

**Table G-1. Nontidal Freshwater Permanent Emergent Communities: Potential CALFED Effects and Conservation Measures**

**Summary Effect of Implementing CALFED Actions and Conservation Measures on Nontidal Freshwater Permanent Emergent Communities:** Restoration of up to 19,600 acres of nontidal freshwater permanent emergent wetlands in the Delta Region and potential for restoration or enhancement of emergent wetlands in all regions incidental to restoration and enhancement of seasonal wetland habitats and floodplains. Potential for short-term loss or degradation of existing wetland habitats and long-term increase in habitat area with implementation of conservation measures to compensate for CALFED impacts.

**Associated Evaluated Species:** American peregrine falcon, Aleutian Canada goose, giant garter snake, California black rail, white-tailed kite, short-eared owl, California gull, northern harrier, white-faced ibis, California red-legged frog, tricolored blackbird, long-billed curlew, western least bittern, greater sandhill crane, Sacramento perch, western pond turtle, black-crowned night heron (rookery), and snowy egret (rookery), bristly sedge, hispid bird's-beak, mad-dog skullcap, rose-mallow, Sanford's arrowhead, slough thistle, Calistoga popcornflower, Kenwood Marsh checkerbloom, Napa blue grass, Pitkin Marsh lily, Sonoma alopecurus, white sedge, North Coast semaphore grass, California beaked-rush, marsh skullcap, Ferris' milkvetch, four-angled spikerush, marsh checkerbloom, Delta coyote-thistle, Bellinger's meadowfoam, English peak greenbriar.

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
<b>Delta Region</b>					
<b>Associated Evaluated Species:</b> American peregrine falcon, Aleutian Canada goose, giant garter snake, California black rail, white-tailed kite, short-eared owl, California gull, northern harrier, white-faced ibis, California red-legged frog, tricolored blackbird, long-billed curlew, western least bittern, greater sandhill crane, Sacramento perch, western pond turtle, bristly sedge, hispid bird's-beak, marsh skullcap, mad-dog skullcap, rose-mallow, Sanford's arrowhead, slough thistle, black-crowned night heron (rookery), and snowy egret (rookery)					
Summary Programmatic Action Outcomes E1, E4, E9, E10a, E11, E16a, E17, E19-22, E24, E25, E28, Q1, Q2, and Q7 are likely to have no discernable effect on nontidal freshwater permanent emergent wetland communities in the Delta Region.					
<b>Ecosystem Restoration Program</b>					
E5a. Restoration of up to 7,500 acres of tidal shallow-water habitat.	E010401, E010402, E010403, E010404, E010405, E010406, E010407, E010901, E010902, E010903, E010904, E010905, E010906, E015201, E015202	Likely to be no discernable beneficial effects on existing habitat areas and associated evaluation species (N/E).	Potential for permanent loss or degradation of existing habitat area on Delta islands if habitat is restored by setting back or breaching levees (AE1).	To the extent practicable, avoid disturbance to existing habitat areas (M1).	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.

Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
			<p>Construction-related activities associated with implementing actions could result in take of evaluated species (AE2).</p>	<p>Restore or enhance 1-3 acres of habitat for every acre of existing habitat affected by restoration near affected areas at the time or before impacts are incurred (M2).</p> <p>To the extent practicable, avoid construction activities during the breeding period of species that could be adversely affected by the actions (M3).</p> <p>To the extent practicable, avoid direct disturbance to populations and individuals of evaluated plant species (M4).</p> <p>When feasible, establish and protect additional populations of evaluated plant species in suitable nearby habitat areas before construction activities are implemented that could affect existing populations or individuals (M5).</p>	
<p>E8. Restoration of 30,000 to 45,000 acres of tidal fresh emergent wetland.</p>	<p>E010401, E010402, E010404, E010405, E010407, E010606, E011101, E011102, E011201, E011202, E011401, E011402, E011403, E011404, E011405, E015202</p>	<p>N/E</p>	<p>AE1.</p>	<p>M1.</p> <p>M2.</p>	<p>Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.</p>

Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
			AE2.	M3. M4. M5.	
E10a. Restoration of 85-190 miles of tidal sloughs.	E015201, E015202, E011101, E011102	N/E	AE1.  AE2.	M1.  M2. M3. M4. M5.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.
E11. Restoration of up to 19,600 acres of nontidal freshwater emergent wetland.	E010403, E010406, E011001, E011002, E011003, E011004, E011005, E011006, E011007, E011301, E011302, E011303, E011304, E011305	Substantial increase in nontidal freshwater permanent emergent marsh habitat area (BE1).	Potential for temporary loss or degradation of habitat area associated with implementing restoration actions (AE3).  AE2.	None.  M3. M4. M5.	Potential for substantial increases in habitat area. Wildlife habitat values associated with large and contiguous patches of restored habitat would be much greater than is provided by existing habitat areas that are associated with levee toe drains and agricultural ditches and drains.

Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
E13a. Enhancement of up to 4,000 acres of existing and restoration and management of up to 28,000 acres of seasonal wetlands for wildlife.	E010403, E010406, E011501, E011502, E011503, E011504, E011505, E011506, E011507, E011508, E011509, E011510, E017201, E017202	Potential increase in habitat area if restoration and management of seasonal wetlands results in the establishment of interior patches of freshwater permanent wetland habitats (BE2).	<p>AE3.</p> <p>Potential for permanent loss of habitat area if restoration actions result in converting permanent wetlands to seasonal wetland communities (AE4).</p> <p>AE2.</p>	<p>Minimize the potential for construction-related runoff into nearby wetlands through use of siltation-control barriers, detention basins, or other appropriate methods (M6).</p> <p>M1.</p> <p>M2.</p> <p>M3.</p> <p>M4.</p> <p>M5.</p>	<p>Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.</p> <p>Potential for increase in habitat area incidental to the restoration and management of seasonal wetlands.</p>
E15a. Restoration of 48-85 miles of riparian habitat along channels, restoration of riparian habitat in association with setback levees, protection of 500 acres of existing riparian forest, and reduction of current invasive riparian plants by 50%.	E010501, E010502, E010606, E011101, E011102, E011201, E011202, E011601, E011602, E011603, E011604, E011605, E011606, E011607, E011608, E011609, E014901, E015301, E015302, E015303	N/E	AE1.	<p>M1.</p> <p>M2.</p>	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.

Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
			AE2.	M3. M4. M5.	
E16a. Restoration of 4,000–6,000 acres of perennial grassland.	E011801, E011802, E011803, E011804, E017201, E017202	Potential for increased wildlife habitat values for some associated species where grassland is restored adjacent to existing wetlands (BE3).	Potential for temporary loss or degradation of habitat area associated with restoration actions (AE5).  AE2.	M6.  M3. M4. M5.	Potential for increasing foraging, nesting, or roosting habitat area for wetland-associated species that also use grassland habitats where grassland is restored adjacent to existing wetlands.  Potential for temporary loss or degradation of habitat associated with restoration actions adjacent to wetlands.
E18a. Cooperative management of 40,000–75,000 acres of agricultural lands to enhance habitat values for waterfowl and other associated species.	E011901, E011902, E011903, E011904, E011905, E011906, E011907, E007101	N/E	AE3.	None.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.

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Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
			Potential for permanent loss of habitat area if enhancement actions result in converting permanent wetlands to other habitat types (AE6).  AE2.	M1.  M2. M3.	
E27a. Reduction in the concentrations and loadings of contaminants in the aquatic environment by 25%–50%.	E015701, E015702	Reduction in the use of herbicides and pesticides in or near existing seasonal wetland habitat areas could improve the vigor of associated plant populations and result in an increase in populations of invertebrates that are adversely affected by these agents (BE4).	Likely to be no discernable adverse effects on existing habitat areas and associated evaluation species (N/E).	None.	Implementation of the proposed actions would most likely have no discernable effect on the evaluation species' numbers or distribution.
<b>Levee System Integrity</b>					
L1. Improvement and maintenance of Delta levees.	L010101, L010102, L010201, L010202, L010301	Long-term protection of existing habitat areas from flooding that would result from levee failures (BE5).	AE3.  AE6.	M6.  M1.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.  Long-term protection of existing habitat areas from flooding that would be associated with levee failures.

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Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
			AE2.	M2. M3. M4. M5.	
L2. Reduction in the risk to levee stability from subsidence.	L010401, L010402	Potential beneficial effects of the program are not analyzed. The type and magnitude of potential beneficial effects would depend on the type of specific program actions that are implemented (N/A).	Potential adverse effects of the program are not analyzed. The type and magnitude of potential adverse effects would depend on the type of specific program actions that are implemented (N/A).		Potential program effects cannot be evaluated.
<b>Water Quality Program</b>					
Q4. Reduction of pesticide loadings in the aquatic environment.	Q010501	BE4.	N/E	None.	Implementation of the proposed actions would most likely have no discernable effect on evaluation species numbers or distribution.
<b>Water Use Efficiency Program</b>					
W1. Support implementation of water management techniques that increase the effectiveness of water use management and efficiency for agricultural uses.	None.	N/E	Potential for localized loss of habitat area where emergent vegetation is supported primarily by seeps or runoff associated with existing inefficiencies in the use agricultural water (AE7).	M1.  M2.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.

Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
W2. Support implementation of measures that increase agricultural production per unit of water used, protect water quality, or increase environmental benefits while meeting agricultural needs.	None.	N/E	AE7.	M1.  M2.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.
W3. Provide planning and technical assistance, financing assistance, and assurances for development and implementation of water management plans and best management practices to urban water agencies.	None.	N/A	N/A		Potential program effects cannot be evaluated.
W4. Support development and implementation of water-recycling projects.	None.	N/A	N/A		Potential program effects cannot be evaluated.

Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
<b>Water Transfer Program</b>					
T1. Implement a framework of actions, policies, and processes that will facilitate transfers and the further development of a statewide water-transfer market.	None.	Potential for maintaining or increasing the availability of water for management of existing and restored habitat areas if water supplies are made available for such uses through water transfers (BE6).	Potential for loss or degradation of existing emergent wetlands habitat areas if water is transferred from uses that currently support wetland vegetation (AE8).	To the extent consistent with program objectives, avoid implementing transfers of water from sources that support emergent wetland vegetation (M7).  M2.	Potential for short-term loss or degradation of existing habitat area if water is transferred from uses currently supporting wetland vegetation and long-term increase in habitat area with implementation of conservation measures.  Potential for long-term increases in habitat area if water is transferred to uses that would support wetland habitat areas.
<b>Watershed Management Program</b>					
M1. Fund and implement watershed restoration, maintenance, conservation, and monitoring activities.	None.	N/A	N/A		Potential program effects cannot be evaluated.

Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
<b>Conveyance Facilities</b>					
C1. Construct and operate modifications to existing south-Delta conveyance features.	C010101, C010102, C010103, C010104, C010105, C010106, C010107, C010108	N/E	Construction of interties and supporting infrastructure between existing conveyance facilities and export pumps could result in the permanent loss of wetland vegetation (AE9).  AE2.  AE3.	M1.  M2. M3. M4. M5. M6.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.
C2. Construct and operate modifications to existing north-Delta conveyance features.	C020101, C020102, C020103	N/E	Construction of conveyance facilities and associated infrastructure could result in short-term or permanent loss or degradation of wetland habitat (AE10).  AE2.	M1.  M2. M6. M3. M4. M5.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.

Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
C3 Construct and operate an isolated conveyance facility from the Sacramento River along the east side of the Delta to Clifton Court Forebay.	C030101	N/E	AE10.          AE2.	M1.   M2. M6. M3. M4. M5.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.
<b>Storage Facilities</b>					
S1. Construct and operate enlarged or new surface storage facilities.	None.	Potential for increase in wetland habitat area if design and operation of storage islands provide suitable substrate and hydrology to support the natural and long-term establishment of emergent vegetation along storage island levees and shorelines (BE7).	Potential for permanent loss of wetlands present on Delta islands that are used for storage (AE11).          AE2.	To the extent consistent with program objectives, select Delta islands that support little or no wetland habitat for use as storage facilities (M8).          M1. M2. M3.	Potential for short-term loss of wetland habitat and, depending on design and operation of storage facilities, potential for long-term increase in habitat area.  Some long-term increase in habitat area as a result of implementing conservation measures.

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Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
				M4. M5. To the extent practicable, trap and relocate evaluated wildlife species that would be unlikely to escape from the inundation area of new or enlarged reservoirs to suitable nearby habitat areas (M9).	
<b>Water Operations</b>					
01. Implement operating criteria needed to improve water management for beneficial uses.	None.	N/A	N/A		Potential program effects cannot be evaluated.
02. Implement an Environmental Water Account to provide operational flexibility to achieve environmental benefits.	None.	N/A	N/A		Potential program effects cannot be evaluated.
<b>Bay Region</b>					
<b>Associated Evaluated Species:</b> American peregrine falcon, Aleutian Canada goose, giant garter snake, California black rail, white-tailed kite, short-eared owl, California gull, northern harrier, white-faced ibis, California red-legged frog, tricolored blackbird, long-billed curlew, western pond turtle, Sandford's arrowhead, snowy egret (rookery), Calistoga popcornflower, Kenwood Marsh checkerbloom, Napa blue grass, Pitkin Marsh lily, Sonoma alopecurus, white sedge, North Coast semaphore grass.					
Summary Programmatic Action Outcomes E1, E5b, E7, E10b, E12, E14, E21, E22, E24, E25, E28, E30, Q2, Q7, and Q8 are likely to have no discernable effect on nontidal freshwater permanent emergent wetland communities in the Bay Region.					

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Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
<b>Levee System Integrity Program</b>					
L3. Enhancement of the level of flood protection provided by Suisun Marsh levees.	None.	BE5.	AE3.  AE6.  AE2.	M6.   M1. M2. M3. M4. M5.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.  Long-term protection of existing habitat areas from flooding that would be associated with levee failures.
<b>Water Quality Program</b>					
Q4. Reduction of pesticide loadings in the aquatic environment.	Q010501	BE4.	N/E	None.	Implementation of the proposed actions would most likely have no discernable effect on the evaluation species' numbers or distribution.
<b>Water Use Efficiency Program</b>					

Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
W1. Support implementation of water management techniques that increase the effectiveness of water-use management and efficiency for agricultural uses.	None.	N/E	AE7.	M1.  M2.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.
W2. Support implementation of measures that increase agricultural production per unit of water used, protect water quality, or increase environmental benefits while meeting agricultural needs.	None.		AE7.	M1.  M2.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.
W3. Provide planning and technical assistance, financing assistance, and assurances for development and implementation of water management plans and best management practices to urban water agencies.	None.	N/A	N/A		Potential program effects cannot be evaluated.
W4. Support development and implementation of water-recycling projects.	None.	N/A	N/A		Potential program effects cannot be evaluated.



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Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
<b>Ecosystem Restoration Program</b>					
E1. Provide for more natural river flows and Bay-Delta freshwater inflow peaks in fall, winter, and spring of all but critical years.	E030101, E030102, E040101, E040102, E040103, E040104, E044701, E044703, E050101, E070101, E070102, E070103, E070104, E070105, E070106, E080101, E080102, E080103, E080104, E090101, E090102, E090103, E090104, E090105, E090106, E090107, E100101, E100102	Potential for increase in habitat area if increased flows inundate overflow channels, old oxbows, and other floodplain features for sufficient periods to allow for the establishment and maintenance of emergent vegetation (BE9).	N/E	None.	Potential for increase in habitat area associated with floodplains.
E2. Improvement in the supply of sediment to rivers and streams necessary for providing spawning gravels and rehabilitation of related ecological processes (e.g., stream meander) and floodplain habitats (e.g., riparian habitats).	E030201, E030202, E030301, E030302, E030303, E030604, E031602, E040201, E040202, E040203, E040301, E040402, E050201, E050202, E050203, E060401, E070201, E070202, E070203, E080201, E080202, E080203, E080303, E090201, E090401, E090403, E090404, E090407, E090409, E100201, E100202, E105101	BE9.	Potential for loss or degradation of habitat area on the landward side of levees if levees are set back to reestablish stream meander corridors (AE12).  AE3.  AE2.	M1.  M2.  M6.  M3.  M4.  M5.	Potential for increase in habitat area associated with floodplains and implementation of conservation measures.

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Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
E16c. Restoration of perennial grassland associated with existing or restored wetlands in the American River basin.	E091801	BE3.	AE5.          AE2.	M6.          M3. M4. M5.	Potential for increasing foraging, nesting, or roosting habitat area for wetland-associated species that also use grassland habitats where grassland is restored adjacent to existing habitat areas.  Potential for short-term loss or degradation of habitat associated with restoration activities adjacent to wetlands.
E18b. Cooperative management of up to 298,643 acres of agricultural lands to enhance habitat values for waterfowl and other associated species.	E061901, E061902, E061903, E071901, E071902, E071903, E081901, E091901, E091902	N/E	AE3.          AE6.          AE2.	None.          M1. M2. M3.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.

Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
E27b. Reduction in the concentrations and loadings of contaminants in the aquatic environment.	E035702, E035703, E035704, E095701, E095702, E105701, E105702	BE4.	N/E	None.	Implementation of the proposed actions would most likely have no discernable effect on the evaluation species' numbers or distribution.
<b>Water Quality Program</b>					
Q4. Reduction of pesticide loadings in the aquatic environment.	Q030301, Q030302, Q040301, Q040302, Q050301, Q050302, Q060301, Q060302, Q070301, Q070302, Q080301, Q080302, Q090301, Q090302, Q100301, Q100302	BE4.	N/E	None.	Implementation of the proposed actions would most likely have no discernable effect on the evaluation species' numbers or distribution.
<b>Water Use Efficiency Program</b>					
W1. Support implementation of water management techniques that increase the effectiveness of water-use management and efficiency for agricultural uses.	None.	N/E	AE7.	M1.  M2.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.
W2. Support implementation of measures that increase agricultural production per unit of water used, protect water quality, or increase environmental benefits while meeting agricultural needs.	None.		AE7.	M1.  M2.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.



Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
<b>Watershed Management Program</b>					
M1. Fund and implement watershed restoration, maintenance, conservation, and monitoring activities.	None.	N/A	N/A		Potential program effects cannot be evaluated.
<b>Storage Facilities</b>					
S1. Construct and operate enlarged or new surface storage facilities.	None.	Depending on storage design and operation, potential for the natural establishment and long-term maintenance of emergent vegetation along shorelines of storage pools (BE12).	<p>Permanent loss of habitat if storage facilities and associated infrastructure are constructed in drainages that support emergent wetlands (AE13).</p> <p>Potential for permanent loss or degradation of emergent wetlands downstream of storage reservoirs if storage operations adversely affect current channel hydrology supporting existing wetland vegetation (AE14).</p>	<p>M1.</p> <p>M2.</p> <p>To the extent consistent with program objectives, provide sufficient outflow from storage reservoirs sufficient to support the long-term maintenance of wetland vegetation downstream of storage reservoirs (M10).</p> <p>M2.</p>	<p>Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.</p> <p>Potential for establishment of emergent wetland along reservoir shorelines.</p>

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Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
			Recreation-related activities potentially associated with new storage facilities could result in take of evaluated species (AE15).  AE2.	Manage recreational uses to avoid or reduce the likelihood for recreation-related impacts on sensitive plant populations and wildlife use areas (M11).  M3.  M4.  M5.  To the extent practicable, trap and relocate evaluated wildlife species that would be unlikely to escape from the inundation area of new or enlarged reservoirs to suitable nearby habitat areas (M12).	
<b>Water Operations</b>					
01. Implement operating criteria needed to improve water management for beneficial uses.	None.	N/A	N/A		Potential program effects cannot be evaluated.
02. Implement an Environmental Water Account to provide operational flexibility to achieve environmental benefits.	None.	N/A	N/A		Potential program effects cannot be evaluated.

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Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
<b>San Joaquin River Region</b>					
<b>Associated Evaluated Species:</b> American peregrine falcon, Aleutian Canada goose, giant garter snake, California black rail, white-tailed kite, short-eared owl, California gull, northern harrier, white-faced ibis, California red-legged frog, tricolored blackbird, long-billed curlew, greater sandhill crane, western pond turtle, hispid bird's-beak, marsh skullcap, mad-dog skullcap, rose-mallow, slough thistle, black-crowned night heron (rookery), snowy egret (rookery), Ferris' milkvetch, and four-angled spikerush.					
Summary Programmatic Action Outcomes E18c, E22-26, E29, Q1, Q2, Q5-8, and S2 are likely to have no discernable effect on nontidal freshwater permanent emergent wetland communities in the San Joaquin River Region.					
<b>Ecosystem Restoration Program</b>					
E1. Provide for more natural river flows and Bay-Delta freshwater inflow peaks in fall, winter, and spring of all but critical years.	E110101, E110102, E110103, E110104, E110105, E110106, E110107, E110108, E110109, E110110, E110205, E110502, E120101, E130103, E130101, E130102, E130104, E130105, E140101, E140102, E140103, E140104	BE9.	N/E	None.	Potential for increase in habitat area associated with floodplains.
E2. Improvement in the supply of sediment to rivers and streams necessary for providing spawning gravels and rehabilitation of related ecological processes (e.g., stream meander) and floodplain habitats (e.g., riparian habitats).	E110201, E110202, E110203, E110204, E110205, E110206, E110207, E110208, E110209, E130201, E130202, E130203, E130301, E130302, E130303, E130304, E130305, E130306, E130307, E130402, E135601, E140401, E140403	BE9.	AE12.  AE3.  AE2.	M1.  M2.  M6.  M3.	Potential for increase in habitat area associated with floodplains and implementation of conservation measures.

Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
				M4. M5.	
E6. Restoration and maintenance of riverine aquatic habitats.	E110401, E110401, E130301, E130302, E130303, E130304, E130305, E130306, E130307, E130402, E135601, E131601, E131602, E131603, E140401, E140402, E140403	BE9.	AE12.  AE3. AE2.	M1.  M2. M6. M3. M4. M5.	Potential for increase in habitat area associated with floodplains and implementation of conservation measures.
E13d. Protection and enhancement of up to 172,800 acres of seasonal wetlands in the San Joaquin River Ecological Management Zone and protection and enhancement of existing seasonal wetlands elsewhere in the San Joaquin River Region.	E111501, E121501, E121502, E141501, E141502	BE10.	AE3.  AE2.	M6.  M3. M4.	Potential for increase in habitat area incidental to the restoration and management of seasonal wetlands.



Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
E27b. Reduction in the concentrations and loadings of contaminants in the aquatic environment.	E115701, E115702, E115703, E125701, E125702	BE4.	N/E	None.	Implementation of the proposed actions would most likely have no discernable effect on the evaluation species' numbers or distribution.
<b>Water Quality Program</b>					
Q4. Reduction of pesticide loadings in the aquatic environment.	Q120501, Q130501, Q140501, Q140502	BE4.	N/E	None.	Implementation of the proposed actions would most likely have no discernable effect on the evaluation species' numbers or distribution.
<b>Water Use Efficiency Program</b>					
W1. Support implementation of water management techniques that increase the effectiveness of water-use management and efficiency for agricultural uses.	None.	N/E	AE7.	M1.  M2.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.
W2. Support implementation of measures that increase agricultural production per unit of water used, protect water quality, or increase environmental benefits while meeting agricultural needs.	None.		AE7.	M1.  M2.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.



Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
<b>Watershed Management Program</b>					
M1. Fund and implement watershed restoration, maintenance, conservation, and monitoring activities.	None.	N/A	N/A		Potential program effects cannot be evaluated.
<b>Storage Facilities</b>					
S1. Construct and operate enlarged or new surface storage facilities.	None.	BE12.	AE13.  AE14.  AE15.  AE2.	M1.   M2. M10. M2. M11. M3. M4. M5. M12.	Potential for short-term loss of habitat and long-term increase in habitat area with implementation of conservation measures.  Potential for establishment of emergent wetlands along reservoir shorelines.

Table G-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
<b>Water Operations</b>					
01. Implement operating criteria needed to improve water management for beneficial uses.	None.	N/A	N/A		Potential program effects cannot be evaluated.
02. Implement an Environmental Water Account to provide operational flexibility to achieve environmental benefits.	None.	N/A	N/A		Potential program effects cannot be evaluated.

Contributors to the development of this table: Pete Rawlings and Gerrit Platenkamp of Jones & Stokes Associates.

**Table G-2. Key to Table G-1 Potential Beneficial Effects, Potential Adverse Effects, and Conservation Measures Codes**

Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program
Substantial increase in nontidal freshwater permanent emergent marsh habitat area (BE1).	Potential for permanent loss or degradation of existing habitat area on Delta islands if habitat is restored by setting back or breaching levees (AE1).	To the extent practicable, avoid disturbance to existing habitat areas (M1).
Potential increase in habitat area if restoration and management of seasonal wetlands results in the establishment of interior patches of freshwater permanent wetland habitats (BE2).	Construction-related activities associated with implementing actions could result in take of evaluated species (AE2).	Restore or enhance 1-3 acres of habitat for every acre of existing habitat affected by restoration near affected areas at the time or before impacts are incurred (M2).
Potential for increased wildlife habitat values for some associated species where grassland is restored adjacent to existing wetlands (BE3).	Potential for temporary loss or degradation of habitat area associated with implementing restoration actions (AE3).	To the extent practicable, avoid construction activities during the breeding period of species that could be adversely affected by the actions (M3).
Reduction in the use of herbicides and pesticides in or near existing seasonal wetland habitat areas could improve the vigor of associated plant populations and result in an increase in populations of invertebrates that are adversely affected by these agents (BE4).	Potential for permanent loss of habitat area if restoration actions result in converting permanent wetlands to seasonal wetland communities (AE4).	To the extent practicable, avoid direct disturbance to populations and individuals of evaluated plant species (M4).
Long-term protection of existing habitat areas from flooding that would result from levee failures (BE5).	Potential for temporary loss or degradation of habitat area associated with restoration actions (AE5).	When feasible, establish and protect additional populations of evaluated plant species in suitable nearby habitat areas before construction activities are implemented that could affect existing populations or individuals (M5).
Potential for maintaining or increasing the availability of water for management of existing and restored habitat areas if water supplies are made available for such uses through water transfers (BE6).	Potential for permanent loss of habitat area if enhancement actions result in converting permanent wetlands to other habitat types (AE6).	Minimize the potential for construction-related runoff into nearby wetlands through use of siltation-control barriers, detention basins, or other appropriate methods (M6).

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Table G-2. Continued

Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program
<p>Potential for increase in wetland habitat area if design and operation of storage islands provide suitable substrate and hydrology to support the natural and long-term establishment of emergent vegetation along storage island levees and shorelines (BE7).</p>	<p>Potential for localized loss of habitat area where emergent vegetation is supported primarily by seeps or runoff associated with existing inefficiencies in the use agricultural water (AE7).</p>	<p>To the extent consistent with program objectives, avoid implementing transfers of water from sources that support emergent wetland vegetation (M7).</p>
<p>Potential increase in habitat area if management of seasonal wetlands results in the establishment of interior patches of freshwater permanent wetland habitat (BE8).</p>	<p>Potential for loss or degradation of existing emergent wetlands habitat areas if water is transferred from uses that currently support wetland vegetation (AE8).</p>	<p>To the extent consistent with program objectives, select Delta islands that support little or no wetland habitat for use as storage facilities (M8).</p>
<p>Potential for increase in habitat area if increased flows inundate overflow channels, old oxbows, and other floodplain features for sufficient periods to allow for the establishment and maintenance of emergent vegetation (BE9).</p>	<p>Construction of interties and supporting infrastructure between existing conveyance facilities and export pumps could result in the permanent loss of wetland vegetation (AE9).</p>	<p>To the extent practicable, trap and relocate evaluated wildlife species that would be unlikely to escape from the inundation area of new or enlarged reservoirs to suitable nearby habitat areas (M9).</p>
<p>Potential increase in habitat area if enhancement of seasonal wetlands results in the establishment of interior patches of freshwater permanent wetland habitats (BE10).</p>	<p>Construction of conveyance facilities and associated infrastructure could result in short-term or permanent loss or degradation of wetland habitat (AE10).</p>	<p>To the extent consistent with program objectives, provide sufficient outflow from storage reservoirs sufficient to support the long-term maintenance of wetland vegetation downstream of storage reservoirs (M10).</p>
<p>Potential for increase in habitat area if actions result in modifying existing channels to create overflow channels and backwaters that support emergent vegetation (BE11).</p>	<p>Potential for permanent loss of wetlands present on Delta islands that are used for storage (AE11).</p>	<p>Manage recreational uses to avoid or reduce the likelihood for recreation-related impacts on sensitive plant populations and wildlife use areas (M11).</p>
<p>Depending on storage design and operation, potential for the natural establishment and long-term maintenance of emergent vegetation along shorelines of storage pools (BE12).</p>	<p>Potential for loss or degradation of habitat area on the landward side of levees if levees are set back to reestablish stream meander corridors (AE12).</p>	<p>To the extent practicable, trap and relocate evaluated wildlife species that would be unlikely to escape from the inundation area of new or enlarged reservoirs to suitable nearby habitat areas (M12).</p>

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Table G-2. Continued

Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program
<p>Potential beneficial effects of the program are not analyzed. The type and magnitude of potential beneficial effects would depend on the type of specific program actions that are implemented (N/A).</p>	<p>Permanent loss of habitat if storage facilities and associated infrastructure are constructed in drainages that support emergent wetlands (AE13).</p>	
<p>Likely to be no discernable beneficial effects on existing habitat areas and associated evaluation species (N/E).</p>	<p>Potential for permanent loss or degradation of emergent wetlands downstream of storage reservoirs if storage operations adversely affect current channel hydrology supporting existing wetland vegetation (AE14).</p>	
	<p>Recreation-related activities potentially associated with new storage facilities could result in take of evaluated species (AE15).</p>	
	<p>Potential adverse effects of the program are not analyzed. The type and magnitude of potential adverse effects would depend on the type of specific program actions that are implemented (N/A).</p>	
	<p>Likely to be no discernable adverse effects on existing habitat areas and associated evaluation species (N/E).</p>	