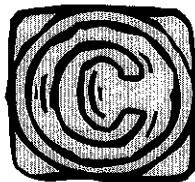


7.11 Cultural Resources

Cultural resources remain undiscovered in the study area, and implementation of the CALFED Bay-Delta Program may adversely affect some of these resources. Sites protected as a result of Program actions would benefit future generations.

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7.11 Cultural Resources

7.11.1 SUMMARY

A wealth of cultural resources exist within the CALFED Bay-Delta Program (Program) geographic area. This is especially true of the Delta Region, with its rich ecosystem and history of intense aboriginal occupation. Cultural resources consist of archeological sites, historic sites, and traditional cultural properties associated with the values of Native Americans and other cultural groups. Although many archeological sites have been greatly compromised as a result of agricultural development, remains of these sites can provide insight into the adaptation of early people and reveal information about the context of the early Delta as well. Burials frequently are found at Delta archeological sites. Human remains are a sensitive issue and important to many surviving Native American groups. Archeological and historic properties from other regions provide information about an earlier way of life and express the range of human adaptation through time.

Cultural resources consist of archeological sites, historic sites, and traditional cultural properties associated with the values of Native Americans and other cultural groups. Cultural resources are fragile, finite, and nonrenewable.

Actions that physically disturb a site, alter its setting, or introduce elements out of character with the site constitute an impact. Any type of physical damage results in a permanent loss of information that reduces the potential contribution of the site to our understanding of the past. Some prehistoric sites are found only in buried contexts. These sites will not be detected until such time as an area is trenched or excavated. Cultural resources eligible for inclusion in the National Register of Historic Places (NRHP) under federal law or considered important under state law may be adversely affected by a wide range of impacts. Cultural resources are fragile, finite, and nonrenewable.

Within the context of the cultural resource discussion, impacts are evaluated as minor, moderate, or major. These terms refer to the potential for an action to affect cultural resources. Small or low-intensity actions have a minor potential to affect cultural resources. Conversely, extensive construction programs hold a major potential to affect cultural resources. The actual impact of an action on cultural resources depends on a project-specific survey and inventory of cultural resources at a project site. The March 1998 Cultural Resources Technical Report elaborates on this topic.

Preferred Program Alternative. Implementing the Preferred Program Alternative would adversely affect cultural resources. Projects in the Delta involving only minor construction actions would result in little surface disturbance and consequently only slight impacts on cultural resources. Revegetation projects, improved fish passages, and



creating shallow-water habitats are examples of actions involving minor construction activity. As the level of impacts increases, the potential for affecting cultural resources also increases. Setback levees or other dredging actions may constitute a moderate impact. Large-scale impacts may be expected from projects that call for the movement of large quantities of sediment, such as through-Delta conveyance structures.

Regions outside the Delta may experience substantial impacts on cultural resources, depending on the scale of the activity. Depending on the location of the reservoir, water storage facilities may affect many cultural resource sites from construction and flooding.

Cultural resources may benefit as a result of implementing the Preferred Program Alternative. For example, purchasing and placing a cultural resource site into federal ownership provides the protection of federal cultural resource legislation. These laws apply only to resources found on public lands. Similarly, a site would benefit if a Program action prevents the site from being disturbed.

Implementing the Preferred Program Alternative would benefit and adversely affect cultural resources.

Alternatives 1, 2, and 3. The impacts identified under Alternatives 1, 2, and 3 would be similar to those identified for the Preferred Program Alternative but would vary in magnitude, depending on the Delta facilities associated with the alternative. Alternative 1 would result in the fewest impacts on Delta cultural resources because it includes the fewest in-Delta facilities. Alternative 2 and the Preferred Program Alternative would result in similar impacts on cultural resources. Alternative 3 would have the greatest potential for impacts on cultural resources because of the larger scope of the isolated facility.

The following table presents the potentially significant adverse impacts and mitigation strategies associated with the Preferred Program Alternative. Mitigation strategies that correlate to each listed impact are noted in parentheses after the impact.

**Potentially Significant Adverse Impacts and Mitigation Strategies
Associated with the Preferred Program Alternative**

Potentially Significant Adverse Impacts

Impacts on cultural resources from ground-disturbing activities (1-9,11).

Impacts on cultural resources from new construction, excavation, or fill (1-9,11).

Inundation of cultural resources from flooding (1-11).

Impacts on cultural resources from alteration of existing facilities (1,7,10).

Impacts on cultural resources from construction of new facilities (1-9, 11).

Alteration of the historic setting of a cultural resource (1-11).

Introduction of elements out of character with a cultural resource site (1-11).

Mitigation Strategies

1. Conducting cultural resource inventories.
2. Avoiding sites through project redesign.



Potentially Significant Adverse Impacts and Mitigation Strategies
Associated with the Preferred Program Alternative
(continued)

- | | |
|---|---|
| 3. Mapping sites. | 8. Conducting full-scale excavations of sites slated for destruction as a result of projects. |
| 4. Conducting surface collections. | 9. Preparing public interpretive documents. |
| 5. Performing test excavations. | 10. Documenting historic structures by preparing Historic American Engineering Records or Historic American Building Surveys. |
| 6. Probing for potentially buried sites. | 11. Conducting ethnographic studies for traditional cultural properties. |
| 7. Preparing reports to document mitigation work. | |

No potentially significant unavoidable impacts on cultural resources are associated with the Preferred Program Alternative.

7.11.2 AREAS OF CONTROVERSY

Areas of controversy as defined by CEQA involve differences of opinion among technical experts or information that is not available and cannot be readily obtained. According to this definition, no areas of controversy relate to cultural resources.

7.11.3 AFFECTED ENVIRONMENT / EXISTING CONDITIONS

7.11.3.1 DELTA REGION

The Delta Region is one of the most intensely investigated areas of California because of its high prehistoric population density and proximity to population centers. Although the bulk of sites were recorded prior to 1960, there has been little systematic inventory for cultural resources. Most of the early archeological work in the region focused on prominent prehistoric mounds. Later work has recorded a more diverse, but less impressive range of sites. Documentation of historic sites has largely occurred only in the last 20-30 years.

At least 171 sites in the Delta Region have been listed in the NRHP as individual properties or as districts. Six sites in the region have been listed as California Historical Landmarks, and four are listed as California Points of Historical Interest.

The Delta Region is one of the most intensely investigated areas of California because of its high prehistoric population density and proximity to population centers.



Prehistoric Resources. Types of prehistoric sites that have been recorded in the Delta Region include village sites, temporary camp sites, milling-related activity sites, and lithic scatters (Table 7.11-1). Locations of recorded prehistoric sites in the Delta Region have been entered into a geographic information system (GIS) for the region. This GIS layer reveals that prehistoric sites are not evenly distributed across the Delta Region. Although channel deposits, floodplains, and basins make up approximately 40% of the total acreage in the Delta Region, nearly 80% of prehistoric sites are located within these land forms. In contrast, those land forms identified as mucks, organic soils, fans, basins, and terraces make up 25% of the study area landmass but contain less than 5% of the prehistoric sites. Furthermore, no prehistoric sites have been recorded in peat (> 50% organics) or peaty mucks (25-50% organics). Former tidal wetlands may be sensitive areas for prehistoric resources where they contain sand dunes and mounds that have been occupied in prehistoric times.

Table 7.11-1. Distribution of Prehistoric Site Types by Landform Type in the Delta Region

LANDFORMS (LANDFORM CODE)	AREA (x1,000)	%	PREHISTORIC SITE CODES*								TOTAL SITES	%	
			01	02	04	07	16	15	15,09	09			
Channel deposits (11)	82.1	10.3	11					7	23	14	12	67	34.9
Mucks: Delta/marsh (12)	62.0	7.8								2		2	1.0
Floodplains (14)	59.1	7.4	4					5	3	8	8	28	14.6
Peat and muds (15)	185.9	23.4	1					1	3	9	4	18	9.4
Organic soils (16)	105.2	13.2	1					1	1		1	4	2.1
Basins and basin rims (22)	151.8	19.1	3	3				2	17	17	13	55	28.6
Interfan basins (31)	8.2	1.0										0	0.0
Fans, basins, terraces (32)	36.9	4.6							1			1	0.5
Eolian deposits (33)	14.6	1.8						1			1	2	1.0
Valley fill (34)	38.3	4.8			1			2	1	2		6	3.1
Alluvial fans (35)	9.2	1.1										0	0.0
Low terraces (41)	25.5	3.2						2	1	1		4	2.1
Dissected terraces (51)	4.4	0.5							1			1	0.5
Steep uplands (62)	7.0	0.8				2			1			4	2.1
Mountain slopes (63)	4.5	0.5										0	0.0
Total	794.7	N/A	21	3	1	2	21	52	53	39	192	N/A	
Percentage of site types			10.9	1.5	0.5	1.0	10.9	27.1	27.6	20.3	N/A	N/A	

Notes:

N/A = Not applicable.

* Prehistoric Site Types: 01 = Unknown; 02 = Lithic scatter; 04 = Bedrock mortar/milling feature; 07 = Architectural feature; 15 = Habitation debris; 16 = Other; 15 and 09 = Habitation debris with burials; 09 = Burials.



The landscape of the Delta Region is radically different today than it was prior to farmland reclamation. Reconstructed watercourses, areas presently and formerly subject to tidal influence, and other features of surface geology were used as a basis for generating a predictive model of prehistoric settlement patterns in the Delta Region. Further mapping of extinct watercourses can help define areas of sensitivity for buried prehistoric sites. Age dating the sediments on which sites are found may be useful in predicting the location of sites from the same chronological period.

The landscape of the Delta Region is radically different today than it was prior to farmland reclamation.

Much of the region has a long history of agricultural development. In these areas, intact surface or shallow subsurface deposits are unlikely to exist. Intact surface prehistoric resources are most likely to exist in areas relatively unaffected by development or agriculture, although subsurface deposits may exist below the plow zone or may be capped underneath pavement or structures.

Historic Resources. Potential historic resources in the Delta Region are largely related to agriculture; however, other types of resources also are present, including farmsteads, labor camps, landings for the shipment of agricultural produce, canneries, pumping stations, siphons, canals, drains, unpaved roads, bridges, and ferry crossings. Forty known historic sites coincide with prehistoric sites. Labor camps generally consist of at least one wooden bunkhouse or boarding house, a dining hall, a cookhouse, a washroom, and associated buildings. Landings, for the most part, are not elaborate, consisting of a few pilings or a dolphin. At least three ferry crossings are present in the study area.

Due to the extensive use of the land in historic times, architectural resources are likely to occur throughout the region. However, much of the region is still used for agricultural purposes, where the ground surface is regularly plowed, raked, or tilled.

Native American cultures in the Delta were replaced and destroyed by missionization, epidemics, and results of the Gold Rush.

Traditional Cultural Properties. A review of the ethnographic literature for the Delta Region has revealed no known traditional properties or sacred sites. Contact with the Native American Heritage Commission and a number of Native American individuals also did not identify any traditional cultural properties in the Delta Region.

Native American Groups. Several Native American groups occupied portions of the Delta Region. The Valley Nisenan occupied the far northeastern portion. The Plains and Bay Miwok originally were found in the eastern and far western portions of the area. The south Delta was occupied by the Northern Valley Yokuts. The north shore of Suisun Bay was settled by the Patwin. These cultures were rapidly reduced by missionization, epidemics, and results of the Gold Rush.

No reservations or rancherias are located in the Delta Region. However, several Native American burial and cremation sites have been discovered in the region, and more are likely to be found. These types of sites are of concern to Native American groups.



7.11.3.2 BAY REGION

Considerable industrial and residential development in the Bay Region has taken a toll on archeological resources. Prehistoric and historic sites have been destroyed by urban development and by industrial construction. Archeological sites remain in areas that have not been fully developed. Subsurface deposits also can be found capped under asphalt and below buildings.

Considerable industrial and residential development in the Bay Region has taken a toll on archeological resources.

At least 407 sites within the Bay Region have been listed in the NRHP as individual properties or as districts. In addition, 176 sites in the region have been listed as California Historical Landmarks, and 156 are listed as California Points of Historical Interest (see the March 1998 Cultural Resources Technical Report). Many of these are historic buildings located in urban areas. Historic preservation programs, societies, and organizations are active in the Bay Region. The Bay Region includes the Suisun Marsh, which is the largest contiguous tidal wetlands in the state.

Prehistoric Resources. Prehistoric site types recorded in the Bay Region include village sites, temporary camp sites, milling sites, petroglyphs, lithic scatters, quarry sites, shell and ash middens, and burial sites. Permanent settlements were common in the Bay Region in prehistoric times, and prehistoric sites are likely to occur throughout the region. However, substantial commercial and residential development in the region has disturbed or destroyed many sites. Intact deposits are most likely to occur in undeveloped areas.

Historic Resources. Historic site types documented in the Bay Region include railroad grades and associated features, recreational sites, dams and culverts, mining-related sites, early military sites, lighthouses and other navigational aids, vessels both sunken and afloat, refuse deposits, and architectural structures. Due to the extensive use of the land in historic times, historic resources are likely to occur throughout the region. However, extensive development has destroyed or disturbed many sites.

Traditional Cultural Properties. Mount Diablo and Mount Tamalpais are well-known landmarks in the Bay Area that are considered traditional cultural properties because of their religious and ceremonial significance to several Native American groups. Mount Diablo, located approximately 13 miles southeast of Suisun Bay and 22 miles east of San Francisco Bay, plays an important role in Native American religion and is the focal point of the Costanoan creation myth and several Miwok legends. Mount Tamalpais is also a sacred site, located approximately 6 miles northwest of Sausalito. In addition, many sacred sites in the Bay Area are not on mountain tops.

Mount Diablo and Mount Tamalpais are well-known landmarks in the Bay Area that are considered traditional cultural properties because of their religious and ceremonial significance to several Native American groups.

Native American Groups. The primary Native American groups known to have occupied the Bay Region are the Costanoan, Coast Miwok, Wappo, and Patwin. No formal reservations or rancherias are present in the Bay Region; however, a number of Native Americans live in the area. Several Native American burial sites have been discovered in the Bay Region, and more are likely to be found. These types of sites are of concern to Native American groups, who consider these locations sacred. Mount St. Helena is an important sacred place to the Wappo.



7.11.3.3 SACRAMENTO RIVER REGION

Substantial agricultural and urban development of the valley floor has significantly damaged many archeological sites. Prehistoric mounds have been leveled, and sites have been repeatedly tilled and plowed in agricultural fields. Nevertheless, intact archeological deposits may occur in buried contexts, beneath the plow zone, or under asphalt parking lots. The foothill regions of the Sacramento River Region contain undeveloped areas where prehistoric and historic sites may be found.

Substantial agricultural and urban development of the valley floor has significantly damaged many archeological sites.

At least 299 sites in the Sacramento River Region have been listed in the NRHP as individual properties or districts. In addition, 226 sites in the region have been listed as California Historical Landmarks, and 198 are listed as California Points of Historical Interest (see the March 1998 Cultural Resources Technical Report). Many of these properties fall outside areas of potential impact.

Prehistoric Resources. Prehistoric site types that have been recorded in the Sacramento River Region and that are likely to occur in the upper watersheds include village sites, temporary camp sites, milling sites, petroglyphs, lithic scatters, quarry sites, and burial sites. Acorn processing sites are commonly found in the oak woodland. According to a site-density model prepared for the American River Water Resources Investigation, the foothills and granite-based upland areas contain a projected 3.5 and 2.8 sites per square mile, respectively. Habitation sites and bedrock mortar or other milling sites are the most common types found in these areas. Due to intensive occupation of the area in prehistoric times, prehistoric resources are common in the region. However, substantial agricultural development has disturbed or destroyed many sites. Intact sites are most likely to occur in areas that have not been fully developed or farmed, or may remain below plow zones.

Archeological sites are frequently found clustered along the river, particularly where tributary streams enter the main stem. Related primarily to fishing, such sites served as major encampments. Resource procurement camps also occur in the uplands.

Archeological sites are frequently found clustered along the river, particularly where tributary streams enter the main stem.

Historic Resources. The majority of historic site types recorded in the Sacramento River Region and listed in the NRHP consist of local structures, such as houses, schools, libraries, churches, post offices, hotels, railroad stations or related features, mine sites, and bridges. Additional types of historic sites that have been recorded in the Sacramento River Region and that may be likely to occur in the upper watersheds include mining-related structures or features, railroad grades and associated features, dams and culverts, and refuse deposits. Mining in the Sierra Nevada was widespread in the second half of the nineteenth century, and numerous railroads were established throughout the region to transport timber and other goods. The mining boom brought non-Indians to the northern mountains of the region. Native peoples were driven out, and the landscape was altered. Abundant evidence of this era still remains. In addition, attempts to irrigate the valley and bring potable water to San Francisco created many irrigation features in the region. Historic resources are likely to occur throughout the region.



Traditional Cultural Properties. Traditional cultural properties exist in the study area. Some natural or geologic features are traditionally considered sensitive or sacred. Sutter Buttes is considered by the Konkow and Maidu to be the location where spirits of the dead left for the afterworld. Butte Mountain is a Nisenan ancestral ceremony site. The Nomlaki consider Lassen Butte to be the home of a mythical figure. Marysville Buttes and Mount Shasta are also of mythical importance to the Patwin and Wintu. Burial or cremation sites may exist in the Sacramento River Region. Specific traditional cultural properties along the Trinity River have not been identified for this Draft Programmatic EIS/EIR.

Burial or cremation sites may exist in the Sacramento River Region.

Native American Groups. The primary Native American groups known to have occupied the Sacramento River Region include the Achumawi, Atsugewi, Konkow, Maidu, Nisenan, Nomlaki, Yana, Wintu, and Patwin. The Hoopa and Yurok are known to have occupied the Trinity River area. Twenty-one reservations or rancherias are located in the counties that make up the Sacramento River Region. However, some of these reservations fall outside areas of potential impact. An unknown number of public domain allotments are located in the region.

7.11.3.4 SAN JOAQUIN RIVER REGION

As in the Sacramento River Region, vast agricultural development in the San Joaquin River Region has destroyed many archeological sites. Remnants of sites still occur in agricultural lands, but they have been highly disturbed.

Vast agricultural development in the San Joaquin River Region has destroyed many archeological sites. Remnants of sites still occur in agricultural lands, but they have been highly disturbed.

At least 156 sites in the San Joaquin River Region have been listed in the NRHP as individual properties or districts. In addition, 111 sites in the region have been listed as California Historical Landmarks, and 50 are listed as California Points of Historical Interest (see the March 1998 Cultural Resources Technical Report). Many of these properties fall outside areas of potential impacts.

Prehistoric Resources. Prehistoric site types that occur in the San Joaquin River Region and are likely to occur in the upper watersheds include village sites, temporary camp sites, milling sites, petroglyphs, lithic scatters, quarry sites, and burial sites. Prehistoric sites are most commonly found along the San Joaquin River and its associated sloughs. Buried sites are possible in this region due to the high rate of sedimentation. Substantial agricultural development in the valley has disturbed or destroyed many sites. Prehistoric sites are most likely to exist in areas not fully developed or farmed, or may remain below plow zones.

Historic Resources. Historic site types that have been recorded in the San Joaquin River Region and that are likely to occur in the upper watersheds include mining-related and timber harvesting structures and features, railroad grades and associated features, dams and culverts, roads, refuse deposits, and architectural structures. Agricultural development of the valley has occurred since the Gold Rush era, leading to the establishment of numerous rural communities. These communities may contain sites and structures of historical significance.



Traditional Cultural Properties. Table Mountain is a traditional cultural property because of its importance to the Monache, who believe that mythical beings visited the mountain. Several additional places of mythological importance to the Monache that are located in the San Joaquin River Region also may qualify as traditional cultural properties. Table Mountain near Friant was thought to be visited by mythical beings. Burial or cremation sites also may exist in the San Joaquin River Region.

Table Mountain is a traditional cultural property because of its importance to the Monache, who believe that mythical beings visited the mountain.

Native American Groups. The primary Native American groups known to have occupied the San Joaquin River Region include the Foothill Yokuts and Southern Valley Yokuts, Kawaissu, Kitanemuk, Monache (Sierra Mono), and Tubatulabal. Eight reservations or rancherias are located in the counties that make up the San Joaquin River Region, although some of these reservations fall outside areas of potential impact. An unknown number of public domain allotments are present in the region.

7.11.3.5 OTHER SWP AND CVP SERVICE AREAS

The Other SWP and CVP Service Areas region includes two distinct, noncontiguous areas: in the north, are the San Felipe Division's CVP service area and the South Bay SWP service area; to the south, are the SWP service areas. The northern section of this region encompasses parts of the central coast counties of Santa Clara, San Benito, Santa Cruz, and Monterey. The southern portion includes parts of Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, and Ventura Counties.

The majority of the Other SWP and CVP Service Areas has sustained extensive residential, urban, and industrial development, which has destroyed or damaged many archeological sites.

The majority of the Other SWP and CVP Service Areas has sustained extensive residential, urban, and industrial development, which has destroyed or damaged many archeological sites. Other sites may have been damaged from the limited agricultural development in the areas. Intact cultural deposits are most likely to occur in areas not fully developed or may lie buried beneath structures or plow zones. Some portions of this region, especially in the foothills, have not been substantially developed and may contain intact prehistoric and historic resources. Historically significant architectural resources may exist throughout the region.

Prehistoric Resources. Prehistoric site types include village sites, temporary camp sites, milling sites, petroglyphs, lithic scatters, quarry sites, and burial sites. Permanent settlements were common along the coast in prehistoric times, and interior valleys were traversed on a seasonal basis. Therefore, prehistoric sites are likely to occur in the region. However, substantial development has occurred in urban areas, and many sites have been disturbed or destroyed. Prehistoric sites may exist in areas that have not been fully developed or farmed, may remain buried under plow zones, or may be capped under asphalt or structures.

Historic Resources. Historic site types that have been recorded in the area include mines and mining-related features, railroad grades and associated features, roads, trails, bridges, refuse deposits, and architectural structures. Because the California coast was heavily occupied



in historic times, historic resources are likely to occur in the region. However, these areas also are extensively developed.

Traditional Cultural Properties. Few traditional cultural properties have been identified in the region. The Martinez Historical District, located in the Torres-Martinez Indian Reservation in Riverside County (SWP service area), was listed in the NRHP in 1973. This district plays an important role in the history of the Torres-Martinez band of Mission Indians and is therefore considered a traditional cultural property. Other properties of significance to cultural groups may exist in the region.

Native American Groups. The primary Native American groups known to have occupied the region are the Northern Valley Yokuts, Chumash, Cahuilla, Gabrielino, Luiseno, Ipai, Kumeyaay, Tataviam, and Serrano. The region contains approximately 24 Native American reservations or rancherias. Public domain allotments also may exist in the region.

7.11.4 ASSESSMENT METHODS

Impact assessments focus mainly on those properties listed or eligible for listing in the NRHP, or on important archeological resources, as defined in the State CEQA Guidelines Section 21083.2(g).

Section 106 of the National Historic Preservation Act (NHPA) (16 USC 470) as amended (PL 89-515), and its implementing regulation (36 CFR Part 800), require federal agencies to consider the effects of their actions on properties listed or eligible for listing in the NRHP. The regulations state that an undertaking affects a historic property when that undertaking alters those characteristics of the property that qualify it for inclusion in the NRHP. An undertaking is considered to adversely affect a historic property when it diminishes the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects include, but are not limited to:

- Physical destruction, damage, or alteration of all or part of the property.
- Isolation of the property or alteration of the character of the property's setting when that character contributes to the property's qualifications for the NRHP.
- Introduction of visual, audible, or atmospheric elements that are out of character with the property or changes that may alter its setting.
- Neglect of a property resulting in its deterioration or destruction.
- Transfer, lease, or sale of a property, without adequate provisions to protect the property's historic integrity.

Impact assessments focus mainly on those properties listed or eligible for listing in the National Register of Historic Places, or on important archeological resources.



Additional assessment methods are provided in the March 1998 Cultural Resources Technical Report.

7.11.5 SIGNIFICANCE CRITERIA

Impact assessments for cultural resources are based on the type of site, its NRHP-eligibility status or importance as defined under the CEQA Guidelines Section 21083.2(g), the type of impact, and the extent of disturbance from the project. Impacts on prehistoric and historic resources are considered significant if the project could adversely affect those sites listed or eligible for listing in the NRHP or considered important under CEQA.

Potentially significant adverse impacts on cultural resources can be caused by ground-disturbing activities, modification and alteration of historic structures, visual intrusion to a historic setting, and artifact theft. Direct impacts are those that occur during project construction, development, or operation that directly impinge on or destroy cultural resources, such as all activities that entail earthmoving. Ground-disturbing activities may affect the physical integrity of cultural resources, destroying the research potential. Modification or alteration of historic buildings may disturb the architectural integrity that contributes to their NRHP eligibility or importance under CEQA.

Potentially significant adverse impacts also can occur indirectly through the alteration of the character of the site setting and the introduction of visual, audible, or atmospheric elements that change the character of a site or its setting—which may affect the eligibility of the site for inclusion in the NRHP. Additional indirect impacts may result from increased pedestrian activity in an area, which provides opportunities for artifact theft or vandalism of cultural resources.

The acquisition of private land by the federal government could result in a potential beneficial impact since the cultural resources that are present would be subject to federal antiquities legislation.

Additional significance criteria are provided in the March 1998 Cultural Resources Technical Report.

Impacts on cultural resources consist of ground-disturbing activities, modification and alteration of historic structures, visual intrusion to a historic setting, and artifact theft.

Cultural resources present on land acquired by the federal government would be protected by legislation.

7.11.6 NO ACTION ALTERNATIVE

Several actions, planned or under development, will be implemented under the No Action Alternative. Impacts on cultural resources from these actions in each of the regions are being considered prior to implementation. For example, considerable inventory, excavation, and mitigation of historic and archeological sites have been conducted in support of the Los Vaqueros Reservoir Project. Many other actions listed in Attachment A will not affect cultural resources.



Impacts from individual projects will be evaluated on a project-specific basis using 36 CFR Part 800 as a guide for compliance with Section 106 of the NHPA. Impacts also will be evaluated using the State CEQA Guidelines presented in Section 21083.2 (a-f).

7.11.7 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES

For cultural resources, the environmental consequences of the Ecosystem Restoration, Water Quality, Levee System Integrity, Water Use Efficiency, Water Transfer, and Watershed Programs, and the Storage element are similar under all Program alternatives, as described below. The environmental consequences of the Conveyance element vary among Program alternatives, as discussed in Section 7.11.8.

7.11.7.1 DELTA REGION

Ecosystem Restoration Program

Implementing the Ecosystem Restoration Program could result in minor to moderate impacts on cultural resources. A multitude of minor construction projects are involved in the Ecosystem Restoration Program. Revegetation projects, improved fish passage, eradication of undesirable plant species, and establishment of shallow-water habitat could result in relatively minor adverse impacts on prehistoric and historic sites. Conversely, gravel replacement, new floodways, and levee setbacks may constitute a moderate adverse impact on cultural resources because areas adjacent to waterways potentially have greater prehistoric and historic sensitivity. Creating aquatic and wetlands habitat is projected as a moderate adverse impact.

The application of formal archeological data recovery methods formulated in consultation with the State Historic Preservation Officer (SHPO) may result in a determination that the action will result in "no adverse effect" to the historic property.

Areas adjacent to waterways potentially have greater pre-historic and historic sensitivity.

Water Quality and Water Use Efficiency Programs

Water Quality and Water Use Efficiency Programs may result in minor to moderate adverse impacts on cultural resources if canal lining, tailwater recovery ponds, or new water recycling plants are developed; however, specific projects implemented by local agencies would need to address this potential on a project-specific basis.



Levee System Integrity Program

In the Delta Region, prehistoric and historic sites often are clustered along watercourses. Levee construction activities are viewed as a potential moderate adverse impact due to the extensive earth movement required, combined with the sensitivity associated with the proximity of water sources. Future cultural inventories would be conducted to determine the actual number of sites affected by levee construction activities.

Future cultural inventories would be conducted to determine the actual number of sites affected by levee construction activities.

Water Transfer and Watershed Programs

No impacts on cultural resources in the Delta Region are anticipated as a result of the Water Transfer or Watershed Program.

Storage

Several Delta islands may be flooded. Impacts associated with such actions are considered minor. The surface of most Delta islands has long been compromised as a result of extensive agricultural development. Impacts would be proportional to the size of the storage facility. Cultural resources assessments would be required to ensure that historic resources were not damaged as a result of island flooding.

The surface of most Delta islands has long been compromised as a result of extensive agricultural development.

7.11.7.2 BAY REGION

Ecosystem Restoration and Levee System Integrity Programs

The Suisun Marsh is located in the Bay Region. For cultural resources, the only Program actions that would directly affect the marsh are levee improvements under the Levee System Integrity Program and restoration actions under the Ecosystem Restoration Program. Some ecosystem restoration activities may affect cultural resources found at Suisun Marsh. Impacts of the Levee System Integrity Program in the Suisun Marsh are expected to be similar to those described for the Delta Region.

Water Quality, Water Use Efficiency, Water Transfer, and Watershed Programs and Storage

These Program elements would not affect cultural resources in the Bay Region.



7.11.7.3 SACRAMENTO RIVER AND SAN JOAQUIN RIVER REGIONS

Ecosystem Restoration Program

Ecosystem Restoration Program projects include habitat improvement, fish facilities, relocation of water facilities, and upgrade of structures. Potential adverse impacts on cultural resources from these actions include primarily minor and possibly moderate construction activity. Site-specific inventories and evaluations would be needed to fully analyze project-specific adverse impacts.

New off-stream reservoirs represent significant surface disturbance, with major construction-related adverse impacts and adverse impacts associated with flooding. In general, the larger the land area dedicated for water storage, the greater potential for affecting cultural resources.

Water Quality, Water Use Efficiency, and Water Transfer Programs

No impacts on cultural resources in the Sacramento River or San Joaquin River Region are anticipated from these programs.

Watershed Program

Projects that could be included in upper watershed restoration may involve construction, flooding of areas, dredging soil to restore streams or reduce erosion, and revegetation or use of controlled burns for wildfire prevention. Construction activities could result in adverse impacts on NRHP-eligible properties or important cultural resources present in construction areas. Flooding of areas also would result in adverse impacts on NRHP-eligible properties or important cultural resources present in the areas to be flooded. Dredging could result in impacts similar to construction-related impacts if NRHP-eligible properties or important cultural resources are present in the dredged soils or locations for fill deposition. Clearing or replanting of vegetation, if not performed with hand tools, could adversely affect historic properties or important cultural resources located in the areas to be cleared or restored. Other potential impacts on cultural resources include vandalism and looting of artifacts as a result of increased access to locations where cultural resources are present. Impacts from individual projects would need to be evaluated on a project-specific basis. Potential impacts from the above projects may be mitigated, but this depends on the type of resource and consultation with the SHPO and other interested parties.

Storage

Storage elements potentially involve surface water and groundwater storage. Surface storage reservoirs represent significant surface disturbance, with major construction-related adverse impacts and adverse impacts associated with flooding. In general, the larger the land area dedicated for water storage, the greater potential for affecting cultural



resources. Groundwater storage could result in similar impacts because the possible inclusion of percolating basins may be needed, but the overall scope of such projects would be less than for a surface storage reservoir.

7.11.7.4 OTHER SWP AND CVP SERVICE AREAS

All Programs

The Program would not result in any direct adverse impacts on cultural resources in the Other SWP and CVP Service Areas. No structures, conveyance facilities, storage projects, or habitat improvements are planned in the region. However, the delivery of water to nonagricultural areas may cause growth above current projections. Development associated with such growth may result in indirect adverse impacts on cultural resources located in areas to be developed.

The Program would not result in any direct adverse impacts on cultural resources located in the Other SWP and CVP Service Areas.

7.11.8 CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES

For cultural resources, the Conveyance element results in environmental consequences that differ among the alternatives, as discussed below. This section includes a description of the consequences of a pilot diversion project for the Preferred Program Alternative. If the pilot project is not built, these consequences would not be associated with the Preferred Program Alternative.

7.11.8.1 ALL ALTERNATIVES

Under the Preferred Program Alternative and Alternatives 1, 2, and 3, various projects are proposed for increasing flow through the Delta that may affect cultural resources. Construction and flooding along waterways that are potentially archeologically sensitive may result in a moderate level of adverse impacts. Additional adverse impacts involve flooding certain tracts, acquiring land, and relocating certain facilities that may hold historic significance. Generally, Alternative 1 would have the lowest potential for causing adverse impacts due to channel enlargement. The Preferred Program Alternative has more potential for adverse effects than Alternative 1; impacts are similar to those of Alternative 2 and less than those of Alternative 3. Depending on the size of the isolated facility in Alternative 3, the need for channel enlargement under Alternative 3 is generally more than under Alternative 2. Therefore, Alternative 3 potentially would cause more adverse effects than Alternative 2.

Construction and flooding along waterways that are potentially archeologically sensitive may result in a moderate level of adverse impacts.



Alternative 2 and the Preferred Program Alternative include projects that involve setting back levees, dredging and enlarging channels, or widening portions of Mokelumne River that could result in a potential moderate to major impact on cultural resources, since these environments likely contain prehistoric and historic sites. Earth moving associated with these actions could affect cultural resources. Dredging may reduce the area required for setback levees but may increase the likelihood of encountering possible ship wrecks or other underwater cultural resource features. Disposal of dredged spoils could affect buried and surface archeological sites. As stated above, prehistoric and historic sites often are clustered along watercourses. As an example, levee setbacks along the North Fork of the Mokelumne River may affect six recorded prehistoric sites and two historic sites. Identification of the actual number of sites affected by this levee project, however, depends on future cultural resources inventories of the entire area to be affected. The pilot diversion facility near Hood or the barrier at Old River constitute minor adverse impacts, although the isolated channel to the Mokelumne River may constitute a moderate impact on cultural resources. If the pilot project is not built, these consequences would not be associated with the Preferred Program Alternative.

Construction of an isolated facility under Alternative 3 potentially could cause major adverse impacts on cultural resources. These adverse impacts are considered major due to the magnitude of the proposal, the presence of potentially significant archeological resources, and the amount of construction disturbance involved. Varying the size of the isolated facility from 5 to 15,000 cfs would result in relatively little difference in the potential impacts on cultural resources.

Adverse impacts are considered major due to the magnitude of the proposal, the presence of potentially significant archeological resources, and the amount of construction disturbance involved.

7.11.9 PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS

This section presents the comparison of existing conditions to the Preferred Program Alternative and Alternatives 1, 2, and 3. The analysis found that the potentially beneficial and adverse impacts from implementing any of the Program alternatives when compared to existing conditions are the same impacts as those identified in Sections 7.11.7 and 7.11.8, which compare the Program alternatives to the No Action Alternative. The comparison of Program alternatives to existing conditions did not identify any additional potentially significant environmental consequences that were not identified in the comparison of the Program alternatives to the No Action Alternative.

The following potentially significant impacts were identified for the Preferred Program Alternative:

- Impacts on cultural resources from ground-disturbing activities.
- Impacts on cultural resources from new construction, excavation, or fill.
- Inundation of cultural resources from flooding.



- Impacts on cultural resources from alteration of existing facilities.
- Impacts on cultural resources from construction of new facilities.
- Alteration of the historic setting of a cultural resource.
- Introduction of elements out of character with a cultural resource site.

No potentially significant unavoidable impacts on cultural resources are associated with the Preferred Program Alternative.

7.11.10 ADDITIONAL IMPACT ANALYSIS

Cumulative Impacts. For a summary of cumulative impacts for all resource categories, please refer to Chapter 3. A description of the projects and programs contributing to this cumulative impacts analysis can be found in Attachment A.

In all regions except the Other SWP and CVP Service Areas, Program actions and the projects listed in Attachment A would cause ground and soil disturbance that could affect cultural resources. For potentially significant impacts on cultural resources caused by these projects, mitigation measures will be implemented as required according to procedures identified in Section 106 of the NHPA and its implementing regulations (36 CFR 800). Mitigation measures also are required by the State CEQA Guidelines. Mitigation measures will be developed through a consultation process involving the federal agency, SHPO, state agencies, and interested members of the public. Mitigation measures also will be required for potentially significant impacts on cultural resources caused by implementation of the Preferred Program Alternative. Most likely, some archeological and historical resources would be lost from implementation of the Preferred Program Alternative and other projects, but mitigation measures should be provided. This is, of course, contingent on consultation with the SHPO and other interested parties per the NHPA. Nevertheless, cumulative impacts on cultural resources are considered potentially significant.

Growth-Inducing Impacts. Improvements in water supply caused by the Preferred Program Alternative could induce growth, depending on how the additional water supply was used by water contractors. If additional water was used to expand agricultural production or population, the proposed action would foster economic and population growth, including possible construction of new housing. Expansion of agricultural production and population could affect cultural resources. The nature of the effects would depend on where the economic or population growth occurred and how it was managed.

Short- and Long-Term Relationships. Development of alternatives may affect cultural resources; however, mitigation is available to reduce potential impacts to less-than-significant levels. Long-term benefits to cultural resources could result from federal protection of resources found on public land.

Mitigation measures will be developed through a consultation process involving the federal agency, SHPO, state agencies, and interested members of the public.

Expansion of agricultural production and population could affect cultural resources. The nature of the effects would depend on where the economic or population growth occurred and how it was managed.

Long-term benefits to cultural resources could result from federal protection of resources found on public land.



Irreversible and Irretrievable Commitments. Cultural resources are fragile, finite, and nonrenewable. Any type of physical damage results in a permanent loss of information. The importance of any given resource is closely related to its structural or depositional integrity. Once a site is disturbed, it may be stabilized and protected from further deterioration, but it cannot be restored to its original condition. Even the application of data recovery techniques involves some loss because data recovery is necessarily selective. Although the construction or development phase of a proposed project may be of relatively short duration, adverse effects on NRHP-eligible or important cultural resources could be long term and permanent. The application of data recovery techniques can recover physical objects and mitigate the loss of data, but the site is nonetheless lost to posterity and future in-situ research.

The importance of any given resource is closely related to its structural or depositional integrity.

Cultural resources that are affected during the implementation of any alternative would be lost for posterity. Data recovery techniques ameliorate this loss somewhat. Cultural resources cannot be replaced or reproduced once they are lost, regardless of mitigation activities.

7.11.11 MITIGATION STRATEGIES

Mitigation strategies will be considered during specific planning and development of implementation projects. Specific mitigation measures will be adopted, consistent with Program goals and objectives and the purposes of site-specific projects. Not all mitigation strategies will be applicable to all projects because site-specific projects will vary in purpose, location, and timing.

A range of actions is possible to mitigate adverse impacts on cultural resources. Specific mitigation strategies depend on the type of cultural resource being affected. Specific types of sites require different forms of mitigation. For example, an archeological site consisting of an isolated feature would require less mitigation than a long-term habitation location that contains burials.

Inventories for cultural resources often consist of formal on-foot transects across the area of potential effect. Historic and prehistoric sites are recorded through the completion of a site record form. When inventories are completed for specific Program elements and resources have been evaluated for NRHP eligibility or significance under CEQA, discussion of mitigation measures could begin for affected properties. The preferred action would be to avoid the historic property (that is, a resource that is NRHP-listed or NRHP-eligible, or is considered important under CEQA). This option would save money and preserve the resource for posterity. Routes could be diverted, facilities relocated, or projects redesigned to avoid adversely affecting historic properties. When avoidance is not feasible, mitigation becomes necessary.

Developing and implementing mitigation measures involve a series of steps. These are, in part, contingent on the specific resource. Data recovery is a common measure undertaken



to mitigate adverse impacts on historic properties. Data recovery typically includes record keeping, mapping, surface collections, subsurface testing, and possibly excavations. These actions are preceded by research design and a memorandum of agreement (MOA), in compliance with Section 106 of the NHPA. Completing an MOA involves input from various federal and state agencies, as well as potential input from interested members of the public. Mitigation is complete with agency acceptance of a final report. Public reports summarizing the results of mitigation efforts often are used to disperse information gained from data recovery. In addition to data recovery, mitigation may involve other long-term actions, such as fencing, monitoring, or maintaining a historic property.

Mitigating historic architectural properties is more involved. If a structure is determined eligible for inclusion in the NRHP, an MOA is prepared, as described above. The actual level of documentation for a structure or engineering facility is determined in consultation with the National Park Service, which provides direction for recording the structure to standards found in the Historic American Buildings Survey or the Historic American Engineering Record.

Mitigating impacts on traditional cultural properties is more problematic due to the character and potential sensitivity of the resource. Development of a management plan for the property is one possibility. Conducting intensive ethnographic interviews and research would provide additional documentation, if appropriate. Fencing, project redesign, and limiting the season of use are all options. Mitigation measures should be developed on a case-by-case basis in consultation with the cultural group with which the property is associated.

Mitigating impacts on traditional cultural properties is more problematic due to the character and potential sensitivity of the resource. Development of a management plan for the property is one possibility.

7.11.12 POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS

Implementation of the Program would result in impacts on some cultural resources. The quantity and significance is unknown since specific projects have not been determined and a detailed cultural resource inventory and evaluation for specific actions have not been conducted. If impacts on NRHP-eligible or important cultural resources in any region could not be avoided through project design, after appropriate consultation, mitigation would be available to reduce impacts to an acceptable level.

If impacts on NRHP-eligible or important cultural resources in any region could not be avoided through project design, after appropriate consultation, mitigation would be available to reduce impacts to an acceptable level.

