - 33 ○ Managing vegetation, water levels and residence time to reduce bioavailable selenium  
34 concentrations and bioaccumulation, as feasible.
- 35 ● Define adaptive management strategies that can be implemented to monitor and minimize, as  
36 feasible, actual post-restoration bioavailable selenium concentrations in the water, and if  
37 necessary, bioaccumulation of selenium. The adaptive management strategies could be applied  
38 where site conditions indicate a high probability of selenium bioaccumulation and effects on  
39 covered species.
- 40 ● For each restoration project under *CM4 Tidal Habitat Restoration*, a project-specific SMMP  
41 would be developed and would incorporate all of the management measures discussed below or  
42 include an explanation of why a particular measure cannot be incorporated. The plan would  
43 include the following components:

- 1           ○ A brief review of predicted changes in water residence time at assessment locations in the
- 2           Delta, expected changes in bioavailable selenium concentrations, and possible changes in
- 3           bioaccumulation by fish and aquatic invertebrates.
- 4           ○ A determination if sampling for characterization of selenium concentrations in biota and/or
- 5           post-restoration monitoring is warranted.
- 6           ○ A plan for conducting the sampling for selenium, if characterization sampling is
- 7           recommended. To cover any sampling or monitoring, the project-specific SMMP would also
- 8           include a quality assurance/quality control (QA/QC) program specifying sampling
- 9           procedures, analytical methods, data review requirements, and data management and
- 10          reporting procedures.
- 11          ○ Statistical analyses of selenium water concentrations and fish tissue levels collected over
- 12          time to evaluate trends in these parameters.

13          This environmental commitment provides specific tidal habitat restoration design elements to  
 14          reduce the potential for bioaccumulation of selenium and its bioavailability in tidal habitats.  
 15          Consequently, this commitment would be implemented as part of the tidal habitat restoration  
 16          design schedule.

17          *Explanation of effectiveness:* While increases in bioavailable selenium in the habitat restoration areas  
 18          are uncertain, this environmental commitment, along with other proposed avoidance and  
 19          minimization measures, would require evaluating risks of selenium exposure at a project level for  
 20          each restoration area, minimizing to the extent practicable potential risk of additional  
 21          bioaccumulation, and monitoring selenium levels in fish and/or wildlife to establish whether, or to  
 22          what extent, additional bioaccumulation is occurring. Although it is unlikely that substantial  
 23          increases in selenium in fish tissues or bird eggs would occur such that effects on aquatic life  
 24          beneficial uses would be anticipated, in the absence of this environmental commitment, increases in  
 25          selenium could result in significant impacts. This environmental commitment reduces those impacts  
 26          to a less than significant level.

27          Selenium toxicity in avian species can result from the mobilization of naturally high concentrations  
 28          of selenium in soils (Ohlendorf and Heinz 2009) and covered activities have the potential to  
 29          exacerbate bioaccumulation of selenium in avian species, such as California black rail, California  
 30          clapper rail, California least tern, Greater and Lesser sandhill crane, least bittern and white-faced  
 31          biis. Marsh (tidal and nontidal) and floodplain restoration have the potential to mobilize selenium,  
 32          and therefore increase avian exposure from ingestion of prey items with elevated selenium levels.  
 33          Thus, project-related restoration activities that create newly inundated areas could increase  
 34          bioavailability of selenium. Changes in selenium concentrations were analyzed in Chapter 8, *Water*  
 35          *Quality*, and it was determined that, relative to Existing Conditions and the No Action Alternative,  
 36          CM1 would not result in substantial, long-term increases in selenium concentrations in water in the  
 37          Delta under any alternative. However, it is difficult to determine whether the effects of potential  
 38          increases in selenium bioavailability associated with restoration-related conservation measures  
 39          (CM4–CM5) would lead to adverse effects on California black rail.

40          Because of the uncertainty that exists at this programmatic level of review, there could be a  
 41          substantial effect on avian species and habitat from increases in selenium associated with  
 42          restoration activities. This effect would be addressed through the implementation of this  
 43          environmental commitment, along with *AMM27, Selenium Management* (BDCP Appendix 3.C,  
 44          *Avoidance and Minimization Measures*) which would provide specific tidal habitat restoration design

1 elements to reduce the potential for bioaccumulation of selenium and its bioavailability in tidal  
 2 habitats. Furthermore, the effectiveness of selenium management to reduce selenium  
 3 concentrations and/or bioaccumulation would be evaluated separately for each restoration effort as  
 4 part of design and implementation.

5 Longer water residence times in restoration areas could also make selenium more bioavailable to  
 6 Sacramento splittail but Delta-relevant information is limited to assess this risk. It is anticipated that  
 7 any potential effects of selenium on Sacramento splittail would be addressed through  
 8 implementation of this environmental commitment and AMM27.

9 In the absence of this environmental commitment, and other CMs and AMMs, increases in selenium  
 10 could lead to significant impacts.

### 11 **3B.2.21 CEQA and NEPA Compliance for BDCP-related** 12 **Conservation Projects**

13 Prior to implementing project -related habitat restoration conservation projects as described  
 14 generally in the Restoration Opportunity Areas (ROAs<sup>14</sup>), for all alternatives except 2A, 4A, and 5D,  
 15 project proponents commit to undertaking additional analysis pursuant to the California  
 16 Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). Alternatives 2A,  
 17 4A, and 5D are project-level analysis and therefore, are anticipated to go forward without additional  
 18 formal environmental review, In determining the extent to which they may rely on programmatic  
 19 analysis in the Draft EIR/EIS in assessing project-specific impacts on terrestrial biological resources  
 20 and the extent to which additional new site-specific information regarding potential impacts on such  
 21 resources is needed, the project proponents will compare the areas that will be directly and  
 22 indirectly affected by proposed conservation projects with the theoretical footprints for  
 23 conservation projects assumed in the programmatic analyses for effects on terrestrial biological  
 24 resources found in the Draft EIR/EIS. Such a comparison shall identify the extent, if any, to which the  
 25 impacts of proposed conservation projects may extend onto lands that were not considered in the  
 26 Draft EIR/EIS because they were outside these theoretical impact areas. The proponents for project  
 27 -related conservation projects further commit to considering any potential impacts on any natural  
 28 communities, special-status wildlife and plant species, and common species that may occur on the  
 29 lands affected by such conservation projects but that were not discussed in the Draft EIR/EIS. A  
 30 checklist intended to guide the preparation of future CEQA and NEPA compliance documents for  
 31 project -related projects other than Conservation Measure 1 is described in detail in Appendix 31A,  
 32 *BDCP Later CM Activity Environmental Checklist*.

### 33 **3B.2.22 Comply with Caltrans' Division of Aeronautics on** 34 **Location of Conveyance Facilities Within Two Miles** 35 **of Airport Boundary**

36 If the proposed sites of project conveyance facilities are within two miles, measured by air line, of  
 37 that point on an airport runway, or runway proposed by an airport master plan, which is nearest the  
 38 site, DWR shall, before acquiring title to property for construction of the facilities or for an addition  
 39 to a present site, notify the Caltrans' Division of Aeronautics prior to initiating construction of the

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<sup>14</sup> For additional information on the ROAs please see Chapter 3 of the BDCP and Appendix 3G of Chapter 3 of the Draft EIR/EIS.



1 project conveyance facilities, in writing, of the proposed acquisition. The department shall  
 2 investigate the proposed site and, within 30 working days after receipt of the notice, shall submit to  
 3 DWR a written report (OE/AAA) of the investigation and its recommendations concerning  
 4 acquisition of the site. DWR would comply with Caltrans' recommendations based on its  
 5 investigations and compliance with the recommendations of the Obstruction Evaluation/Airport  
 6 Airspace Analysis (OE/AAA).

## 7 **3B.3 Other Commitments**

8 The following commitments are identified separately from environmental commitments for the  
 9 purpose of addressing other non-environmental consequences of implementing the project. As with  
 10 environmental commitments, these other commitments are incorporated into the project and would  
 11 be implemented in the same or similar manner as proposed mitigation measures. These additional  
 12 commitments are actions that the project proponents commit to implementing in some manner to  
 13 reduce or partially reduce potential effects related to the environmental impacts disclosed in this  
 14 EIR/EIS and caused by implementation of the project, even if the underlying environmental impact  
 15 is not fully reduced or remains unchanged.

### 16 **3B.3.1 Agricultural Water Purveyors in Developing Methods** 17 **to Reduce Potential Water Quality Effects**

18 The project proponents commit to assisting in-Delta municipal, industrial, and agricultural water  
 19 purveyors that will be subject to significant unavoidable water quality effects from operation of  
 20 Conservation Measure 1 (CM1) and effects on dissolved organic carbon (DOC) due to  
 21 implementation of Conservation Measures 2-22 (CM2-21). This commitment shall apply specifically  
 22 to those purveyors affected by significant unavoidable increases in bromide, electrical conductivity,  
 23 chloride, and DOC concentrations such that the purveyors will bear increased financial costs in  
 24 order to continue to treat or otherwise supply water to acceptable standards. The assistance  
 25 provided by the project proponents is intended to fully offset any increased treatment or delivery  
 26 costs attributable to CM1, or for DOC attributable to CM2-21 and may take the form of financial  
 27 contributions, technical contributions, or partnerships. Assistance for construction and/or  
 28 operation of facilities or the procurement of replacement sources shall be limited to reasonable,  
 29 cost-effective solutions developed with input from the project proponents. It is anticipated that such  
 30 solutions would be devised by the affected purveyors in consultation with project proponents after  
 31 thorough investigation and the completion of environmental review. The methods used for this  
 32 investigation and monitoring, along with the conclusions regarding the nature and extent of those  
 33 effects on water treatment or delivery, would be subject to agreement between the project  
 34 proponents and the affected water purveyors.

35 Assistance shall not extend to investments needed solely or substantially to address adverse water  
 36 quality effects due to any of the following: sea level rise and/or changed precipitation patterns  
 37 attributable to climate change; the regulatory actions of other agencies or programs within or  
 38 upstream of the Delta that may affect water quality; or effects not otherwise associated with  
 39 operations of CM1. This commitment would supplement, rather than supersede, the commitments  
 40 set forth in Mitigation Measures WQ-5, WQ-7, WQ-11, and WQ-18 (presented in EIR/EIS Chapter 8,  
 41 *Water Quality*). This commitment will arise only upon the approval of the project. Potential  
 42 alternative solutions for further consideration are described below.

### 3B.3.1.1 Chloride and Electrical Conductivity

The following are concepts that affected purveyors could consider to address any significant unavoidable effects of increased chloride concentrations and electrical conductivity:

**Provide Funding Assistance to Acquire Alternative in-Basin Water Supplies, Storage, Conjunctive Uses, or Develop Water Transfers (municipal uses).** Additional water supply improvement projects or agreements could be developed to facilitate improved blending water quality to reduce chloride. This concept could be applied to potential Los Vaqueros Reservoir effects based on investigations recommend in Mitigation Measure WQ-7 (Chapter 8, *Water Quality*).

**Develop Water Supply Connections to SWP Facilities or BDCP Intertie (municipal uses).** Water supply supplement/replacement actions or agreements could be developed to provide an alternative water supply during poor Delta water quality periods.

**Develop demand management and/or conservation/recycling projects to extend available water supplies (municipal uses).** Facilitation and development of additional demand management, water conservation, and wastewater recycling projects would help reduce use of Delta diversion facilities when water quality is poor allowing for more efficient use of other existing water supplies.

**Assist with alternative crop or water management efficiency projects/facilities (agricultural uses).** Assistance could be provided to develop additional irrigation efficiency projects or facilities to reduce in-Delta diversions and facilitate improved Delta drainage quality.

**Provide alternative intake locations (agricultural uses).** Assistance could be provided to identify and evaluate feasible projects to provide alternative agricultural intakes that may improve diverted water quality and/or reduce adverse effects to Delta water quality.

### 3B.3.1.2 Bromide

The following are concepts that could be considered to address any significant unavoidable effects of increased bromide concentrations:

**Provide Funding Assistance to Acquire Alternative in-Basin Water Supplies, Groundwater Banking, or Conjunctive Uses.** Additional water supply improvement projects or agreements could be developed to facilitate reduced use of the North Bay Aqueduct (NBA) and improved water supply blending quality, to reduce potential DBP formation potential.

**Develop DOC source control projects for Barker Slough/Cache Slough watersheds.** Agricultural and/or other waste control projects could be developed to reduce effects of watershed runoff on DOC levels at the NBA intake pump station. DOC reduction would reduce DBP formation potential.

**Develop demand management and/or conservation/recycling projects to extend available water supplies.** Facilitation and development of additional demand management, water conservation, and wastewater recycling projects would help reduce use of NBA at critical dry periods when Barker Slough/Delta water quality is poor, allowing more efficient use of available water supplies.

**Expand existing NBA intake capacity.** The existing NBA pipeline conveyance capacity could be expanded to approximately 250 cfs (from existing 145 cfs) to facilitate increased diversion efficiency

1 and quantity during favorable water quality periods. NBA expansion could be complementary to  
2 other conjunctive use or storage options.

3 **Implement the North Bay Aqueduct Alternative Intake Project.** The North Bay Aqueduct  
4 Alternative Intake Project could be implemented to establish an alternative surface water intake on  
5 the Sacramento River upstream of the Sacramento Regional Wastewater Treatment Plant discharge.

### 6 **3B.3.1.3 Dissolved Organic Carbon**

7 The following are concepts that could be considered to address any significant unavoidable effects of  
8 increased DOC concentrations:

9 **Provide funding to implement treatment for DOC and/or DBPs in water treatment facilities.**  
10 This could include pre-treatment of DOC or modification of disinfection facilities to minimize DBP  
11 formation, or post-disinfection treatment for DBPs or modifications to distribution systems to limit  
12 DBP formation.

13 **Develop DOC source control projects.** Agricultural and/or other waste control projects could be  
14 developed to reduce effects of watershed runoff on DOC levels. DOC reduction would reduce DBP  
15 formation potential.

### 16 **3B.3.2 Enhance Recreation Access in the Vicinity of the** 17 **Proposed Intakes**

18 Prior to construction activities in the area of the intakes, DWR shall enhance the visual character of  
19 the area by creating new wildlife viewing sites and enhancing interest in the construction site by  
20 constructing viewing areas and displaying information about the project, which may attract people  
21 who may use the recreation facilities to the construction site as part of the visit.

22 To further compensate for the loss of access as a result of constructing the river intakes, DWR shall  
23 work with the California Department of Parks and Recreation (DPR) to help insure the elements of  
24 CM1 would not conflict with the elements proposed in DPR's Recreation Proposal for the  
25 Sacramento-San Joaquin Delta and Suisun Marsh (California Department of Parks and Recreation  
26 2011) that would enhance bicycle and foot access to the Delta. This would include the helping to  
27 fund or construct elements of the American Discovery Trail and the potential conversion of the  
28 abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut Grove.  
29 DWR will ensure that the constructed elements of CM1 would not result in physical barriers to  
30 implementing the Delta recreation access elements outlined in the DPR proposal. DWR will also  
31 work with DPR to determine if some of the constructed elements of CM1 could incorporate elements  
32 of the DPR's proposal.

### 33 **3B.3.3 Fund Efforts to Carry out the Recreation** 34 **Recommendations Adopted in the Delta Plan**

35 Project proponents will contribute funds for the construction of new recreation opportunities as  
36 well as for the protection of existing recreation opportunities as outlined in Recommendation DP  
37 R11 of the Delta Plan. Project proponents will also assist in funding the expansion of state recreation  
38 areas in the Delta as described in Recommendation DP R13 of the Delta Plan. Project proponents

1 would consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as  
2 described in Recommendation DP R14 of the Delta Plan.

3 Potential areas for use of funds include, but are not limited to:; completion of Delta Meadows-Locke  
4 Boarding House General Plan; draft reconnaissance planning or General Plan development for  
5 potential new State Parks at Barker Slough, Elkhorn Basin, and/or the Wright-Elmwood Tract, or in  
6 the south Delta; and enhancement of recreational opportunities in and around the Yolo Bypass  
7 Wildlife Area.

8 The funds will be transferred prior to, or concurrent with, commencement of construction and  
9 implementation of the project conservation measures. This mitigation serves to compensate for the  
10 loss of recreational opportunities within the project area by providing a recreational opportunity  
11 downstream/upstream in the same area for the same regional recreational users. Funding estimates  
12 and sources for this commitment are discussed in Chapter 8, *Implementation Costs and Funding*  
13 *Sources* of the BDCP.

14 Because the total impacts within the project area are substantially reduced for Alternatives 4A, 2D,  
15 and 5A, this commitment only applies to Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8  
16 and 9.

### 17 **3B.3.4 Fund the California Department of Boating and** 18 **Waterways' Programs for Aquatic Weed Control**

19 Invasive aquatic vegetation can limit access to boats and reduce swimming areas. Project  
20 proponents will contribute funds to further the DBW's aquatic weed control programs in the Delta.  
21 Enhanced ability to control invasive vegetation would lead to increased recreation opportunities  
22 which would compensate for the loss of recreational opportunities within the project area by  
23 providing a recreational opportunity downstream/upstream in the same area for the same regional  
24 recreational users. The funds will be transferred prior to, or concurrent with, commencement of  
25 construction of the project.

26 This commitment would supplement CM13 (*Invasive Aquatic Vegetation Control*) which also  
27 provides for the control of *egeria*, water hyacinth, and other IAV throughout the Plan Area. The  
28 project Implementation Office would partner with existing programs operating in the Delta  
29 (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of  
30 California Cooperative Extension Weed Research and Information Center, California Department of  
31 Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the  
32 California Invasive Plant Council) to perform risk assessment and subsequent prioritization of  
33 treatment areas to strategically and effectively reduce expansion of the multiple species of IAV in the  
34 Delta. This risk assessment would dictate where initial control efforts would occur to maximize the  
35 effectiveness of the conservation measure. The proposed project's contribution to DBW's aquatic  
36 weed control would include enhancement funding for those areas with project impacts that are  
37 located outside DBW's risk assessment area.

### 38 **3B.3.5 Provide Construction Site Security**

39 To ensure adequate construction site security, the project proponents will arrange to provide for  
40 24-hour onsite security personnel. Security personnel will monitor and patrol construction sites,  
41 including staging and equipment storage areas. Security personnel will monitor construction sites

1 for potential criminal activities and nuisances at construction sites. Private patrol security operators  
2 hired to provide site security will have the appropriate licenses from the California Bureau of  
3 Security and Investigative Services. Individual security personnel will have a minimum security  
4 guard registration license that meets the California Bureau of Security and Investigative Services  
5 requirements for training and continuation training as required for that license. All security  
6 personnel will also receive environmental training similar to that of onsite construction workers so  
7 that they understand the environmental conditions and issues associated with the various areas for  
8 which they are responsible at a given time. This commitment is related to AMM34, Construction Site  
9 Security, described in BDCP Appendix 3.C.

10 Security operations and field personnel will be given the emergency contact phone numbers of  
11 environmental response personnel for rapid response to environmental issues resulting from  
12 vandalism or incidents that occur when construction personnel are not onsite. Security operations  
13 will also maintain a contact list of backup support from city police, county sheriffs, California  
14 Highway Patrol, water patrols (such as the Contra Costa County Marine Patrol), helicopter response,  
15 and emergency response (including fire departments, ambulances/emergency medical  
16 technicians]). The appropriate local and regional contact list will be made available to security  
17 personal by project proponents. When on patrol, security personnel will be required to have the  
18 ability to contact backup or response by having cell phones or two way radios.

19 *Explanation of effectiveness:* Given the scale and duration of construction required for the water  
20 conveyance facilities and other conservation measures requiring construction, there could be an  
21 increased demand on law enforcement due to theft and vandalism in major construction sites after  
22 work hours. By having 24-hour onsite security at these sites, this demand would be reduced or  
23 avoided. An increase in public service demands due to implementation of the project would be a  
24 significant impact. However, because potential theft and vandalism of equipment and property  
25 would not be the only project-related effects that could result in this potential increase in demand  
26 for public services, other environmental commitments related to reducing the potential for fire  
27 hazards, hazardous spills, and other hazards would be implemented in order to reduce this impact  
28 to a less-than-significant level.

## 29 **3B.4 Avoidance and Minimization Measures**

30 Avoidance and minimization measures have been incorporated into the analysis throughout this  
31 Draft EIR/EIS as a means of avoiding or reducing impacts of the proposed project. Those listed  
32 below have been identified as avoiding or reducing effects to less than significant. See Appendix 3.C,  
33 *Avoidance and Minimization Measures*, of the Draft BDCP for a full list and text of AMMs.

1 **Table 3B-7. Summary of Avoidance and Minimization Measures Used As Mitigation**

Number	Title	Summary
<b>Benefit All Natural Communities and Covered Species</b>		
AMM1	Worker Awareness Training	Includes procedures and training requirements to educate construction personnel on the types of sensitive resources in the project area, the applicable environmental rules and regulations, and the measures required to avoid and minimize effects on these resources.
AMM2	Construction Best Management Practices and Monitoring	Standard practices and measures that will be implemented prior, during, and after construction to avoid or minimize effects of construction activities on sensitive resources (e.g., species, habitat), and monitoring protocols for verifying the protection provided by the implemented measures.
<b>Primarily Benefit Covered Fishes</b>		
AMM3	Stormwater Pollution Prevention Plan	Includes measures that will be implemented to minimize pollutants in stormwater discharges during and after construction related to covered activities, and that will be incorporated into a stormwater pollution prevention plan to prevent water quality degradation related to pollutant delivery from project area runoff to receiving waters.
AMM4	Erosion and Sediment Control Plan	Includes measures that will be implemented for ground-disturbing activities to control short-term and long-term erosion and sedimentation effects and to restore soils and vegetation in areas affected by construction activities, and that will be incorporated into plans developed and implemented as part of the National Pollutant Discharge Elimination System permitting process for covered activities.
AMM5	Spill Prevention, Containment, and Countermeasure Plan	Includes measures to prevent and respond to spills of hazardous material that could affect navigable waters, including actions used to prevent spills, as well as specifying actions that will be taken should any spills occur, and emergency notification procedures.
AMM6	Disposal and Reuse of Spoils, Reusable Tunnel Material, and Dredged Material	Includes measures for handling, storage, beneficial reuse, and disposal of excavation or dredge spoils and reusable tunnel material, including procedures for the chemical characterization of this material or the decant water to comply with permit requirements, and reducing potential effects on aquatic habitat, as well as specific measures to avoid and minimize effects on species in the areas where reusable tunnel material would be used or disposed.
AMM7	Barge Operations Plan	Includes measures to avoid or minimize effects on aquatic species and habitat related to barge operations, by establishing specific protocols for the operation of all project-related vessels at the construction and/or barge landing sites. Also includes monitoring protocols to verify compliance with the plan and procedures for contingency plans.

Number	Title	Summary
<b>Primarily Benefit Covered Plants, Wildlife, or Natural Communities</b>		
AMM10	Restoration of Temporarily Affected Natural Communities	Restore and monitor natural communities in the Plan Area that are temporarily affected by covered activities. Measures will be incorporated into restoration and monitoring plans and will include methods for stockpiling and storing topsoil, restoring soil conditions, and revegetating disturbed areas; schedules for monitoring and maintenance; strategies for adaptive management; reporting requirements; and success criteria.
AMM12	Vernal Pool Crustaceans	Includes provisions to require project design to minimize indirect effects on modeled habitat, avoid effects on core recovery areas, minimize ground-disturbing activities or alterations to hydrology, conduct protocol-level surveys, and redesign projects to ensure that no suitable habitat within these areas.
AMM13	California Tiger Salamander	During the project planning phase, identify suitable habitat within 1.3 miles of the project footprint, ash survey aquatic habitats in potential work areas for California tiger salamander. If California tiger salamander larvae or eggs are found, implement prescribed mitigation.
AMM14	California Red-Legged Frog	During the project planning phase, identify suitable habitat within 1 mile of the project footprint, conduct a preconstruction survey, implement protective measures for areas where species presence is known or assumed, and establish appropriate buffer distances. If aquatic habitat cannot be avoided, implement prescribed surveys and mitigation.
AMM15	Valley Elderberry Longhorn Beetle	During the project planning phase, conduct surveys for elderberry shrubs within 100 feet of covered activities involving ground disturbance, and design project to avoid effects within 100 feet of shrubs, if feasible. Implement additional protective measures, as stipulated in AMM2. Elderberry shrubs identified within project footprints that cannot be avoided will be transplanted to previously approved conservation areas in the Plan Area.
AMM18	Swainson's Hawk	Conduct preconstruction surveys of potentially occupied breeding habitat in and within 0.25 mile of the project footprint to locate active nest sites.
AMM19	California Clapper Rail	Identify suitable habitat in and within 500 feet of the project footprint. Perform surveys and implement prescribed protective measures in areas where species is present or assumed to be present.
AMM20	Greater Sandhill Crane	Conduct preconstruction surveys to determine winter roost occupancy within 0.75 mile of the construction area boundary and determine related areas of foraging and roosting habitat. Implement protective measures in occupied areas.
AMM21	Tricolored Blackbird	Conduct preconstruction surveys in breeding habitat within 1,300 feet of the project footprint, if the project is to occur during the breeding season. Avoid any construction activity within 250 feet of an active tricolored blackbird nesting colony, and minimize such activity within 1,300 feet.
AMM22	Suisun Song Sparrow, Yellow-Breasted Chat, Least Bell's Vireo, Western Yellow-Billed Cuckoo	Conduct preconstruction surveys of potential breeding habitat in and within 500 feet of project activities. It may be necessary to conduct the breeding bird surveys during the preceding year depending on when construction is scheduled to start. Implement protective measures in occupied areas.

Number	Title	Summary
AMM23	Western Burrowing Owl	Perform surveys where burrowing owl habitat (or sign) is encountered within 150 meters of a proposed construction area. If burrowing owls or suitable burrowing owl burrows are identified during the habitat survey, and if the project does not fully avoid direct and indirect impacts on the suitable habitat, perform preconstruction surveys and implement certain minimization measures.
AMM24	San Joaquin Kit Fox	Conduct habitat assessment in and within 250 feet of project footprint. If suitable habitat is present, conduct a preconstruction survey and implement U.S. Fish and Wildlife Service guidelines. Implement protective measures in occupied areas.
AMM25	Riparian Woodrat and Riparian Brush Rabbit	Conduct surveys for projects occurring within suitable habitat as identified from habitat modeling and by additional assessments conducted during the planning phase of construction or restoration projects following U.S. Fish and Wildlife Service <i>Draft Habitat Assessment Guidelines and Survey Protocol for the Riparian Brush Rabbit and the Riparian Woodrat</i> . Implement protective measures in suitable habitat.
AMM26	Salt Marsh Harvest Mouse and Suisun Shrew	Identify suitable habitat in and within 100 feet of the project footprint for projects in the species range. Ground disturbance will be limited to the period between May 1 and November 30, to avoid destroying nests with young. Prior to ground-disturbing activities, vegetation will first be removed with nonmechanized hand tools (e.g., goat or sheep grazing, or in limited cases where the biological monitor can confirm that there is no risk of harming salt marsh harvest mouse or Suisun shrew, hoes, rakes, and shovels may be used). Implement protective measures in suitable habitat.
AMM27	Selenium Management	Develop a plan to evaluate site-specific restoration conditions and include design elements that minimize any conditions that could be conducive to increases of bioavailable selenium in restored areas. Before ground-breaking activities associated with site-specific restoration occurs, identify and evaluate potentially feasible actions for the purpose of minimizing conditions that promote bioaccumulation of selenium in restored areas.
AMM28	Geotechnical Studies	Conduct geotechnical investigations to identify the types of soil avoidance or soil stabilization measures that should be implemented to ensure that the facilities are constructed to withstand subsidence and settlement and to conform to applicable state and federal standards.
AMM29	Design Standards and Building Codes	Ensure that the standards, guidelines, and codes, which establish minimum design criteria and construction requirements for project facilities, will be followed. Follow any other standards, guidelines, and code requirements that are promulgated during the detailed design and construction phases and during operation of the conveyance facilities.
AMM30	Transmission Line Design and Alignment Guidelines	Design the alignment of proposed transmission lines to minimize impacts on sensitive terrestrial and aquatic habitats when siting poles and towers. Restore disturbed areas to preconstruction conditions. In agricultural areas, implement additional BMPs. Site transmission lines to avoid greater sandhill crane roost sites or, for temporary roost sites, by relocating roost sites prior to construction if needed. Site transmission lines to minimize bird strike risk.
AMM31	Noise Abatement	Develop and implement a plan to avoid or reduce the potential in-air noise impacts related to construction, maintenance, and operations.



Number	Title	Summary
AMM32	Hazardous Material Management	Develop and implement site-specific plans that will provide detailed information on the types of hazardous materials used or stored at all sites associated with the water conveyance facilities and required emergency-response procedures in case of a spill. Before construction activities begin, establish a specific protocol for the proper handling and disposal of hazardous materials.
AMM33	Mosquito Management	Consult with appropriate mosquito and vector control districts before the sedimentation basins, solids lagoons, and the intermediate forebay inundation area become operational. Once these components are operational, consult again with the control districts to determine if mosquitoes are present in these facilities, and implement mosquito control techniques as applicable. Consult with the control districts when designing and planning restoration sites.
AMM34	Construction Site Security	Provide all security personnel with environmental training similar to that of onsite construction workers, so that they understand the environmental conditions and issues associated with the various areas for which they are responsible at a given time.
AMM35	Fugitive Dust Control	Implement basic and enhanced control measures at all construction and staging areas to reduce construction-related fugitive dust and ensure the project commitments are appropriately implemented before and during construction, and that proper documentation procedures are followed.
AMM37	Recreation	Implement avoidance and minimization measures for recreational use within the reserve system. Measures to be implemented address the siting, designing, and construction of trails and other recreational facilities. Allowable recreational uses will be controlled using a variety of techniques including fences, gates, clearly signed trails, educational kiosks, trail maps and brochures, interpretive programs, patrol by land management staff, and restrictions by area and time.
AMM 38	California Black Rail	Preconstruction surveys for California black rail will be conducted where potentially suitable habitat for this species occurs within 500 feet of work areas. If California black rail is present in the immediate construction area, protective measures will apply during construction activities.
AMM 39	White Tailed Kite	Conduct preconstruction surveys of potentially occupied breeding habitat in and within 0.25 mile of the project footprint to locate active nest sites.

1

### 2 **3B.4.1 AMM1 Worker Awareness Training**

3 *Explanation of effectiveness:* The proposed project would result in the near-term loss or conversion  
4 of tidal perennial aquatic natural community due to construction of the water conveyance facilities  
5 (CM1) and fish passage improvements (CM2), and inundation during tidal marsh restoration (CM4).  
6 In addition to other CMs and AMMs, AMM1 would help minimize these losses and conversions  
7 through worker awareness training to minimize impacts to reduce impacts to a less-than significant  
8 level.

9 The proposed project would result in the loss of tidal freshwater emergent wetland natural  
10 community (permanent and temporary) due to construction of the water conveyance facilities  
11 (CM1) and fish passage improvements (CM2), and tidal marsh restoration (CM4). AMM1 would be  
12 implemented to minimize impacts.

1 The proposed project would result in the loss of valley/foothill riparian natural community due to  
2 construction of the water conveyance facilities (CM1) and fish passage improvements (CM2), and  
3 inundation during tidal marsh restoration (CM4). The construction losses would be spread across  
4 the near-term timeframe. AMM1 would be implemented to minimize impacts.

5 The proposed project would result in the loss of nontidal perennial aquatic natural community due  
6 to construction of the water conveyance facilities (CM1) and fish passage improvements (CM2), and  
7 change to tidally influenced inundation during tidal marsh restoration (CM4). AMM1 would be  
8 implemented to minimize impacts.

9 The proposed project would result in the loss of nontidal freshwater perennial emergent wetland  
10 natural community due to construction of the water conveyance facilities (CM1) and fish passage  
11 improvements (CM2). Inundation and construction-related losses from CM4 would occur in the  
12 near-term. AMM1 would be implemented to minimize impacts.

13 During construction, the proposed project could result in the direct loss of vernal pool complex  
14 natural community due to inundation during tidal marsh restoration (CM4) and construction of the  
15 water conveyance facility (CM1). The construction- and inundation-related loss of this special-status  
16 natural community would represent a significant impact if it were not minimize by avoidance and  
17 minimization measures and other actions associated with project-related conservation components.  
18 The proposed project also includes AMM1 to minimize impacts.

19 During the near-term timeframe, the proposed project would permanently remove and temporarily  
20 remove managed wetland through inundation or construction-related losses in habitat from CM1,  
21 CM2, and CM4 activities. The construction or inundation loss of this special-status natural  
22 community would represent a significant impact if it were not minimize by other conservation  
23 actions. The Plan also includes commitments to implement AMM1 Worker Awareness Training to  
24 avoid or minimize the risk of affecting habitats at work areas.

25 The effects on vernal pool crustacean habitat from construction and operation of the proposed  
26 project would represent an adverse effect as a result of habitat modification of a special-status  
27 species and potential for direct mortality in the absence of other conservation actions. These  
28 conservation activities would be guided by species-specific goals and objectives, and by AMM1,  
29 which would be in place throughout the project permit term. AMM1 includes elements that avoid or  
30 minimize the risk of affecting habitats and species adjacent to work areas. Considering these  
31 commitments, the project over the permit term would not result in a substantial adverse effect  
32 through habitat modifications and would not substantially reduce the number or restrict the range  
33 of vernal pool crustaceans.

34 The proposed project would result in permanent and temporary impacts on modeled habitat for  
35 valley elderberry longhorn beetle in the study area. These effects would result from the construction  
36 of the water conveyance facilities (CM1), and implementing other conservation measures (Yolo  
37 Bypass fisheries improvements [CM2] and tidal restoration [CM4]). These impacts would be  
38 minimized through the implementation of CMs and AMMs. The Plan includes a commitment to  
39 implement AMM1 Worker Awareness Training to avoid or minimize the risk of affecting habitats  
40 and species adjacent to work areas and RTM storage sites. These commitments, implemented  
41 together with the AMMs, are more than sufficient to support the conclusion that the near-term  
42 impacts of the proposed project would be less than significant under CEQA.

1 The effects on nonlisted vernal pool invertebrate habitat from the proposed project would represent  
2 an adverse effect as a result of habitat modification of a special-status species and potential for  
3 direct mortality in the absence of other conservation actions. However, the proposed project has  
4 committed to impact limits for vernal pool habitat and to habitat protection, restoration,  
5 management and enhancement associated with CM3, CM9, and CM11. These conservation activities  
6 would be guided by goals and objectives, such as AMM1, which would be in place throughout the  
7 proposed project permit term. Considering these commitments, the proposed project would not  
8 result in a substantial adverse effect through habitat modifications and would not substantially  
9 reduce the number or restrict the range of nonlisted vernal pool invertebrates.

10 The proposed project would result in permanent and temporary effects on aquatic habitat and  
11 upland terrestrial cover habitat for California red-legged frog. The effects would result from  
12 construction of the water conveyance facilities (CM1 and CM11). These conservation actions would  
13 occur in the same timeframe as the construction losses, thereby avoiding adverse effects of habitat  
14 loss on California red-legged frog. The proposed project contains commitments to implement AMMs,  
15 including AMM1, to avoid or minimize the risk of affecting individuals and species habitats adjacent  
16 to work areas and storage sites. With implementation of these AMMs and CM3, impacts will be  
17 minimize.

18 The proposed project would permanently and temporarily remove upland terrestrial cover habitat  
19 for California tiger salamander. In the absence of other conservation actions, the losses of California  
20 tiger salamander upland habitat associated with the proposed project would represent an adverse  
21 effect as a result of habitat modification and potential direct mortality of a special-status species.  
22 However, with habitat protection and restoration associated with the conservation components,  
23 guided by landscape-scale goals and objectives and by AMM1, which include elements that avoid or  
24 minimize the risk of affecting habitats and species adjacent to work areas and storage sites and  
25 would be in place throughout the construction phase, the impacts of the proposed project as a whole  
26 on California tiger salamander would not be significant.

27 Implementation of the proposed project would result in a loss of modeled foraging habitat for  
28 California least tern in the study area in the near-term. These effects would result from the  
29 construction of the water conveyance facilities (CM1), and implementing other conservation  
30 measures (Yolo Bypass fisheries improvements [CM2], and tidal habitat restoration [CM4]). MM  
31 BIO-66, CM4, and AMMs, including AMM1, would avoid and minimize potential impacts on the  
32 species from construction-related habitat loss and noise and disturbance. With habitat restoration  
33 associated with CM4, guided by AMM1 Worker Awareness Training, the loss of habitat under the  
34 proposed project would have a less-than-significant impact on California least tern.

35 In the absence of other conservation actions, the effects on greater sandhill crane habitat from the  
36 proposed project would represent an adverse effect as a result of habitat modification of a special-  
37 status species and potential for direct mortality. Mitigation Measure BIO-69a, Mitigation Measure  
38 72, along with AMMs 1-7 and AMM20 would further eliminate potential for take and minimize  
39 impacts from the proposed project so that it would not result in a substantial adverse effect through  
40 habitat modifications and would not result in take of greater sandhill cranes per Section 86 of the  
41 California Fish and Game code.

42 In the absence of other conservation actions, the effects on lesser sandhill crane habitat from the  
43 proposed project would represent an adverse effect as a result of habitat modification of a special-  
44 status species and potential for direct mortality. Implementation of Mitigation Measure BIO-72,

1 AMMs 1-7 and AMM20 would further eliminate potential for take and minimize impacts so that the  
2 proposed project would not result in a substantial adverse effect through habitat modifications and  
3 would not substantially reduce the number or restrict the range of lesser sandhill cranes.

4 Project conservation measures would result in the combined permanent and temporary loss of  
5 modeled habitat for least Bell's vireo and yellow warbler. Conservation measures that would result  
6 in these losses are conveyance facilities and transmission line construction, and establishment and  
7 use of borrow and spoil areas (CM1), Fremont Weir/Yolo Bypass fisheries improvements (CM2),  
8 tidal natural communities restoration (CM4), and seasonally inundated floodplain restoration  
9 (CM5). Habitat enhancement and management activities (CM11) which include ground disturbance  
10 or removal of nonnative vegetation, could result in local adverse habitat effects. In addition,  
11 maintenance activities associated with the long-term operation of the water conveyance facilities  
12 and other project-related physical facilities could degrade or eliminate least Bell's vireo and yellow  
13 warbler habitat. AMM 1 would help minimize these impacts so that the proposed project would not  
14 result in a substantial adverse effect through habitat modifications and would not substantially  
15 reduce the number or restrict the range of either species.

16 In the absence of other conservation actions, the effects on tricolored blackbird habitat from the  
17 proposed project would represent an adverse effect as a result of habitat modification and potential  
18 for direct mortality of a special-status species. The implementation of AMM1 would help minimize  
19 potential impacts of Plan implementation in the near-term time period.

20 The loss of western burrowing owl habitat and potential for mortality of this special-status species  
21 under the proposed project would represent an adverse effect in the absence of other conservation  
22 actions. However, AMM1 would help minimize the loss of habitat or direct mortality through  
23 implementation of the proposed project.

24 In the absence of other conservation actions, the loss of western yellow-billed cuckoo habitat  
25 associated with the proposed project would represent an adverse effect as a result of habitat  
26 modification and potential for direct mortality of a special-status species. However, the species is  
27 not an established breeder in the study area and current presence is limited to migrants. In addition,  
28 the habitat that would be lost consists of small, fragmented riparian stands that do not provide high-  
29 value habitat for the species. AMM 1 would minimize some effects of habitat loss and potential  
30 mortality on western yellow-billed cuckoo under the proposed project would be less-than-  
31 significant.

32 In the absence of other conservation actions, the effects on white-tailed kite habitat from the  
33 proposed project would represent an adverse effect as a result of habitat modification and potential  
34 for direct mortality of a special status species; however, considering the proposed project's  
35 protection and restoration provisions, which would provide acreages of new or enhanced habitat in  
36 amounts greater than necessary to compensate for the time lag of restoring riparian and foraging  
37 habitats lost to construction and restoration activities, AMMs that would eliminate the potential for  
38 take, and with implementation of AMM1, the loss of habitat or direct mortality through  
39 implementation of the proposed project would not result in take of white-tailed kite per Section 86  
40 of California Fish and Game Code.

41 In the absence of other conservation actions, the effects on least Bell's vireo and yellow warbler  
42 habitat from the proposed project would represent an adverse effect as a result of habitat  
43 modification and potential for direct mortality of special-status species. The acres of protection  
44 contained in the near-term Plan goals and the additional detail in the biological objectives for

1 yellow-breasted chat satisfy the typical mitigation ratios that would be applied to the project-level  
2 effects of CM1, as well as mitigate the near-term effects of the other conservation measures. The  
3 restored riparian habitat could require 5 years to several decades, for ecological succession to occur  
4 and for restored riparian habitat to functionally replace habitat that has been affected. Considering  
5 the conservation actions described above, and AMM 1, the proposed project would not result in a  
6 substantial adverse effect through habitat modifications and would not substantially reduce the  
7 number or restrict the range of yellow-breasted chat.

8 In the absence of other conservation actions, the effects on Cooper's hawk and osprey nesting  
9 habitat would represent an adverse effect as a result of habitat modification and potential for direct  
10 mortality of special-status species. Cooper's hawk and osprey are not species that are covered under  
11 the proposed project. For the proposed project to avoid an adverse effect on individuals,  
12 preconstruction surveys for noncovered avian species would be required to ensure that active nests  
13 are detected and avoided. Considering the proposed project's protection and restoration provisions,  
14 which would provide acreages of new or enhanced habitat in amounts greater than necessary to  
15 compensate for the time lag of restoring riparian habitats lost to construction and restoration  
16 activities, and with implementation of AMM1, the loss of habitat or direct mortality through  
17 implementation of the proposed project would not result in a substantial adverse effect through  
18 habitat modifications and would not substantially reduce the number or restrict the range of either  
19 species.

20 In the absence of other conservation actions, the effects on golden eagle and ferruginous hawk  
21 foraging habitat would represent an adverse effect as a result of habitat modification and potential  
22 for direct mortality of special-status species. However, the acres of restoration and protection  
23 contained in the near-term Plan goals and the additional detail in the biological objectives satisfy the  
24 typical mitigation that would be applied to the project-level effects of CM1 on golden eagle and  
25 ferruginous hawk, as well as mitigate the near-term effects of the other conservation measures with  
26 the consideration that some portion of the cultivated lands protected in the near-term timeframe  
27 would be managed in suitable crop types to compensate for the loss of habitat at a ratio of 2:1. The  
28 implementation of AMM1 would reduce the impact of habitat loss in the near-term to less than  
29 significant.

30 In the absence of other conservation actions, effects on nesting cormorants, herons, and egrets  
31 would represent an adverse effect as a result of habitat modification and potential for direct  
32 mortality of special-status species. This impact would be considered significant. However, the  
33 proposed project has committed to habitat protection, restoration, management and enhancement  
34 activities described above. The natural community restoration and protection activities would be  
35 concluded in the first 10 years of Plan implementation, which is close enough in time to the  
36 occurrence of impacts to constitute adequate mitigation for CEQA purposes. In addition,  
37 implementation of AMM1 would reduce this potential impact to a less-than-significant level.

38 In the absence of other conservation actions, effects on short-eared owl and northern harrier would  
39 represent an adverse effect as a result of habitat modification and potential for direct mortality of  
40 special-status species. This impact would be considered significant. However, the proposed project  
41 has committed to habitat protection, restoration, management and enhancement activities  
42 described above. The natural community restoration and protection activities would be concluded  
43 in the first 10 years of Plan implementation, which is close enough in time to the occurrence of  
44 impacts to constitute adequate mitigation for CEQA purposes. In addition, implementation of AMM1  
45 would reduce this potential impact to a less-than-significant level.

1 In the absence of other conservation actions, effects on nesting cormorants, herons, and egrets  
2 would represent an adverse effect as a result of habitat modification and potential for direct  
3 mortality of special-status species. This impact would be considered significant. However, the  
4 proposed project has committed to habitat protection, restoration, management and enhancement  
5 activities described above. The natural community restoration and protection activities would be  
6 concluded in the first 10 years of Plan implementation, which is close enough in time to the  
7 occurrence of impacts to constitute adequate mitigation for CEQA purposes. In addition,  
8 implementation of AMM1 would reduce this potential impact in the near-term to a less-than-  
9 significant level.

10 In the absence of other conservation actions, the effects on California horned lark and grasshopper  
11 sparrow habitat would represent an adverse effect as a result of habitat modification and potential  
12 direct mortality of special-status species. This impact would be significant. California horned lark  
13 and grasshopper sparrow are not covered species under the proposed project. For the proposed  
14 project to avoid an adverse effect on individuals, preconstruction surveys for noncovered avian  
15 species would be required to ensure that nests are detected and avoided. The acres of restoration  
16 and protection contained in the near-term Plan goals and the additional detail in the biological  
17 objectives satisfy the typical mitigation that would be applied to the project-level effects of CM1 on  
18 California horned lark and grasshopper sparrow, as well as mitigate the near-term effects of the  
19 other conservation measures with the consideration that some portion of the cultivated lands  
20 protected in the near-term timeframe would be managed in suitable crop types to compensate for  
21 the loss of habitat at a ratio of 2:1. With the acres of habitat protection and restoration described  
22 above, in addition to AMM1 and other CMs and AMMs, the proposed project would not result in a  
23 substantial adverse effect through habitat modification and would not substantially reduce the  
24 number or restrict the range of either species.

25 In the absence of other conservation actions, the effects on least bittern and white-faced ibis habitat  
26 would represent an adverse effect as a result of habitat modification and potential direct mortality  
27 of special-status species. This impact would be significant. Least bittern and white-faced ibis are not  
28 covered species under the proposed project. For the proposed project to avoid an adverse effect on  
29 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
30 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
31 proposed project goals satisfy the typical mitigation that would be applied to the project-level  
32 effects of CM1, as well as mitigate the near-term effects of the other conservation measures. With  
33 the acres of habitat protection and restoration described above, in addition to AMM1 and other CMs  
34 and AMMs, the proposed project would not result in a substantial adverse effect through habitat  
35 modification and would not substantially reduce the number or restrict the range of either species.

36 In the absence of other conservation actions, the effects on loggerhead shrike habitat would  
37 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
38 special-status species. This impact would be significant. Loggerhead shrike is not a covered species  
39 under the proposed project. For the proposed project to avoid an adverse effect on individuals,  
40 preconstruction surveys for noncovered avian species would be required to ensure that nests are  
41 detected and avoided. With implementation of AMM1 and other CMs and AMMs, the proposed  
42 project would avoid potentially significant impacts on nesting individuals. With these measures in  
43 place, the proposed project would not result in a substantial adverse effect through habitat  
44 modification and would not substantially reduce the number or restrict the range of either species.

1 In the absence of other conservation actions, the effects on Modesto song sparrow habitat would  
2 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
3 special-status species. This impact would be significant. Modesto song sparrow is not a covered  
4 species under the proposed project. For the proposed project to avoid an adverse effect on  
5 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
6 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
7 Plan goals and the additional detail in the biological objectives satisfy the typical mitigation that  
8 would be applied to the project-level effects of CM1 on Modesto song sparrow, as well as mitigate  
9 the near-term effects of the other conservation measures. With the acres of habitat protection and  
10 restoration described above, in addition to AMM1 and other CMs and AMMs, the proposed project  
11 would not result in a substantial adverse effect through habitat modification and would not  
12 substantially reduce the number or restrict the range of the species.

13 In the absence of other conservation actions, the effects on yellow-headed blackbird habitat would  
14 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
15 special-status species. This impact would be significant. Yellow-headed blackbird is not a covered  
16 species under the proposed project. For the proposed project to avoid an adverse effect on  
17 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
18 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
19 Plan goals and the additional detail in the biological objectives satisfy the typical mitigation that  
20 would be applied to the project-level effects of CM1 on yellow-headed blackbird habitat, as well as  
21 mitigate the near-term effects of the other conservation measures. With implementation of AMM1  
22 and other CMs and AMMs, the proposed project would not result in a substantial adverse effect  
23 through habitat modification and would not substantially reduce the number or restrict the range of  
24 the species.

25 Implementation of the proposed project would result in temporary and permanent losses of riparian  
26 and grassland habitat and potential direct mortality of riparian brush rabbit. However, the habitat  
27 restoration and protection associated with CM3, CM7, CM8, and CM11, guided by species-specific  
28 goals and objectives and by AMM1 and other AMMs, would minimize significant impacts so that the  
29 proposed project would not represent a substantial adverse effect through habitat modifications  
30 and would not substantially reduce the number or restrict the range of the species.

31 In the absence of other conservation actions, the effects on San Joaquin kit fox and American badger  
32 habitat from the proposed project would represent a significant impact as a result of habitat  
33 modification and potential direct mortality of a special-status species. However, with habitat  
34 protection, restoration, management, and enhancement associated with CM3, CM8, and CM11, and  
35 guided by AMM1 and other AMMs and MMs, which would be in place throughout the time period of  
36 construction, the impact of the proposed project as a whole on San Joaquin kit fox and American  
37 badger would be less than significant.

38 The proposed project would result in a substantial adverse effect through habitat modifications and  
39 would not substantially reduce the number or restrict the range of San Joaquin pocket mouse. With  
40 implementation of AMM1 and other AMMs, the loss of habitat or potential mortality under the  
41 proposed project would have a less-than-significant impact on San Joaquin pocket mouse.

42 The proposed project would result in the permanent loss of roosting habitat for special-status bats.  
43 In addition to Mitigation Measure BIO-166, which would include protective measures to ensure  
44 there is no significant impact under CEQA on roosting special-status bats, either directly or through

1 habitat modifications and no substantial reduction in numbers or a restriction in the range of  
 2 special-status bats, the proposed project also contains commitments to implement AMM1 and other  
 3 AMMs. These AMMs include elements that avoid or minimize the risk of construction activity  
 4 affecting habitat and species adjacent to work areas and storage sites. Implementation of MM BIO-  
 5 166, AMM 1-6, and AMM10 would minimize impacts to a less-than-significant level.

6 In absence of the implementation of this avoidance and minimization measure, in addition to other  
 7 CMs and AMMs, there would be a greater potential for significant impacts to these species and  
 8 natural communities due to loss of habitat and loss of species from construction and/or operation of  
 9 the proposed project. Refer to the impact analyses for each resource for more detail.

### 10 **3B.4.2 AMM2: Construction Best Management Practices** 11 **and Monitoring**

12 *Explanation of effectiveness:* The proposed project would result in the near-term loss or conversion  
 13 of tidal perennial aquatic natural community due to construction of the water conveyance facilities  
 14 (CM1) and fish passage improvements (CM2), and inundation during tidal marsh restoration (CM4).  
 15 These losses and conversions would be offset by planned restoration of high-value tidal perennial  
 16 aquatic natural community scheduled for the first 10 years of project implementation (CM4).  
 17 Additionally, AMM2 and other AMMs would also be implemented to minimize impacts. Because of  
 18 these offsetting near-term restoration activities and AMMs, impacts would be less than significant.

19 The operation and maintenance activities associated with the proposed project would have the  
 20 potential to create minor losses in total acreage of tidal perennial aquatic natural community in the  
 21 study area, and could create temporary increases in turbidity and sedimentation. The activities  
 22 could also introduce herbicides periodically to control nonnative, invasive plants. Implementation of  
 23 environmental commitments, CMs and AMMs, including AMM2, would minimize these impacts.  
 24 Ongoing operation, maintenance and management activities would not result in a net permanent  
 25 reduction in the acreage or value of this sensitive natural community within the study area.  
 26 Therefore, there would be a less-than-significant impact on the tidal perennial aquatic natural  
 27 community.

28 The operation and maintenance activities associated with the proposed project would have the  
 29 potential to create minor changes in total acreage of tidal brackish emergent wetland natural  
 30 community in the study area, and could create temporary increases in turbidity and sedimentation.  
 31 The activities could also introduce herbicides periodically to control nonnative, invasive plants.  
 32 Implementation of environmental commitments, CMs and AMMs, including AMM2, would minimize  
 33 these impacts, and other operations and maintenance activities. Long-term restoration activities  
 34 associated with CM4 Tidal Natural Communities Restoration would greatly expand this natural  
 35 community in the study area.

36 The proposed project would result in the loss of tidal freshwater emergent wetland natural  
 37 community (permanent and temporary) due to construction of the water conveyance facilities  
 38 (CM1) and fish passage improvements (CM2), and tidal marsh restoration (CM4). CM4, AMM1 and  
 39 other AMMs would also be implemented to minimize impacts. Because of these offsetting near-term  
 40 restoration activities and AMMs, impacts would be less than significant and no mitigation would be  
 41 required.



1 The operation and maintenance activities associated with the proposed project, including changed  
2 water operations in the upstream rivers, would have the potential to create minor changes in total  
3 acreage of tidal freshwater emergent wetland natural community in the study area, and could create  
4 temporary increases in turbidity and sedimentation. The activities could also introduce herbicides  
5 periodically to control nonnative, invasive plants. Implementation of environmental commitments,  
6 CMs, and AMMs, including AMM2, would minimize and offset these effects. Long-term restoration  
7 activities associated with CM4 Tidal Natural Communities Restoration would greatly expand this  
8 natural community in the study area.

9 The proposed project would result in the loss of valley/foothill riparian natural community due to  
10 construction of the water conveyance facilities (CM1) and fish passage improvements (CM2), and  
11 inundation during tidal marsh restoration (CM4). The construction losses would be spread across  
12 the near-term timeframe. These losses would be minimized and offset by the implementation of CMs  
13 and AMMs, including AMM2. Because of these near-term restoration and protection activities and  
14 AMMs, impacts would be less than significant.

15 The operation and maintenance activities associated with the proposed project would have the  
16 potential to create minor changes in total acreage of valley/foothill riparian natural community in  
17 the study area, and could create temporary increases in turbidity and sedimentation. The activities  
18 could also introduce herbicides periodically to control nonnative, invasive plants. Implementation of  
19 environmental commitments, CMs, and AMMs, including AMM2, would minimize and offset these  
20 effects. With the restoration and enhancement of these amounts of habitat, in addition to  
21 implementation of AMMs, impacts on this natural community would be less than significant for  
22 CEQA purposes.

23 The proposed project would result in the loss of nontidal perennial aquatic natural community due  
24 to construction of the water conveyance facilities (CM1) and fish passage improvements (CM2), and  
25 change to tidally influenced inundation during tidal marsh restoration (CM4). These losses would be  
26 offset and minimized by CM10 and AMMs, including AMM2. Because of these offsetting near-term  
27 restoration activities and AMMs, impacts would be less than significant.

28 The operation and maintenance activities associated with the proposed project would have the  
29 potential to create minor changes in total acreage of nontidal perennial aquatic natural community  
30 in the study area, and could create temporary increases in turbidity and sedimentation. The  
31 activities could also introduce herbicides periodically to control nonnative, invasive plants.  
32 Implementation of environmental commitments, CMs, and AMMs, including AMM2, would offset and  
33 minimize these effects. Ongoing operation, maintenance and management activities would not result  
34 in a net permanent reduction in this sensitive natural community within the study area. Therefore,  
35 there would be a less-than-significant impact on the nontidal perennial aquatic natural community.

36 The proposed project would result in the loss of nontidal freshwater perennial emergent wetland  
37 natural community due to construction of the water conveyance facilities (CM1) and fish passage  
38 improvements (CM2). Inundation and construction-related losses from CM4 would occur in the  
39 near-term. These losses would be offset and minimized by CMs and AMMs, including AMM2.  
40 Because of these offsetting near-term restoration activities and AMMs, impacts would be less than  
41 significant.

42 The operation and maintenance activities associated with the proposed project would have the  
43 potential to create minor changes in total acreage of nontidal freshwater perennial emergent  
44 wetland natural community in the study area, and could create temporary increases in turbidity and

1 sedimentation. The activities could also introduce herbicides periodically to control nonnative,  
2 invasive plants. Implementation of environmental commitments, CMs, and AMMs, including AMM2,  
3 would minimize and offset these impacts.

4 The operation and maintenance activities associated with the proposed project would have the  
5 potential to create minor changes in total acreage of alkali seasonal wetland complex natural  
6 community in the study area, and could create temporary increases sedimentation. The activities  
7 could also introduce herbicides periodically to control nonnative, invasive plants. Implementation of  
8 environmental commitments, CMs and AMMs, including AMM2, would offset and minimize these  
9 impacts to a less than significant level.

10 During construction, the proposed project could result in the direct loss of vernal pool complex  
11 natural community due to inundation during tidal marsh restoration (CM4) and construction of the  
12 water conveyance facility (CM1). The construction- and inundation-related loss of this special-status  
13 natural community would represent a significant impact if it were not offset by avoidance and  
14 minimization measures and other actions associated with project-related conservation components.  
15 Loss of vernal pool complex natural community would be considered both a loss in acreage of a  
16 sensitive natural community and a loss of wetland as defined by Section 404 of the CWA.  
17 Implementation of CM3 and AMMs, including AMM2, would offset and minimize these impacts.  
18 Because of the offsetting protection and restoration activities and implementation of AMMs, impacts  
19 would be less than significant.

20 The operation and maintenance activities associated with the proposed project would have the  
21 potential to create minor changes in total acreage of vernal pool complex natural community in the  
22 study area, and could create temporary increases in sedimentation or damage from recreational  
23 activity. The activities could also introduce herbicides periodically to control nonnative, invasive  
24 plants. These impacts would be offset and minimized through implementation of environmental  
25 commitments, CMs and AMMS, including AMM2.

26 During the near-term timeframe, the proposed project would permanently remove and temporarily  
27 remove managed wetland through inundation or construction-related losses in habitat from CM1,  
28 CM2, and CM4 activities. The construction or inundation loss of this special-status natural  
29 community would represent a significant impact if it were not offset by other conservation actions.  
30 The implementation of CMs and AMMs, including AMM2 which includes construction best  
31 management practices, would offset and minimize these impacts. The AMMs include elements that  
32 avoid or minimize the risk of affecting habitats at work areas. In spite of the managed wetland  
33 protection and restoration and avoidance measures included in the proposed project, there would  
34 be a net reduction in the acreage of this special-status natural community in the near-term. This  
35 would be a significant impact when judged by the significance criteria listed earlier in this chapter.  
36 However, the conversion of these managed habitats to natural tidal wetland types that support  
37 similar ecological functions would offset this significant impact. As a result, there would be a less-  
38 than-significant impact.

39 The operation and maintenance activities associated with the proposed project would have the  
40 potential to create minor changes in total acreage of managed wetland natural community in the  
41 study area, and could create temporary increases in turbidity and sedimentation. The activities  
42 could also introduce herbicides periodically to control nonnative, invasive plants. Hunting could  
43 intermittently reduce the availability of this community to special-status and common wildlife

1 species. Implementation of environmental commitments, CMs and AMMs, including AMM2, would  
2 minimize and offset these impacts to a less than significant level.

3 The operation and maintenance activities associated with the proposed project would have the  
4 potential to create minor changes in total acreage of other natural seasonal wetland natural  
5 community in the study area, and could create temporary increases in sedimentation. The activities  
6 could also introduce herbicides periodically to control nonnative, invasive plants. The  
7 implementation of CMs and AMMs, including AMM2 which includes construction best management  
8 practices, would offset and minimize these impacts. Ongoing operation, maintenance and  
9 management activities would not result in a net permanent reduction in this natural community  
10 within the study area.

11 The operation and maintenance activities associated with the proposed project would have the  
12 potential to create minor changes in total acreage of grassland natural community in the study area,  
13 and could create temporary increases sedimentation. The activities could also introduce herbicides  
14 periodically to control nonnative, invasive plants. The implementation of CMs and AMMs, including  
15 AMM2 which includes construction best management practices, would offset and minimize these  
16 impacts.

17 The effects on vernal pool crustacean habitat from construction and operation of the proposed  
18 project would represent an adverse effect as a result of habitat modification of a special-status  
19 species and potential for direct mortality in the absence of other conservation actions. However, the  
20 proposed project has committed to impact limits for vernal pool crustacean habitat and to habitat  
21 protection, restoration, management and enhancement associated with CM3, CM9, and CM11. These  
22 conservation activities would be guided by species-specific goals and objectives, and by AMM1,  
23 including AMM2 that requires construction best management practices, which would be in place  
24 throughout permit term for the proposed project. All of these AMMs include elements that avoid or  
25 minimize the risk of affecting habitats and species adjacent to work areas. Considering these  
26 commitments over the permit term, the proposed project would not result in a substantial adverse  
27 effect through habitat modifications and would not substantially reduce the number or restrict the  
28 range of vernal pool crustaceans. Therefore, the project would have a less-than-significant impact on  
29 vernal pool crustaceans.

30 The proposed project would result in permanent and temporary impacts on modeled habitat for  
31 valley elderberry longhorn beetle in the study area. These effects would result from the construction  
32 of the water conveyance facilities (CM1), and implementing other conservation measures (Yolo  
33 Bypass fisheries improvements [CM2] and tidal restoration [CM4]). The implementation of CMs and  
34 AMMs, including AMM2 which includes construction best management practices, would offset and  
35 minimize these impacts. All of these AMMs include elements that avoid or minimize the risk of  
36 affecting habitats and species adjacent to work areas and RTM storage sites. These commitments,  
37 implemented together with the AMMs, are more than sufficient to support the conclusion that the  
38 near-term impacts of the proposed project would be less than significant under CEQA.

39 The effects on nonlisted vernal pool invertebrate habitat from the proposed project would represent  
40 an adverse effect as a result of habitat modification of a special-status species and potential for  
41 direct mortality in the absence of other conservation actions. The implementation of CMs and AMMs,  
42 including AMM2 which includes construction best management practices, would offset and  
43 minimize these impacts. Considering these commitments, the proposed project would not result in

1 a substantial adverse effect through habitat modifications and would not substantially reduce the  
2 number or restrict the range of nonlisted vernal pool invertebrates.

3 The proposed project would result in permanent and temporary effects on aquatic habitat and  
4 upland terrestrial cover habitat for California red-legged frog. The effects would result from  
5 construction of the water conveyance facilities (CM1 and CM11). These conservation actions would  
6 occur in the same timeframe as the construction losses, thereby avoiding adverse effects of habitat  
7 loss on California red-legged frog. The implementation of CMs and AMMs, including AMM2 which  
8 includes construction best management practices, would offset and minimize these impacts. These  
9 AMMs include elements that avoid or minimize the risk of affecting individuals and species habitats  
10 adjacent to work areas and storage sites. With implementation of these AMMs and CM3 offset the  
11 impacts and are more than sufficient to support the conclusion that the near-term effects of the  
12 proposed project on California red-legged frog would be less than significant.

13 The proposed project would permanently and temporarily combined remove upland terrestrial  
14 cover habitat for California tiger salamander. In the absence of other conservation actions, the  
15 losses of California tiger salamander upland habitat associated with the proposed project would  
16 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
17 special-status species. However, with habitat protection and restoration associated with the  
18 conservation components, guided by landscape-scale goals and objectives and by AMMs, including  
19 AMM2, which includes elements that avoid or minimize the risk of affecting habitats and species  
20 adjacent to work areas and storage sites and would be in place throughout the construction phase,  
21 the impacts of the proposed project as a whole on California tiger salamander would not be  
22 significant.

23 Implementation of the proposed project would result in a loss of modeled foraging habitat for  
24 California least tern in the study area in the near-term. These effects would result from the  
25 construction of the water conveyance facilities (CM1), and implementing other conservation  
26 measures (Yolo Bypass fisheries improvements [CM2], and tidal habitat restoration [CM4]). The  
27 implementation of MMs, CMs and AMMs, including AMM2 which includes construction best  
28 management practices, would offset and minimize these impacts. Therefore, the loss of habitat  
29 under this alternative would have a less-than-significant impact on California least tern.

30 In the absence of other conservation actions, the effects on greater sandhill crane habitat from the  
31 proposed project would represent an adverse effect as a result of habitat modification of a special-  
32 status species and potential for direct mortality. Mitigation Measure BIO-69a, AMMs that would  
33 eliminate the potential take, including AMM2, would be available to guide the near-term protection  
34 of cultivated lands to ensure that the near-term impacts of moderate- to very high-value habitat for  
35 greater sandhill crane were compensated for with appropriate crop types and natural communities,  
36 and would offset impacts from the proposed project so that it would not result in a substantial  
37 adverse effect through habitat modifications and would not substantially result in take of greater  
38 sandhill cranes per Section 86 of the California Fish and Game Code.

39 In the absence of other conservation actions, the effects on lesser sandhill crane habitat from the  
40 proposed project would represent an adverse effect as a result of habitat modification of a special-  
41 status species and potential for direct mortality. Implementation of Mitigation Measure BIO-72 and  
42 AMMS, including AMM2, would offset impacts so that the proposed project would not result in a  
43 substantial adverse effect through habitat modifications and would not substantially reduce the

1 number or restrict the range of lesser sandhill cranes. Therefore, the proposed project would have a  
2 less-than-significant impact on lesser sandhill cranes.

3 The proposed project's conservation measures would result in the combined permanent and  
4 temporary loss of modeled habitat for least Bell's vireo and yellow warbler. Conservation measures  
5 that would result in these losses are conveyance facilities and transmission line construction, and  
6 establishment and use of borrow and spoil areas (CM1), Fremont Weir/Yolo Bypass fisheries  
7 improvements (CM2), tidal natural communities restoration (CM4), and seasonally inundated  
8 floodplain restoration (CM5). Habitat enhancement and management activities (CM11) which  
9 include ground disturbance or removal of nonnative vegetation, could result in local adverse habitat  
10 effects. In addition, maintenance activities associated with the long-term operation of the water  
11 conveyance facilities and other project-related physical facilities could degrade or eliminate least  
12 Bell's vireo and yellow warbler habitat. AMMs, including AMM2, and Mitigation Measure BIO-75  
13 would offset these impacts so that the proposed project would not result in a substantial adverse  
14 effect through habitat modifications and would not substantially reduce the number or restrict the  
15 range of either species.

16 In the absence of other conservation actions, the effects on tricolored blackbird habitat from the  
17 proposed project would represent an adverse effect as a result of habitat modification and potential  
18 for direct mortality of a special-status species. The acres of protection and restoration contained in  
19 the near-term Plan goals, in addition to the detailed habitat value goals that would be applied to  
20 near-term acres, are more than sufficient to satisfy the typical mitigation ratios that would be  
21 applied to the project-level effects of CM1 and the near-term impacts from other conservation  
22 measures on nesting, roosting, and cultivated lands foraging habitat. With the protection and  
23 restoration acres described above, and the implementation of AMMs, including AMM2, potential  
24 impacts of Plan implementation in the near-term time period would result in a less-than-significant  
25 impact on tricolored blackbird.

26 The loss of western burrowing owl habitat and potential for mortality of this special-status species  
27 under the proposed project would represent an adverse effect in the absence of other conservation  
28 actions. However, with habitat protection and restoration associated with CM3, CM8, and CM11,  
29 guided by biological goals and objectives and by AMMs, including AMM2, and with Mitigation  
30 Measure BIO-91, the loss of habitat or direct mortality through implementation of the proposed  
31 project would not result in a substantial adverse effect through habitat modifications and would not  
32 substantially reduce the number or restrict the range of the species.

33 In the absence of other conservation actions, the loss of western yellow-billed cuckoo habitat  
34 associated with the proposed project would represent an adverse effect as a result of habitat  
35 modification and potential for direct mortality of a special-status species. However, the species is  
36 not an established breeder in the study area and current presence is limited to migrants. In addition,  
37 the habitat that would be lost consists of small, fragmented riparian stands that do not provide high-  
38 value habitat for the species. With habitat protection and restoration associated with CM3, CM7, and  
39 CM11, guided by biological goals and objectives and by AMMs, including AMM2, the effects of habitat  
40 loss and potential mortality on western yellow-billed cuckoo under the proposed project would be  
41 less-than-significant.

42 In the absence of other conservation actions, the effects on white-tailed kite habitat from the  
43 proposed project would represent an adverse effect as a result of habitat modification and potential  
44 for direct mortality of a special status species; however, considering the proposed project's

1 protection and restoration provisions, which would provide acreages of new or enhanced habitat in  
2 amounts greater than necessary to compensate for the time lag of restoring riparian and foraging  
3 habitats lost to construction and restoration activities, and with implementation of AMMs that  
4 would eliminate the potential for take, including AMM2, the loss of habitat or direct mortality  
5 through implementation of the proposed project would not result in take of white-tailed kite per  
6 Section 86 of the California Fish and Game Code.

7 In the absence of other conservation actions, the effects on least Bell's vireo and yellow warbler  
8 habitat from the proposed project would represent an adverse effect as a result of habitat  
9 modification and potential for direct mortality of special-status species. The acres of protection  
10 contained in the near-term Plan goals and the additional detail in the biological objectives for  
11 yellow-breasted chat satisfy the typical mitigation ratios that would be applied to the project-level  
12 effects of CM1, as well as mitigate the near-term effects of the other conservation measures. The  
13 restored riparian habitat could require 5 years to several decades, for ecological succession to occur  
14 and for restored riparian habitat to functionally replace habitat that has been affected. However,  
15 because the modeled habitat impacted largely consists of small patches of blackberry, willow, and  
16 riparian scrub, temporal losses of potential habitat as a result of proposed project actions would be  
17 expected to have a less-than-significant population-level impact on the species in the near-term time  
18 period. Considering the conservation actions described above, and AMMs, including AMM2, the  
19 proposed project would not result in a substantial adverse effect through habitat modifications and  
20 would not substantially reduce the number or restrict the range of yellow-breasted chat.

21 In the absence of other conservation actions, the effects on Cooper's hawk and osprey nesting  
22 habitat would represent an adverse effect as a result of habitat modification and potential for direct  
23 mortality of special-status species. Cooper's hawk and osprey are not species that are covered under  
24 the proposed project. For the proposed project to avoid an adverse effect on individuals,  
25 preconstruction surveys for noncovered avian species would be required to ensure that active nests  
26 are detected and avoided. Implementation of Mitigation Measure BIO-75 and AMMs, including  
27 AMM2, would reduce the potential impact on nesting Cooper's hawk and osprey to a less-than-  
28 significant level.

29 In the absence of other conservation actions, the effects on golden eagle and ferruginous hawk  
30 foraging habitat would represent an adverse effect as a result of habitat modification and potential  
31 for direct mortality of special-status species. However, the acres of restoration and protection  
32 contained in the near-term Plan goals and the additional detail in the biological objectives satisfy the  
33 typical mitigation that would be applied to the project-level effects of CM1 on golden eagle and  
34 ferruginous hawk, as well as mitigate the near-term effects of the other conservation measures with  
35 the consideration that some portion of the cultivated lands protected in the near-term timeframe  
36 would be managed in suitable crop types to compensate for the loss of habitat at a ratio of 2:1. The  
37 implementation of these conservation actions, in addition to AMMs, including AMM2, and Mitigation  
38 Measure BIO-113, would reduce the impact of habitat loss in the near-term to less than significant.

39 In the absence of other conservation actions, effects on nesting cormorants, herons, and egrets  
40 would represent an adverse effect as a result of habitat modification and potential for direct  
41 mortality of special-status species. This impact would be considered significant. However, the  
42 proposed project has committed to habitat protection, restoration, management and enhancement  
43 activities described above. The natural community restoration and protection activities would be  
44 concluded in the first 10 years of Plan implementation, which is close enough in time to the  
45 occurrence of impacts to constitute adequate mitigation for CEQA purposes. In addition,

1 implementation of AMMs, including AMM2, and Mitigation Measure BIO-75, would reduce this  
2 potential impact to a less-than-significant level.

3 In the absence of other conservation actions, effects on short-eared owl and northern harrier would  
4 represent an adverse effect as a result of habitat modification and potential for direct mortality of  
5 special-status species. This impact would be considered significant. However, the proposed project  
6 has committed to habitat protection, restoration, management and enhancement activities  
7 described above. The natural community restoration and protection activities would be concluded  
8 in the first 10 years of Plan implementation, which is close enough in time to the occurrence of  
9 impacts to constitute adequate mitigation for CEQA purposes. In addition, implementation of AMMs,  
10 including AMM2, and Mitigation Measure BIO-75, would reduce this potential impact to a less-than-  
11 significant level.

12 In the absence of other conservation actions, effects on nesting cormorants, herons, and egrets  
13 would represent an adverse effect as a result of habitat modification and potential for direct  
14 mortality of special-status species. This impact would be considered significant. However, the  
15 proposed project has committed to habitat protection, restoration, management and enhancement  
16 activities described above. The natural community restoration and protection activities would be  
17 concluded in the first 10 years of Plan implementation, which is close enough in time to the  
18 occurrence of impacts to constitute adequate mitigation for CEQA purposes. In addition,  
19 implementation of AMMs, including AMM2, and Mitigation Measure BIO-125, would reduce this  
20 potential impact in the near-term to a less-than-significant level.

21 In the absence of other conservation actions, the effects on California horned lark and grasshopper  
22 sparrow habitat would represent an adverse effect as a result of habitat modification and potential  
23 direct mortality of special-status species. This impact would be significant. California horned lark  
24 and grasshopper sparrow are not covered species under the proposed project. For the proposed  
25 project to avoid an adverse effect on individuals, preconstruction surveys for noncovered avian  
26 species would be required to ensure that nests are detected and avoided. The acres of restoration  
27 and protection contained in the near-term Plan goals and the additional detail in the biological  
28 objectives satisfy the typical mitigation that would be applied to the project-level effects of CM1 on  
29 California horned lark and grasshopper sparrow, as well as mitigate the near-term effects of the  
30 other conservation measures with the consideration that some portion of the cultivated lands  
31 protected in the near-term timeframe would be managed in suitable crop types to compensate for  
32 the loss of habitat at a ratio of 2:1. With the acres of habitat protection and restoration described  
33 above, in addition to AMMs, including AMM2, and Mitigation Measure BIO-75, the proposed project  
34 would not result in a substantial adverse effect through habitat modification and would not  
35 substantially reduce the number or restrict the range of either species.

36 In the absence of other conservation actions, the effects on least bittern and white-faced ibis habitat  
37 would represent an adverse effect as a result of habitat modification and potential direct mortality  
38 of special-status species. This impact would be significant. Least bittern and white-faced ibis are not  
39 covered species under the proposed project. For the proposed project to avoid an adverse effect on  
40 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
41 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
42 Plan goals satisfy the typical mitigation that would be applied to the project-level effects of CM1, as  
43 well as mitigate the near-term effects of the other conservation measures. With the acres of habitat  
44 protection and restoration described above, in addition to AMMs, including AMM2, and Mitigation  
45 Measure BIO-75, the proposed project would not result in a substantial adverse effect through

1 habitat modification and would not substantially reduce the number or restrict the range of either  
2 species.

3 In the absence of other conservation actions, the effects on loggerhead shrike habitat would  
4 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
5 special-status species. This impact would be significant. Loggerhead shrike is not a covered species  
6 under the proposed project. For the proposed project to avoid an adverse effect on individuals,  
7 preconstruction surveys for noncovered avian species would be required to ensure that nests are  
8 detected and avoided. With implementation of Mitigation Measures BIO-138 and BIO-75, CM3 and  
9 CM11, as well as AMMs, including AMM2, the proposed project would not result in a substantial  
10 adverse effect through habitat modification and would not substantially reduce the number or  
11 restrict the range of either species.

12 In the absence of other conservation actions, the effects on Modesto song sparrow habitat would  
13 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
14 special-status species. This impact would be significant. Modesto song sparrow is not a covered  
15 species under the proposed project. For the proposed project to avoid an adverse effect on  
16 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
17 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
18 Plan goals and the additional detail in the biological objectives satisfy the typical mitigation that  
19 would be applied to the project-level effects of CM1 on Modesto song sparrow, as well as mitigate  
20 the near-term effects of the other conservation measures. With the acres of habitat protection and  
21 restoration described above, in addition to AMMs, including AMM2, and Mitigation Measure BIO-75,  
22 the proposed project would not result in a substantial adverse effect through habitat modification  
23 and would not substantially reduce the number or restrict the range of the species.

24 In the absence of other conservation actions, the effects on yellow-headed blackbird habitat would  
25 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
26 special-status species. This impact would be significant. Yellow-headed blackbird is not a covered  
27 species under the proposed project. For the proposed project to avoid an adverse effect on  
28 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
29 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
30 Plan goals and the additional detail in the biological objectives satisfy the typical mitigation that  
31 would be applied to the project-level effects of CM1 on yellow-headed blackbird habitat, as well as  
32 mitigate the near-term effects of the other conservation measures. With implementation of AMMs,  
33 including AMM2, and Mitigation Measure BIO-75, the proposed project would not result in a  
34 substantial adverse effect through habitat modification and would not substantially reduce the  
35 number or restrict the range of the species.

36 Implementation of the proposed project would result in temporary and permanent losses of riparian  
37 and grassland habitat and potential direct mortality of riparian brush rabbit. However, the habitat  
38 restoration and protection associated with CM3, CM7, CM8, and CM11, guided by species-specific  
39 goals and objectives and by AMMs, including AMM2, would offset significant impacts so that the  
40 proposed project would not represent a substantial adverse effect through habitat modifications  
41 and would not substantially reduce the number or restrict the range of the species.

42 In the absence of other conservation actions, the effects on San Joaquin kit fox and American badger  
43 habitat from the proposed project would represent a significant impact as a result of habitat  
44 modification and potential direct mortality of a special-status species. However, with habitat



1 protection, restoration, management, and enhancement associated with CM3, CM8, and CM11, and  
 2 guided by AMMs, including AMM2, which would be in place throughout the time period of  
 3 construction, and with implementation of Mitigation Measure BIO-162, the impact of the proposed  
 4 project as a whole on San Joaquin kit fox and American badger would be less than significant.

5 Implementation of the proposed project would result in the loss of habitat or direct mortality and  
 6 would result in a substantial adverse effect through habitat modifications and would substantially  
 7 reduce the number or restrict the range of San Joaquin pocket mouse. With implementation of  
 8 AMMs, including AMM2, the loss of habitat or direct mortality under the proposed project would  
 9 have a less-than-significant impact on San Joaquin pocket mouse.

10 The permanent loss of roosting habitat from the proposed project would be mitigated, minimized,  
 11 and offset through implementation of Mitigation Measure BIO-166, and AMMs, including AMM2.  
 12 These AMMs include elements that avoid or minimize the risk of construction activity affecting  
 13 habitat and species adjacent to work areas and storage sites.

14 In absence of the implementation of AMM2, in addition to other CMs, MMs, and AMMs, there would  
 15 be a greater potential for significant impacts to these species and natural communities due to loss of  
 16 habitat and loss of species from construction and/or operation of the proposed project. Refer to the  
 17 impact analyses for each resource for more detail.

### 18 **3B.4.3 AMM3 Stormwater Pollution Prevention Plan**

19 *Explanation of effectiveness:* During construction, the proposed project could result in the direct loss  
 20 of vernal pool complex natural community due to inundation during tidal marsh restoration (CM4)  
 21 and construction of the water conveyance facility (CM1). The construction- and inundation-related  
 22 loss of this special-status natural community would represent a significant impact if it were not  
 23 offset by avoidance and minimization measures and other actions associated with proposed project  
 24 conservation components. Loss of vernal pool complex natural community would be considered  
 25 both a loss in acreage of a sensitive natural community and a loss of wetland as defined by Section  
 26 404 of the CWA. Implementation of CM3 and AMMs, including AMM3, would offset and minimize  
 27 these impacts. Because of the offsetting protection and restoration activities and implementation of  
 28 AMMs, impacts would be less than significant.

29 During the near-term timeframe, the proposed project would permanently remove and temporarily  
 30 remove managed wetland through inundation or construction-related losses in habitat from CM1,  
 31 CM2, and CM4 activities. The construction or inundation loss of this special-status natural  
 32 community would represent a significant impact if it were not offset by other conservation actions.  
 33 The implementation of CMs and AMMs, including AMM3 which includes incorporation of a  
 34 stormwater pollution prevention plan, would offset and minimize these impacts. The AMMs include  
 35 elements that avoid or minimize the risk of affecting habitats at work areas. In spite of the managed  
 36 wetland protection, restoration and avoidance measures contained in the proposed project there  
 37 would be a net reduction in the acreage of this special-status natural community in the near-term.  
 38 This would be a significant impact when judged by the significance criteria listed earlier in this  
 39 chapter. However, the conversion of these managed habitats to natural tidal wetland types that  
 40 support similar ecological functions (2,000 acres of tidal brackish emergent wetland and 8,850 acres  
 41 of tidal freshwater emergent wetland) would offset this significant impact. As a result, there would  
 42 be a less-than-significant impact.

1 The effects on vernal pool crustacean habitat from construction and operation of the proposed  
2 project would represent an adverse effect as a result of habitat modification of a special-status  
3 species and potential for direct mortality in the absence of other conservation actions. However, the  
4 proposed project has committed to impact limits for vernal pool crustacean habitat and to habitat  
5 protection, restoration, management and enhancement associated with CM3, CM9, and CM11. These  
6 conservation activities would be guided by species-specific goals and objectives, and by AMM1,  
7 including AMM3 that requires incorporation of a stormwater pollution prevention plan, which  
8 would be in place throughout the proposed project's permit term. All of these AMMs include  
9 elements that avoid or minimize the risk of affecting habitats and species adjacent to work areas.  
10 Considering these commitments over the permit term, the proposed project would not result in a  
11 substantial adverse effect through habitat modifications and would not substantially reduce the  
12 number or restrict the range of vernal pool crustaceans. Therefore, the project would have a less-  
13 than-significant impact on vernal pool crustaceans.

14 The proposed project would result in permanent and temporary impacts on modeled habitat for  
15 valley elderberry longhorn beetle in the study area. These effects would result from the construction  
16 of the water conveyance facilities (CM1), and implementing other conservation measures (Yolo  
17 Bypass fisheries improvements [CM2] and tidal restoration [CM4]). The implementation of CMs and  
18 AMMs, including AMM3 which includes incorporation of a stormwater pollution prevention plan,  
19 would offset and minimize these impacts. All of these AMMs include elements that avoid or  
20 minimize the risk of affecting habitats and species adjacent to work areas and RTM storage sites.  
21 These commitments, implemented together with the AMMs, are more than sufficient to support the  
22 conclusion that the near-term impacts of the proposed project would be less than significant under  
23 CEQA.

24 The effects on nonlisted vernal pool invertebrate habitat from the proposed project would represent  
25 an adverse effect as a result of habitat modification of a special-status species and potential for  
26 direct mortality in the absence of other conservation actions. The implementation of CMs and AMMs,  
27 including AMM3 which includes incorporation of a stormwater pollution prevention plan, would  
28 offset and minimize these impacts. Considering these commitments, the proposed project would not  
29 result in a substantial adverse effect through habitat modifications and would not substantially  
30 reduce the number or restrict the range of nonlisted vernal pool invertebrates.

31 The proposed project would result in permanent and temporary effects on aquatic habitat and  
32 upland terrestrial cover habitat for California red-legged frog. The effects would result from  
33 construction of the water conveyance facilities (CM1 and CM11). These conservation actions would  
34 occur in the same timeframe as the construction losses, thereby avoiding adverse effects of habitat  
35 loss on California red-legged frog. The implementation of CMs and AMMs, including AMM3 which  
36 includes incorporation of a stormwater pollution prevention plan, would offset and minimize these  
37 impacts. These AMMs include elements that avoid or minimize the risk of affecting individuals and  
38 species habitats adjacent to work areas and storage sites. With implementation of these AMMs and  
39 CM3 offset the impacts and are more than sufficient to support the conclusion that the near-term  
40 effects of the proposed project on California red-legged frog would be less than significant.

41 The proposed project would permanently and temporarily combined remove upland terrestrial  
42 cover habitat for California tiger salamander. In the absence of other conservation actions, the  
43 losses of California tiger salamander upland habitat associated with the proposed project would  
44 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
45 special-status species. However, with habitat protection and restoration associated with the

1 conservation components, guided by landscape-scale goals and objectives and by AMMs, including  
2 AMM3, which includes elements that avoid or minimize the risk of affecting habitats and species  
3 adjacent to work areas and storage sites and would be in place throughout the construction phase,  
4 the impacts of the proposed project as a whole on California tiger salamander would not be  
5 significant.

6 Implementation of the proposed project would result in a loss of modeled foraging habitat for  
7 California least tern in the study area in the near-term. These effects would result from the  
8 construction of the water conveyance facilities (CM1), and implementing other conservation  
9 measures (Yolo Bypass fisheries improvements [CM2], and tidal habitat restoration [CM4]). The  
10 implementation of MMs, CMs and AMMs, including AMM3 which includes incorporation of a  
11 stormwater pollution prevention plan, would offset and minimize these impacts. Therefore, the loss  
12 of habitat under this alternative would have a less-than-significant impact on California least tern.

13 In the absence of other conservation actions, the effects on greater sandhill crane habitat from the  
14 proposed project would represent an adverse effect as a result of habitat modification of a special-  
15 status species and potential for direct mortality. Mitigation Measure BIO-69a, AMMs that would  
16 eliminate potential take, including AMM3, would be available to guide the near-term protection of  
17 cultivated lands to ensure that the near-term impacts of moderate- to very high-value habitat for  
18 greater sandhill crane were compensated for with appropriate crop types and natural communities,  
19 and would offset impacts from the proposed project so that it would not result in a substantial  
20 adverse effect through habitat modifications and would not result in take of greater sandhill cranes  
21 per Section 86 of the California Fish and Game Code.

22 In the absence of other conservation actions, the effects on lesser sandhill crane habitat from the  
23 proposed project would represent an adverse effect as a result of habitat modification of a special-  
24 status species and potential for direct mortality. Implementation of Mitigation Measure BIO-72 and  
25 AMMS, including AMM3, would offset impacts so that the proposed project would not result in a  
26 substantial adverse effect through habitat modifications and would not substantially reduce the  
27 number or restrict the range of lesser sandhill cranes. Therefore, the proposed project would have a  
28 less-than-significant impact on lesser sandhill cranes.

29 The proposed project's conservation measures would result in the combined permanent and  
30 temporary loss of modeled habitat for least Bell's vireo and yellow warbler. Conservation measures  
31 that would result in these losses are conveyance facilities and transmission line construction, and  
32 establishment and use of borrow and spoil areas (CM1), Fremont Weir/Yolo Bypass fisheries  
33 improvements (CM2), tidal natural communities restoration (CM4), and seasonally inundated  
34 floodplain restoration (CM5). Habitat enhancement and management activities (CM11) which  
35 include ground disturbance or removal of nonnative vegetation, could result in local adverse habitat  
36 effects. In addition, maintenance activities associated with the long-term operation of the water  
37 conveyance facilities and other project-related physical facilities could degrade or eliminate least  
38 Bell's vireo and yellow warbler habitat. AMMs, including AMM3, and Mitigation Measure BIO-75  
39 would offset these impacts so that the proposed project would not result in a substantial adverse  
40 effect through habitat modifications and would not substantially reduce the number or restrict the  
41 range of either species.

42 In the absence of other conservation actions, the effects on tricolored blackbird habitat from the  
43 proposed project would represent an adverse effect as a result of habitat modification and potential  
44 for direct mortality of a special-status species. The acres of protection and restoration contained in

1 the near-term Plan goals, in addition to the detailed habitat value goals that would be applied to  
2 near-term acres, are more than sufficient to satisfy the typical mitigation ratios that would be  
3 applied to the project-level effects of CM1 and the near-term impacts from other conservation  
4 measures on nesting, roosting, and cultivated lands foraging habitat. With the protection and  
5 restoration acres described above, and the implementation of AMMs, including AMM3, potential  
6 impacts of Plan implementation in the near-term time period would result in a less-than-significant  
7 impact on tricolored blackbird.

8 The loss of western burrowing owl habitat and potential for mortality of this special-status species  
9 under the proposed project would represent an adverse effect in the absence of other conservation  
10 actions. However, with habitat protection and restoration associated with CM3, CM8, and CM11,  
11 guided by biological goals and objectives and by AMMs, including AMM3, and with Mitigation  
12 Measure BIO-91, the loss of habitat or direct mortality through implementation of the proposed  
13 project would not result in a substantial adverse effect through habitat modifications and would not  
14 substantially reduce the number or restrict the range of the species.

15 In the absence of other conservation actions, the loss of western yellow-billed cuckoo habitat  
16 associated with the proposed project would represent an adverse effect as a result of habitat  
17 modification and potential for direct mortality of a special-status species. However, the species is  
18 not an established breeder in the study area and current presence is limited to migrants. In addition,  
19 the habitat that would be lost consists of small, fragmented riparian stands that do not provide high-  
20 value habitat for the species. With habitat protection and restoration associated with CM3, CM7, and  
21 CM11, guided by biological goals and objectives and by AMMs, including AMM3, the effects of habitat  
22 loss and potential mortality on western yellow-billed cuckoo under the proposed project would be  
23 less-than-significant.

24 In the absence of other conservation actions, the effects on white-tailed kite habitat from the  
25 proposed project would represent an adverse effect as a result of habitat modification and potential  
26 for direct mortality of a special status species; however, considering the proposed project's  
27 protection and restoration provisions, which would provide acreages of new or enhanced habitat in  
28 amounts greater than necessary to compensate for the time lag of restoring riparian and foraging  
29 habitats lost to construction and restoration activities, and with implementation of AMMs that  
30 would eliminate the potential for take and AMM3, the loss of habitat through implementation of the  
31 proposed project would not result in take of white-tailed kite per Section 86 of the California Fish  
32 and Game Code.

33 In the absence of other conservation actions, the effects on least Bell's vireo and yellow warbler  
34 habitat from the proposed project would represent an adverse effect as a result of habitat  
35 modification and potential for direct mortality of special-status species. The acres of protection  
36 contained in the near-term Plan goals and the additional detail in the biological objectives for  
37 yellow-breasted chat satisfy the typical mitigation ratios that would be applied to the project-level  
38 effects of CM1, as well as mitigate the near-term effects of the other conservation measures. The  
39 restored riparian habitat could require 5 years to several decades, for ecological succession to occur  
40 and for restored riparian habitat to functionally replace habitat that has been affected. However,  
41 because the modeled habitat impacted largely consists of small patches of blackberry, willow, and  
42 riparian scrub, temporal losses of potential habitat as a result of proposed project's actions would  
43 be expected to have a less-than-significant population-level impact on the species in the near-term  
44 time period. Considering the conservation actions described above, and AMMs, including AMM3, the

1 proposed project would not result in a substantial adverse effect through habitat modifications and  
2 would not substantially reduce the number or restrict the range of yellow-breasted chat.

3 In the absence of other conservation actions, the effects on Cooper's hawk and osprey nesting  
4 habitat would represent an adverse effect as a result of habitat modification and potential for direct  
5 mortality of special-status species. Cooper's hawk and osprey are not species that are covered under  
6 the proposed project. For the proposed project to avoid an adverse effect on individuals,  
7 preconstruction surveys for noncovered avian species would be required to ensure that active nests  
8 are detected and avoided. Implementation of Mitigation Measure BIO-75 and AMMs, including  
9 AMM3, would reduce the potential impact on nesting Cooper's hawk and osprey to a less-than-  
10 significant level.

11 In the absence of other conservation actions, the effects on golden eagle and ferruginous hawk  
12 foraging habitat would represent an adverse effect as a result of habitat modification and potential  
13 for direct mortality of special-status species. However, the acres of restoration and protection  
14 contained in the near-term Plan goals and the additional detail in the biological objectives satisfy the  
15 typical mitigation that would be applied to the project-level effects of CM1 on golden eagle and  
16 ferruginous hawk, as well as mitigate the near-term effects of the other conservation measures with  
17 the consideration that some portion of the cultivated lands protected in the near-term timeframe  
18 would be managed in suitable crop types to compensate for the loss of habitat at a ratio of 2:1. The  
19 implementation of these conservation actions, in addition to AMMs, including AMM3, and Mitigation  
20 Measure BIO-113, would reduce the impact of habitat loss in the near-term to less than significant.

21 In the absence of other conservation actions, effects on nesting cormorants, herons, and egrets  
22 would represent an adverse effect as a result of habitat modification and potential for direct  
23 mortality of special-status species. This impact would be considered significant. However, the  
24 proposed project has committed to habitat protection, restoration, management and enhancement  
25 activities described above. The natural community restoration and protection activities would be  
26 concluded in the first 10 years of Plan implementation, which is close enough in time to the  
27 occurrence of impacts to constitute adequate mitigation for CEQA purposes. In addition,  
28 implementation of AMMs, including AMM3, and Mitigation Measure BIO-75, would reduce this  
29 potential impact to a less-than-significant level.

30 In the absence of other conservation actions, effects on short-eared owl and northern harrier would  
31 represent an adverse effect as a result of habitat modification and potential for direct mortality of  
32 special-status species. This impact would be considered significant. However, the proposed project  
33 has committed to habitat protection, restoration, management and enhancement activities  
34 described above. The natural community restoration and protection activities would be concluded  
35 in the first 10 years of Plan implementation, which is close enough in time to the occurrence of  
36 impacts to constitute adequate mitigation for CEQA purposes. In addition, implementation of AMMs,  
37 including AMM3, and Mitigation Measure BIO-75, would reduce this potential impact to a less-than-  
38 significant level.

39 In the absence of other conservation actions, effects on nesting cormorants, herons, and egrets  
40 would represent an adverse effect as a result of habitat modification and potential for direct  
41 mortality of special-status species. This impact would be considered significant. However, the  
42 proposed project has committed to habitat protection, restoration, management and enhancement  
43 activities described above. The natural community restoration and protection activities would be  
44 concluded in the first 10 years of Plan implementation, which is close enough in time to the

1 occurrence of impacts to constitute adequate mitigation for CEQA purposes. In addition,  
2 implementation of AMMs, including AMM3, and Mitigation Measure BIO-125, would reduce this  
3 potential impact in the near-term to a less-than-significant level.

4 In the absence of other conservation actions, the effects on California horned lark and grasshopper  
5 sparrow habitat would represent an adverse effect as a result of habitat modification and potential  
6 direct mortality of special-status species. This impact would be significant. California horned lark  
7 and grasshopper sparrow are not covered species under the proposed project. For the proposed  
8 project to avoid an adverse effect on individuals, preconstruction surveys for noncovered avian  
9 species would be required to ensure that nests are detected and avoided. The acres of restoration  
10 and protection contained in the near-term Plan goals and the additional detail in the biological  
11 objectives satisfy the typical mitigation that would be applied to the project-level effects of CM1 on  
12 California horned lark and grasshopper sparrow, as well as mitigate the near-term effects of the  
13 other conservation measures with the consideration that some portion of the cultivated lands  
14 protected in the near-term timeframe would be managed in suitable crop types to compensate for  
15 the loss of habitat at a ratio of 2:1. With the acres of habitat protection and restoration described  
16 above, in addition to AMMs, including AMM3, and Mitigation Measure BIO-75, the proposed project  
17 would not result in a substantial adverse effect through habitat modification and would not  
18 substantially reduce the number or restrict the range of either species.

19 In the absence of other conservation actions, the effects on least bittern and white-faced ibis habitat  
20 would represent an adverse effect as a result of habitat modification and potential direct mortality  
21 of special-status species. This impact would be significant. Least bittern and white-faced ibis are not  
22 covered species under the proposed project. For the proposed project to avoid an adverse effect on  
23 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
24 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
25 Plan goals satisfy the typical mitigation that would be applied to the project-level effects of CM1, as  
26 well as mitigate the near-term effects of the other conservation measures. With the acres of habitat  
27 protection and restoration described above, in addition to AMMs, including AMM3, and Mitigation  
28 Measure BIO-75, the proposed project would not result in a substantial adverse effect through  
29 habitat modification and would not substantially reduce the number or restrict the range of either  
30 species.

31 In the absence of other conservation actions, the effects on loggerhead shrike habitat would  
32 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
33 special-status species. This impact would be significant. Loggerhead shrike is not a covered species  
34 under the proposed project. For the proposed project to avoid an adverse effect on individuals,  
35 preconstruction surveys for noncovered avian species would be required to ensure that nests are  
36 detected and avoided. With implementation of Mitigation Measures BIO-138 and BIO-75, CM3 and  
37 CM11, as well as AMMs, including AMM3, the proposed project would not result in a substantial  
38 adverse effect through habitat modification and would not substantially reduce the number or  
39 restrict the range of either species.

40 In the absence of other conservation actions, the effects on Modesto song sparrow habitat would  
41 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
42 special-status species. This impact would be significant. Modesto song sparrow is not a covered  
43 species under the proposed project. For the proposed project to avoid an adverse effect on  
44 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
45 nests are detected and avoided. The acres of restoration and protection contained in the near-term

1 Plan goals and the additional detail in the biological objectives satisfy the typical mitigation that  
2 would be applied to the project-level effects of CM1 on Modesto song sparrow, as well as mitigate  
3 the near-term effects of the other conservation measures. With the acres of habitat protection and  
4 restoration described above, in addition to AMMs, including AMM3, and Mitigation Measure BIO-75,  
5 the proposed project would not result in a substantial adverse effect through habitat modification  
6 and would not substantially reduce the number or restrict the range of the species.

7 In the absence of other conservation actions, the effects on yellow-headed blackbird habitat would  
8 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
9 special-status species. This impact would be significant. Yellow-headed blackbird is not a covered  
10 species under the proposed project. For the proposed project to avoid an adverse effect on  
11 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
12 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
13 Plan goals and the additional detail in the biological objectives satisfy the typical mitigation that  
14 would be applied to the project-level effects of CM1 on yellow-headed blackbird habitat, as well as  
15 mitigate the near-term effects of the other conservation measures. With implementation of AMMs,  
16 including AMM3, and Mitigation Measure BIO-75, the proposed project would not result in a  
17 substantial adverse effect through habitat modification and would not substantially reduce the  
18 number or restrict the range of the species.

19 Implementation of the proposed project would result in temporary and permanent losses of riparian  
20 and grassland habitat and potential direct mortality of riparian brush rabbit. However, the habitat  
21 restoration and protection associated with CM3, CM7, CM8, and CM11, guided by species-specific  
22 goals and objectives and by AMMs, including AMM3, would offset significant impacts so that the  
23 proposed project would not represent a substantial adverse effect through habitat modifications  
24 and would not substantially reduce the number or restrict the range of the species.

25 In the absence of other conservation actions, the effects on San Joaquin kit fox and American badger  
26 habitat from the proposed project would represent a significant impact as a result of habitat  
27 modification and potential direct mortality of a special-status species. However, with habitat  
28 protection, restoration, management, and enhancement associated with CM3, CM8, and CM11, and  
29 guided by AMMs, including AMM3, which would be in place throughout the time period of  
30 construction, and with implementation of Mitigation Measure BIO-162, the impact of the proposed  
31 project as a whole on San Joaquin kit fox and American badger would be less than significant.

32 Implementation of the proposed project would result in the loss of habitat or direct mortality  
33 through and would result in a substantial adverse effect through habitat modifications and would  
34 substantially reduce the number or restrict the range of San Joaquin pocket mouse. With  
35 implementation of AMMs, including AMM3, the loss of habitat or direct mortality under the  
36 proposed project would have a less-than-significant impact on San Joaquin pocket mouse.

37 The permanent loss of roosting habitat from the proposed project would be mitigated, minimized,  
38 and offset through implementation of Mitigation Measure BIO-166, and AMMs, including AMM3.  
39 These AMMs include elements that avoid or minimize the risk of construction activity affecting  
40 habitat and species adjacent to work areas and storage sites.

41 In absence of the implementation of AMM3, in addition to other CMs, MMs, and AMMs, there would  
42 be a greater potential for significant impacts to these species and natural communities due to loss of  
43 habitat and loss of species from construction and/or operation of the proposed project. Refer to the  
44 impact analyses for each resource for more detail.

### 1 **3B.4.4** **AMM4 Erosion and Sediment Control Plan**

2 *Explanation of effectiveness:* The operation and maintenance activities associated with the proposed  
 3 project would have the potential to create minor losses in total acreage of tidal perennial aquatic  
 4 natural community in the study area, and could create temporary increases in turbidity and  
 5 sedimentation. The activities could also introduce herbicides periodically to control nonnative,  
 6 invasive plants. Implementation of environmental commitments, CMs and AMMs, including AMM4,  
 7 would minimize these impacts. Ongoing operation, maintenance and management activities would  
 8 not result in a net permanent reduction in the acreage or value of this sensitive natural community  
 9 within the study area. Therefore, there would be a less-than-significant impact on the tidal perennial  
 10 aquatic natural community.

11 The operation and maintenance activities associated with the proposed project would have the  
 12 potential to create minor changes in total acreage of tidal brackish emergent wetland natural  
 13 community in the study area, and could create temporary increases in turbidity and sedimentation.  
 14 The activities could also introduce herbicides periodically to control nonnative, invasive plants.  
 15 Implementation of environmental commitments, CMs and AMMs, including AMM4, would minimize  
 16 these impacts, and other operations and maintenance activities. Long-term restoration activities  
 17 associated with CM4 Tidal Natural Communities Restoration would greatly expand this natural  
 18 community in the study area.

19 The operation and maintenance activities associated with the proposed project, including changed  
 20 water operations in the upstream rivers, would have the potential to create minor changes in total  
 21 acreage of tidal freshwater emergent wetland natural community in the study area, and could create  
 22 temporary increases in turbidity and sedimentation. The activities could also introduce herbicides  
 23 periodically to control nonnative, invasive plants. Implementation of environmental commitments,  
 24 CMs, and AMMs, including AMM4, would minimize and offset these effects. Long-term restoration  
 25 activities associated with CM4 Tidal Natural Communities Restoration would greatly expand this  
 26 natural community in the study area.

27 The operation and maintenance activities associated with the proposed project would have the  
 28 potential to create minor changes in total acreage of valley/foothill riparian natural community in  
 29 the study area, and could create temporary increases in turbidity and sedimentation. The activities  
 30 could also introduce herbicides periodically to control nonnative, invasive plants. Implementation of  
 31 environmental commitments, CMs, and AMMs, including AMM4, would minimize and offset these  
 32 effects. With the restoration and enhancement of these amounts of habitat, in addition to  
 33 implementation of AMMs, impacts on this natural community would be less than significant for  
 34 CEQA purposes.

35 The operation and maintenance activities associated with the proposed project would have the  
 36 potential to create minor changes in total acreage of nontidal perennial aquatic natural community  
 37 in the study area, and could create temporary increases in turbidity and sedimentation. The  
 38 activities could also introduce herbicides periodically to control nonnative, invasive plants.  
 39 Implementation of environmental commitments, CMs, and AMMs, including AMM4, would offset and  
 40 minimize these effects. Ongoing operation, maintenance and management activities would not result  
 41 in a net permanent reduction in this sensitive natural community within the study area. Therefore,  
 42 there would be a less-than-significant impact on the nontidal perennial aquatic natural community.

43 The operation and maintenance activities associated with the proposed project would have the  
 44 potential to create minor changes in total acreage of nontidal freshwater perennial emergent



1 wetland natural community in the study area, and could create temporary increases in turbidity and  
2 sedimentation. The activities could also introduce herbicides periodically to control nonnative,  
3 invasive plants. Implementation of environmental commitments, CMs, and AMMs, including AMM4,  
4 would minimize and offset these impacts.

5 The operation and maintenance activities associated with the proposed project would have the  
6 potential to create minor changes in total acreage of alkali seasonal wetland complex natural  
7 community in the study area, and could create temporary increases sedimentation. The activities  
8 could also introduce herbicides periodically to control nonnative, invasive plants. Implementation of  
9 environmental commitments, CMs and AMMs, including AMM4, would offset and minimize these  
10 impacts to a less than significant level.

11 During construction, the proposed project could result in the direct loss of vernal pool complex  
12 natural community due to inundation during tidal marsh restoration (CM4) and construction of the  
13 water conveyance facility (CM1). The construction- and inundation-related loss of this special-status  
14 natural community would represent a significant impact if it were not offset by avoidance and  
15 minimization measures and other actions associated with proposed project conservation  
16 components. Loss of vernal pool complex natural community would be considered both a loss in  
17 acreage of a sensitive natural community and a loss of wetland as defined by Section 404 of the  
18 CWA. Implementation of CM3 and AMMs, including AMM4, would offset and minimize these impacts.  
19 Because of the offsetting protection and restoration activities and implementation of AMMs, impacts  
20 would be less than significant.

21 The operation and maintenance activities associated with the proposed project would have the  
22 potential to create minor changes in total acreage of vernal pool complex natural community in the  
23 study area, and could create temporary increases in sedimentation or damage from recreational  
24 activity. The activities could also introduce herbicides periodically to control nonnative, invasive  
25 plants. These impacts would be offset and minimized through implementation of environmental  
26 commitments, CMs and AMMS, including AMM4.

27 During the near-term timeframe, the proposed project would permanently remove and temporarily  
28 remove managed wetland through inundation or construction-related losses in habitat from CM1,  
29 CM2, and CM4 activities. The construction or inundation loss of this special-status natural  
30 community would represent a significant impact if it were not offset by other conservation actions.  
31 The implementation of CMs and AMMs, including AMM4 which includes an erosion and sediment  
32 control plan, would offset and minimize these impacts. The AMMs include elements that avoid or  
33 minimize the risk of affecting habitats at work areas. In spite of the managed wetland protection,  
34 restoration and avoidance measures contained in the proposed project there would be a net  
35 reduction in the acreage of this special-status natural community in the near-term. This would be a  
36 significant impact when judged by the significance criteria listed earlier in this chapter. However,  
37 the conversion of these managed habitats to natural tidal wetland types that support similar  
38 ecological functions (2,000 acres of tidal brackish emergent wetland and 8,850 acres of tidal  
39 freshwater emergent wetland) would offset this significant impact. As a result, there would be a  
40 less-than-significant impact.

41 The operation and maintenance activities associated with the proposed project would have the  
42 potential to create minor changes in total acreage of managed wetland natural community in the  
43 study area, and could create temporary increases in turbidity and sedimentation. The activities  
44 could also introduce herbicides periodically to control nonnative, invasive plants. Hunting could

1 intermittently reduce the availability of this community to special-status and common wildlife  
2 species. Implementation of environmental commitments, CMs and AMMS, including AMM4, would  
3 minimize and offset these impacts to a less than significant level.

4 The operation and maintenance activities associated with the proposed project would have the  
5 potential to create minor changes in total acreage of other natural seasonal wetland natural  
6 community in the study area, and could create temporary increases in sedimentation. The activities  
7 could also introduce herbicides periodically to control nonnative, invasive plants. The  
8 implementation of CMs and AMMs, including AMM4 which includes an erosion and sediment control  
9 plan, would offset and minimize these impacts. Ongoing operation, maintenance and management  
10 activities would not result in a net permanent reduction in this natural community within the study  
11 area.

12 The operation and maintenance activities associated with the proposed project would have the  
13 potential to create minor changes in total acreage of grassland natural community in the study area,  
14 and could create temporary increases sedimentation. The activities could also introduce herbicides  
15 periodically to control nonnative, invasive plants. The implementation of CMs and AMMs, including  
16 AMM4 which includes an erosion and sediment control plan, would offset and minimize these  
17 impacts.

18 The effects on vernal pool crustacean habitat from construction and operation of the proposed  
19 project would represent an adverse effect as a result of habitat modification of a special-status  
20 species and potential for direct mortality in the absence of other conservation actions. However, the  
21 proposed project has committed to impact limits for vernal pool crustacean habitat and to habitat  
22 protection, restoration, management and enhancement associated with CM3, CM9, and CM11. These  
23 conservation activities would be guided by species-specific goals and objectives, and by AMM1,  
24 including AMM4 that requires an erosion and sediment control plan, which would be in place  
25 throughout the proposed project's permit term. All of these AMMs include elements that avoid or  
26 minimize the risk of affecting habitats and species adjacent to work areas. Considering these  
27 commitments over the permit term, the proposed project would not result in a substantial adverse  
28 effect through habitat modifications and would not substantially reduce the number or restrict the  
29 range of vernal pool crustaceans. Therefore, the project would have a less-than-significant impact on  
30 vernal pool crustaceans.

31 The proposed project would result in permanent and temporary impacts on modeled habitat for  
32 valley elderberry longhorn beetle in the study area. These effects would result from the construction  
33 of the water conveyance facilities (CM1), and implementing other conservation measures (Yolo  
34 Bypass fisheries improvements [CM2] and tidal restoration [CM4]). The implementation of CMs and  
35 AMMs, including AMM4 which includes an erosion and sediment control plan, would offset and  
36 minimize these impacts. All of these AMMs include elements that avoid or minimize the risk of  
37 affecting habitats and species adjacent to work areas and RTM storage sites. These commitments,  
38 implemented together with the AMMs, are more than sufficient to support the conclusion that the  
39 near-term impacts of the proposed project would be less than significant under CEQA.

40 The effects on nonlisted vernal pool invertebrate habitat from the proposed project would represent  
41 an adverse effect as a result of habitat modification of a special-status species and potential for  
42 direct mortality in the absence of other conservation actions. The implementation of CMs and AMMs,  
43 including AMM4 which includes an erosion and sediment control plan, would offset and minimize  
44 these impacts. Considering these commitments, the proposed project would not result in a

1 substantial adverse effect through habitat modifications and would not substantially reduce the  
2 number or restrict the range of nonlisted vernal pool invertebrates.

3 The proposed project would result in permanent and temporary effects on aquatic habitat and  
4 upland terrestrial cover habitat for California red-legged frog. The effects would result from  
5 construction of the water conveyance facilities (CM1 and CM11). These conservation actions would  
6 occur in the same timeframe as the construction losses, thereby avoiding adverse effects of habitat  
7 loss on California red-legged frog. The implementation of CMs and AMMs, including AMM4 which  
8 includes an erosion and sediment control plan, would offset and minimize these impacts. These  
9 AMMs include elements that avoid or minimize the risk of affecting individuals and species habitats  
10 adjacent to work areas and storage sites. With implementation of these AMMs and CM3 offset the  
11 impacts and are more than sufficient to support the conclusion that the near-term effects of the  
12 proposed project on California red-legged frog would be less than significant.

13 The proposed project would permanently and temporarily combined remove upland terrestrial  
14 cover habitat for California tiger salamander. In the absence of other conservation actions, the  
15 losses of California tiger salamander upland habitat associated with the proposed project would  
16 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
17 special-status species. However, with habitat protection and restoration associated with the  
18 conservation components, guided by landscape-scale goals and objectives and by AMMs, including  
19 AMM4, which includes elements that avoid or minimize the risk of affecting habitats and species  
20 adjacent to work areas and storage sites and would be in place throughout the construction phase,  
21 the impacts of the proposed project as a whole on California tiger salamander would not be  
22 significant.

23 Implementation of the proposed project would result in a loss of modeled foraging habitat for  
24 California least tern in the study area in the near-term. These effects would result from the  
25 construction of the water conveyance facilities (CM1), and implementing other conservation  
26 measures (Yolo Bypass fisheries improvements [CM2], and tidal habitat restoration [CM4]). The  
27 implementation of MMs, CMs and AMMs, including AMM4 which includes an erosion and sediment  
28 control plan, would offset and minimize these impacts. Therefore, the loss of habitat under this  
29 alternative would have a less-than-significant impact on California least tern.

30 In the absence of other conservation actions, the effects on greater sandhill crane habitat from the  
31 proposed project would represent an adverse effect as a result of habitat modification of a special-  
32 status species and potential for direct mortality. Mitigation Measure BIO-69a and AMMs that would  
33 eliminate the potential for take, including AMM4, would be available to guide the near-term  
34 protection of cultivated lands to ensure that the near-term impacts of moderate- to very high-value  
35 habitat for greater sandhill crane were compensated for with appropriate crop types and natural  
36 communities, and would offset impacts from the proposed project so that it would not result in take  
37 of greater sandhill cranes per Section 86 of the California Fish and Game Code.

38 In the absence of other conservation actions, the effects on lesser sandhill crane habitat from the  
39 proposed project would represent an adverse effect as a result of habitat modification of a special-  
40 status species and potential for direct mortality. Implementation of Mitigation Measure BIO-72 and  
41 AMMS, including AMM4, would offset impacts so that the proposed project would not result in a  
42 substantial adverse effect through habitat modifications and would not substantially reduce the  
43 number or restrict the range of lesser sandhill cranes. Therefore, the proposed project would have a  
44 less-than-significant impact on lesser sandhill cranes.

1 The proposed project's conservation measures would result in the combined permanent and  
2 temporary loss of modeled habitat for least Bell's vireo and yellow warbler. Conservation measures  
3 that would result in these losses are conveyance facilities and transmission line construction, and  
4 establishment and use of borrow and spoil areas (CM1), Fremont Weir/Yolo Bypass fisheries  
5 improvements (CM2), tidal natural communities restoration (CM4), and seasonally inundated  
6 floodplain restoration (CM5). Habitat enhancement and management activities (CM11) which  
7 include ground disturbance or removal of nonnative vegetation, could result in local adverse habitat  
8 effects. In addition, maintenance activities associated with the long-term operation of the water  
9 conveyance facilities and other project-related physical facilities could degrade or eliminate least  
10 Bell's vireo and yellow warbler habitat. AMMs, including AMM4, and Mitigation Measure BIO-75  
11 would offset these impacts so that the proposed project would not result in a substantial adverse  
12 effect through habitat modifications and would not substantially reduce the number or restrict the  
13 range of either species.

14 In the absence of other conservation actions, the effects on tricolored blackbird habitat from the  
15 proposed project would represent an adverse effect as a result of habitat modification and potential  
16 for direct mortality of a special-status species. The acres of protection and restoration contained in  
17 the near-term Plan goals, in addition to the detailed habitat value goals that would be applied to  
18 near-term acres, are more than sufficient to satisfy the typical mitigation ratios that would be  
19 applied to the project-level effects of CM1 and the near-term impacts from other conservation  
20 measures on nesting, roosting, and cultivated lands foraging habitat. With the protection and  
21 restoration acres described above, and the implementation of AMMs, including AMM4, potential  
22 impacts of Plan implementation in the near-term time period would result in a less-than-significant  
23 impact on tricolored blackbird.

24 The loss of western burrowing owl habitat and potential for mortality of this special-status species  
25 under the proposed project would represent an adverse effect in the absence of other conservation  
26 actions. However, with habitat protection and restoration associated with CM3, CM8, and CM11,  
27 guided by biological goals and objectives and by AMMs, including AMM4, and with Mitigation  
28 Measure BIO-91, the loss of habitat or direct mortality through implementation of the proposed  
29 project would not result in a substantial adverse effect through habitat modifications and would not  
30 substantially reduce the number or restrict the range of the species.

31 In the absence of other conservation actions, the loss of western yellow-billed cuckoo habitat  
32 associated with the proposed project would represent an adverse effect as a result of habitat  
33 modification and potential for direct mortality of a special-status species. However, the species is  
34 not an established breeder in the study area and current presence is limited to migrants. In addition,  
35 the habitat that would be lost consists of small, fragmented riparian stands that do not provide high-  
36 value habitat for the species. With habitat protection and restoration associated with CM3, CM7, and  
37 CM11, guided by biological goals and objectives and by AMMs, including AMM4, the effects of habitat  
38 loss and potential mortality on western yellow-billed cuckoo under the proposed project would be  
39 less-than-significant.

40 In the absence of other conservation actions, the effects on white-tailed kite habitat from the  
41 proposed project would represent an adverse effect as a result of habitat modification and potential  
42 for direct mortality of a special status species; however, considering the proposed project's  
43 protection and restoration provisions, which would provide acreages of new or enhanced habitat in  
44 amounts greater than necessary to compensate for the time lag of restoring riparian and foraging  
45 habitats lost to construction and restoration activities, and with implementation of AMMs that

1 would eliminate the potential for take, including AMM4, the loss of habitat or direct mortality  
2 through implementation of the proposed project would not result in a substantial adverse effect  
3 through habitat modifications and would not result in take of white-tailed kite per Section 86 of the  
4 California Fish and Game Code.

5 In the absence of other conservation actions, the effects on least Bell's vireo and yellow warbler  
6 habitat from the proposed project would represent an adverse effect as a result of habitat  
7 modification and potential for direct mortality of special-status species. The acres of protection  
8 contained in the near-term Plan goals and the additional detail in the biological objectives for  
9 yellow-breasted chat satisfy the typical mitigation ratios that would be applied to the project-level  
10 effects of CM1, as well as mitigate the near-term effects of the other conservation measures. The  
11 restored riparian habitat could require 5 years to several decades, for ecological succession to occur  
12 and for restored riparian habitat to functionally replace habitat that has been affected. However,  
13 because the modeled habitat impacted largely consists of small patches of blackberry, willow, and  
14 riparian scrub, temporal losses of potential habitat as a result of project-related actions would be  
15 expected to have a less-than-significant population-level impact on the species in the near-term time  
16 period. Considering the conservation actions described above, and AMMs, including AMM4, the  
17 proposed project would not result in a substantial adverse effect through habitat modifications and  
18 would not substantially reduce the number or restrict the range of yellow-breasted chat.

19 In the absence of other conservation actions, the effects on Cooper's hawk and osprey nesting  
20 habitat would represent an adverse effect as a result of habitat modification and potential for direct  
21 mortality of special-status species. Cooper's hawk and osprey are not species that are covered under  
22 the proposed project. For the proposed project to avoid an adverse effect on individuals,  
23 preconstruction surveys for noncovered avian species would be required to ensure that active nests  
24 are detected and avoided. Implementation of Mitigation Measure BIO-75 and AMMs, including  
25 AMM4, would reduce the potential impact on nesting Cooper's hawk and osprey to a less-than-  
26 significant level.

27 In the absence of other conservation actions, the effects on golden eagle and ferruginous hawk  
28 foraging habitat would represent an adverse effect as a result of habitat modification and potential  
29 for direct mortality of special-status species. However, the acres of restoration and protection  
30 contained in the near-term Plan goals and the additional detail in the biological objectives satisfy the  
31 typical mitigation that would be applied to the project-level effects of CM1 on golden eagle and  
32 ferruginous hawk, as well as mitigate the near-term effects of the other conservation measures with  
33 the consideration that some portion of the cultivated lands protected in the near-term timeframe  
34 would be managed in suitable crop types to compensate for the loss of habitat at a ratio of 2:1. The  
35 implementation of these conservation actions, in addition to AMMs, including AMM4, and Mitigation  
36 Measure BIO-113, would reduce the impact of habitat loss in the near-term to less than significant.

37 In the absence of other conservation actions, effects on nesting cormorants, herons, and egrets  
38 would represent an adverse effect as a result of habitat modification and potential for direct  
39 mortality of special-status species. This impact would be considered significant. However, the  
40 proposed project has committed to habitat protection, restoration, management and enhancement  
41 activities described above. The natural community restoration and protection activities would be  
42 concluded in the first 10 years of Plan implementation, which is close enough in time to the  
43 occurrence of impacts to constitute adequate mitigation for CEQA purposes. In addition,  
44 implementation of AMMs, including AMM4, and Mitigation Measure BIO-75, would reduce this  
45 potential impact to a less-than-significant level.

1 In the absence of other conservation actions, effects on short-eared owl and northern harrier would  
2 represent an adverse effect as a result of habitat modification and potential for direct mortality of  
3 special-status species. This impact would be considered significant. However, the proposed project  
4 has committed to habitat protection, restoration, management and enhancement activities  
5 described above. The natural community restoration and protection activities would be concluded  
6 in the first 10 years of Plan implementation, which is close enough in time to the occurrence of  
7 impacts to constitute adequate mitigation for CEQA purposes. In addition, implementation of AMMs,  
8 including AMM4, and Mitigation Measure BIO-75, would reduce this potential impact to a less-than-  
9 significant level.

10 In the absence of other conservation actions, effects on nesting cormorants, herons, and egrets  
11 would represent an adverse effect as a result of habitat modification and potential for direct  
12 mortality of special-status species. This impact would be considered significant. However, the  
13 proposed project has committed to habitat protection, restoration, management and enhancement  
14 activities described above. The natural community restoration and protection activities would be  
15 concluded in the first 10 years of Plan implementation, which is close enough in time to the  
16 occurrence of impacts to constitute adequate mitigation for CEQA purposes. In addition,  
17 implementation of AMMs, including AMM4, and Mitigation Measure BIO-125, would reduce this  
18 potential impact in the near-term to a less-than-significant level.

19 In the absence of other conservation actions, the effects on California horned lark and grasshopper  
20 sparrow habitat would represent an adverse effect as a result of habitat modification and potential  
21 direct mortality of special-status species. This impact would be significant. California horned lark  
22 and grasshopper sparrow are not covered species under the proposed project. For the proposed  
23 project to avoid an adverse effect on individuals, preconstruction surveys for noncovered avian  
24 species would be required to ensure that nests are detected and avoided. The acres of restoration  
25 and protection contained in the near-term Plan goals and the additional detail in the biological  
26 objectives satisfy the typical mitigation that would be applied to the project-level effects of CM1 on  
27 California horned lark and grasshopper sparrow, as well as mitigate the near-term effects of the  
28 other conservation measures with the consideration that some portion of the cultivated lands  
29 protected in the near-term timeframe would be managed in suitable crop types to compensate for  
30 the loss of habitat at a ratio of 2:1. With the acres of habitat protection and restoration described  
31 above, in addition to AMMs, including AMM4, and Mitigation Measure BIO-75, the proposed project  
32 would not result in a substantial adverse effect through habitat modification and would not  
33 substantially reduce the number or restrict the range of either species.

34 In the absence of other conservation actions, the effects on least bittern and white-faced ibis habitat  
35 would represent an adverse effect as a result of habitat modification and potential direct mortality  
36 of special-status species. This impact would be significant. Least bittern and white-faced ibis are not  
37 covered species under the proposed project. For the proposed project to avoid an adverse effect on  
38 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
39 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
40 Plan goals satisfy the typical mitigation that would be applied to the project-level effects of CM1, as  
41 well as mitigate the near-term effects of the other conservation measures. With the acres of habitat  
42 protection and restoration described above, in addition to AMMs, including AMM4, and Mitigation  
43 Measure BIO-75, the proposed project would not result in a substantial adverse effect through  
44 habitat modification and would not substantially reduce the number or restrict the range of either  
45 species.

1 In the absence of other conservation actions, the effects on loggerhead shrike habitat would  
2 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
3 special-status species. This impact would be significant. Loggerhead shrike is not a covered species  
4 under the proposed project. For the proposed project to avoid an adverse effect on individuals,  
5 preconstruction surveys for noncovered avian species would be required to ensure that nests are  
6 detected and avoided. With implementation of Mitigation Measures BIO-138 and BIO-75, CM3 and  
7 CM11, as well as AMMs, including AMM4, the proposed project would not result in a substantial  
8 adverse effect through habitat modification and would not substantially reduce the number or  
9 restrict the range of either species.

10 In the absence of other conservation actions, the effects on Modesto song sparrow habitat would  
11 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
12 special-status species. This impact would be significant. Modesto song sparrow is not a covered  
13 species under the proposed project. For the proposed project to avoid an adverse effect on  
14 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
15 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
16 Plan goals and the additional detail in the biological objectives satisfy the typical mitigation that  
17 would be applied to the project-level effects of CM1 on Modesto song sparrow, as well as mitigate  
18 the near-term effects of the other conservation measures. With the acres of habitat protection and  
19 restoration described above, in addition to AMMs, including AMM4, and Mitigation Measure BIO-75,  
20 the proposed project would not result in a substantial adverse effect through habitat modification  
21 and would not substantially reduce the number or restrict the range of the species.

22 In the absence of other conservation actions, the effects on yellow-headed blackbird habitat would  
23 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
24 special-status species. This impact would be significant. Yellow-headed blackbird is not a covered  
25 species under the proposed project. For the proposed project to avoid an adverse effect on  
26 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
27 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
28 Plan goals and the additional detail in the biological objectives satisfy the typical mitigation that  
29 would be applied to the project-level effects of CM1 on yellow-headed blackbird habitat, as well as  
30 mitigate the near-term effects of the other conservation measures. With implementation of AMMs,  
31 including AMM4, and Mitigation Measure BIO-75, the proposed project would not result in a  
32 substantial adverse effect through habitat modification and would not substantially reduce the  
33 number or restrict the range of the species.

34 Implementation of the proposed project would result in temporary and permanent losses of riparian  
35 and grassland habitat and potential direct mortality of riparian brush rabbit. However, the habitat  
36 restoration and protection associated with CM3, CM7, CM8, and CM11, guided by species-specific  
37 goals and objectives and by AMMs, including AMM4, would offset significant impacts so that the  
38 BDCP would not represent a substantial adverse effect through habitat modifications and would not  
39 substantially reduce the number or restrict the range of the species.

40 In the absence of other conservation actions, the effects on San Joaquin kit fox and American badger  
41 habitat from the proposed project would represent a significant impact as a result of habitat  
42 modification and potential direct mortality of a special-status species. However, with habitat  
43 protection, restoration, management, and enhancement associated with CM3, CM8, and CM11, and  
44 guided by AMMs, including AMM4, which would be in place throughout the time period of

1 construction, and with implementation of Mitigation Measure BIO-162, the impact of the proposed  
2 project as a whole on San Joaquin kit fox and American badger would be less than significant.

3 Implementation of the proposed project would result in the loss of habitat or direct mortality  
4 through and would result in a substantial adverse effect through habitat modifications and would  
5 substantially reduce the number or restrict the range of San Joaquin pocket mouse. With  
6 implementation of AMMs, including AMM4, the loss of habitat or direct mortality under the  
7 proposed project would have a less-than-significant impact on San Joaquin pocket mouse.

8 The permanent loss of roosting habitat from the proposed project would be mitigated, minimized,  
9 and offset through implementation of Mitigation Measure BIO-166, and AMMs, including AMM4.  
10 These AMMs include elements that avoid or minimize the risk of construction activity affecting  
11 habitat and species adjacent to work areas and storage sites.

12 Implementation of the proposed project would result in impacts on natural communities from the  
13 introduction or spread of invasive plants. However, this would not result in the long-term  
14 degradation of a sensitive natural community because implementation of AMM4, AMM10, AMM11  
15 and CM11, would offset the temporary disturbance of land associated with the alternative and  
16 would not result in substantial alteration of site conditions. Implementation of AMM4, AMM10, and  
17 AMM11 would also reduce the adverse effects that could result from construction activities. The  
18 AMMs provide methods to minimize ground disturbance, guidance for developing restoration and  
19 monitoring plans for temporary construction effects, and measures to minimize the introduction  
20 and spread of invasive plants. AMM4 would involve the preparation and implementation of an  
21 erosion and sediment control plan that would control erosion and sedimentation and restore soils  
22 and vegetation in affected areas. In combination with other AMMs and CM11, AMM4 would help  
23 minimize impacts to a less than significant level.

24 In absence of the implementation of AMM4, in addition to other CMs, MMs, and AMMs, there would  
25 be a greater potential for significant impacts to these species and natural communities due to loss of  
26 habitat and loss of species from construction and/or operation of the proposed project. Refer to the  
27 impact analyses for each resource for more detail.

### 28 **3B.4.5 AMM5 Spill Prevention, Containment, and** 29 **Countermeasure Plan**

30 *Explanation of effectiveness:* The operation and maintenance activities associated with the proposed  
31 project would have the potential to create minor losses in total acreage of tidal perennial aquatic  
32 natural community in the study area, and could create temporary increases in turbidity and  
33 sedimentation. The activities could also introduce herbicides periodically to control nonnative,  
34 invasive plants. Implementation of environmental commitments, CMs and AMMs, including AMM5,  
35 would minimize these impacts. Ongoing operation, maintenance and management activities would  
36 not result in a net permanent reduction in the acreage or value of this sensitive natural community  
37 within the study area. Therefore, there would be a less-than-significant impact on the tidal perennial  
38 aquatic natural community.

39 The operation and maintenance activities associated with the proposed project would have the  
40 potential to create minor changes in total acreage of tidal brackish emergent wetland natural  
41 community in the study area, and could create temporary increases in turbidity and sedimentation.  
42 The activities could also introduce herbicides periodically to control nonnative, invasive plants.



1 Implementation of environmental commitments, CMs and AMMs, including AMM5, would minimize  
2 these impacts, and other operations and maintenance activities. Long-term restoration activities  
3 associated with CM4 Tidal Natural Communities Restoration would greatly expand this natural  
4 community in the study area.

5 The proposed project would result in the loss of tidal freshwater emergent wetland natural  
6 community (permanent and temporary) due to construction of the water conveyance facilities  
7 (CM1) and fish passage improvements (CM2), and tidal marsh restoration (CM4). CM4, AMM1 and  
8 other AMMs would also be implemented to minimize impacts. Because of these offsetting near-term  
9 restoration activities and AMMs, impacts would be less than significant and no mitigation would be  
10 required.

11 The operation and maintenance activities associated with the proposed project would have the  
12 potential to create minor changes in total acreage of valley/foothill riparian natural community in  
13 the study area, and could create temporary increases in turbidity and sedimentation. The activities  
14 could also introduce herbicides periodically to control nonnative, invasive plants. Implementation of  
15 environmental commitments, CMs, and AMMs, including AMM5, would minimize and offset these  
16 effects. With the restoration and enhancement of these amounts of habitat, in addition to  
17 implementation of AMMs, impacts on this natural community would be less than significant for  
18 CEQA purposes.

19 The operation and maintenance activities associated with the proposed project would have the  
20 potential to create minor changes in total acreage of nontidal perennial aquatic natural community  
21 in the study area, and could create temporary increases in turbidity and sedimentation. The  
22 activities could also introduce herbicides periodically to control nonnative, invasive plants.  
23 Implementation of environmental commitments, CMs, and AMMs, including AMM5, would offset and  
24 minimize these effects. Ongoing operation, maintenance and management activities would not result  
25 in a net permanent reduction in this sensitive natural community within the study area. Therefore,  
26 there would be a less-than-significant impact on the nontidal perennial aquatic natural community.

27 The operation and maintenance activities associated with the proposed project would have the  
28 potential to create minor changes in total acreage of nontidal freshwater perennial emergent  
29 wetland natural community in the study area, and could create temporary increases in turbidity and  
30 sedimentation. The activities could also introduce herbicides periodically to control nonnative,  
31 invasive plants. Implementation of environmental commitments, CMs, and AMMs, including AMM5,  
32 would minimize and offset these impacts.

33 The operation and maintenance activities associated with the proposed project would have the  
34 potential to create minor changes in total acreage of alkali seasonal wetland complex natural  
35 community in the study area, and could create temporary increases sedimentation. The activities  
36 could also introduce herbicides periodically to control nonnative, invasive plants. Implementation of  
37 environmental commitments, CMs and AMMs, including AMM5, would offset and minimize these  
38 impacts to a less than significant level.

39 The operation and maintenance activities associated with the proposed project would have the  
40 potential to create minor changes in total acreage of vernal pool complex natural community in the  
41 study area, and could create temporary increases in sedimentation or damage from recreational  
42 activity. The activities could also introduce herbicides periodically to control nonnative, invasive  
43 plants. These impacts would be offset and minimized through implementation of environmental  
44 commitments, CMs and AMMS, including AMM5.

1 The operation and maintenance activities associated with the proposed project would have the  
2 potential to create minor changes in total acreage of managed wetland natural community in the  
3 study area, and could create temporary increases in turbidity and sedimentation. The activities  
4 could also introduce herbicides periodically to control nonnative, invasive plants. Hunting could  
5 intermittently reduce the availability of this community to special-status and common wildlife  
6 species. Implementation of environmental commitments, CMs and AMMs, including AMM5, would  
7 minimize and offset these impacts to a less than significant level.

8 The operation and maintenance activities associated with the proposed project would have the  
9 potential to create minor changes in total acreage of other natural seasonal wetland natural  
10 community in the study area, and could create temporary increases in sedimentation. The activities  
11 could also introduce herbicides periodically to control nonnative, invasive plants. The  
12 implementation of CMs and AMMs, including AMM5 which includes a spill prevention containment  
13 and countermeasure plan, would offset and minimize these impacts. Ongoing operation,  
14 maintenance and management activities would not result in a net permanent reduction in this  
15 natural community within the study area.

16 The operation and maintenance activities associated with the proposed project would have the  
17 potential to create minor changes in total acreage of grassland natural community in the study area,  
18 and could create temporary increases sedimentation. The activities could also introduce herbicides  
19 periodically to control nonnative, invasive plants. The implementation of CMs and AMMs, including  
20 AMM5 which includes a spill prevention containment and countermeasure plan, would offset and  
21 minimize these impacts.

22 The effects on vernal pool crustacean habitat from construction and operation of the proposed  
23 project would represent an adverse effect as a result of habitat modification of a special-status  
24 species and potential for direct mortality in the absence of other conservation actions. However, the  
25 proposed project has committed to impact limits for vernal pool crustacean habitat and to habitat  
26 protection, restoration, management and enhancement associated with CM3, CM9, and CM11. These  
27 conservation activities would be guided by species-specific goals and objectives, and by AMM1,  
28 including AMM5 that requires a spill prevention containment and countermeasure plan, which  
29 would be in place throughout the proposed project's permit term. All of these AMMs include  
30 elements that avoid or minimize the risk of affecting habitats and species adjacent to work areas.  
31 Considering these commitments, the proposed project over the term of the proposed project would  
32 not result in a substantial adverse effect through habitat modifications and would not substantially  
33 reduce the number or restrict the range of vernal pool crustaceans. Therefore, the project would  
34 have a less-than-significant impact on vernal pool crustaceans.

35 The proposed project would result in permanent and temporary impacts on modeled habitat for  
36 valley elderberry longhorn beetle in the study area. These effects would result from the construction  
37 of the water conveyance facilities (CM1), and implementing other conservation measures (Yolo  
38 Bypass fisheries improvements [CM2] and tidal restoration [CM4]). The implementation of CMs and  
39 AMMs, including AMM5 which includes a spill prevention containment and countermeasure plan,  
40 would offset and minimize these impacts. All of these AMMs include elements that avoid or  
41 minimize the risk of affecting habitats and species adjacent to work areas and RTM storage sites.  
42 These commitments, implemented together with the AMMs, are more than sufficient to support the  
43 conclusion that the near-term impacts of the proposed project would be less than significant under  
44 CEQA.

1 The effects on nonlisted vernal pool invertebrate habitat from the proposed project would represent  
2 an adverse effect as a result of habitat modification of a special-status species and potential for  
3 direct mortality in the absence of other conservation actions. The implementation of CMs and AMMs,  
4 including AMM5 which includes a spill prevention containment and countermeasure plan, would  
5 offset and minimize these impacts. Considering these commitments, the proposed project would not  
6 result in a substantial adverse effect through habitat modifications and would not substantially  
7 reduce the number or restrict the range of nonlisted vernal pool invertebrates.

8 The proposed project would result in permanent and temporary effects on aquatic habitat and  
9 upland terrestrial cover habitat for California red-legged frog. The effects would result from  
10 construction of the water conveyance facilities (CM1 and CM11). These conservation actions would  
11 occur in the same timeframe as the construction losses, thereby avoiding adverse effects of habitat  
12 loss on California red-legged frog. The implementation of CMs and AMMs, including AMM5 which  
13 includes a spill prevention containment and countermeasure plan, would offset and minimize these  
14 impacts. These AMMs include elements that avoid or minimize the risk of affecting individuals and  
15 species habitats adjacent to work areas and storage sites. With implementation of these AMMs and  
16 CM3 offset the impacts and are more than sufficient to support the conclusion that the near-term  
17 effects of the proposed project on California red-legged frog would be less than significant.

18 The proposed project would permanently and temporarily combined remove upland terrestrial  
19 cover habitat for California tiger salamander. In the absence of other conservation actions, the  
20 losses of California tiger salamander upland habitat associated with the proposed project would  
21 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
22 special-status species. However, with habitat protection and restoration associated with the  
23 conservation components, guided by landscape-scale goals and objectives and by AMMs, including  
24 AMM5, which includes elements that avoid or minimize the risk of affecting habitats and species  
25 adjacent to work areas and storage sites and would be in place throughout the construction phase,  
26 the impacts of the proposed project as a whole on California tiger salamander would not be  
27 significant.

28 Implementation of the proposed project would result in a loss of modeled foraging habitat for  
29 California least tern in the study area in the near-term. These effects would result from the  
30 construction of the water conveyance facilities (CM1), and implementing other conservation  
31 measures (Yolo Bypass fisheries improvements [CM2], and tidal habitat restoration [CM4]). The  
32 implementation of MMs, CMs and AMMs, including AMM5 which includes a spill prevention  
33 containment and countermeasure plan, would offset and minimize these impacts. Therefore, the loss  
34 of habitat under this alternative would have a less-than-significant impact on California least tern.

35 In the absence of other conservation actions, the effects on greater sandhill crane habitat from the  
36 proposed project would represent an adverse effect as a result of habitat modification of a special-  
37 status species and potential for direct mortality. Mitigation Measure BIO-69a and AMMs that would  
38 eliminate the potential for take, including AMM5, would be available to guide the near-term  
39 protection of cultivated lands to ensure that the near-term impacts of moderate- to very high-value  
40 habitat for greater sandhill crane were compensated for with appropriate crop types and natural  
41 communities, and would offset impacts from the proposed project so that it would not result in take  
42 of greater sandhill cranes per Section 86 of the California Fish and Game Code.

43 In the absence of other conservation actions, the effects on lesser sandhill crane habitat from the  
44 proposed project would represent an adverse effect as a result of habitat modification of a special-

1 status species and potential for direct mortality. Implementation of Mitigation Measure BIO-72 and  
2 AMMS, including AMM5, would offset impacts so that the proposed project would not result in a  
3 substantial adverse effect through habitat modifications and would not substantially reduce the  
4 number or restrict the range of lesser sandhill cranes. Therefore, the proposed project would have a  
5 less-than-significant impact on lesser sandhill cranes.

6 The proposed project's conservation measures would result in the combined permanent and  
7 temporary loss of modeled habitat for least Bell's vireo and yellow warbler. Conservation measures  
8 that would result in these losses are conveyance facilities and transmission line construction, and  
9 establishment and use of borrow and spoil areas (CM1), Fremont Weir/Yolo Bypass fisheries  
10 improvements (CM2), tidal natural communities restoration (CM4), and seasonally inundated  
11 floodplain restoration (CM5). Habitat enhancement and management activities (CM11) which  
12 include ground disturbance or removal of nonnative vegetation, could result in local adverse habitat  
13 effects. In addition, maintenance activities associated with the long-term operation of the water  
14 conveyance facilities and other project-related physical facilities could degrade or eliminate least  
15 Bell's vireo and yellow warbler habitat. AMMs, including AMM5, and Mitigation Measure BIO-75  
16 would offset these impacts so that the proposed project would not result in a substantial adverse  
17 effect through habitat modifications and would not substantially reduce the number or restrict the  
18 range of either species.

19 In the absence of other conservation actions, the effects on tricolored blackbird habitat from the  
20 proposed project would represent an adverse effect as a result of habitat modification and potential  
21 for direct mortality of a special-status species. The acres of protection and restoration contained in  
22 the near-term Plan goals, in addition to the detailed habitat value goals that would be applied to  
23 near-term acres, are more than sufficient to satisfy the typical mitigation ratios that would be  
24 applied to the project-level effects of CM1 and the near-term impacts from other conservation  
25 measures on nesting, roosting, and cultivated lands foraging habitat. With the protection and  
26 restoration acres described above, and the implementation of AMMs, including AMM5, potential  
27 impacts of Plan implementation in the near-term time period would result in a less-than-significant  
28 impact on tricolored blackbird.

29 The loss of western burrowing owl habitat and potential for mortality of this special-status species  
30 under the proposed project would represent an adverse effect in the absence of other conservation  
31 actions. However, with habitat protection and restoration associated with CM3, CM8, and CM11,  
32 guided by biological goals and objectives and by AMMs, including AMM5, and with Mitigation  
33 Measure BIO-91, the loss of habitat or direct mortality through implementation of the proposed  
34 project would not result in a substantial adverse effect through habitat modifications and would not  
35 substantially reduce the number or restrict the range of the species.

36 In the absence of other conservation actions, the loss of western yellow-billed cuckoo habitat  
37 associated with the proposed project would represent an adverse effect as a result of habitat  
38 modification and potential for direct mortality of a special-status species. However, the species is  
39 not an established breeder in the study area and current presence is limited to migrants. In addition,  
40 the habitat that would be lost consists of small, fragmented riparian stands that do not provide high-  
41 value habitat for the species. With habitat protection and restoration associated with CM3, CM7, and  
42 CM11, guided by biological goals and objectives and by AMMs, including AMM5, the effects of habitat  
43 loss and potential mortality on western yellow-billed cuckoo under the proposed project would be  
44 less-than-significant.

1 In the absence of other conservation actions, the effects on white-tailed kite habitat from the  
2 proposed project would represent an adverse effect as a result of habitat modification and potential  
3 for direct mortality of a special status species; however, considering the proposed project's  
4 protection and restoration provisions, which would provide acreages of new or enhanced habitat in  
5 amounts greater than necessary to compensate for the time lag of restoring riparian and foraging  
6 habitats lost to construction and restoration activities, and with implementation of AMMs that  
7 would eliminate the potential for take, including AMM5, the loss of habitat or direct mortality  
8 through implementation of the proposed project would not result in a substantial adverse effect  
9 through habitat modifications and would not result in take of white-tailed kite per Section 86 of the  
10 California Fish and Game Code.

11 In the absence of other conservation actions, the effects on least Bell's vireo and yellow warbler  
12 habitat from the proposed project would represent an adverse effect as a result of habitat  
13 modification and potential for direct mortality of special-status species. The acres of protection  
14 contained in the near-term Plan goals and the additional detail in the biological objectives for  
15 yellow-breasted chat satisfy the typical mitigation ratios that would be applied to the project-level  
16 effects of CM1, as well as mitigate the near-term effects of the other conservation measures. The  
17 restored riparian habitat could require 5 years to several decades, for ecological succession to occur  
18 and for restored riparian habitat to functionally replace habitat that has been affected. However,  
19 because the modeled habitat impacted largely consists of small patches of blackberry, willow, and  
20 riparian scrub, temporal losses of potential habitat as a result of project-related actions would be  
21 expected to have a less-than-significant population-level impact on the species in the near-term time  
22 period. Considering the conservation actions described above, and AMMs, including AMM5, the  
23 proposed project would not result in a substantial adverse effect through habitat modifications and  
24 would not substantially reduce the number or restrict the range of yellow-breasted chat.

25 In the absence of other conservation actions, the effects on Cooper's hawk and osprey nesting  
26 habitat would represent an adverse effect as a result of habitat modification and potential for direct  
27 mortality of special-status species. Cooper's hawk and osprey are not species that are covered under  
28 the proposed project. For the proposed project to avoid an adverse effect on individuals,  
29 preconstruction surveys for noncovered avian species would be required to ensure that active nests  
30 are detected and avoided. Implementation of Mitigation Measure BIO-75 and AMMs, including  
31 AMM5, would reduce the potential impact on nesting Cooper's hawk and osprey to a less-than-  
32 significant level.

33 In the absence of other conservation actions, the effects on golden eagle and ferruginous hawk  
34 foraging habitat would represent an adverse effect as a result of habitat modification and potential  
35 for direct mortality of special-status species. However, the acres of restoration and protection  
36 contained in the near-term Plan goals and the additional detail in the biological objectives satisfy the  
37 typical mitigation that would be applied to the project-level effects of CM1 on golden eagle and  
38 ferruginous hawk, as well as mitigate the near-term effects of the other conservation measures with  
39 the consideration that some portion of the cultivated lands protected in the near-term timeframe  
40 would be managed in suitable crop types to compensate for the loss of habitat at a ratio of 2:1. The  
41 implementation of these conservation actions, in addition to AMMs, including AMM5, and Mitigation  
42 Measure BIO-113, would reduce the impact of habitat loss in the near-term to less than significant.

43 In the absence of other conservation actions, effects on nesting cormorants, herons, and egrets  
44 would represent an adverse effect as a result of habitat modification and potential for direct  
45 mortality of special-status species. This impact would be considered significant. However, the

1 proposed project has committed to habitat protection, restoration, management and enhancement  
2 activities described above. The natural community restoration and protection activities would be  
3 concluded in the first 10 years of Plan implementation, which is close enough in time to the  
4 occurrence of impacts to constitute adequate mitigation for CEQA purposes. In addition,  
5 implementation of AMMs, including AMM5, and Mitigation Measure BIO-75, would reduce this  
6 potential impact to a less-than-significant level.

7 In the absence of other conservation actions, effects on short-eared owl and northern harrier would  
8 represent an adverse effect as a result of habitat modification and potential for direct mortality of  
9 special-status species. This impact would be considered significant. However, the proposed project  
10 has committed to habitat protection, restoration, management and enhancement activities  
11 described above. The natural community restoration and protection activities would be concluded  
12 in the first 10 years of Plan implementation, which is close enough in time to the occurrence of  
13 impacts to constitute adequate mitigation for CEQA purposes. In addition, implementation of AMMs,  
14 including AMM5, and Mitigation Measure BIO-75, would reduce this potential impact to a less-than-  
15 significant level.

16 In the absence of other conservation actions, effects on nesting cormorants, herons, and egrets  
17 would represent an adverse effect as a result of habitat modification and potential for direct  
18 mortality of special-status species. This impact would be considered significant. However, the  
19 proposed project has committed to habitat protection, restoration, management and enhancement  
20 activities described above. The natural community restoration and protection activities would be  
21 concluded in the first 10 years of Plan implementation, which is close enough in time to the  
22 occurrence of impacts to constitute adequate mitigation for CEQA purposes. In addition,  
23 implementation of AMMs, including AMM5, and Mitigation Measure BIO-125, would reduce this  
24 potential impact in the near-term to a less-than-significant level.

25 In the absence of other conservation actions, the effects on California horned lark and grasshopper  
26 sparrow habitat would represent an adverse effect as a result of habitat modification and potential  
27 direct mortality of special-status species. This impact would be significant. California horned lark  
28 and grasshopper sparrow are not covered species under the proposed project. For the proposed  
29 project to avoid an adverse effect on individuals, preconstruction surveys for noncovered avian  
30 species would be required to ensure that nests are detected and avoided. The acres of restoration  
31 and protection contained in the near-term Plan goals and the additional detail in the biological  
32 objectives satisfy the typical mitigation that would be applied to the project-level effects of CM1 on  
33 California horned lark and grasshopper sparrow, as well as mitigate the near-term effects of the  
34 other conservation measures with the consideration that some portion of the cultivated lands  
35 protected in the near-term timeframe would be managed in suitable crop types to compensate for  
36 the loss of habitat at a ratio of 2:1. With the acres of habitat protection and restoration described  
37 above, in addition to AMMs, including AMM5, and Mitigation Measure BIO-75, the proposed project  
38 would not result in a substantial adverse effect through habitat modification and would not  
39 substantially reduce the number or restrict the range of either species.

40 In the absence of other conservation actions, the effects on least bittern and white-faced ibis habitat  
41 would represent an adverse effect as a result of habitat modification and potential direct mortality  
42 of special-status species. This impact would be significant. Least bittern and white-faced ibis are not  
43 covered species under the proposed project. For the proposed project to avoid an adverse effect on  
44 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
45 nests are detected and avoided. The acres of restoration and protection contained in the near-term

1 Plan goals satisfy the typical mitigation that would be applied to the project-level effects of CM1, as  
2 well as mitigate the near-term effects of the other conservation measures. With the acres of habitat  
3 protection and restoration described above, in addition to AMMs, including AMM5, and Mitigation  
4 Measure BIO-75, the proposed project would not result in a substantial adverse effect through  
5 habitat modification and would not substantially reduce the number or restrict the range of either  
6 species.

7 In the absence of other conservation actions, the effects on loggerhead shrike habitat would  
8 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
9 special-status species. This impact would be significant. Loggerhead shrike is not a covered species  
10 under the proposed project. For the proposed project to avoid an adverse effect on individuals,  
11 preconstruction surveys for noncovered avian species would be required to ensure that nests are  
12 detected and avoided. With implementation of Mitigation Measures BIO-138 and BIO-75, CM3 and  
13 CM11, as well as AMMs, including AMM5, the proposed project would not result in a substantial  
14 adverse effect through habitat modification and would not substantially reduce the number or  
15 restrict the range of either species.

16 In the absence of other conservation actions, the effects on Modesto song sparrow habitat would  
17 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
18 special-status species. This impact would be significant. Modesto song sparrow is not a covered  
19 species under the proposed project. For the proposed project to avoid an adverse effect on  
20 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
21 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
22 Plan goals and the additional detail in the biological objectives satisfy the typical mitigation that  
23 would be applied to the project-level effects of CM1 on Modesto song sparrow, as well as mitigate  
24 the near-term effects of the other conservation measures. With the acres of habitat protection and  
25 restoration described above, in addition to AMMs, including AMM5, and Mitigation Measure BIO-75,  
26 the proposed project would not result in a substantial adverse effect through habitat modification  
27 and would not substantially reduce the number or restrict the range of the species.

28 In the absence of other conservation actions, the effects on yellow-headed blackbird habitat would  
29 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
30 special-status species. This impact would be significant. Yellow-headed blackbird is not a covered  
31 species under the proposed project. For the proposed project to avoid an adverse effect on  
32 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
33 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
34 Plan goals and the additional detail in the biological objectives satisfy the typical mitigation that  
35 would be applied to the project-level effects of CM1 on yellow-headed blackbird habitat, as well as  
36 mitigate the near-term effects of the other conservation measures. With implementation of AMMs,  
37 including AMM5, and Mitigation Measure BIO-75, the proposed project would not result in a  
38 substantial adverse effect through habitat modification and would not substantially reduce the  
39 number or restrict the range of the species.

40 Implementation of the proposed project would result in temporary and permanent losses of riparian  
41 and grassland habitat and potential direct mortality of riparian brush rabbit. However, the habitat  
42 restoration and protection associated with CM3, CM7, CM8, and CM11, guided by species-specific  
43 goals and objectives and by AMMs, including AMM5, would offset significant impacts so that the  
44 proposed project would not represent a substantial adverse effect through habitat modifications  
45 and would not substantially reduce the number or restrict the range of the species.

1 In the absence of other conservation actions, the effects on San Joaquin kit fox and American badger  
 2 habitat from the proposed project would represent a significant impact as a result of habitat  
 3 modification and potential direct mortality of a special-status species. However, with habitat  
 4 protection, restoration, management, and enhancement associated with CM3, CM8, and CM11, and  
 5 guided by AMMs, including AMM5, which would be in place throughout the time period of  
 6 construction, and with implementation of Mitigation Measure BIO-162, the impact of the proposed  
 7 project as a whole on San Joaquin kit fox and American badger would be less than significant.

8 Implementation of the proposed project would result in the loss of habitat or direct mortality  
 9 through and would result in a substantial adverse effect through habitat modifications and would  
 10 substantially reduce the number or restrict the range of San Joaquin pocket mouse. With  
 11 implementation of AMMs, including AMM5, the loss of habitat or direct mortality under the  
 12 proposed project would have a less-than-significant impact on San Joaquin pocket mouse.

13 The permanent loss of roosting habitat from the proposed project would be mitigated, minimized,  
 14 and offset through implementation of Mitigation Measure BIO-166, and AMMs, including AMM5.  
 15 These AMMs include elements that avoid or minimize the risk of construction activity affecting  
 16 habitat and species adjacent to work areas and storage sites.

17 In absence of the implementation of AMM5, in addition to other CMs, MMs, and AMMs, there would  
 18 be a greater potential for significant impacts to these species and natural communities due to loss of  
 19 habitat and loss of species from construction and/or operation of the proposed project. Refer to the  
 20 impact analyses for each resource for more detail.

### 21 **3B.4.6 AMM6 Disposal and Reuse of Spoils**

22 *Explanation of effectiveness:* The proposed project would result in the near-term loss or conversion  
 23 of tidal perennial aquatic natural community due to construction of the water conveyance facilities  
 24 (CM1) and fish passage improvements (CM2), and inundation during tidal marsh restoration (CM4).  
 25 In addition to other CMs and AMMs, AMM6 would help minimize these losses and conversions  
 26 through disposal and reuse of soils to minimize impacts to reduce impacts to a less-than significant  
 27 level.

28 The proposed project would result in the loss of tidal freshwater emergent wetland natural  
 29 community (permanent and temporary) due to construction of the water conveyance facilities  
 30 (CM1) and fish passage improvements (CM2), and tidal marsh restoration (CM4). AMM6 would be  
 31 implemented to minimize impacts.

32 The proposed project would result in the loss of valley/foothill riparian natural community due to  
 33 construction of the water conveyance facilities (CM1) and fish passage improvements (CM2), and  
 34 inundation during tidal marsh restoration (CM4).The construction losses would be spread across  
 35 the near-term timeframe. AMM6 would be implemented to minimize impacts.

36 The proposed project would result in the loss of nontidal perennial aquatic natural community due  
 37 to construction of the water conveyance facilities (CM1) and fish passage improvements (CM2), and  
 38 change to tidally influenced inundation during tidal marsh restoration (CM4). AMM6 would be  
 39 implemented to minimize impacts.

40 The proposed project would result in the loss of nontidal freshwater perennial emergent wetland  
 41 natural community due to construction of the water conveyance facilities (CM1) and fish passage



1 improvements (CM2). Inundation and construction-related losses from CM4 would occur in the  
2 near-term. AMM6 would be implemented to minimize impacts.

3 The effects on vernal pool crustacean habitat from construction and operation of the proposed  
4 project would represent an adverse effect as a result of habitat modification of a special-status  
5 species and potential for direct mortality in the absence of other conservation actions. These  
6 conservation activities would be guided by species-specific goals and objectives, and by AMM6,  
7 which would be in place throughout the proposed project's permit term. AMM6 includes elements  
8 that avoid or minimize the risk of affecting habitats and species adjacent to work areas. Considering  
9 these commitments, the proposed project over the term of the proposed project would not result in  
10 a substantial adverse effect through habitat modifications and would not substantially reduce the  
11 number or restrict the range of vernal pool crustaceans.

12 The proposed project would result in permanent and temporary impacts on modeled habitat for  
13 valley elderberry longhorn beetle in the study area. These effects would result from the construction  
14 of the water conveyance facilities (CM1), and implementing other conservation measures (Yolo  
15 Bypass fisheries improvements [CM2] and tidal restoration [CM4]). These impacts would be  
16 minimized through the implementation of CMs and AMMs. The Plan includes a commitment to  
17 implement AMM6 Disposal and Reuse of Soils to avoid or minimize the risk of affecting habitats and  
18 species adjacent to work areas and RTM storage sites. These commitments, implemented together  
19 with the AMMs, are more than sufficient to support the conclusion that the near-term impacts of the  
20 proposed project would be less than significant under CEQA.

21 The effects on nonlisted vernal pool invertebrate habitat from the proposed project would represent  
22 an adverse effect as a result of habitat modification of a special-status species and potential for  
23 direct mortality in the absence of other conservation actions. However, the proposed project has  
24 committed to impact limits for vernal pool habitat and to habitat protection, restoration,  
25 management and enhancement associated with CM3, CM9, and CM11. These conservation activities  
26 would be guided by goals and objectives, such as AMM6, which would be in place throughout the  
27 proposed project's permit term. Considering these commitments, the proposed project would not  
28 result in a substantial adverse effect through habitat modifications and would not substantially  
29 reduce the number or restrict the range of nonlisted vernal pool invertebrates.

30 The proposed project would result in permanent and temporary effects on aquatic habitat and  
31 upland terrestrial cover habitat for California red-legged frog. The effects would result from  
32 construction of the water conveyance facilities (CM1 and CM11). These conservation actions would  
33 occur in the same timeframe as the construction losses, thereby avoiding adverse effects of habitat  
34 loss on California red-legged frog. The proposed project contains commitments to implement AMMs,  
35 including AMM6, to avoid or minimize the risk of affecting individuals and species habitats adjacent  
36 to work areas and storage sites. With implementation of these AMMs and CM3, impacts will be  
37 minimize.

38 The proposed project would permanently and temporarily remove upland terrestrial cover habitat  
39 for California tiger salamander. In the absence of other conservation actions, the losses of California  
40 tiger salamander upland habitat associated with the proposed project would represent an adverse  
41 effect as a result of habitat modification and potential direct mortality of a special-status species.  
42 However, with habitat protection and restoration associated with the conservation components,  
43 guided by landscape-scale goals and objectives and by AMM6, which include elements that avoid or  
44 minimize the risk of affecting habitats and species adjacent to work areas and storage sites and

1 would be in place throughout the construction phase, the impacts of the proposed project as a whole  
2 on California tiger salamander would not be significant.

3 Implementation of the proposed project would result in a loss of modeled foraging habitat for  
4 California least tern in the study area in the near-term. These effects would result from the  
5 construction of the water conveyance facilities (CM1), and implementing other conservation  
6 measures (Yolo Bypass fisheries improvements [CM2], and tidal habitat restoration [CM4]). MM  
7 BIO-66, CM4, and AMMs, including AMM6, would avoid and minimize potential impacts on the  
8 species from construction-related habitat loss and noise and disturbance. With habitat restoration  
9 associated with CM4, guided by AMM6 Disposal and Reuse of Soils, the loss of habitat under this  
10 alternative would have a less-than-significant impact on California least tern.

11 In the absence of other conservation actions, the effects on greater sandhill crane habitat from the  
12 proposed project would represent an adverse effect as a result of habitat modification of a special-  
13 status species and potential for direct mortality. Mitigation Measure BIO-69a, along with AMMs 1-7  
14 and AMM20 and any other AMMs that would eliminate the potential for take would minimize  
15 impacts from the proposed project so that it would not result in take of greater sandhill cranes per  
16 Section 86 of the California Fish and Game Code.

17 In the absence of other conservation actions, the effects on lesser sandhill crane habitat from the  
18 proposed project would represent an adverse effect as a result of habitat modification of a special-  
19 status species and potential for direct mortality. Implementation of Mitigation Measure BIO-72,  
20 AMMs 1-7 and AMM20 would minimize impacts so that the proposed project would not result in a  
21 substantial adverse effect through habitat modifications and would not substantially reduce the  
22 number or restrict the range of lesser sandhill cranes.

23 The proposed project's conservation measures would result in the combined permanent and  
24 temporary loss of modeled habitat for least Bell's vireo and yellow warbler. Conservation measures  
25 that would result in these losses are conveyance facilities and transmission line construction, and  
26 establishment and use of borrow and spoil areas (CM1), Fremont Weir/Yolo Bypass fisheries  
27 improvements (CM2), tidal natural communities restoration (CM4), and seasonally inundated  
28 floodplain restoration (CM5). Habitat enhancement and management activities (CM11) which  
29 include ground disturbance or removal of nonnative vegetation, could result in local adverse habitat  
30 effects. In addition, maintenance activities associated with the long-term operation of the water  
31 conveyance facilities and other project-related physical facilities could degrade or eliminate least  
32 Bell's vireo and yellow warbler habitat. AMM 1 would help minimize these impacts so that the  
33 proposed project would not result in a substantial adverse effect through habitat modifications and  
34 would not substantially reduce the number or restrict the range of either species.

35 In the absence of other conservation actions, the effects on tricolored blackbird habitat from the  
36 proposed project would represent an adverse effect as a result of habitat modification and potential  
37 for direct mortality of a special-status species. The implementation of AMM6 would help minimize  
38 potential impacts of Plan implementation in the near-term time period.

39 The loss of western burrowing owl habitat and potential for mortality of this special-status species  
40 under the proposed project would represent an adverse effect in the absence of other conservation  
41 actions. However, AMM6 would help minimize the loss of habitat or direct mortality through  
42 implementation of the proposed project.

1 In the absence of other conservation actions, the loss of western yellow-billed cuckoo habitat  
2 associated with the proposed project would represent an adverse effect as a result of habitat  
3 modification and potential for direct mortality of a special-status species. However, the species is  
4 not an established breeder in the study area and current presence is limited to migrants. In addition,  
5 the habitat that would be lost consists of small, fragmented riparian stands that do not provide high-  
6 value habitat for the species. AMM 1 would minimize some effects of habitat loss and potential  
7 mortality on western yellow-billed cuckoo under the proposed project would be less-than-  
8 significant.

9 In the absence of other conservation actions, the effects on white-tailed kite habitat from the  
10 proposed project would represent an adverse effect as a result of habitat modification and potential  
11 for direct mortality of a special status species; however, considering the proposed project's  
12 protection and restoration provisions, which would provide acreages of new or enhanced habitat in  
13 amounts greater than necessary to compensate for the time lag of restoring riparian and foraging  
14 habitats lost to construction and restoration activities, AMMs that would eliminate the potential for  
15 take, and with implementation of AMM6, the loss of habitat through implementation of the proposed  
16 project would not result in a substantial adverse effect through habitat modifications and would not  
17 result in take of white-tailed kite per Section 86 of the California Fish and Game Code.

18 In the absence of other conservation actions, the effects on least Bell's vireo and yellow warbler  
19 habitat from the proposed project would represent an adverse effect as a result of habitat  
20 modification and potential for direct mortality of special-status species. The acres of protection  
21 contained in the near-term Plan goals and the additional detail in the biological objectives for  
22 yellow-breasted chat satisfy the typical mitigation ratios that would be applied to the project-level  
23 effects of CM1, as well as mitigate the near-term effects of the other conservation measures. The  
24 restored riparian habitat could require 5 years to several decades, for ecological succession to occur  
25 and for restored riparian habitat to functionally replace habitat that has been affected. Considering  
26 the conservation actions described above, and AMM 1, the proposed project would not result in a  
27 substantial adverse effect through habitat modifications and would not substantially reduce the  
28 number or restrict the range of yellow-breasted chat.

29 In the absence of other conservation actions, the effects on Cooper's hawk and osprey nesting  
30 habitat would represent an adverse effect as a result of habitat modification and potential for direct  
31 mortality of special-status species. Cooper's hawk and osprey are not species that are covered under  
32 the proposed project. For the proposed project to avoid an adverse effect on individuals,  
33 preconstruction surveys for noncovered avian species would be required to ensure that active nests  
34 are detected and avoided. Considering the proposed project's protection and restoration provisions,  
35 which would provide acreages of new or enhanced habitat in amounts greater than necessary to  
36 compensate for the time lag of restoring riparian habitats lost to construction and restoration  
37 activities, and with implementation of AMM6, the loss of habitat or direct mortality through  
38 implementation of the proposed project would not result in a substantial adverse effect through  
39 habitat modifications and would not substantially reduce the number or restrict the range of either  
40 species.

41 In the absence of other conservation actions, the effects on golden eagle and ferruginous hawk  
42 foraging habitat would represent an adverse effect as a result of habitat modification and potential  
43 for direct mortality of special-status species. However, the acres of restoration and protection  
44 contained in the near-term Plan goals and the additional detail in the biological objectives satisfy the  
45 typical mitigation that would be applied to the project-level effects of CM1 on golden eagle and

1 ferruginous hawk, as well as mitigate the near-term effects of the other conservation measures with  
2 the consideration that some portion of the cultivated lands protected in the near-term timeframe  
3 would be managed in suitable crop types to compensate for the loss of habitat at a ratio of 2:1. The  
4 implementation of AMM6 would reduce the impact of habitat loss in the near-term to less than  
5 significant.

6 In the absence of other conservation actions, effects on nesting cormorants, herons, and egrets  
7 would represent an adverse effect as a result of habitat modification and potential for direct  
8 mortality of special-status species. This impact would be considered significant. However, the  
9 proposed project has committed to habitat protection, restoration, management and enhancement  
10 activities described above. The natural community restoration and protection activities would be  
11 concluded in the first 10 years of Plan implementation, which is close enough in time to the  
12 occurrence of impacts to constitute adequate mitigation for CEQA purposes. In addition,  
13 implementation of AMM6 would reduce this potential impact to a less-than-significant level.

14 In the absence of other conservation actions, effects on short-eared owl and northern harrier would  
15 represent an adverse effect as a result of habitat modification and potential for direct mortality of  
16 special-status species. This impact would be considered significant. However, the proposed project  
17 has committed to habitat protection, restoration, management and enhancement activities  
18 described above. The natural community restoration and protection activities would be concluded  
19 in the first 10 years of Plan implementation, which is close enough in time to the occurrence of  
20 impacts to constitute adequate mitigation for CEQA purposes. In addition, implementation of AMM6  
21 would reduce this potential impact to a less-than-significant level.

22 In the absence of other conservation actions, effects on nesting cormorants, herons, and egrets  
23 would represent an adverse effect as a result of habitat modification and potential for direct  
24 mortality of special-status species. This impact would be considered significant. However, the  
25 proposed project has committed to habitat protection, restoration, management and enhancement  
26 activities described above. The natural community restoration and protection activities would be  
27 concluded in the first 10 years of Plan implementation, which is close enough in time to the  
28 occurrence of impacts to constitute adequate mitigation for CEQA purposes. In addition,  
29 implementation of AMM6 would reduce this potential impact in the near-term to a less-than-  
30 significant level.

31 In the absence of other conservation actions, the effects on California horned lark and grasshopper  
32 sparrow habitat would represent an adverse effect as a result of habitat modification and potential  
33 direct mortality of special-status species. This impact would be significant. California horned lark  
34 and grasshopper sparrow are not covered species under the proposed project. For the proposed  
35 project to avoid an adverse effect on individuals, preconstruction surveys for noncovered avian  
36 species would be required to ensure that nests are detected and avoided. The acres of restoration  
37 and protection contained in the near-term Plan goals and the additional detail in the biological  
38 objectives satisfy the typical mitigation that would be applied to the project-level effects of CM1 on  
39 California horned lark and grasshopper sparrow, as well as mitigate the near-term effects of the  
40 other conservation measures with the consideration that some portion of the cultivated lands  
41 protected in the near-term timeframe would be managed in suitable crop types to compensate for  
42 the loss of habitat at a ratio of 2:1. With the acres of habitat protection and restoration described  
43 above, in addition to AMM6 and other CMs and AMMs, the proposed project would not result in a  
44 substantial adverse effect through habitat modification and would not substantially reduce the  
45 number or restrict the range of either species.

1 In the absence of other conservation actions, the effects on least bittern and white-faced ibis habitat  
2 would represent an adverse effect as a result of habitat modification and potential direct mortality  
3 of special-status species. This impact would be significant. Least bittern and white-faced ibis are not  
4 covered species under the proposed project. For the proposed project to avoid an adverse effect on  
5 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
6 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
7 Plan goals satisfy the typical mitigation that would be applied to the project-level effects of CM1, as  
8 well as mitigate the near-term effects of the other conservation measures. With the acres of habitat  
9 protection and restoration described above, in addition to AMM6 and other CMs and AMMs, the  
10 proposed project would not result in a substantial adverse effect through habitat modification and  
11 would not substantially reduce the number or restrict the range of either species.

12 In the absence of other conservation actions, the effects on loggerhead shrike habitat would  
13 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
14 special-status species. This impact would be significant. Loggerhead shrike is not a covered species  
15 under the proposed project. For the proposed project to avoid an adverse effect on individuals,  
16 preconstruction surveys for noncovered avian species would be required to ensure that nests are  
17 detected and avoided. With implementation of AMM6 and other CMs and AMMs, the proposed  
18 project would avoid potentially significant impacts on nesting individuals. With these measures in  
19 place, the proposed project would not result in a substantial adverse effect through habitat  
20 modification and would not substantially reduce the number or restrict the range of either species.

21 In the absence of other conservation actions, the effects on Modesto song sparrow habitat would  
22 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
23 special-status species. This impact would be significant. Modesto song sparrow is not a covered  
24 species under the proposed project. For the proposed project to avoid an adverse effect on  
25 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
26 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
27 Plan goals and the additional detail in the biological objectives satisfy the typical mitigation that  
28 would be applied to the project-level effects of CM1 on Modesto song sparrow, as well as mitigate  
29 the near-term effects of the other conservation measures. With the acres of habitat protection and  
30 restoration described above, in addition to AMM6 and other CMs and AMMs, the proposed project  
31 would not result in a substantial adverse effect through habitat modification and would not  
32 substantially reduce the number or restrict the range of the species.

33 In the absence of other conservation actions, the effects on yellow-headed blackbird habitat would  
34 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
35 special-status species. This impact would be significant. Yellow-headed blackbird is not a covered  
36 species under the proposed project. For the proposed project to avoid an adverse effect on  
37 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
38 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
39 Plan goals and the additional detail in the biological objectives satisfy the typical mitigation that  
40 would be applied to the project-level effects of CM1 on yellow-headed blackbird habitat, as well as  
41 mitigate the near-term effects of the other conservation measures. With implementation of AMM6  
42 and other CMs and AMMs, the proposed project would not result in a substantial adverse effect  
43 through habitat modification and would not substantially reduce the number or restrict the range of  
44 the species.

1 Implementation of the proposed project would result in temporary and permanent losses of riparian  
 2 and grassland habitat and potential direct mortality of riparian brush rabbit. However, the habitat  
 3 restoration and protection associated with CM3,-CM7, CM8, and CM11, guided by species-specific  
 4 goals and objectives and by AMM6 and other AMMs, would minimize significant impacts so that the  
 5 proposed project would not represent a substantial adverse effect through habitat modifications  
 6 and would not substantially reduce the number or restrict the range of the species.

7 In the absence of other conservation actions, the effects on San Joaquin kit fox and American badger  
 8 habitat from the proposed project would represent a significant impact as a result of habitat  
 9 modification and potential direct mortality of a special-status species. However, with habitat  
 10 protection, restoration, management, and enhancement associated with CM3, CM8, and CM11, and  
 11 guided by AMM6 and other AMMs and MMs, which would be in place throughout the time period of  
 12 construction, the impact of the proposed project as a whole on San Joaquin kit fox and American  
 13 badger would be less than significant.

14 The proposed project would result in a substantial adverse effect through habitat modifications and  
 15 would not substantially reduce the number or restrict the range of San Joaquin pocket mouse. With  
 16 implementation of AMM6 and other AMMs, the loss of habitat or potential mortality under this  
 17 alternative would have a less-than-significant impact on San Joaquin pocket mouse.

18 The proposed project would result in the permanent loss of roosting habitat for special-status bats.  
 19 In addition to Mitigation Measure BIO-166, which would include protective measures to ensure  
 20 there is no significant impact under CEQA on roosting special-status bats, either directly or through  
 21 habitat modifications and no substantial reduction in numbers or a restriction in the range of  
 22 special-status bats, the proposed project also contains commitments to implement AMM6 and other  
 23 AMMs. These AMMs include elements that avoid or minimize the risk of construction activity  
 24 affecting habitat and species adjacent to work areas and storage sites. Implementation of MM BIO-  
 25 166, AMM 1-6, and AMM60 would minimize impacts to a less-than-significant level.

26 In absence of the implementation of this avoidance and minimization measure, in addition to other  
 27 CMs and AMMs, there would be a greater potential for significant impacts to these species and  
 28 natural communities due to loss of habitat and loss of species from construction and/or operation of  
 29 the proposed project. Refer to the impact analyses for each resource for more detail.

### 30 **3B.4.7 AMM7 Barge Operations Plan**

31 *Explanation of effectiveness:* The proposed project would result in the near-term loss or conversion  
 32 of tidal perennial aquatic natural community due to construction of the water conveyance facilities  
 33 (CM1) and fish passage improvements (CM2), and inundation during tidal marsh restoration (CM4).  
 34 In addition to other CMs and AMMs, AMM1 would help minimize these losses and conversions  
 35 through barge operations plan to minimize impacts to reduce impacts to a less-than significant level.

36 The proposed project would result in the loss of tidal freshwater emergent wetland natural  
 37 community (permanent and temporary) due to construction of the water conveyance facilities  
 38 (CM1) and fish passage improvements (CM2), and tidal marsh restoration (CM4). AMM1 would be  
 39 implemented to minimize impacts.

40 The proposed project would result in the loss of valley/foothill riparian natural community due to  
 41 construction of the water conveyance facilities (CM1) and fish passage improvements (CM2), and

1 inundation during tidal marsh restoration (CM4).The construction losses would be spread across  
2 the near-term timeframe. AMM1 would be implemented to minimize impacts.

3 The proposed project would result in the loss of nontidal perennial aquatic natural community due  
4 to construction of the water conveyance facilities (CM1) and fish passage improvements (CM2), and  
5 change to tidally influenced inundation during tidal marsh restoration (CM4). AMM1 would be  
6 implemented to minimize impacts.

7 The proposed project would result in the loss of nontidal freshwater perennial emergent wetland  
8 natural community due to construction of the water conveyance facilities (CM1) and fish passage  
9 improvements (CM2). Inundation and construction-related losses from CM4 would occur in the  
10 near-term. AMM1 would be implemented to minimize impacts.

11 Implementation of the proposed project would result in a loss of modeled foraging habitat for  
12 California least tern in the study area in the near-term. These effects would result from the  
13 construction of the water conveyance facilities (CM1), and implementing other conservation  
14 measures (Yolo Bypass fisheries improvements [CM2], and tidal habitat restoration [CM4]). MM  
15 BIO-66, CM4, and AMMs, including AMM7, would avoid and minimize potential impacts on the  
16 species from construction-related habitat loss and noise and disturbance. With habitat restoration  
17 associated with CM4, guided by AMM7 Barge Operations Plan, the loss of habitat under the proposed  
18 project would have a less-than-significant impact on California least tern.

19 In the absence of other conservation actions, the effects on greater sandhill crane habitat from the  
20 proposed project would represent an adverse effect as a result of habitat modification of a special-  
21 status species and potential for direct mortality. Mitigation Measure BIO-69a, along with AMMs 1-7  
22 and AMM20 and other AMMs that would eliminate take, would minimize impacts from the proposed  
23 project so that it would not result in a substantial adverse effect through habitat modifications and  
24 would not result in take of greater sandhill cranes per Section 86 of the California Fish and Game  
25 Code.

26 In the absence of other conservation actions, the effects on lesser sandhill crane habitat from the  
27 proposed project would represent an adverse effect as a result of habitat modification of a special-  
28 status species and potential for direct mortality. Implementation of Mitigation Measure BIO-72,  
29 AMMs 1-7 and AMM20 would minimize impacts so that the proposed project would not result in a  
30 substantial adverse effect through habitat modifications and would not substantially reduce the  
31 number or restrict the range of lesser sandhill cranes.

32 The proposed project's conservation measures would result in the combined permanent and  
33 temporary loss of modeled habitat for least Bell's vireo and yellow warbler. Conservation measures  
34 that would result in these losses are conveyance facilities and transmission line construction, and  
35 establishment and use of borrow and spoil areas (CM1), Fremont Weir/Yolo Bypass fisheries  
36 improvements (CM2), tidal natural communities restoration (CM4), and seasonally inundated  
37 floodplain restoration (CM5). Habitat enhancement and management activities (CM11) which  
38 include ground disturbance or removal of nonnative vegetation, could result in local adverse habitat  
39 effects. In addition, maintenance activities associated with the long-term operation of the water  
40 conveyance facilities and other project-related physical facilities could degrade or eliminate least  
41 Bell's vireo and yellow warbler habitat. AMM 1 would help minimize these impacts so that the  
42 proposed project would not result in a substantial adverse effect through habitat modifications and  
43 would not substantially reduce the number or restrict the range of either species.

1 In the absence of other conservation actions, the effects on tricolored blackbird habitat from the  
2 proposed project would represent an adverse effect as a result of habitat modification and potential  
3 for direct mortality of a special-status species. The implementation of AMM7 would help minimize  
4 potential impacts of Plan implementation in the near-term time period.

5 The loss of western burrowing owl habitat and potential for mortality of this special-status species  
6 under the proposed project would represent an adverse effect in the absence of other conservation  
7 actions. However, AMM7 would help minimize the loss of habitat or direct mortality through  
8 implementation of the proposed project.

9 In the absence of other conservation actions, the loss of western yellow-billed cuckoo habitat  
10 associated with the proposed project would represent an adverse effect as a result of habitat  
11 modification and potential for direct mortality of a special-status species. However, the species is  
12 not an established breeder in the study area and current presence is limited to migrants. In addition,  
13 the habitat that would be lost consists of small, fragmented riparian stands that do not provide high-  
14 value habitat for the species. AMM 1 would minimize some effects of habitat loss and potential  
15 mortality on western yellow-billed cuckoo under the proposed project would be less-than-  
16 significant.

17 In the absence of other conservation actions, the effects on white-tailed kite habitat from the  
18 proposed project would represent an adverse effect as a result of habitat modification and potential  
19 for direct mortality of a special status species; however, considering the proposed project's  
20 protection and restoration provisions, which would provide acreages of new or enhanced habitat in  
21 amounts greater than necessary to compensate for the time lag of restoring riparian and foraging  
22 habitats lost to construction and restoration activities, AMMs that would eliminate the potential for  
23 take, and with implementation of AMM7, the loss of habitat through implementation of the proposed  
24 project would not result in a substantial adverse effect through habitat modifications and would not  
25 result in take of white-tailed kite per Section 86 of the California Fish and Game Code.

26 In the absence of other conservation actions, the effects on least Bell's vireo and yellow warbler  
27 habitat from the proposed project would represent an adverse effect as a result of habitat  
28 modification and potential for direct mortality of special-status species. The acres of protection  
29 contained in the near-term Plan goals and the additional detail in the biological objectives for  
30 yellow-breasted chat satisfy the typical mitigation ratios that would be applied to the project-level  
31 effects of CM1, as well as mitigate the near-term effects of the other conservation measures. The  
32 restored riparian habitat could require 5 years to several decades, for ecological succession to occur  
33 and for restored riparian habitat to functionally replace habitat that has been affected. Considering  
34 the conservation actions described above, and AMM 1, the proposed project would not result in a  
35 substantial adverse effect through habitat modifications and would not substantially reduce the  
36 number or restrict the range of yellow-breasted chat.

37 In the absence of other conservation actions, the effects on Cooper's hawk and osprey nesting  
38 habitat would represent an adverse effect as a result of habitat modification and potential for direct  
39 mortality of special-status species. Cooper's hawk and osprey are not species that are covered under  
40 the proposed project. For the proposed project to avoid an adverse effect on individuals,  
41 preconstruction surveys for noncovered avian species would be required to ensure that active nests  
42 are detected and avoided. Considering the proposed project's protection and restoration provisions,  
43 which would provide acreages of new or enhanced habitat in amounts greater than necessary to  
44 compensate for the time lag of restoring riparian habitats lost to construction and restoration



1 activities, and with implementation of AMM7, the loss of habitat or direct mortality through  
2 implementation of the proposed project would not result in a substantial adverse effect through  
3 habitat modifications and would not substantially reduce the number or restrict the range of either  
4 species.

5 In the absence of other conservation actions, the effects on golden eagle and ferruginous hawk  
6 foraging habitat would represent an adverse effect as a result of habitat modification and potential  
7 for direct mortality of special-status species. However, the acres of restoration and protection  
8 contained in the near-term Plan goals and the additional detail in the biological objectives satisfy the  
9 typical mitigation that would be applied to the project-level effects of CM1 on golden eagle and  
10 ferruginous hawk, as well as mitigate the near-term effects of the other conservation measures with  
11 the consideration that some portion of the cultivated lands protected in the near-term timeframe  
12 would be managed in suitable crop types to compensate for the loss of habitat at a ratio of 2:1. The  
13 implementation of AMM7 would reduce the impact of habitat loss in the near-term to less than  
14 significant.

15 In the absence of other conservation actions, effects on nesting cormorants, herons, and egrets  
16 would represent an adverse effect as a result of habitat modification and potential for direct  
17 mortality of special-status species. This impact would be considered significant. However, the  
18 proposed project has committed to habitat protection, restoration, management and enhancement  
19 activities described above. The natural community restoration and protection activities would be  
20 concluded in the first 10 years of Plan implementation, which is close enough in time to the  
21 occurrence of impacts to constitute adequate mitigation for CEQA purposes. In addition,  
22 implementation of AMM7 would reduce this potential impact to a less-than-significant level.

23 In the absence of other conservation actions, effects on short-eared owl and northern harrier would  
24 represent an adverse effect as a result of habitat modification and potential for direct mortality of  
25 special-status species. This impact would be considered significant. However, the proposed project  
26 has committed to habitat protection, restoration, management and enhancement activities  
27 described above. The natural community restoration and protection activities would be concluded  
28 in the first 10 years of Plan implementation, which is close enough in time to the occurrence of  
29 impacts to constitute adequate mitigation for CEQA purposes. In addition, implementation of AMM7  
30 would reduce this potential impact to a less-than-significant level.

31 In the absence of other conservation actions, effects on nesting cormorants, herons, and egrets  
32 would represent an adverse effect as a result of habitat modification and potential for direct  
33 mortality of special-status species. This impact would be considered significant. However, the  
34 proposed project has committed to habitat protection, restoration, management and enhancement  
35 activities described above. The natural community restoration and protection activities would be  
36 concluded in the first 10 years of Plan implementation, which is close enough in time to the  
37 occurrence of impacts to constitute adequate mitigation for CEQA purposes. In addition,  
38 implementation of AMM7 would reduce this potential impact in the near-term to a less-than-  
39 significant level.

40 In the absence of other conservation actions, the effects on California horned lark and grasshopper  
41 sparrow habitat would represent an adverse effect as a result of habitat modification and potential  
42 direct mortality of special-status species. This impact would be significant. California horned lark  
43 and grasshopper sparrow are not covered species under the proposed project. For the proposed  
44 project to avoid an adverse effect on individuals, preconstruction surveys for noncovered avian

1 species would be required to ensure that nests are detected and avoided. The acres of restoration  
2 and protection contained in the near-term Plan goals and the additional detail in the biological  
3 objectives satisfy the typical mitigation that would be applied to the project-level effects of CM1 on  
4 California horned lark and grasshopper sparrow, as well as mitigate the near-term effects of the  
5 other conservation measures with the consideration that some portion of the cultivated lands  
6 protected in the near-term timeframe would be managed in suitable crop types to compensate for  
7 the loss of habitat at a ratio of 2:1. With the acres of habitat protection and restoration described  
8 above, in addition to AMM7 and other CMs and AMMs, the proposed project would not result in a  
9 substantial adverse effect through habitat modification and would not substantially reduce the  
10 number or restrict the range of either species.

11 In the absence of other conservation actions, the effects on least bittern and white-faced ibis habitat  
12 would represent an adverse effect as a result of habitat modification and potential direct mortality  
13 of special-status species. This impact would be significant. Least bittern and white-faced ibis are not  
14 covered species under the proposed project. For the proposed project to avoid an adverse effect on  
15 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
16 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
17 Plan goals satisfy the typical mitigation that would be applied to the project-level effects of CM1, as  
18 well as mitigate the near-term effects of the other conservation measures. With the acres of habitat  
19 protection and restoration described above, in addition to AMM7 and other CMs and AMMs, the  
20 proposed project would not result in a substantial adverse effect through habitat modification and  
21 would not substantially reduce the number or restrict the range of either species.

22 In the absence of other conservation actions, the effects on loggerhead shrike habitat would  
23 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
24 special-status species. This impact would be significant. Loggerhead shrike is not a covered species  
25 under the proposed project. For the proposed project to avoid an adverse effect on individuals,  
26 preconstruction surveys for noncovered avian species would be required to ensure that nests are  
27 detected and avoided. With implementation of AMM7 and other CMs and AMMs, the proposed  
28 project would avoid potentially significant impacts on nesting individuals. With these measures in  
29 place, the proposed project would not result in a substantial adverse effect through habitat  
30 modification and would not substantially reduce the number or restrict the range of either species.

31 In the absence of other conservation actions, the effects on Modesto song sparrow habitat would  
32 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
33 special-status species. This impact would be significant. Modesto song sparrow is not a covered  
34 species under the proposed project. For the proposed project to avoid an adverse effect on  
35 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
36 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
37 Plan goals and the additional detail in the biological objectives satisfy the typical mitigation that  
38 would be applied to the project-level effects of CM1 on Modesto song sparrow, as well as mitigate  
39 the near-term effects of the other conservation measures. With the acres of habitat protection and  
40 restoration described above, in addition to AMM7 and other CMs and AMMs, the proposed project  
41 would not result in a substantial adverse effect through habitat modification and would not  
42 substantially reduce the number or restrict the range of the species.

43 In the absence of other conservation actions, the effects on yellow-headed blackbird habitat would  
44 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
45 special-status species. This impact would be significant. Yellow-headed blackbird is not a covered

1 species under the proposed project. For the proposed project to avoid an adverse effect on  
 2 individuals, preconstruction surveys for noncovered avian species would be required to ensure that  
 3 nests are detected and avoided. The acres of restoration and protection contained in the near-term  
 4 Plan goals and the additional detail in the biological objectives satisfy the typical mitigation that  
 5 would be applied to the project-level effects of CM1 on yellow-headed blackbird habitat, as well as  
 6 mitigate the near-term effects of the other conservation measures. With implementation of AMM7  
 7 and other CMs and AMMs, the proposed project would not result in a substantial adverse effect  
 8 through habitat modification and would not substantially reduce the number or restrict the range of  
 9 the species.

10 Implementation of the proposed project would result in temporary and permanent losses of riparian  
 11 and grassland habitat and potential direct mortality of riparian brush rabbit. However, the habitat  
 12 restoration and protection associated with CM3,-CM7, CM8, and CM11, guided by species-specific  
 13 goals and objectives and by AMM7 and other AMMs, would minimize significant impacts so that the  
 14 proposed project would not represent a substantial adverse effect through habitat modifications  
 15 and would not substantially reduce the number or restrict the range of the species.

16 In absence of the implementation of this avoidance and minimization measure, in addition to other  
 17 CMs and AMMs, there would be a greater potential for significant impacts to these species and  
 18 natural communities due to loss of habitat and loss of species from construction and/or operation of  
 19 the proposed project. Refer to the impact analyses for each resource for more detail.

### 20 **3B.4.8 AMM10 Restoration of Temporarily Affected Natural** 21 **Communities**

22 *Explanation of effectiveness:* Restoration and monitoring plans will include methods for stockpiling  
 23 and storing topsoil, restoring soil conditions, and revegetating disturbed areas; monitoring and  
 24 maintenance schedules; adaptive management strategies; reporting requirements; and success  
 25 criteria. Restoration will commence immediately after construction is completed, or if construction  
 26 is completed during a season that is inappropriate for planting the natural community, restoration  
 27 will commence during the appropriate season for restoring that natural community (e.g., fall  
 28 plantings for riparian natural community) and within 1 year of completing construction.

29 The proposed project would result in the near-term loss or conversion of tidal perennial aquatic  
 30 natural community due to construction of the water conveyance facilities (CM1) and fish passage  
 31 improvements (CM2), and inundation during tidal marsh restoration (CM4). In addition to other  
 32 CMs and AMMs, AMM10 would help minimize these losses and conversions through restoration of  
 33 temporarily affected natural communities to minimize impacts to reduce impacts to a less-than  
 34 significant level.

35 The proposed project would result in the loss of tidal freshwater emergent wetland natural  
 36 community (permanent and temporary) due to construction of the water conveyance facilities  
 37 (CM1) and fish passage improvements (CM2), and tidal marsh restoration (CM4). AMM10 would be  
 38 implemented to minimize impacts.

39 The proposed project would result in the loss of valley/foothill riparian natural community due to  
 40 construction of the water conveyance facilities (CM1) and fish passage improvements (CM2), and  
 41 inundation during tidal marsh restoration (CM4).The construction losses would be spread across  
 42 the near-term timeframe. AMM10 would be implemented to minimize impacts. The restoration and

1 monitoring plans for implementation of AMM10 would involve methods for stockpiling, storing, and  
2 restoring topsoil, revegetating disturbed areas, monitoring and maintenance schedules, adaptive  
3 management strategies, reporting requirements, and success criteria. AMM10 would also include  
4 planting native species appropriate for the natural community being restored, with the exception of  
5 some borrow sites in cultivated lands that would be restored as grasslands.

6 The operation and maintenance activities associated with the proposed project would have the  
7 potential to create minor changes in total acreage of valley/foothill riparian natural community in  
8 the study area, and could create temporary increases in turbidity and sedimentation. The activities  
9 could also introduce herbicides periodically to control nonnative, invasive plants. Implementation of  
10 environmental commitments, CMs, and AMMs, including AMM2, would minimize and offset these  
11 effects. With the restoration and enhancement of these amounts of habitat, in addition to  
12 implementation of AMMs, impacts on this natural community would be less than significant for  
13 CEQA purposes.

14 The proposed project would result in the loss of nontidal perennial aquatic natural community due  
15 to construction of the water conveyance facilities (CM1) and fish passage improvements (CM2), and  
16 change to tidally influenced inundation during tidal marsh restoration (CM4). AMM10 would be  
17 implemented to minimize impacts.

18 The proposed project would result in the loss of nontidal freshwater perennial emergent wetland  
19 natural community due to construction of the water conveyance facilities (CM1) and fish passage  
20 improvements (CM2). Inundation and construction-related losses from CM4 would occur in the  
21 near-term. AMM10 would be implemented to minimize impacts.

22 The operation and maintenance activities associated with the proposed project would have the  
23 potential to create minor changes in total acreage of alkali seasonal wetland complex natural  
24 community in the study area, and could create temporary increases sedimentation. The activities  
25 could also introduce herbicides periodically to control nonnative, invasive plants. Implementation of  
26 environmental commitments, CMs and AMMs, including AMM2, would offset and minimize these  
27 impacts to a less than significant level.

28 During construction, the proposed project could result in the direct loss of vernal pool complex  
29 natural community due to inundation during tidal marsh restoration (CM4) and construction of the  
30 water conveyance facility (CM1). The construction- and inundation-related loss of this special-status  
31 natural community would represent a significant impact if it were not offset by avoidance and  
32 minimization measures and other actions associated with proposed project conservation  
33 components. Loss of vernal pool complex natural community would be considered both a loss in  
34 acreage of a sensitive natural community and a loss of wetland as defined by Section 404 of the  
35 CWA. Implementation of CM3 and AMMs, including AMM2, would offset and minimize these impacts.  
36 Because of the offsetting protection and restoration activities and implementation of AMMs, impacts  
37 would be less than significant.

38 The operation and maintenance activities associated with the proposed project would have the  
39 potential to create minor changes in total acreage of vernal pool complex natural community in the  
40 study area, and could create temporary increases in sedimentation or damage from recreational  
41 activity. The activities could also introduce herbicides periodically to control nonnative, invasive  
42 plants. These impacts would be offset and minimized through implementation of environmental  
43 commitments, CMs and AMMS, including AMM2.

1 During the near-term timeframe, the proposed project would permanently remove and temporarily  
2 remove managed wetland through inundation or construction-related losses in habitat from CM1,  
3 CM2, and CM4 activities. The construction or inundation loss of this special-status natural  
4 community would represent a significant impact if it were not offset by other conservation actions.  
5 The implementation of CMs and AMMs, including AMM2 which includes construction best  
6 management practices, would offset and minimize these impacts. The AMMs include elements that  
7 avoid or minimize the risk of affecting habitats at work areas. In spite of the managed wetland  
8 protection, restoration and avoidance measures contained in the proposed project there would be a  
9 net reduction in the acreage of this special-status natural community in the near-term. This would  
10 be a significant impact when judged by the significance criteria listed earlier in this chapter.  
11 However, the conversion of these managed habitats to natural tidal wetland types that support  
12 similar ecological functions would offset this significant impact. As a result, there would be a less-  
13 than-significant impact.

14 The operation and maintenance activities associated with the proposed project would have the  
15 potential to create minor changes in total acreage of other natural seasonal wetland natural  
16 community in the study area, and could create temporary increases in sedimentation. The activities  
17 could also introduce herbicides periodically to control nonnative, invasive plants. The  
18 implementation of CMs and AMMs, including AMM2 which includes construction best management  
19 practices, would offset and minimize these impacts. Ongoing operation, maintenance and  
20 management activities would not result in a net permanent reduction in this natural community  
21 within the study area.

22 The operation and maintenance activities associated with the proposed project would have the  
23 potential to create minor changes in total acreage of grassland natural community in the study area,  
24 and could create temporary increases sedimentation. The activities could also introduce herbicides  
25 periodically to control nonnative, invasive plants. The implementation of CMs and AMMs, including  
26 AMM2 which includes construction best management practices, would offset and minimize these  
27 impacts.

28 The effects on vernal pool crustacean habitat from construction and operation of the proposed  
29 project would represent an adverse effect as a result of habitat modification of a special-status  
30 species and potential for direct mortality in the absence of other conservation actions. However, the  
31 proposed project has committed to impact limits for vernal pool crustacean habitat and to habitat  
32 protection, restoration, management and enhancement associated with CM3, CM9, and CM11. These  
33 conservation activities would be guided by species-specific goals and objectives, and by AMM1,  
34 including AMM2 that requires construction best management practices, which would be in place  
35 throughout the proposed project's permit term. All of these AMMs include elements that avoid or  
36 minimize the risk of affecting habitats and species adjacent to work areas. Considering these  
37 commitments over the permit term, the proposed project would not result in a substantial adverse  
38 effect through habitat modifications and would not substantially reduce the number or restrict the  
39 range of vernal pool crustaceans. Therefore, the project would have a less-than-significant impact on  
40 vernal pool crustaceans.

41 The effects on nonlisted vernal pool invertebrate habitat from the proposed project would represent  
42 an adverse effect as a result of habitat modification of a special-status species and potential for  
43 direct mortality in the absence of other conservation actions. The implementation of CMs and AMMs,  
44 including AMM2 which includes construction best management practices, would offset and  
45 minimize these impacts. Considering these commitments, the proposed project would not result in

1 a substantial adverse effect through habitat modifications and would not substantially reduce the  
2 number or restrict the range of nonlisted vernal pool invertebrates.

3 The proposed project would result in permanent and temporary effects on aquatic habitat and  
4 upland terrestrial cover habitat for California red-legged frog. The effects would result from  
5 construction of the water conveyance facilities (CM1 and CM11). These conservation actions would  
6 occur in the same timeframe as the construction losses, thereby avoiding adverse effects of habitat  
7 loss on California red-legged frog. The proposed project contains commitments to implement AMMs,  
8 including AMM1, to avoid or minimize the risk of affecting individuals and species habitats adjacent  
9 to work areas and storage sites. With implementation of these AMMs and CM3, impacts will be  
10 minimize.

11 The proposed project would permanently and temporarily remove upland terrestrial cover habitat  
12 for California tiger salamander. In the absence of other conservation actions, the losses of California  
13 tiger salamander upland habitat associated with the proposed project would represent an adverse  
14 effect as a result of habitat modification and potential direct mortality of a special-status species.  
15 However, with habitat protection and restoration associated with the conservation components,  
16 guided by landscape-scale goals and objectives and by AMM1, which include elements that avoid or  
17 minimize the risk of affecting habitats and species adjacent to work areas and storage sites and  
18 would be in place throughout the construction phase, the impacts of the proposed project as a whole  
19 on California tiger salamander would not be significant.

20 Implementation of the proposed project would result in temporary and permanent losses of riparian  
21 and grassland habitat and potential direct mortality of riparian brush rabbit. However, the habitat  
22 restoration and protection associated with CM3, CM7, CM8, and CM11, guided by species-specific  
23 goals and objectives and by AMM10 and other AMMs, would minimize significant impacts so that the  
24 proposed project would not represent a substantial adverse effect through habitat modifications  
25 and would not substantially reduce the number or restrict the range of the species.

26 In the absence of other conservation actions, the effects on San Joaquin kit fox and American badger  
27 habitat from the proposed project would represent a significant impact as a result of habitat  
28 modification and potential direct mortality of a special-status species. However, with habitat  
29 protection, restoration, management, and enhancement associated with CM3, CM8, and CM11, and  
30 guided by AMM10 and other AMMs and MMs, which would be in place throughout the time period of  
31 construction, the impact of the proposed project as a whole on San Joaquin kit fox and American  
32 badger would be less than significant.

33 The proposed project would result in a substantial adverse effect through habitat modifications and  
34 would not substantially reduce the number or restrict the range of San Joaquin pocket mouse. With  
35 implementation of AMM10 and other AMMs, the loss of habitat or potential mortality under the  
36 proposed project would have a less-than-significant impact on San Joaquin pocket mouse.

37 The proposed project would result in the permanent loss of roosting habitat for special-status bats.  
38 In addition to Mitigation Measure BIO-166, which would include protective measures to ensure  
39 there is no significant impact under CEQA on roosting special-status bats, either directly or through  
40 habitat modifications and no substantial reduction in numbers or a restriction in the range of  
41 special-status bats, the proposed project also contains commitments to implement AMM10 and  
42 other AMMs. These AMMs include elements that avoid or minimize the risk of construction activity  
43 affecting habitat and species adjacent to work areas and storage sites. Implementation of MM BIO-  
44 166, AMM 1-6, and AMM10 would minimize impacts to a less-than-significant level.

1 Implementation of the proposed project would result in impacts on natural communities from the  
 2 introduction or spread of invasive plants. However, this would not result in the long-term  
 3 degradation of a sensitive natural community because implementation of AMM4, AMM10, AMM11  
 4 and CM11, would offset the temporary disturbance of land associated with the alternative and  
 5 would not result in substantial alteration of site conditions. Implementation of AMM4, AMM10, and  
 6 AMM11 would also reduce the adverse effects that could result from construction activities. The  
 7 AMMs provide methods to minimize ground disturbance, guidance for developing restoration and  
 8 monitoring plans for temporary construction effects, and measures to minimize the introduction  
 9 and spread of invasive plants. The restoration and monitoring plans for implementation of AMM10  
 10 would involve methods for stockpiling, storing, and restoring topsoil, revegetating disturbed areas,  
 11 monitoring and maintenance schedules, adaptive management strategies, reporting requirements,  
 12 and success criteria. AMM10 would also include planting native species appropriate for the natural  
 13 community being restored, with the exception of some borrow sites in cultivated lands that would  
 14 be restored as grasslands. This, in addition to other CMs and AMMs, would reduce and offset impacts  
 15 to a less than significant level.

16 In the absence of the implementation of this avoidance and minimization measure, in addition to  
 17 other CMs and AMMs, there would be a greater potential for significant impacts to these species and  
 18 natural communities due to loss of habitat and loss of species from construction and/or operation of  
 19 the proposed project. Refer to the impact analyses for each resource for more detail.

### 20 **3B.4.9 AMM12 Vernal Pool Crustaceans**

21 *Explanation of effectiveness:* Vernal pool crustacean critical habitat is present in the Plan Area in  
 22 Conservation Zones 1, 8, and 11. During the planning phase for individual projects, the  
 23 Implementation Office will ensure that tidal natural communities restoration or other ground-  
 24 disturbing covered activities in Conservation Zones 1 and 11 and will not result in the adverse  
 25 modification of primary constituent elements of critical habitat for vernal pool fairy shrimp,  
 26 conservancy fairy shrimp, and vernal pool tadpole shrimp as defined by USFWS.

27 During the planning phase for individual projects, the Implementation Office will ensure that tidal  
 28 natural communities restoration or other ground-disturbing covered activities in Conservation  
 29 Zones 1 and 11 will not result in the adverse modification of primary constituent elements of critical  
 30 habitat for vernal pool fairy shrimp, conservancy fairy shrimp, and vernal pool tadpole shrimp as  
 31 defined by USFWS.

32 During construction, the proposed project could result in the direct loss of vernal pool complex  
 33 natural community due to inundation during tidal marsh restoration (CM4) and construction of the  
 34 water conveyance facility (CM1). The construction- and inundation-related loss of this special-status  
 35 natural community would represent a significant impact if it were not offset by avoidance and  
 36 minimization measures and other actions associated with project-related conservation components.  
 37 Loss of vernal pool complex natural community would be considered both a loss in acreage of a  
 38 sensitive natural community and a loss of wetland as defined by Section 404 of the CWA.  
 39 Implementation of CM3 and AMMs, including AMM2, would offset and minimize these impacts.  
 40 Because of the offsetting protection and restoration activities and implementation of AMMs, impacts  
 41 would be less than significant.

42 The operation and maintenance activities associated with the proposed project would have the  
 43 potential to create minor changes in total acreage of vernal pool complex natural community in the

1 study area, and could create temporary increases in sedimentation or damage from recreational  
 2 activity. The activities could also introduce herbicides periodically to control nonnative, invasive  
 3 plants. These impacts would be offset and minimized through implementation of environmental  
 4 commitments, CMs and AMMS, including AMM2.

5 The effects on vernal pool crustacean habitat from construction and operation of the proposed  
 6 project would represent an adverse effect as a result of habitat modification of a special-status  
 7 species and potential for direct mortality in the absence of other conservation actions. However, the  
 8 proposed project has committed to impact limits for vernal pool crustacean habitat and to habitat  
 9 protection, restoration, management and enhancement associated with CM3, CM9, and CM11. These  
 10 conservation activities would be guided by species-specific goals and objectives, and by AMM1,  
 11 including AMM12 that requires construction best management practices, which would be in place  
 12 throughout the project permit term. All of these AMMs include elements that avoid or minimize the  
 13 risk of affecting habitats and species adjacent to work areas. Considering these commitments over  
 14 the permit term, the proposed project would not result in a substantial adverse effect through  
 15 habitat modifications and would not substantially reduce the number or restrict the range of vernal  
 16 pool crustaceans. Therefore, the project would have a less-than-significant impact on vernal pool  
 17 crustaceans.

18 The effects on nonlisted vernal pool invertebrate habitat from the proposed project would represent  
 19 an adverse effect as a result of habitat modification of a special-status species and potential for  
 20 direct mortality in the absence of other conservation actions. The implementation of CMs and AMMs,  
 21 including AMM12 which includes construction best management practices, would offset and  
 22 minimize these impacts. Considering these commitments, the proposed project would not result in  
 23 a substantial adverse effect through habitat modifications and would not substantially reduce the  
 24 number or restrict the range of nonlisted vernal pool invertebrates.

25 In absence of the implementation of AMM12, in addition to other CMs, MMs, and AMMs, there would  
 26 be a greater potential for significant impacts to these species and natural communities due to loss of  
 27 habitat and loss of species from construction and/or operation of the proposed project. Refer to the  
 28 impact analyses for each resource for more detail.

### 29 **3B.4.10 AMM13 California Tiger Salamander**

30 *Explanation of effectiveness:* During the planning phase for individual restoration projects, the  
 31 Implementation Office will ensure that tidal natural communities restoration along Lindsey Slough  
 32 and other covered activities near Jepson Prairie will not result in the adverse modification of critical  
 33 habitat for California tiger salamander in this area. (The only construction activities that will affect  
 34 California tiger salamander critical habitat are those related to restoration projects; construction of  
 35 the water conveyance facilities will not affect this species.) These activities, if planned for areas  
 36 within designated critical habitat areas, will be designed to avoid adverse modification of the  
 37 primary constituent elements for the species as defined by USFWS.

38 The proposed project would permanently and temporarily remove upland terrestrial cover habitat  
 39 for California tiger salamander. In the absence of other conservation actions, the losses of California  
 40 tiger salamander upland habitat associated with the proposed project would represent an adverse  
 41 effect as a result of habitat modification and potential direct mortality of a special-status species.  
 42 However, with habitat protection and restoration associated with the conservation components,  
 43 guided by landscape-scale goals and objectives and by AMMs, including AMM13, which include



1 elements that avoid or minimize the risk of affecting habitats and species adjacent to work areas and  
 2 storage sites and would be in place throughout the construction phase, the impacts of the proposed  
 3 project as a whole on California tiger salamander would not be significant.

4 In absence of the implementation of AMM13, in addition to other AMMs, there would be a greater  
 5 potential for significant impacts to this species due to loss of habitat and loss of species from  
 6 construction and/or operation of the proposed project. Refer to the impact analyses for each  
 7 resource for more detail.

### 8 **3B.4.11 AMM14 California Red-Legged Frog**

9 *Explanation of effectiveness:* During the planning phase, the Implementation Office will ensure that  
 10 covered activities avoid designated critical habitat areas, or if such habitat cannot be avoided, the  
 11 covered activities will not result in the adverse modification of the primary constituent elements of  
 12 critical habitat for California red-legged frog. No covered activities will take place within designated  
 13 California red-legged frog critical habitat areas without prior written concurrence from USFWS that  
 14 such activities will not adversely modify any primary constituent elements of California red-legged  
 15 frog critical habitat.

16 The proposed project would result in permanent and temporary effects on aquatic habitat and  
 17 upland terrestrial cover habitat for California red-legged frog. The effects would result from  
 18 construction of the water conveyance facilities (CM1 and CM11). These conservation actions would  
 19 occur in the same timeframe as the construction losses, thereby avoiding adverse effects of habitat  
 20 loss on California red-legged frog. The proposed project contains commitments to implement AMMs,  
 21 including AMM14, to avoid or minimize the risk of affecting individuals and species habitats  
 22 adjacent to work areas and storage sites. With implementation of these AMMs and CM3, impacts will  
 23 be minimized.

24 In absence of the implementation of AMM14, in addition to other CMs and AMMs, there would be a  
 25 greater potential for significant impacts to this species due to loss of habitat and loss of species from  
 26 construction and/or operation of the proposed project. Refer to the impact analyses for each  
 27 resource for more detail.

### 28 **3B.4.12 AMM15 Valley Elderberry Longhorn Beetle**

29 *Explanation of effectiveness:* The proposed project would result in permanent and temporary  
 30 impacts on modeled habitat for valley elderberry longhorn beetle in the study area. These effects  
 31 would result from the construction of the water conveyance facilities (CM1), and implementing  
 32 other conservation measures (Yolo Bypass fisheries improvements [CM2] and tidal restoration  
 33 [CM4]). These impacts would be offset through the implementation of CMs and AMMs, including  
 34 AMM15, which requires surveys for elderberry shrubs within 100 feet of any ground disturbing  
 35 activities, the implementation avoidance and minimize measures for any shrubs that are identified  
 36 within this 100-foot buffer, and transplanting shrubs that can't be avoided. All of these AMMs  
 37 include elements that avoid or minimize the risk of affecting habitats and species adjacent to work  
 38 areas and RTM storage sites. These commitments, implemented together with the AMMs, are more  
 39 than sufficient to support the conclusion that the near-term impacts of the proposed project would  
 40 be less than significant under CEQA.

1 In absence of the implementation of AMM15, in addition to other CMs and AMMs, there would be a  
 2 greater potential for significant impacts to this species due to loss of habitat and loss of species from  
 3 construction and/or operation of the proposed project. Refer to the impact analyses for each  
 4 resource for more detail.

### 5 **3B.4.13 AMM18 Swainson's Hawk**

6 *Explanation of effectiveness:* The proposed project would result in the loss of valley/foothill riparian  
 7 natural community due to construction of the water conveyance facilities (CM1) and fish passage  
 8 improvements (CM2), and inundation during tidal marsh restoration (CM4). The construction losses  
 9 would be spread across the near-term timeframe. These losses would be minimized by planned  
 10 restoration CMs and AMMs, including AMM18. Because of these near-term restoration and  
 11 protection activities and AMMs, impacts would be less than significant.

12 The operation and maintenance activities associated with the proposed project would have the  
 13 potential to create minor changes in total acreage of valley/foothill riparian natural community in  
 14 the study area, and could create temporary increases in turbidity and sedimentation. The activities  
 15 could also introduce herbicides periodically to control nonnative, invasive plants. Implementation of  
 16 environmental commitments, CMs, and AMMs, including AMM18, would minimize these impacts.  
 17 With the restoration and enhancement of these amounts of habitat, in addition to implementation of  
 18 AMMs, impacts on this natural community would be less than significant for CEQA purposes.

19 In the absence of other conservation actions, the effects on Cooper's hawk and osprey nesting  
 20 habitat would represent an adverse effect as a result of habitat modification and potential for direct  
 21 mortality of special-status species. Cooper's hawk and osprey are not species that are covered under  
 22 the proposed project. For the proposed project to avoid an adverse effect on individuals,  
 23 preconstruction surveys for noncovered avian species would be required to ensure that active nests  
 24 are detected and avoided. Considering the proposed project's protection and restoration provisions,  
 25 which would provide acreages of new or enhanced habitat in amounts greater than necessary to  
 26 compensate for the time lag of restoring riparian habitats lost to construction and restoration  
 27 activities, and with implementation of AMMs, including AMM18 Swainson's Hawk, and Mitigation  
 28 Measure BIO-75, the loss of habitat or direct mortality through implementation of the proposed  
 29 project would not result in a substantial adverse effect through habitat modifications and would not  
 30 substantially reduce the number or restrict the range of either species.

31 In the absence of other conservation actions, effects on nesting cormorants, herons, and egrets  
 32 would represent an adverse effect as a result of habitat modification and potential for direct  
 33 mortality of special-status species. This impact would be considered significant. However, the  
 34 proposed project has committed to habitat protection, restoration, management and enhancement  
 35 activities described above. The natural community restoration and protection activities would be  
 36 concluded in the first 10 years of Plan implementation, which is close enough in time to the  
 37 occurrence of impacts to constitute adequate mitigation for CEQA purposes. In addition,  
 38 implementation of AMMs, including AMM18, and Mitigation Measure BIO-75, Conduct  
 39 Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds, would reduce this  
 40 potential impact to a less-than-significant level.

41 In the absence of other conservation actions, effects on nesting cormorants, herons, and egrets  
 42 would represent an adverse effect as a result of habitat modification and potential for direct  
 43 mortality of special-status species. This impact would be considered significant. However, the

1 proposed project has committed to habitat protection, restoration, management and enhancement  
 2 activities described above. The natural community restoration and protection activities would be  
 3 concluded in the first 10 years of Plan implementation, which is close enough in time to the  
 4 occurrence of impacts to constitute adequate mitigation for CEQA purposes. In addition,  
 5 implementation of AMMs, including AMM18, and Mitigation Measure BIO-125, Compensate for the  
 6 Near-Term Loss of Mountain Plover Wintering Habitat would reduce this potential impact in the  
 7 near-term to a less-than-significant level.

8 In absence of the implementation of AMM18, in addition to other CMs and AMMs, there would be a  
 9 greater potential for significant impacts to this species due to loss of habitat and loss of species from  
 10 construction and/or operation of the proposed project. Refer to the impact analyses for each  
 11 resource for more detail.

### 12 **3B.4.14 AMM19 California Clapper Rail**

13 *Explanation of effectiveness:* In the absence of other conservation actions, the effects on California  
 14 clapper rail habitat from the proposed project would represent an adverse effect as a result of  
 15 habitat modification of a special-status species and potential for direct mortality.

16 Ground-disturbing activities, such as removal of nonnative vegetation and road and other  
 17 infrastructure maintenance activities, would be expected to have minor adverse effects on available  
 18 California clapper rail habitat. These potential effects are currently not quantifiable, but would be  
 19 minimized with implementation *AMM19, Clapper Rail*. This AMM would avoid and minimize  
 20 potential impacts on the species from construction-related habitat loss and noise and disturbance,  
 21 and would eliminate potential for take of the species during construction by establishing 500-foot  
 22 no-disturbance buffers around identified territorial calling centers during the breeding season. In  
 23 addition to other AMMS, this AMM includes elements that would avoid or minimize the risk of  
 24 affecting individuals and species habitats adjacent to work areas.

25 If construction occurs during the nesting season, these indirect effects could result in the loss or  
 26 abandonment of nests, and mortality of any eggs and/or nestlings. However, this AMM requires that  
 27 preconstruction surveys of potential breeding habitat would be conducted within 700 feet of project  
 28 activities, and a 500-foot no-disturbance buffer would be established around any territorial call-  
 29 centers during the breeding season. In addition, construction would be avoided altogether if  
 30 breeding territories cannot be accurately delimited.

31 In absence of the implementation of AMM18, in addition to other CMs and AMMs, there would be a  
 32 greater potential for significant impacts to this species due to loss of habitat and loss of species from  
 33 construction and/or operation of the proposed project. Refer to the impact analyses for each  
 34 resource for more detail.

### 35 **3B.4.15 AMM20 Greater Sandhill Crane**

36 *Explanation of effectiveness:* In the absence of other conservation actions, the effects on greater  
 37 sandhill crane habitat from the proposed project would represent an adverse effect as a result of  
 38 habitat modification of a special-status species and potential for take. Mitigation Measure BIO-69a  
 39 would be available to guide the near-term protection of cultivated lands to ensure that the near-  
 40 term impacts of moderate- to very high-value habitat for greater sandhill crane were compensated  
 41 for with appropriate crop types and natural communities. Additionally, AMMs, including AMM20,

1 would offset impacts from the proposed project so that it would not result in a substantial adverse  
 2 effect through habitat modifications and would not substantially reduce the number or restrict the  
 3 range of greater sandhill cranes.

4 In the absence of other conservation actions, the effects on greater sandhill crane habitat from the  
 5 proposed project would represent an adverse effect as a result of habitat modification of a special-  
 6 status species and potential for direct mortality. Implementation of Mitigation Measure BIO-72 and  
 7 AMMs that would eliminate the potential for take, including AMM20 would offset impacts so that the  
 8 proposed project would not result in a substantial adverse effect through habitat modifications and  
 9 would not result in take of greater sandhill cranes per Section 86 of the California Fish and Game  
 10 Code. Therefore, the proposed project would have a less-than-significant impact on lesser sandhill  
 11 cranes.

12 In absence of the implementation of AMM20, in addition to other CMs and AMMs, there would be a  
 13 greater potential for significant impacts to this species due to loss of habitat and loss of species from  
 14 construction and/or operation of the proposed project. Refer to the impact analyses for each  
 15 resource for more detail.

### 16 **3B.4.16 AMM21 Tricolored Blackbird**

17 *Explanation of effectiveness:* In the absence of other conservation actions, the effects on tricolored  
 18 blackbird habitat from the proposed project would represent an adverse effect as a result of habitat  
 19 modification and potential for direct mortality of a special-status species. The acres of protection  
 20 and restoration contained in the near-term Plan goals, in addition to the detailed habitat value goals  
 21 that would be applied to near-term acres, are more than sufficient to satisfy the typical mitigation  
 22 ratios that would be applied to the project-level effects of CM1 and the near-term impacts from  
 23 other conservation measures on nesting, roosting, and cultivated lands foraging habitat. With the  
 24 protection and restoration acres, and the implementation of AMMs, including AMM21, potential  
 25 impacts of Plan implementation in the near-term time period would result in a less-than-significant  
 26 impact on tricolored blackbird.

27 In absence of the implementation of AMM21, in addition to other CMs and AMMs, there would be a  
 28 greater potential for significant impacts to this species due to loss of habitat and loss of species from  
 29 construction and/or operation of the proposed project. Refer to the impact analyses for each  
 30 resource for more detail.

### 31 **3B.4.17 AMM22 Suisun Song Sparrow, Yellow-Breasted Chat, 32 Least Bell's Vireo, Western Yellow-Billed Cuckoo**

33 *Explanation of effectiveness:* The proposed project's conservation measures would result in the  
 34 combined permanent and temporary loss of modeled habitat for least Bell's vireo and yellow  
 35 warbler. Conservation measures that would result in these losses are conveyance facilities and  
 36 transmission line construction, and establishment and use of borrow and spoil areas (CM1),  
 37 Fremont Weir/Yolo Bypass fisheries improvements (CM2), tidal natural communities restoration  
 38 (CM4), and seasonally inundated floodplain restoration (CM5). Habitat enhancement and  
 39 management activities (CM11) which include ground disturbance or removal of nonnative  
 40 vegetation, could result in local adverse habitat effects. In addition, maintenance activities  
 41 associated with the long-term operation of the water conveyance facilities and other project-related  
 42 physical facilities could degrade or eliminate least Bell's vireo and yellow warbler habitat. AMMs,

1 including AMM 22, and Mitigation Measure BIO-75 would offset these impacts so that the proposed  
 2 project would not result in a substantial adverse effect through habitat modifications and would not  
 3 substantially reduce the number or restrict the range of either species.

4 In the absence of other conservation actions, the loss of western yellow-billed cuckoo habitat  
 5 associated with the proposed project would represent an adverse effect as a result of habitat  
 6 modification and potential for direct mortality of a special-status species. However, the species is  
 7 not an established breeder in the study area and current presence is limited to migrants. In addition,  
 8 the habitat that would be lost consists of small, fragmented riparian stands that do not provide high-  
 9 value habitat for the species. With habitat protection and restoration associated with CMs, and  
 10 AMMs, including 3, AMM22 Suisun Song Sparrow, Yellow-Breasted Chat, Least Bell's Vireo, Western  
 11 Yellow-Billed Cuckoo, which would be in place throughout the construction period, the effects of  
 12 habitat loss and potential mortality on western yellow-billed cuckoo under the proposed project  
 13 would be less-than-significant.

14 In the absence of other conservation actions, the effects on least Bell's vireo and yellow warbler  
 15 habitat from the proposed project would represent an adverse effect as a result of habitat  
 16 modification and potential for direct mortality of special-status species. The acres of protection  
 17 contained in the near-term Plan goals and the additional detail in the biological objectives for  
 18 yellow-breasted chat satisfy the typical mitigation ratios that would be applied to the project-level  
 19 effects of CM1, as well as mitigate the near-term effects of the other conservation measures. The  
 20 restored riparian habitat could require 5 years to several decades, for ecological succession to occur  
 21 and for restored riparian habitat to functionally replace habitat that has been affected. However,  
 22 because the modeled habitat impacted largely consists of small patches of blackberry, willow, and  
 23 riparian scrub, temporal losses of potential habitat as a result of project-related actions would be  
 24 expected to have a less-than-significant population-level impact on the species in the near-term time  
 25 period. Considering the conservation actions described above, and AMMs including AMM 22, the  
 26 proposed project would not result in a substantial adverse effect through habitat modifications and  
 27 would not substantially reduce the number or restrict the range of yellow-breasted chat.

28 In absence of the implementation of AMM22, in addition to other CMs and AMMs, there would be a  
 29 greater potential for significant impacts to this species due to loss of habitat and loss of species from  
 30 construction and/or operation of the proposed project. Refer to the impact analyses for each  
 31 resource for more detail.

### 32 **3B.4.18 AMM23 Western Burrowing Owl**

33 *Explanation of effectiveness:* The loss of western burrowing owl habitat and potential for mortality of  
 34 this special-status species under the proposed project would represent an adverse effect in the  
 35 absence of other conservation actions. However, with habitat protection and restoration associated  
 36 with CMs, guided by biological goals and objectives and by AMMs, including AMM23 Western  
 37 Burrowing Owl, and with Mitigation Measure BIO-91, Compensate for Near-Term Loss of High-Value  
 38 Western Burrowing Owl Habitat, which would be available to guide the near-term protection and  
 39 management of cultivated lands, the loss of habitat or direct mortality through implementation of  
 40 the proposed project would not result in a substantial adverse effect through habitat modifications  
 41 and would not substantially reduce the number or restrict the range of the species.

42 In absence of the implementation of AMM23, in addition to other CMs and AMMs, there would be a  
 43 greater potential for significant impacts to this species due to loss of habitat and loss of species from

1 construction and/or operation of the proposed project. Refer to the impact analyses for each  
2 resource for more detail.

### 3 **3B.4.19 AMM24 San Joaquin Kit Fox**

4 *Explanation of effectiveness:* In the absence of other conservation actions, the effects on San Joaquin  
5 kit fox and American badger habitat from the proposed project would represent a significant impact  
6 as a result of habitat modification and potential direct mortality of a special-status species. However,  
7 with habitat protection, restoration, management, and enhancement associated with CMs, and  
8 guided by AMMs, including AMM24, which would be in place throughout the time period of  
9 construction, and with implementation of Mitigation Measure BIO-162, the impact of the proposed  
10 project as a whole on San Joaquin kit fox and American badger would be less than significant.

11 In absence of the implementation of AMM24, in addition to other CMs and AMMs, there would be a  
12 greater potential for significant impacts to this species due to loss of habitat and loss of species from  
13 construction and/or operation of the proposed project. Refer to the impact analyses for each  
14 resource for more detail.

### 15 **3B.4.20 AMM25 Riparian Woodrat and Riparian Brush Rabbit**

16 *Explanation of effectiveness:* Implementation of the proposed project would result in temporary and  
17 permanent losses of riparian and grassland habitat and potential direct mortality of riparian brush  
18 rabbit. However, the habitat restoration and protection associated with CMs, guided by species-  
19 specific goals and objectives and by AMMs, including AMM25, would offset significant impacts so  
20 that the proposed project would not represent a substantial adverse effect through habitat  
21 modifications and would not substantially reduce the number or restrict the range of the species.

22 In absence of the implementation of AMM25, in addition to other CMs and AMMs, there would be a  
23 greater potential for significant impacts to this species due to loss of habitat and loss of species from  
24 construction and/or operation of the proposed project. Refer to the impact analyses for each  
25 resource for more detail.

### 26 **3B.4.21 AMM26 Salt Marsh Harvest Mouse and Suisun Shrew**

27 *Explanation of effectiveness:* Implementation of the project would result in temporary and  
28 permanent losses of primary tidal brackish emergent wetland, primary managed wetland habitat,  
29 natural seasonal wetlands and potential direct mortality of salt marsh harvest mouse and Suisun  
30 shrew. However, the habitat restoration and protection associated with CMs, guided by species-  
31 specific goals and objectives and by AMMs that would eliminate potential for take, including  
32 AMM26, would offset significant impacts so that the proposed project would not represent a  
33 substantial adverse effect through habitat modifications and would not result in take of salt marsh  
34 harvest mouse and Suisun shrew per Section 86 of the California Fish and Game Code.

35 In absence of the implementation of AMM26, in addition to other CMs and AMMs, there would be a  
36 greater potential for significant impacts to this species due to loss of habitat and loss of species from  
37 construction and/or operation of the proposed project. Refer to the impact analyses for each  
38 resource for more detail.

### 1 **3B.4.22 AMM27 Selenium Management**

2 *Explanation of effectiveness:* As discussed under the environmental commitment, *Selenium*  
 3 *Management*, in Section 3B.2.20, this AMM, along with the environmental commitment, provides  
 4 specific tidal habitat restoration design elements to reduce the potential for bioaccumulation of  
 5 selenium and its bioavailability in tidal habitats. Furthermore, the effectiveness of selenium  
 6 management to reduce selenium concentrations and/or bioaccumulation would be evaluated  
 7 separately for each restoration effort as part of design and implementation.

8 Selenium toxicity in avian species can result from the mobilization of naturally high concentrations  
 9 of selenium in soils (Ohlendorf and Heinz 2009) and covered activities have the potential to  
 10 exacerbate bioaccumulation of selenium in avian species, such as California black rail, California  
 11 clapper rail, California least tern, Greater and Lesser sandhill crane, least bittern and white-faced  
 12 biis. Marsh (tidal and nontidal) and floodplain restoration have the potential to mobilize selenium,  
 13 and therefore increase avian exposure from ingestion of prey items with elevated selenium levels.  
 14 Thus, project-related restoration activities that create newly inundated areas could increase  
 15 bioavailability of selenium. Because of the uncertainty that exists at this programmatic level of  
 16 review, there could be a substantial effect on avian species and habitat from increases in selenium  
 17 associated with restoration activities.

18 Longer water residence times in restoration areas could also make selenium more bioavailable to  
 19 Sacramento splittail but Delta-relevant information is limited to assess this risk. It is anticipated that  
 20 any potential effects of selenium on Sacramento splittail would be addressed through  
 21 implementation of this environmental commitment and AMM27.

22 In the absence of this environmental commitment, and other CMs and AMMs, increases in selenium  
 23 could lead to significant impacts. Please see Section 3B.2.20 for more detail.

### 24 **3B.4.23 AMM28 Geotechnical Studies**

25 *Explanation of effectiveness:* Design-level geotechnical studies would be prepared by a geotechnical  
 26 engineer licensed in the state of California during project design. The studies would assess site-  
 27 specific conditions at and near all the project facility locations, including seismic activity, soil  
 28 liquefaction, and other potential geologic and soil-related hazards. This information would be used  
 29 to verify assumptions and conclusions included in the EIR/EIS. The geotechnical engineer's  
 30 recommended measures to address adverse conditions would conform to applicable design codes,  
 31 guidelines, and standards. Potential design strategies or conditions could include avoidance  
 32 (deliberately positioning structures and lifelines to avoid crossing identified shear rupture zones),  
 33 geotechnical engineering (using the inherent capability of unconsolidated geomaterials to "locally  
 34 absorb" and distribute distinct bedrock fault movements) and structural engineering (engineering  
 35 the facility to undergo some limited amount of ground deformation without collapse or significant  
 36 damage).

37 In absence of the implementation of AMM28, in addition to other CMs and AMMs, there would be a  
 38 greater potential for significant impacts related to geology and seismicity, soils, and groundwater  
 39 from construction and/or operation of the proposed project. Refer to the impact analyses for each  
 40 resource for more detail.

### 3B.4.24 AMM29 Design Standards and Building Codes

*Explanation of effectiveness:* This AMM, along with its corresponding environmental commitment (described under Section 3B.2.2) would avoid significant impacts related to groundwater, geology and seismicity, and soils, involving potential risk of personal injury, death, structural damage, or loss of property by meeting building codes and design standards. In the absence of compliance with these building codes, design standards, and health and safety requirements, the risks associated with personal injury, death or loss of property as a result of construction activities would be higher, which could result in a significant impact. For more information, please refer to Section 3B.2.2 for more details.

### 3B.4.25 AMM30 Transmission Line Design and Alignment Guidelines

*Explanation of effectiveness:* During construction, the proposed project could result in the direct loss of vernal pool complex natural community due to inundation during tidal marsh restoration (CM4) and construction of the water conveyance facility (CM1). The construction- and inundation-related loss of this special-status natural community would represent a significant impact if it were not offset by avoidance and minimization measures and other actions associated with project-related conservation components. Loss of vernal pool complex natural community would be considered both a loss in acreage of a sensitive natural community and a loss of wetland as defined by Section 404 of the CWA. The protection of vernal pool complex as part of CM3 and the restoration of this community (including a commitment to have restoration keep pace with losses; BDCP Chapter 3, Section 3.4.4.27) as part of CM9 during the first 10 years of proposed project implementation would partially offset this near-term loss. The proposed project also includes AMMs, including AMM30, to minimize impacts. Because of the offsetting protection and restoration activities and implementation of AMMs, impacts would be less than significant.

The operation and maintenance activities associated with the proposed project would have the potential to create minor changes in total acreage of vernal pool complex natural community in the study area, and could create temporary increases in sedimentation or damage from recreational activity. The activities could also introduce herbicides periodically to control nonnative, invasive plants. These impacts would be offset through implementation of environmental commitments, CMs, and AMMs, including AMM30, and would minimize these impacts.

The effects on vernal pool crustacean habitat from construction and operation of the proposed project would represent an adverse effect as a result of habitat modification of a special-status species and potential for direct mortality in the absence of other conservation actions. However, the proposed project has committed to impact limits for vernal pool crustacean habitat and to habitat protection, restoration, management and enhancement associated with CMs. These conservation activities would be guided by species-specific goals and objectives, and by AMMs, including AMM30, which would be in place throughout the proposed project's permit term. All of these AMMs include elements that avoid or minimize the risk of affecting habitats and species adjacent to work areas. Considering these commitments over the permit term, the proposed project would not result in a substantial adverse effect through habitat modifications and would not substantially reduce the number or restrict the range of vernal pool crustaceans. Therefore, the project would have a less-than-significant impact on vernal pool crustaceans.



1 The effects on nonlisted vernal pool invertebrate habitat from the proposed project would represent  
 2 an adverse effect as a result of habitat modification of a special-status species and potential for  
 3 direct mortality in the absence of other conservation actions. However, the proposed project has  
 4 committed to impact limits for vernal pool habitat and to habitat protection, restoration,  
 5 management and enhancement associated with CM3, CM9, and CM11. AMMs would be in place to  
 6 avoid or minimize the risk of affecting habitats and species adjacent to work areas, including  
 7 AMM30, and would be in place throughout the proposed project's permit term. Considering these  
 8 commitments, the proposed project would not result in a substantial adverse effect through habitat  
 9 modifications and would not substantially reduce the number or restrict the range of nonlisted  
 10 vernal pool invertebrates.

11 In absence of the implementation of AMM30, in addition to other CMs and AMMs, there would be a  
 12 greater potential for significant impacts to this species due to loss of habitat and loss of species from  
 13 construction and/or operation of the proposed project. Refer to the impact analyses for each  
 14 resource for more detail.

### 15 **3B.4.26 AMM31 Noise Abatement**

16 *Explanation of effectiveness:* This AMM, along with its corresponding environmental commitment,  
 17 described in Section 3B.2.11, *Develop and Implement Noise Abatement Plan*, would be implemented  
 18 to minimize impacts of construction-related noise and groundborne vibration levels on sensitive  
 19 land uses and wildlife. For more information regarding the effectiveness of this AMM, see Section  
 20 3B.2.11.

### 21 **3B.4.27 AMM32 Hazardous Material Management**

22 *Explanation of effectiveness:* This AMM, along with its corresponding environmental commitment,  
 23 described in Section 3B.2.12, *Develop and Implement Hazardous Materials Management Plans*, would  
 24 be implemented to minimize impacts of improper storage, and handling and use of hazardous  
 25 materials that could result in releases of hazardous materials and associated effects/impacts on the  
 26 public and the environment. Significant impacts on fish species, long-term recreational fishing  
 27 opportunities and associated direct and indirect changes in community character from hazardous  
 28 spills would be minimized, as would the demand for emergency or fire services. See Section 3B.2.12  
 29 for more information.

### 30 **3B.4.28 AMM33 Mosquito Management**

31 *Explanation of effectiveness:* This AMM, along with its corresponding environmental commitment,  
 32 described in Section 3B.2.15, *Prepare and Implement Mosquito Management Plans*, would be  
 33 implemented to minimize impacts of mosquito-related vector borne diseases, which would be a  
 34 significant public health impact. See Section 3B.2.15 for more information.

### 35 **3B.4.29 AMM34 Construction Site Security**

36 *Explanation of effectiveness:* This AMM, along with its corresponding environmental commitment,  
 37 described in Section 3B.3.5, *Provide Construction Site Security*, would be implemented to minimize  
 38 impacts to law enforcement and public service demands, as well as reduce potential for hazardous  
 39 spills and fires, which would be significant impacts. See Section 3B.3.5 for more information.

### 1 **3B.4.30 AMM35 Fugitive Dust Control**

2 *Explanation of effectiveness:* This AMM would be implemented to reduce impacts related to  
 3 aesthetics, air quality, and environmental justice due to construction of the project conveyance  
 4 facilities and restoration areas, particularly near those sites that require substantial earthmoving  
 5 activities or site grading. This AMM would implement basic and enhanced fugitive dust control  
 6 measures, such as regular watering, to help reduce the creation of dust clouds that would cause  
 7 significant impacts. Aesthetic impacts include negatively affecting short-range views; however, this  
 8 AMM, along with its corresponding environmental commitment, and other mitigation measures,  
 9 would still not reduce impacts fully, and impacts related to visual quality or character would remain  
 10 significant and unavoidable. Regular watering and implementation of other fugitive dust control  
 11 measures would also reduce dusty conditions and therefore reduce the risk of exposing sensitive  
 12 receptors to Valley Fever and to other health hazards from localized particulate matter in excess of  
 13 air quality district health-based concentration thresholds.

14 In absence of the implementation of AMM35, in addition to other Mitigation Measures and AMMs,  
 15 there would be a greater potential for significant impacts to sensitive receptors from construction  
 16 and/or operation of the proposed project. Refer to the impact analyses for each resource for more  
 17 detail.

### 18 **3B.4.31 AMM37 Recreation**

19 *Explanation of effectiveness:* The effects on vernal pool crustacean habitat from construction and  
 20 operation of the proposed project would represent an adverse effect as a result of habitat  
 21 modification of a special-status species and potential for direct mortality in the absence of other  
 22 conservation actions. However, the proposed project has committed to impact limits for vernal pool  
 23 crustacean habitat and to habitat protection, restoration, management and enhancement associated  
 24 with CM3, CM9, and CM11. These conservation activities would be guided by species-specific goals  
 25 and objectives, and by AMMs, including AMM37, which would be in place throughout the proposed  
 26 project's permit term. All of these AMMs include elements that avoid or minimize the risk of  
 27 affecting habitats and species adjacent to work areas. Considering these commitments over the  
 28 permit term, proposed project would not result in a substantial adverse effect through habitat  
 29 modifications and would not substantially reduce the number or restrict the range of vernal pool  
 30 crustaceans. Therefore, the project would have a less-than-significant impact on vernal pool  
 31 crustaceans.

32 The effects on nonlisted vernal pool invertebrate habitat from the proposed project would represent  
 33 an adverse effect as a result of habitat modification of a special-status species and potential for  
 34 direct mortality in the absence of other conservation actions. However, the proposed project has  
 35 committed to impact limits for vernal pool habitat and to habitat protection, restoration,  
 36 management and enhancement associated with CM3, CM9, and CM11. AMMs would be in place to  
 37 avoid or minimize the risk of affecting habitats and species adjacent to work areas. These  
 38 conservation activities would be guided by goals and objectives, and by AMMs, including AMM37,  
 39 which would be in place throughout the proposed project's permit term. Considering these  
 40 commitments, the proposed project would not result in a substantial adverse effect through habitat  
 41 modifications and would not substantially reduce the number or restrict the range of nonlisted  
 42 vernal pool invertebrates.

1 The proposed project would result in permanent and temporary effects on aquatic habitat and  
 2 upland terrestrial cover habitat for California red-legged frog. The effects would result from  
 3 construction of the water conveyance facilities (CM1 and CM11). These conservation actions would  
 4 occur in the same timeframe as the construction losses, thereby avoiding adverse effects of habitat  
 5 loss on California red-legged frog. These Plan objectives represent performance standards for  
 6 considering the effectiveness of CM3 protection and restoration actions. The acres of restoration and  
 7 protection contained in the near-term Plan goals and the additional detail in the biological objectives  
 8 for California red-legged frog satisfy the typical mitigation that would be applied to the project-level  
 9 effects of CM1, as well as mitigate the near-term effects of the other conservation measures. The  
 10 proposed project also contains commitments to implement AMMs, including AMM37, to avoid or  
 11 minimize the risk of affecting individuals and species habitats adjacent to work areas and storage  
 12 sites. With implementation of these AMMs and CM3 offset the impacts and are more than sufficient  
 13 to support the conclusion that the near-term effects of the proposed project on California red-legged  
 14 frog would be less than significant.

15 The proposed project would permanently and temporarily combined remove upland terrestrial  
 16 cover habitat for California tiger salamander. In the absence of other conservation actions, the  
 17 losses of California tiger salamander upland habitat associated with the proposed project would  
 18 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
 19 special-status species. However, with habitat protection and restoration associated with the  
 20 conservation components, guided by landscape-scale goals and objectives and by AMMs, including  
 21 AMM37, to avoid or minimize the risk of affecting habitats and species adjacent to work areas and  
 22 storage sites and would be in place throughout the construction phase, the impacts of the proposed  
 23 project as a whole on California tiger salamander would not be significant.

24 Implementation of the proposed project would result in temporary and permanent losses of riparian  
 25 and grassland habitat and potential direct mortality of riparian brush rabbit. However, the habitat  
 26 restoration and protection associated with CMs, guided by species-specific goals and objectives and  
 27 by AMMs, including AMM37, would offset significant impacts so that the proposed project would not  
 28 represent a substantial adverse effect through habitat modifications and would not substantially  
 29 reduce the number or restrict the range of the species.

30 In the absence of other conservation actions, the effects on San Joaquin kit fox and American badger  
 31 habitat from the proposed project would represent a significant impact as a result of habitat  
 32 modification and potential direct mortality of a special-status species. However, with habitat  
 33 protection, restoration, management, and enhancement associated with CMs, and guided by AMMs,  
 34 including AMM37, which would be in place throughout the time period of construction, and with  
 35 implementation of Mitigation Measure BIO-162, the impact of the proposed project as a whole on  
 36 San Joaquin kit fox and American badger would be less than significant.

37 In absence of the implementation of AMM37, in addition to other CMs and AMMs, there would be a  
 38 greater potential for significant impacts to this species due to loss of habitat and loss of species from  
 39 construction and/or operation of the proposed project. Refer to the impact analyses for each  
 40 resource for more detail.

### 41 **3B.4.32 AMM 38 California Black Rail**

42 *Explanation of effectiveness:* The proposed project would result in the loss or conversion of habitat  
 43 for and direct mortality of California Black Rail. The implementation of *AMM38 California Black Rail*

1 would minimize the effects of construction on rails if present in or adjacent to the work area. Take of  
 2 the species during construction would be eliminated by establishing 500-foot no-disturbance  
 3 buffers around identified territorial calling centers during the breeding season, as required by this  
 4 AMM.

5 In addition, AMM38 California Black Rail and AMM1–AMM7 would avoid and minimize potential  
 6 impacts on the species from construction-related habitat loss and noise and disturbance.

7 The proposed project would also result in indirect effects due to construction on California Black  
 8 Rail. If construction occurs during the nesting season, these indirect effects could result in the loss or  
 9 abandonment of nests, and mortality of any eggs and/or nestlings. However, AMM38 requires that  
 10 preconstruction surveys of potential breeding habitat would be conducted within 700 feet of project  
 11 activities, and a 500-foot no-disturbance buffer would be established around any territorial call-  
 12 centers during the breeding season.

13 Additionally, impacts related to fragmentation of California Black Rail habitat as a result of  
 14 conservation component implementation would be minimized and avoided by implementation of  
 15 this AMM.

16 In absence of the implementation of AMM38, in addition to other AMMs, there would be a greater  
 17 potential for significant impacts to this species due to loss of habitat and loss of species from  
 18 construction and/or operation of the proposed project. Refer to the impact analyses for each  
 19 resource for more detail.

### 20 **3B.4.33 AMM 39 White Tailed Kite**

21 *Explanation of effectiveness:* The proposed project would result in the loss of valley/foothill riparian  
 22 natural community due to construction of the water conveyance facilities (CM1) and fish passage  
 23 improvements (CM2), and inundation during tidal marsh restoration (CM4).The construction losses  
 24 would be spread across the near-term timeframe. These losses would be minimized by planned  
 25 restoration CMs and AMMs, including AMM39. Because of these near-term restoration and  
 26 protection activities and AMMs, impacts would be less than significant.

27 In the absence of other conservation actions, the effects on white-tailed kite habitat from the  
 28 proposed project would represent an adverse effect as a result of habitat modification and potential  
 29 for direct mortality of a special status species; however, considering the proposed project's  
 30 protection and restoration provisions, which would provide acreages of new or enhanced habitat in  
 31 amounts greater than necessary to compensate for the time lag of restoring riparian and foraging  
 32 habitats lost to construction and restoration activities, and with implementation of AMMs that  
 33 would eliminate the potential for take, including AMM39 White-Tailed Kite, the loss of habitat or  
 34 direct mortality through implementation of the proposed project would not result in a substantial  
 35 adverse effect through habitat modifications and would not result in take of white-tailed kite per  
 36 Section 86 of the California Fish and Game Code.

37 In absence of the implementation of AMM39, in addition to other AMMs, there would be a greater  
 38 potential for significant impacts to this species due to loss of habitat and loss of species from  
 39 construction and/or operation of the proposed project. Refer to the impact analyses for each  
 40 resource for more detail.

## 3B.5 Conservation Measures

### 3B.5.1 CM3 Natural Communities Protection and Restoration

*Explanation of effectiveness:* CM3 Natural Communities Protection and Restoration (Environmental Commitment 3 under Alternatives 4A, 2D, and 5A) would result in the protection of several habitats, including wetlands, vernal pool, riparian, and grassland communities, which would help in offsetting impacts from the proposed project to recreational and terrestrial resources.

#### 3B.5.1.1 Recreation

*Explanation of effectiveness:* Construction of the proposed project would result in the long-term reduction of recreation opportunities and experiences, such as hunting and wildlife viewing. Implementation of CM3 would result in protection of managed wetlands that would provide suitable habitat conditions for covered species and native biodiversity, including benefiting migratory waterfowl. Under CM3, the protection of cultivated lands would also benefit sandhill crane and other species.

#### 3B.5.1.2 Riparian

*Explanation of effectiveness:* The project would result in the loss of valley/foothill riparian natural community due to construction of the water conveyance facilities and fish passage improvements (CM2), and inundation during tidal marsh restoration (CM4, or EC4 under 2D, 4A, and 5A). The construction losses would be spread across the near-term timeframe. The operation and maintenance activities associated with the proposed project would have the potential to create minor changes in total acreage of valley/foothill riparian natural community in the study area, and could create temporary increases in turbidity and sedimentation. These losses would be minimized by protection (including significant enhancement) of valley/foothill riparian natural community under CM3.

#### 3B.5.1.3 Vernal Pool

*Explanation of effectiveness:* Construction of the proposed project could result in the direct loss of vernal pool complex natural community due to inundation during tidal marsh restoration (CM4) and construction of the water conveyance facility (CM1). The protection of vernal pool complex as part of CM3 would partially offset this near-term loss.

The operation and maintenance activities associated with the proposed project would have the potential to create minor changes in total acreage of vernal pool complex natural community in the study area, and could create temporary increases in sedimentation or damage from recreational activity. The activities could also introduce herbicides periodically to control nonnative, invasive plants. Implementation of management, protection and enhancement actions associated with CM3 would create positive effects, including reduced competition from invasive, nonnative plants in these habitats. Long-term restoration activities associated with CM3 would ensure that the acreage of this natural community would not decrease in the study area.

### 1 **3B.5.1.4 Wetland**

2 *Explanation of effectiveness:* CM3 would offset minor losses in total acreage of tidal and nontidal  
 3 freshwater perennial aquatic natural community in the study area due to CM1 that could create  
 4 temporary increases in turbidity and sedimentation. The operation and maintenance activities  
 5 associated with the proposed project would have the potential to create minor changes in total  
 6 acreage of tidal brackish emergent wetland natural community, tidal freshwater emergent wetland  
 7 natural community, and nontidal perennial aquatic natural community in the study area, and could  
 8 create temporary increases in turbidity and sedimentation. Implementation of management,  
 9 protection and enhancement actions associated with CM3 Natural Communities Protection and  
 10 Restoration would create positive effects, including improved water movement in these habitats.

11 Construction of the proposed project's water conveyance facilities (CM1) and fish passage  
 12 improvements (CM2) would result in the loss of nontidal freshwater perennial emergent wetland  
 13 natural community. Inundation and construction-related losses from CM4 would also occur in the  
 14 near-term. These losses would be offset by planned restoration and protection of nontidal marsh  
 15 scheduled for the first 10 years of CM3 implementation.

16 Implementation of management, protection and enhancement actions associated with CM3 Natural  
 17 Communities Protection and Restoration would create positive effects, including reduced  
 18 competition from invasive, nonnative plants in these habitats. Long-term restoration and protection  
 19 activities associated with CM3 would expand this natural community in the study area.

20 Initial development and construction of CM1, CM2 and CM4 would result in both permanent and  
 21 temporary removal of alkali seasonal wetland complex. Implementation of CM 3 would protect 150  
 22 acres of seasonal wetland, which would benefit the alkali seasonal wetland natural community.

23 The operation and maintenance activities associated with the proposed project would have the  
 24 potential to create minor changes in total acreage of managed wetland natural community in the  
 25 study area, and could create temporary increases in turbidity and sedimentation. The activities  
 26 could also introduce herbicides periodically to control nonnative, invasive plants. Hunting could  
 27 intermittently reduce the availability of this community to special-status and common wildlife  
 28 species. Implementation of management, protection and enhancement actions associated with CM3  
 29 Natural Communities Protection and Restoration would create positive effects, including improved  
 30 water movement in and adjacent to these habitats. Long-term restoration activities associated with  
 31 CM3 Natural Communities Protection and Restoration would greatly expand the ecological functions  
 32 of this natural community in the study area.

### 33 **3B.5.1.5 Grassland**

34 *Explanation of effectiveness:* The operation and maintenance activities associated with Alternative 4  
 35 would have the potential to create minor changes in total acreage of grassland natural community in  
 36 the study area, and could create temporary increases sedimentation. The activities could also  
 37 introduce herbicides periodically to control nonnative, invasive plants. Implementation of  
 38 management, protection and enhancement actions associated with CM3 Natural Communities  
 39 Protection and Restoration would create positive effects, including reduced competition from  
 40 invasive, nonnative plants in these habitats. Long-term restoration activities associated with CM3  
 41 Natural Communities Protection and Restoration would increase the value of this natural  
 42 community in the study area.

### 1 **3B.5.1.6 Habitat**

2 *Explanation of effectiveness:* The proposed project effects on vernal pool crustacean habitat and on  
3 nonlisted vernal pool invertebrate habitat would represent an adverse effect as a result of habitat  
4 modification of a special-status species and potential for direct mortality in the absence of other  
5 conservation actions. However, the proposed project has committed to impact limits for vernal pool  
6 crustacean habitat and vernal pool invertebrate habitat, in addition to habitat protection,  
7 restoration, management and enhancement associated with CM3.

8 The loss of western burrowing owl habitat, San Joaquin kit fox and American badger and potential  
9 for mortality of these special-status species under the proposed project would represent an adverse  
10 effect in the absence of other conservation actions. However, with habitat protection and restoration  
11 associated with CM3, which would be available to guide the near-term protection and management  
12 of cultivated lands, the effects of habitat loss and potential mortality on these species under the  
13 proposed project would be less-than-significant.

14 The loss of western yellow-billed cuckoo habitat associated with the proposed project would  
15 represent an adverse effect as a result of habitat modification and potential for direct mortality of a  
16 special-status species. However, the species is not an established breeder in the study area and  
17 current presence is limited to migrants. In addition, the habitat that would be lost consists of small,  
18 fragmented riparian stands that do not provide high-value habitat for the species. With habitat  
19 protection and restoration associated with CM3, which would be in place throughout the  
20 construction period, the effects of habitat loss and potential mortality on western yellow-billed  
21 cuckoo under the proposed project would be less-than-significant.

22 In the absence of other conservation actions, the effects on loggerhead shrike habitat would  
23 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
24 special-status species. Loggerhead shrike is not a covered species under the proposed project. For  
25 the proposed project to avoid an adverse effect on individuals, preconstruction surveys for  
26 noncovered avian species would be required to ensure that nests are detected and avoided. The  
27 management and enhancement of cultivated lands including insect prey enhancement through CM3,  
28 the protection of shrubs and establishment of hedgerows within protected cultivated lands would  
29 compensate for any potential substantial impact from the loss of low-value loggerhead shrike  
30 foraging habitat.

31 Construction and operation of the water conveyance facilities and habitat restoration activities  
32 would have impacts on common wildlife and plants in the study area through habitat loss and  
33 through direct or indirect loss or injury of individuals. The loss of habitat would not be substantial,  
34 because habitat restoration would increase the amount and extent of habitat available for use by  
35 most common wildlife and plant species. CM3 would avoid or minimize effects on special-status  
36 species by enhancing natural communities, which would result in avoiding and minimizing effects  
37 on common wildlife and plants. Consequently, implementation of the proposed project is not  
38 expected to cause any populations of common wildlife or plants to drop below self-sustaining levels,  
39 and this impact would be less than significant.

40 In absence of the implementation of this conservation measure, in addition to other CMs and AMMs,  
41 there would be a greater potential for significant impacts to these species and natural communities  
42 due to loss of habitat and loss of species from construction and/or operation of the proposed  
43 project. Refer to the impact analyses for each resource for more detail.

## 3B.5.2 CM4 Tidal Natural Communities Restoration:

*Explanation of effectiveness:* CM4 Tidal Natural Communities Restoration (Environmental Commitment 4 under Alternatives 2D, 4A, and 5A) would result in the restoration and enhancement of tidal communities, which would help offset impacts from the proposed project to terrestrial resources.

The proposed project would result in the near-term loss or conversion of tidal perennial aquatic natural community due to construction of the water conveyance facilities (CM1) and fish passage improvements (CM2), and inundation during tidal marsh restoration (CM4). These losses and conversions would be offset by planned restoration of high-value tidal perennial aquatic natural community scheduled for the first 10 years of the proposed project's implementation (CM4).

The operation and maintenance activities associated with the proposed project would have the potential to create minor losses in total acreage of tidal perennial aquatic natural community in the study area, and could create temporary increases in turbidity and sedimentation. The activities could also introduce herbicides periodically to control nonnative, invasive plants. Long-term restoration activities associated with CM4 Tidal Natural Communities Restoration would greatly expand this natural community in the study area. Ongoing operation, maintenance and management activities would not result in a net permanent reduction in the acreage or value of this sensitive natural community within the study area.

The operation and maintenance activities associated with the proposed project would have the potential to create changes in total acreage of tidal brackish emergent wetland natural community in the study area, and could create temporary increases in turbidity and sedimentation. The activities could also introduce herbicides periodically to control nonnative, invasive plants. Long-term restoration activities associated with CM4 Tidal Natural Communities Restoration would greatly expand this natural community in the study area.

The operation and maintenance activities associated with the proposed project would have the potential to create minor changes in total acreage of managed wetland natural community in the study area, and could create temporary increases in turbidity and sedimentation. The activities could also introduce herbicides periodically to control nonnative, invasive plants. Hunting could intermittently reduce the availability of this community to special-status and common wildlife species. Long-term restoration activities associated with CM4 Tidal Natural Communities Restoration would greatly expand the ecological functions of this natural community in the study area.

The proposed project would result in the loss of tidal freshwater emergent wetland natural community (permanent and temporary) due to construction of the water conveyance facilities (CM1) and fish passage improvements (CM2), and tidal marsh restoration (CM4). The losses would be spread across the near-term timeframe and would be offset by planned restoration of tidal freshwater emergent wetland natural community scheduled for the first 10 years of the proposed project's implementation (CM4).

The operation and maintenance activities associated with the proposed project, including changed water operations in the upstream rivers, would have the potential to create minor changes in total acreage of tidal freshwater emergent wetland natural community in the study area, and could create temporary increases in turbidity and sedimentation. The activities could also introduce herbicides periodically to control nonnative, invasive plants. Long-term restoration activities associated with



1 CM4 Tidal Natural Communities Restoration would greatly expand this natural community in the  
2 study area.

3 The loss of California least tern foraging habitat and potential direct mortality associated with the  
4 operation of proposed project would represent a significant impact in the absence of other  
5 conservation actions. However, with habitat restoration associated with CM4, the loss of habitat  
6 under this alternative would have a less-than-significant impact on California least tern.

7 The permanent and temporary loss of potential jurisdictional wetlands as a result of constructing  
8 project-related water conveyance facilities would be substantial if not compensated for by wetland  
9 protection and/or restoration. This loss would represent either temporary or permanent removal of  
10 federally protected wetlands or other waters of the United States as defined by Section 404 of the  
11 CWA. However, CM4 would restore and protect large acreages of tidal wetlands and open water.  
12 Through the course of the proposed project's restoration program, this alternative would result in  
13 restoration of tidal wetlands and open water. Impacts on wetlands from project construction would  
14 occur in the first 10 years after approval of the proposed project. Wetland restoration would occur  
15 during this time period, thereby offsetting the impacts of construction. Therefore, there would be a  
16 beneficial impact on potential jurisdictional wetlands and waters of the United States resulting from  
17 project implementation.

18 Construction and operation of the water conveyance facilities and habitat restoration activities  
19 would have impacts on common wildlife and plants in the study area through habitat loss and  
20 through direct or indirect loss or injury of individuals. The loss of habitat would not be substantial,  
21 because habitat restoration would increase the amount and extent of habitat available for use by  
22 most common wildlife and plant species. CM4 would restore tidal natural communities and help  
23 offset the losses in acreage and value of common wildlife and plants.

24 In the absence of implementation of this conservation measure, in addition to other CMs and AMMs,  
25 there would be a greater potential for significant impacts to these species and natural communities  
26 due to loss of habitat and loss of species from construction and/or operation of the proposed  
27 project. Refer to the impact analyses for each resource for more detail.

### 28 **3B.5.3 CM6 Channel Margin Enhancement**

29 *Explanation of effectiveness:* CM6 Channel Margin Enhancement (Environmental Commitment 6  
30 under Alternatives 4A, 2D, and 5A) would help in offsetting impacts from the proposed project to  
31 terrestrial resources.

32 Construction and operation of the water conveyance facilities and habitat restoration activities  
33 would have impacts on common wildlife and plants in the study area through habitat loss and  
34 through direct or indirect loss or injury of individuals. With implementation of CM4 and other CMs,  
35 the loss of habitat would not be substantial, because habitat restoration would increase the amount  
36 and extent of habitat available for use by most common wildlife and plant species, and offset the  
37 losses in acreage and value of these habitats. Consequently, implementation of the proposed project  
38 is not expected to cause any populations of common wildlife or plants to drop below self-sustaining  
39 levels, and this impact would be less than significant.

40 In absence of the implementation of this conservation measure, in addition to other CMs, there  
41 would be a greater potential for significant impacts to these species and natural communities due to

1 loss of habitat and loss of species from construction and/or operation of the proposed project. Refer  
2 to the impact analyses for each resource for more detail.

### 3 **3B.5.4 CM7 Riparian Natural Community Restoration**

4 *Explanation of effectiveness:* CM7 Riparian Natural Community Restoration (Environmental  
5 Commitment 3 under Alternatives 4A, 2D, and 5A) would result in the protection of several species  
6 habitats, riparian, grassland, and western yellow-billed cuckoo habitats, which would help in  
7 offsetting impacts from the proposed project to terrestrial resources.

8 The proposed project would result in the loss of valley/foothill riparian natural community due to  
9 construction of the water conveyance facilities (CM1) and fish passage improvements (CM2), and  
10 inundation during tidal marsh restoration (CM4). The construction losses would be spread across  
11 the near-term timeframe. These losses would be minimized by planned restoration valley/foothill  
12 riparian natural community scheduled for the first 10 years of project implementation under CM7.  
13 The operation and maintenance activities associated with the proposed project would have the  
14 potential to create minor changes in total acreage of valley/foothill riparian natural community in  
15 the study area, and could create temporary increases in turbidity and sedimentation. The activities  
16 could also introduce herbicides periodically to control nonnative, invasive plants. Long-term  
17 restoration and protection activities associated with CM7 Riparian Natural Community Restoration  
18 would expand this natural community in the study area. With the restoration and enhancement of  
19 these amounts of habitat, in addition to implementation of AMMs, impacts on this natural  
20 community would be less than significant.

21 In the absence of other conservation actions, the loss of western yellow-billed cuckoo habitat  
22 associated with the proposed project would represent an adverse effect as a result of habitat  
23 modification and potential for direct mortality of a special-status species. However, the species is  
24 not an established breeder in the study area and current presence is limited to migrants. In addition,  
25 the habitat that would be lost consists of small, fragmented riparian stands that do not provide high-  
26 value habitat for the species. With habitat protection and restoration associated with CM7, which  
27 would be in place throughout the construction period, and would provide acreages of new or  
28 enhanced habitat in amounts greater than necessary to compensate for the time lag of restoring  
29 habitats lost to construction and restoration activities, CM7 would offset the effects of habitat loss  
30 and potential mortality on western yellow-billed cuckoo from the proposed project.

31 The proposed project would result in temporary and permanent losses of riparian and grassland  
32 habitat and potential direct mortality of riparian brush rabbit. Implementing CM7 would offset these  
33 impacts by creating habitat for the species through habitat modifications.

34 Construction and operation of the water conveyance facilities and habitat restoration activities  
35 would have impacts on common wildlife and plants in the study area through habitat loss and  
36 through direct or indirect loss or injury of individuals. However, the loss of habitat would not be  
37 substantial, because habitat restoration that would be implemented under CM7 and other CMs  
38 would offset the impacts by increasing the amount and extent of habitat available for use by most  
39 common wildlife and plant species. Consequently, implementation of the proposed project is not  
40 expected to cause any populations of common wildlife or plants to drop below self-sustaining levels,  
41 and this impact would be less than significant.

42 In absence of the implementation of this conservation measure, in addition to other CMs and AMMs,  
43 there would be a greater potential for significant impacts to these species and natural communities

1 due to loss of habitat and loss of species from construction and/or operation of the proposed  
2 project. Refer to the impact analyses for each resource for more detail.

### 3 **3B.5.5 CM8 Grassland Natural Community Restoration**

4 *Explanation of effectiveness:* CM8 Grassland Natural Community Restoration would result in the  
5 protection of several habitats, including grassland natural community, and habitat for western  
6 burrowing owl, San Joaquin kit fox and American badger, which would help in offsetting impacts  
7 from the proposed project to terrestrial resources.

8 The operation and maintenance activities associated with Alternative 4 would have the potential to  
9 create minor changes in total acreage of grassland natural community in the study area, and could  
10 create temporary increases in sedimentation. The activities could also introduce herbicides  
11 periodically to control nonnative, invasive plants. Long-term restoration activities associated with  
12 CM8 Grassland Natural Community Restoration would increase the value of this natural community  
13 in the study area.

14 Construction of the proposed project and Conservation Measures 2, 4, 5, 7, 8, 9, 11, and 18 would  
15 result in the combined permanent and temporary loss of modeled habitat for western burrowing  
16 owl. The loss of western burrowing owl habitat and potential for mortality of this special-status  
17 species under Alternative 4 would represent an adverse effect in the absence of other conservation  
18 actions. Implementation of CM8 would protect and restore grassland natural community, which  
19 with other AMMs and CMs would offset impacts to western burrowing owl habitat to a less than  
20 significant level.

21 In the absence of other conservation actions, the effects on San Joaquin kit fox and American badger  
22 habitat from the proposed project would represent a significant impact as a result of habitat  
23 modification and potential direct mortality of a special-status species. However, with habitat  
24 restoration associated with CM8, along with other CMs and AMMs, the impact of the proposed  
25 project as a whole on San Joaquin kit fox and American badger would be less than significant.

26 Construction and operation of the water conveyance facilities and habitat restoration activities  
27 would impact acreage and value of common wildlife and plants in the study area through habitat  
28 loss and through direct or indirect loss or injury of individuals. With implementation of CM8, the  
29 loss of habitat would not be substantial, because habitat restoration would increase the amount and  
30 extent of habitat available for use by most common wildlife and plant species. Consequently,  
31 implementation of the proposed project is not expected to cause any populations of common  
32 wildlife or plants to drop below self-sustaining levels.

33 In absence of the implementation of this conservation measure, in addition to other CMs and AMMs,  
34 there would be a greater potential for significant impacts to these species and natural communities  
35 due to loss of habitat and loss of species from construction and/or operation of the proposed  
36 project. Refer to the impact analyses for each resource for more detail.

### 37 **3B.5.6 CM9 Vernal Pool and Alkali Seasonal Wetland** 38 **Complex Restoration**

39 *Explanation of effectiveness:* CM9 Vernal Pool and Alkali Seasonal Wetland Complex Restoration  
40 would result in the protection of several habitats, including alkali season wetland complex and

1 vernal pool complex natural communities, vernal pool crustacean and vernal pool invertebrate  
2 habitat, and common wildlife and plants.

3 The operation and maintenance activities associated with the proposed project would have the  
4 potential to create minor changes in total acreage of alkali seasonal wetland complex natural  
5 community in the study area, and could create temporary increases sedimentation. The activities  
6 could also introduce herbicides periodically to control nonnative, invasive plants. Implementation of  
7 environmental commitments, AMMs, other CMs, and long-term restoration activities associated with  
8 CM9 Vernal Pool and Alkali Seasonal Wetland Complex Restoration would minimize impacts and  
9 ensure that the acreage of this natural community would not decrease in the study area.

10 During construction, the proposed project could result in the direct loss of vernal pool complex  
11 natural community due to inundation during tidal marsh restoration (CM4) and construction of the  
12 water conveyance facility (CM1). The construction- and inundation-related loss of this special-status  
13 natural community would represent a significant impact if it were not offset by avoidance and  
14 minimization measures and other actions associated with project-related conservation components.  
15 Loss of vernal pool complex natural community would be considered both a loss in acreage of a  
16 sensitive natural community and a loss of wetland as defined by Section 404 of the CWA. The  
17 protection of vernal pool complex as part of CM3 and the restoration of this community (including a  
18 commitment to have restoration keep pace with losses; BDCP Chapter 3, Section 3.4.4.27) as part of  
19 CM9 during the first 10 years of project implementation would partially offset this near-term loss.  
20 The proposed project also includes AMMs to minimize impacts. Because of these offsetting  
21 protection and restoration activities implementation of AMMs, impacts would be less than  
22 significant.

23 The operation and maintenance activities associated with the proposed project would have the  
24 potential to create minor changes in total acreage of vernal pool complex natural community in the  
25 study area, and could create temporary increases in sedimentation or damage from recreational  
26 activity. The activities could also introduce herbicides periodically to control nonnative, invasive  
27 plants. These impacts would be offset through implementation of environmental commitments and  
28 AMMs which would minimize these impacts, and other operations and maintenance activities,  
29 including management, protection and enhancement actions associated with other CMs, as well as  
30 long-term restoration activities associated with CM9 Vernal Pool and Alkali Seasonal Wetland  
31 Complex Restoration, to ensure that the acreage of this natural community would not decrease in  
32 the study area.

33 The operation and maintenance activities associated with the proposed project would have the  
34 potential to create minor changes in total acreage of other natural seasonal wetland natural  
35 community in the study area, and could create temporary increases in sedimentation. The activities  
36 could also introduce herbicides periodically to control nonnative, invasive plants. Implementation of  
37 environmental commitments and AMMs would offset these impacts. Other operations and  
38 maintenance activities, including management, protection and enhancement actions associated with  
39 other CMs, and long-term restoration activities associated with CM9 Vernal Pool and Alkali Seasonal  
40 Wetland Complex Restoration would ensure that the ecological values provided by this small natural  
41 community would not decrease in the study area. Ongoing operation, maintenance and management  
42 activities would not result in a net permanent reduction in this natural community within the study  
43 area.

1 The effects on vernal pool crustacean habitat from construction and operation of the proposed  
 2 project would represent an adverse effect as a result of habitat modification of a special-status  
 3 species and potential for direct mortality in the absence of other conservation actions. However, the  
 4 proposed project has committed to impact limits for vernal pool crustacean habitat and to habitat  
 5 protection, restoration, management and enhancement associated with CM9. These conservation  
 6 activities would be guided by species-specific goals and objectives, and by AMMs, which would be in  
 7 place throughout the proposed project's permit term. All of these AMMs include elements that avoid  
 8 or minimize the risk of affecting habitats and species adjacent to work areas. Considering these  
 9 commitments over the permit term, the proposed project would not result in a substantial adverse  
 10 effect through habitat modifications and would not substantially reduce the number or restrict the  
 11 range of vernal pool crustaceans. Therefore, the project would have a less-than-significant impact on  
 12 vernal pool crustaceans.

13 The effects on nonlisted vernal pool invertebrate habitat from the proposed project would represent  
 14 an adverse effect as a result of habitat modification of a special-status species and potential for  
 15 direct mortality in the absence of other conservation actions. However, the proposed project has  
 16 committed to impact limits for vernal pool habitat and to habitat protection, restoration,  
 17 management and enhancement associated with CM9, other CMs, and AMMs, to avoid and minimize  
 18 direct and indirect effects on vernal pools and would thus be applicable to nonlisted vernal pool  
 19 invertebrates as well. All of these AMMs include elements that avoid or minimize the risk of affecting  
 20 habitats and species adjacent to work areas. Considering these commitments, the proposed project  
 21 would not result in a substantial adverse effect through habitat modifications and would not  
 22 substantially reduce the number or restrict the range of nonlisted vernal pool invertebrates.

23 Construction and operation of the water conveyance facilities and habitat restoration activities  
 24 would have impacts on common wildlife and plants in the study area through habitat loss and  
 25 through direct or indirect loss or injury of individuals. Conservation measures to avoid or minimize  
 26 effects on special-status species, to prevent the introduction and spread of invasive species, and to  
 27 enhance natural communities would result in avoiding and minimizing effects on common wildlife  
 28 and plant. The impacts related to losses in acreage and value of these habitats would be offset by  
 29 protection, restoration, enhancement, and management actions contained in the proposed project,  
 30 including CM9 Vernal Pool and Alkali Seasonal Wetland Complex Restoration, and other CMs.  
 31 Consequently, implementation of the proposed project is not expected to cause any populations of  
 32 common wildlife or plants to drop below self-sustaining levels, and this impact would be less than  
 33 significant.

34 In absence of the implementation of this conservation measure, in addition to other CMs and AMMs,  
 35 there would be a greater potential for significant impacts to these species and natural communities  
 36 due to loss of habitat and loss of species from construction and/or operation of the proposed  
 37 project. Refer to the impact analyses for each resource for more detail.

### 38 **3B.5.7 CM10 Nontidal Marsh Restoration**

39 CM10 Nontidal Marsh Restoration would result in the protection of several habitats, including  
 40 aquatic natural communities, wetland natural communities and common wildlife and plants.

41 The proposed project would result in the loss of nontidal perennial aquatic natural community due  
 42 to construction of the water conveyance facilities (CM1) and fish passage improvements (CM2), and  
 43 change to tidally influenced inundation during tidal marsh restoration (CM4). These losses would be

1 offset by planned restoration of nontidal marsh scheduled for the first 10 years of project  
2 implementation (CM10). Also, AMMs would be implemented to minimize impacts. Because of these  
3 offsetting near-term restoration activities and AMMs, impacts would be less than significant.

4 The operation and maintenance activities associated with the proposed project would have the  
5 potential to create minor changes in total acreage of nontidal perennial aquatic natural community  
6 in the study area, and could create temporary increases in turbidity and sedimentation. The  
7 activities could also introduce herbicides periodically to control nonnative, invasive plants.  
8 Implementation of environmental commitments and AMMs would minimize these impacts, and  
9 other operations and maintenance activities, including long-term restoration activities associated  
10 with CM10 Nontidal Marsh Restoration would expand this natural community in the study area.  
11 Ongoing operation, maintenance and management activities would not result in a net permanent  
12 reduction in this sensitive natural community within the study area. Therefore, there would be a  
13 less-than-significant impact on the nontidal perennial aquatic natural community.

14 The proposed project would result in the loss of nontidal freshwater perennial emergent wetland  
15 natural community due to construction of the water conveyance facilities (CM1) and fish passage  
16 improvements (CM2). Inundation and construction-related losses from CM4 would occur in the  
17 near-term. These losses would be offset by planned restoration and protection of nontidal marsh  
18 scheduled for the first 10 years of project implementation (CM3 and CM10). AMMs would also be  
19 implemented to minimize impacts. Because of these offsetting near-term restoration activities and  
20 AMMs, impacts would be less than significant.

21 The operation and maintenance activities associated with the proposed project would have the  
22 potential to create minor changes in total acreage of nontidal freshwater perennial emergent  
23 wetland natural community in the study area, and could create temporary increases in turbidity and  
24 sedimentation. The activities could also introduce herbicides periodically to control nonnative,  
25 invasive plants. Implementation of environmental commitments, AMMs, and CMs, including long-  
26 term restoration activities associated with CM10 Nontidal Marsh Restoration, would expand this  
27 natural community in the study area.

28 During the near-term timeframe, the proposed project would permanently remove and temporarily  
29 remove managed wetland through inundation or construction-related losses in habitat from CM1,  
30 CM2, and CM4 activities. The construction or inundation loss of this special-status natural  
31 community would represent a significant impact if it were not offset by other conservation actions.  
32 The restoration, protection and enhancement of managed wetland as part of CM10 during project  
33 implementation would fully offset the losses associated with CM1, but would only partially offset the  
34 total near-term loss. CM4 marsh restoration activities that would be creating this loss would be  
35 simultaneously creating tidal brackish emergent wetland and tidal freshwater emergent wetland in  
36 place of the managed wetland in the near-term. This acreage would significantly exceed the number  
37 of acres of managed wetland lost. Mitigation measures, other CMs, and AMMs would be  
38 implemented to avoid or minimize the risk of affecting habitats at work areas and improve  
39 management and enhance existing habitat. As a result, there would be a less-than-significant impact.

40 The operation and maintenance activities associated with the proposed project would have the  
41 potential to create minor changes in total acreage of managed wetland natural community in the  
42 study area, and could create temporary increases in turbidity and sedimentation. The activities  
43 could also introduce herbicides periodically to control nonnative, invasive plants. Hunting could  
44 intermittently reduce the availability of this community to special-status and common wildlife

1 species. Implementation of environmental commitments, AMMs, and CMS, including CM10 Nontidal  
 2 Marsh Restoration, would greatly expand the ecological functions of this natural community in the  
 3 study area.

4 The permanent and temporary loss of potential jurisdictional wetlands as a result of constructing  
 5 the project-related water conveyance facilities would be substantial if not compensated for by  
 6 wetland protection and/or restoration. This loss would represent either temporary or permanent  
 7 removal of federally protected wetlands or other waters of the United States as defined by Section  
 8 404 of the CWA. However, the proposed project includes conservation measures, including CM10,  
 9 that would restore and protect large acreages of both tidal and nontidal wetlands and open water.  
 10 Through the course of the project's restoration program, this alternative would result in restoration  
 11 of tidal and nontidal wetlands and open water. Impacts on wetlands from CM1 construction would  
 12 occur in the first 10 years after project approval. Wetland restoration would occur during this time  
 13 period, thereby offsetting the impacts of CM1 construction.

14 Construction and operation of the water conveyance facilities and habitat restoration activities  
 15 would have impacts on common wildlife and plants in the study area through habitat loss and  
 16 through direct or indirect loss or injury of individuals. Conservation measures to avoid or minimize  
 17 effects on special-status species, to prevent the introduction and spread of invasive species, and to  
 18 enhance natural communities would result in avoiding and minimizing effects on common wildlife  
 19 and plant. The impacts related to losses in acreage and value of these habitats would be offset by  
 20 protection, restoration, enhancement, and management actions contained in the proposed project,  
 21 including CM10 Nontidal Marsh Restoration. Consequently, implementation of the proposed project  
 22 is not expected to cause any populations of common wildlife or plants to drop below self-sustaining  
 23 levels, and this impact would be less than significant.

24 In absence of the implementation of this conservation measure, in addition to other CMs and AMMs,  
 25 there would be a greater potential for significant impacts to these species and natural communities  
 26 due to loss of habitat and loss of species from construction and/or operation of the proposed  
 27 project. Refer to the impact analyses for each resource for more detail.

### 28 **3B.5.8 CM11 Natural Communities Enhancement and** 29 **Management**

30 CM11 Natural Communities Enhancement and Management would result in the protection of several  
 31 habitats, including aquatic natural communities, wetland natural communities and common wildlife  
 32 and plants.

33 The operation and maintenance activities associated with the proposed project would have the  
 34 potential to create minor losses in total acreage of tidal perennial aquatic natural community in the  
 35 study area, and could create temporary increases in turbidity and sedimentation. The activities  
 36 could also introduce herbicides periodically to control nonnative, invasive plants. Implementation of  
 37 environmental commitments, AMMS, and CMS, including CM3 Natural Communities Protection and  
 38 Restoration, would minimize and offset impacts. Ongoing operation, maintenance and management  
 39 activities would not result in a net permanent reduction in the acreage or value of this sensitive  
 40 natural community within the study area. Therefore, there would be a less-than-significant impact  
 41 on the tidal perennial aquatic natural community.

1 The operation and maintenance activities associated with the proposed project would have the  
2 potential to create minor changes in total acreage of tidal brackish emergent wetland natural  
3 community in the study area, and could create temporary increases in turbidity and sedimentation.  
4 The activities could also introduce herbicides periodically to control nonnative, invasive plants.  
5 Implementation of environmental commitments AMMS, and CMs, including CM3 Natural  
6 Communities Protection and Restoration, would minimize and offset impacts.

7 The operation and maintenance activities associated with the proposed project, including changed  
8 water operations in the upstream rivers, would have the potential to create minor changes in total  
9 acreage of tidal freshwater emergent wetland natural community in the study area, and could create  
10 temporary increases in turbidity and sedimentation. The activities could also introduce herbicides  
11 periodically to control nonnative, invasive plants. Implementation of environmental commitments  
12 AMMS, and CMs, including CM3 Natural Communities Protection and Restoration, would minimize  
13 and offset impacts.

14 The proposed project would result in the loss of valley/foothill riparian natural community due to  
15 construction of the water conveyance facilities (CM1) and fish passage improvements (CM2), and  
16 inundation during tidal marsh restoration (CM4).The construction losses would be spread across  
17 the near-term timeframe. These losses would be minimized by AMMS, and CMs, including CM3  
18 Natural Communities Protection and Restoration, which includes protection (including significant  
19 enhancement) (CM3) of valley/foothill riparian natural community scheduled for the first 10 years  
20 of project implementation. Because of these near-term restoration and protection activities and  
21 AMMs, impacts would be less than significant.

22 The operation and maintenance activities associated with the proposed project would have the  
23 potential to create minor changes in total acreage of valley/foothill riparian natural community in  
24 the study area, and could create temporary increases in turbidity and sedimentation. The activities  
25 could also introduce herbicides periodically to control nonnative, invasive plants. Implementation of  
26 environmental commitments, AMMs, and CMs, including CM3 Natural Communities Protection and  
27 Restoration, would minimize and offset impacts. With the restoration and enhancement of these  
28 amounts of habitat, in addition to implementation of AMMs, impacts on this natural community  
29 would be less than significant for CEQA purposes.

30 The operation and maintenance activities associated with the proposed project would have the  
31 potential to create minor changes in total acreage of nontidal perennial aquatic natural community  
32 in the study area, and could create temporary increases in turbidity and sedimentation. The  
33 activities could also introduce herbicides periodically to control nonnative, invasive plants.  
34 Implementation of environmental commitments AMMs, and CMs, including CM3 Natural  
35 Communities Protection and Restoration, would minimize and offset impacts. Ongoing operation,  
36 maintenance and management activities would not result in a net permanent reduction in this  
37 sensitive natural community within the study area. Therefore, there would be a less-than-significant  
38 impact on the nontidal perennial aquatic natural community.

39 The proposed project would result in the loss of nontidal freshwater perennial emergent wetland  
40 natural community due to construction of the water conveyance facilities (CM1) and fish passage  
41 improvements (CM2). Inundation and construction-related losses from CM4 would occur in the  
42 near-term. These losses would be offset by planned restoration and protection of nontidal marsh  
43 scheduled for the first 10 years of project implementation (CM3 ). AMMs would also be



1 implemented to minimize impacts. Because of these offsetting near-term restoration activities and  
2 AMMs, impacts would be less than significant.

3 The operation and maintenance activities associated with the proposed project would have the  
4 potential to create minor changes in total acreage of nontidal freshwater perennial emergent  
5 wetland natural community in the study area, and could create temporary increases in turbidity and  
6 sedimentation. The activities could also introduce herbicides periodically to control nonnative,  
7 invasive plants. Implementation of environmental commitments AMMs, and CMs, including CM3  
8 Natural Communities Protection and Restoration, would minimize and offset impacts. Initial  
9 development and construction of CM1, CM2 and CM4 would result in both permanent and  
10 temporary removal of alkali seasonal wetland complex. Full implementation of the proposed project  
11 would also include the following conservation actions over the term of the project to benefit the  
12 alkali seasonal wetland natural community - CM 3 would protect seasonal wetland.

13 The operation and maintenance activities associated with the proposed project would have the  
14 potential to create minor changes in total acreage of vernal pool complex natural community in the  
15 study area, and could create temporary increases in sedimentation or damage from recreational  
16 activity. The activities could also introduce herbicides periodically to control nonnative, invasive  
17 plants. These impacts would be offset through implementation of environmental commitments  
18 AMMs, and CMs, including CM3 Natural Communities Protection and Restoration, would minimize  
19 and offset impacts. Protection actions associated with CM3 would ensure that the acreage of this  
20 natural community would not decrease in the study area.

21 The operation and maintenance activities associated with the proposed project would have the  
22 potential to create minor changes in total acreage of managed wetland natural community in the  
23 study area, and could create temporary increases in turbidity and sedimentation. The activities  
24 could also introduce herbicides periodically to control nonnative, invasive plants. Hunting could  
25 intermittently reduce the availability of this community to special-status and common wildlife  
26 species. Implementation of environmental commitments AMMs, and CMs, including CM3 Natural  
27 Communities Protection and Restoration, would minimize and offset impacts.

28 The operation and maintenance activities associated with the proposed project would have the  
29 potential to create minor changes in total acreage of other natural seasonal wetland natural  
30 community in the study area, and could create temporary increases in sedimentation. The activities  
31 could also introduce herbicides periodically to control nonnative, invasive plants. Implementation of  
32 environmental commitments AMMs, and CMs, including CM3 Natural Communities Protection and  
33 Restoration, would minimize and offset impacts. Ongoing operation, maintenance and management  
34 activities would not result in a net permanent reduction in this natural community within the study  
35 area.

36 The operation and maintenance activities associated with the proposed project would have the  
37 potential to create minor changes in total acreage of grassland natural community in the study area,  
38 and could create temporary increases sedimentation. The activities could also introduce herbicides  
39 periodically to control nonnative, invasive plants. Implementation of environmental commitments,  
40 AMMs, and CMs, including CM3 Natural Communities Protection and Restoration, would minimize  
41 and offset impacts by increasing the value of this natural community in the study area.

42 The effects on vernal pool crustacean habitat from construction and operation of the proposed  
43 project would represent an adverse effect as a result of habitat modification of a special-status  
44 species and potential for direct mortality in the absence of other conservation actions. However, the

1 proposed project has committed to impact limits for vernal pool crustacean habitat and to habitat  
2 protection, restoration, management and enhancement associated with CM3, CM9, and CM11. These  
3 conservation activities would be guided by species-specific goals and objectives, and by AMMs,  
4 which would be in place throughout the proposed project's permit term. All of these AMMs include  
5 elements that avoid or minimize the risk of affecting habitats and species adjacent to work areas.  
6 Considering these commitments over the permit term, the proposed project would not result in a  
7 substantial adverse effect through habitat modifications and would not substantially reduce the  
8 number or restrict the range of vernal pool crustaceans. Therefore, the project would have a less-  
9 than-significant impact on vernal pool crustaceans.

10 The effects on nonlisted vernal pool invertebrate habitat from the proposed project would represent  
11 an adverse effect as a result of habitat modification of a special-status species and potential for  
12 direct mortality in the absence of other conservation actions. However, the proposed project has  
13 committed to impact limits for vernal pool habitat and to habitat protection, restoration,  
14 management and enhancement associated with CM3, CM9, and CM11. AMMs would be put in place,  
15 and include elements that avoid or minimize the risk of affecting habitats and species adjacent to  
16 work areas. Considering these commitments, the proposed project would not result in a substantial  
17 adverse effect through habitat modifications and would not substantially reduce the number or  
18 restrict the range of nonlisted vernal pool invertebrates.

19 The loss of western burrowing owl habitat and potential for mortality of this special-status species  
20 under the proposed project would represent an adverse effect in the absence of other conservation  
21 actions. However, with habitat protection and restoration associated with CM3, CM8, and CM11,  
22 guided by biological goals and objectives and by AMMs and with Mitigation Measure BIO-91,  
23 Compensate for Near-Term Loss of High-Value Western Burrowing Owl Habitat, which would be  
24 available to guide the near-term protection and management of cultivated lands, the loss of habitat  
25 or direct mortality through implementation of the proposed project would not result in a substantial  
26 adverse effect through habitat modifications and would not substantially reduce the number or  
27 restrict the range of the species.

28 In the absence of other conservation actions, the loss of western yellow-billed cuckoo habitat  
29 associated with the proposed project would represent an adverse effect as a result of habitat  
30 modification and potential for direct mortality of a special-status species. However, the species is  
31 not an established breeder in the study area and current presence is limited to migrants. In addition,  
32 the habitat that would be lost consists of small, fragmented riparian stands that do not provide high-  
33 value habitat for the species. With habitat protection and restoration associated with CMs, including  
34 CM3, guided by biological goals and objectives and by AMM1-AMM7 and AMM22 Suisun Song  
35 Sparrow, Yellow-Breasted Chat, Least Bell's Vireo, Western Yellow-Billed Cuckoo, which would be in  
36 place throughout the construction period, the effects of habitat loss and potential mortality on  
37 western yellow-billed cuckoo under the proposed project would be less-than-significant.

38 In the absence of other conservation actions, the effects on loggerhead shrike habitat would  
39 represent an adverse effect as a result of habitat modification and potential direct mortality of a  
40 special-status species. This impact would be significant. Loggerhead shrike is not a covered species  
41 under the proposed project. For the proposed project to avoid an adverse effect on individuals,  
42 preconstruction surveys for noncovered avian species would be required to ensure that nests are  
43 detected and avoided. With implementation of Mitigation Measure BIO-138, Compensate for the  
44 Near-term Loss of High-Value Loggerhead Shrike Habitat, and the management and enhancement of  
45 cultivated lands including insect prey enhancement through CM3 and CM11, the protection of

1 shrubs and establishment of hedgerows within protected cultivated lands would compensate for  
2 any potential substantial impact from the loss of low-value loggerhead shrike foraging habitat. In  
3 addition, AMMs and implementation of Mitigation Measure BIO-75, Conduct Preconstruction  
4 Nesting Bird Surveys and Avoid Disturbance of Nesting Birds, would avoid potentially significant  
5 impacts on nesting individuals. With these measures in place, the proposed project would not result  
6 in a substantial adverse effect through habitat modification and would not substantially reduce the  
7 number or restrict the range of either species.

8 Implementation of the proposed project would result in temporary and permanent losses of riparian  
9 and grassland habitat and potential direct mortality of riparian brush rabbit. However, the habitat  
10 restoration and protection associated with CMs, including CM3, guided by species-specific goals and  
11 objectives and by AMMs would offset significant impacts so that the proposed project would not  
12 represent a substantial adverse effect through habitat modifications and would not substantially  
13 reduce the number or restrict the range of the species.

14 In the absence of other conservation actions, the effects on San Joaquin kit fox and American badger  
15 habitat from the proposed project would represent a significant impact as a result of habitat  
16 modification and potential direct mortality of a special-status species. However, with habitat  
17 protection, restoration, management, and enhancement associated with CMs, including CM3, and  
18 guided by AMMs, which would be in place throughout the time period of construction, and with  
19 implementation of Mitigation Measure BIO-162, the impact of the proposed project as a whole on  
20 San Joaquin kit fox and American badger would be less than significant.

21 Construction and operation of the water conveyance facilities and habitat restoration activities  
22 would have impacts on common wildlife and plants in the study area through habitat loss and  
23 through direct or indirect loss or injury of individuals. Conservation measures to avoid or minimize  
24 effects on special-status species, to prevent the introduction and spread of invasive species, and to  
25 enhance natural communities would result in avoiding and minimizing effects on common wildlife  
26 and plant. The impacts related to losses in acreage and value of these habitats would be offset by  
27 protection, restoration, enhancement, and management actions contained in the proposed project's  
28 Conservation Measures, including CM3 Natural Communities Protection and Restoration.  
29 Consequently, implementation of the proposed project is not expected to cause any populations of  
30 common wildlife or plants to drop below self-sustaining levels, and this impact would be less than  
31 significant.

32 Implementation of the proposed project would result in impacts on natural communities from the  
33 introduction or spread of invasive plants. However, this would not result in the long-term  
34 degradation of a sensitive natural community because implementation of AMMs would offset the  
35 temporary disturbance of land associated with the alternative and would not result in substantial  
36 alteration of site conditions. CM11 Natural Communities Enhancement and Management would  
37 reduce these adverse effects by implementing invasive plant control within the proposed project's  
38 reserve system to reduce competition on native species, thereby improving conditions for covered  
39 species, ecosystem function, and native biodiversity. The invasive plant control efforts would target  
40 new infestations that are relatively easy to control or the most ecologically damaging nonnative  
41 plants for which effective suppression techniques are available. In aquatic and emergent wetland  
42 communities, Brazilian waterweed, perennial pepperweed, barbgrass, and rabbitsfoot grass would  
43 be controlled (and tidal mudflats would be maintained). In riparian areas, invasive plant control  
44 would focus on reducing or eliminating species such as Himalayan blackberry, giant reed, and  
45 perennial pepperweed. In grassland areas, techniques such as grazing and prescribed burning may

1 be used to decrease the cover of invasive plant species. Implementation of AMMs would also reduce  
 2 the adverse effects that could result from construction activities. The AMMs provide methods to  
 3 minimize ground disturbance, guidance for developing restoration and monitoring plans for  
 4 temporary construction effects, and measures to minimize the introduction and spread of invasive  
 5 plants.

6 In absence of the implementation of this conservation measure, in addition to other CMs and AMMs,  
 7 there would be a greater potential for significant impacts to these species and natural communities  
 8 due to loss of habitat and loss of species from construction and/or operation of the proposed  
 9 project. Refer to the impact analyses for each resource for more detail.

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