Chapter 17
Aesthetics and Visual Resources

17.0 Summary Comparison of Alternatives

A summary comparison of a number of important aesthetic impacts is provided in Figure 17-0. This figure provides information on the magnitude of both adverse and beneficial aesthetic impacts that are expected to result from all alternatives. An important impact to consider is the permanent impact on visual resources after the completion of construction of water conveyance features.

As depicted in Figure 17-0, construction of the water conveyance features would result in effects on viewers, with the greatest number of effects under Alternatives 1A, 2A, 3, 5, 6A, 7, and 8, with 16 effects deemed "very noticeable," one "noticeable" effect, and three "moderately noticeable" effects. Alternative 5A would result in the fewest overall effects, with six very noticeable effects and two moderately noticeable" effects. Effects on visual resources under Alternatives 4, 4A, and 2D fall roughly in the middle, with 10 very noticeable effects and two moderately noticeable effects under Alternatives 4 and 4A, and 13 very noticeable effects and two moderately noticeable effects under Alternative 2D.

Table ES-8 in the Executive Summary provides a summary of all impacts disclosed in this chapter.

17.1 Environmental Setting/Affected Environment

This section discusses the visual resources study area (the area in which impacts may occur) which consists of the Plan Area (the area covered by the BDCP), which is largely formed by the statutory borders of the Delta, along with areas in Suisun Marsh and the Yolo Bypass; upstream rivers and reservoirs; and the Areas of Additional Analysis (see Chapter 3, *Description of Alternatives*). This area hosts a variety of land cover and vegetative communities: open water, riparian forest, wetlands and aquatic vegetation, agriculture, grasslands, and urban development.

The physical context in which a proposed project or alternative would be located is a key consideration in analyzing whether the project or alternative will have adverse or significant effects on aesthetic and visual resources. Identifying a project area's visual resources and conditions involves three steps.

1. Objective identification of the visual features (visual resources) of the landscape, including whether there are any designated scenic vistas or state scenic highways.

2. Assessment of the character and quality of those resources relative to overall regional visual character.

3. Determination of the importance to people, or sensitivity, of views of visual resources in the landscape.

The discussion of visual resource impacts in this chapter is limited to effects on the landscape that affect the human quality of life. Light or glare from construction of infrastructure elements of the project could have an indirect effect on wildlife in the vicinity of the project and in nearby wildlife preserve areas. The project's effects on wildlife in the vicinity of the project and in nearby wildlife preserve areas are discussed in Appendix 5J-D of the Bay Delta Conservation Plan (ICF International 2013:5J-D-1) and Chapter 12, *Terrestrial Biological Resources*.

17.1.1 Concepts and Terminology

The aesthetic value of an area is a measure of its visual character and quality, combined with the viewer response to the area (Federal Highway Administration 1988:26–27, 37–43, 63–72). Scenic quality can best be described as the overall impression that an individual viewer retains after driving through, walking through, or flying over an area (Bureau of Land Management 1980:2–3). Viewer response is a combination of viewer exposure and viewer sensitivity. Viewer exposure is a function of the number of viewers, number of views seen, distance of the viewers, and viewing duration. Viewer sensitivity relates to the extent of the public's concern for a particular viewshed. These terms and criteria are described in detail below.

17.1.1.1 Visual Character

Natural and artificial landscape features contribute to the visual character of an area or view. Visual character is influenced by geologic, hydrologic, botanical, wildlife, recreational, and urban features. Urban features include those associated with landscape settlements and development, including roads, utilities, structures, earthworks, and the results of other human activities. The perception of visual character can vary significantly seasonally, even hourly, as weather, light, shadow, and elements that compose the viewshed change. The basic components used to describe visual character for most visual assessments are the elements of form, line, color, and texture of the landscape features (USDA Forest Service 1995:28–34, 1-2–1-15, 3-3–3-13, 4-5; Federal Highway Administration 1988:37–43). The appearance of the landscape is described in terms of the dominance of each of these components.

- *Form* is the unified mass or shape of an object that often has an edge or outline and can be defined by surrounding space. For example, a high-rise building would have a highly regular, rectangular form whereas a hill would have an organic, mounded form.
- *Line* is perceived when there is a change in form, color, or texture and where the eye generally follows this pathway because of the visual contrast. For example, a city's high-rises can be seen silhouetted against the blue sky and be seen as a skyline, a river can have a curvilinear line as it passes through a landscape, or a hedgerow can create a line where it is seen rising up against a flat agricultural field.
- *Color* is light reflecting off of an object at a particular wavelength that creates hue (green, indigo, purple, red, etc.) and value (light to dark hues).
- *Texture* is the perceived coarseness of a surface that is created by the light and shadow relationship over the surface of an object. For example, a rough surface texture (e.g., a rocky mountainside) would have many facets resulting in a number of areas in light and shadow and, often, with distinct separations between areas of light and shadow. Conversely, a smooth surface texture (e.g., a beach) would have fewer facets, larger surface areas in light or shadow, and gradual gradations between light and shadow. (Bureau of Land Management 1980:15; Federal Highway Administration 1988:40).

It should be noted that while the analysis does not formulaically list out form, line, color, and texture and then provide detailed descriptions of each as it applies to a location or landscape, these

Chapter 17 – Aesthetics and Visual Resources		Existing Condition	No Action	1A	1B	1C	2A	2B	2C	3	4	5	6A	6B	6C	7	8	9	4A	2D	5A
				Alternative																	
AES-2, 3, and 4: Permanent impacts after construction is complete.	Overall number of Very Noticeable effect on viewers	n/a	n/a	16	14	13	16	14	13	16	10	16	16	14	13	16	16	6	10	13	6
	Overall number of Noticeable effect on viewers	n/a	n/a	1	1	1	1	1	1	1	0	1	1	1	1	1	1	7	0	0	0
	Overall number of Moderately Noticeable effect on viewers	n/a	n/a	3	1	0	3	1	0	3	2	3	3	1	0	3	3	0	2	2	2
	Overall number of Minimally Noticeable effect on viewers	n/a	n/a	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0
		n/a	LTS/NA	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A	SU/A
AES-5: Substantial alteration in existing visual quality or character during operation.		n/a	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA	LTS/NA

Key

Level of significance or effect **before** mitigation (Quantity of impact: number of sites, structures, acres, etc. affected)

Increasing level of significance

n/a not applicable
> greater than
< less than
≈ about equal to

Level of significance or effect **after** mitigation (CEQA Finding / NEPA Finding)

CEQA Finding
NI No Impact
LTS Less than significant
S Significant
SU Significant and unavoidable

NEPA Finding
B Beneficial
NE No Effect
NA Not Adverse
A Adverse

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Figure 17-0
Comparison of Impacts on Aesthetics and Visual Resources

elements are addressed by using words and descriptions that are synonymous with those terms. For instance, a description may not read "the line of the river is meandering" but instead read "the meandering river" because the later already implies line.

Readers and reviewers are most-often familiar with the landscapes that are being discussed and gain a clear visual image of parts of that landscape when it is described more holistically and in a simple, relatable manner instead of in elemental pieces. An example would be a description that reads "a patchwork of row crops, pastureland, and orchards comprise the landscape" versus "there are many rectangular fields that are adjacent to one another and some of these look more smooth because they are pasturelands planted with grasses that form a continuous vegetative cover but some fields look more rough because orchards are planted with trees that have a rough appearance and there is not as much visual continuity because there are larger spaces between the rows of trees where the ground plane can be seen". The second description causes the reader to become more focused on overly specific details whereas the first description paints a clear visual image of the landscape in the reader's mind. The readers' familiarity with landscape elements (e.g., pastureland, orchards, suburban development, etc.) in their region allows them to intuitively understand how a landscape looks (i.e., form, line, color, and texture).

17.1.1.2 Visual Quality

Visual quality is evaluated using the well-established approach to visual analysis adopted by the Federal Highway Administration, employing the concepts of vividness, intactness, and unity (Federal Highway Administration 1988:46–59; Jones et. al. 1975:682–713), which are described below.

- *Vividness* is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns.
- *Intactness* is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements; this factor can be present in well-kept urban and rural landscapes, and in natural settings.
- *Unity* is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the landscape.

Visual quality is evaluated based on the relative degree of vividness, intactness, and unity, as modified by its visual sensitivity. High-quality views are highly vivid, relatively intact, and exhibit a high degree of visual unity. Low-quality views lack vividness, are not visually intact, and possess a low degree of visual unity.

17.1.1.3 Visual Exposure and Sensitivity

The measure of the quality of a view must be tempered by the overall sensitivity of the viewer. Viewer sensitivity or concern is based on the visibility of resources in the landscape, proximity of viewers to the visual resource, elevation of viewers relative to the visual resource, frequency and duration of views, number of viewers, and type and expectations of individuals and viewer groups.

The importance of a view is related in part to the position of the viewer to the resource; therefore, visibility and visual dominance of landscape elements depend on their placement within the viewshed. A viewshed is defined as all of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail) (Federal Highway Administration 1988:

26–27). To identify the importance of views of a resource, a viewshed must be broken into distance zones of foreground, middleground, and background. Generally, the closer a resource is to the viewer, the more dominant it is and the greater its importance to the viewer. Although distance zones in a viewshed may vary between different geographic region and types of terrain, the standard foreground zone is 0.25–0.5 mile from the viewer, the middleground zone from the foreground zone to 3–5 miles from the viewer, and the background zone from the middleground to infinity (Litton 1968:3).

Visual sensitivity depends on the number and type of viewers and the frequency and duration of views. Visual sensitivity is also modified by viewer activity, awareness, and visual expectations in relation to the number of viewers and viewing duration. For example, visual sensitivity is generally higher for views seen by people who are driving for pleasure; people engaging in recreational activities such as hiking, biking, or camping; and homeowners. Sensitivity tends to be lower for views seen by people driving to and from work or as part of their work (U.S. Soil Conservation Service 1978:3, 9, 12; Federal Highway Administration 1988:3, 9, 12; USDA Forest Service 1995:3-3–3-13). Commuters and non-recreational travelers have generally fleeting views and tend to focus on commute traffic, not on surrounding scenery; therefore, they are generally considered to have low visual sensitivity. Residential viewers typically have extended viewing periods and are concerned about changes in the views from their homes; therefore, they are generally considered to have high visual sensitivity. Viewers using recreation trails and areas, scenic highways, and scenic overlooks are usually assessed as having high visual sensitivity.

Judgments of visual quality and viewer response must be made based in a regional frame of reference (U.S. Soil Conservation Service 1978:3). The same landform or visual resource appearing in different geographic areas could have a different degree of visual quality and sensitivity in each setting. For example, a small hill may be a significant visual element on a flat landscape but have very little significance in mountainous terrain.

The analysis provides a quantitative measure of viewer sensitivity using a sensitivity rating matrix, provided in Appendix 17A, *Candidate KOP Sensitivity Matrix Ratings*, that evaluates the project in relation to viewer proximity/distance to the project site, viewer concern levels, duration of the views, and the number of viewers and in relation to the existing intactness and visual quality of the project site. The matrix and its application to the project analysis are described in detail in Section 17.3.1.1, *Site Inventory and Selection of Key Observation Points*, below.

17.1.2 Visual Character of the Study Area

17.1.2.1 Delta Overview

The statutory Delta encompasses 738,000 acres and consists of largely undeveloped islands and low-lying tracts of land surrounded by waterways and levees. Historically, more than 40% of the state's runoff flowed to the Delta through the Sacramento, San Joaquin, and Mokelumne Rivers (California Department of Water Resources 1995). In addition to the natural waterways, the area contains a variety of water development facilities such as levees, aqueducts, and intake structures. The construction of levees resulted in the conversion of wetlands, riparian corridors, and open water to agricultural lands characterized by elevated and vegetated levees surrounding low-lying areas of farmland. Construction of these levees, completed before World War II, also allowed for urbanization, commercial shipping to the Ports of Stockton and Sacramento, recreational boating, and marina development within the Delta (SacDelta 2009).

For purposes of this analysis, the visual resources study area consists of the Plan Area, which is largely formed by the statutory borders of the Delta, along with areas in Suisun Marsh and the Yolo Bypass; upstream rivers and reservoirs; and the Areas of Additional Analysis (see Chapter 3, *Description of Alternatives*). This area hosts a variety of land cover and vegetative communities: open water, riparian forest, wetlands and aquatic vegetation, agriculture, grasslands, and urban development.

Lands contributing to the visual resources in the study area include State Recreation Areas, wildlife refuges and preserves, marinas and shoreline recreation facilities, and the Diablo and Vaca mountain ranges. Some large tracts are managed by duck hunting clubs. Although the Delta is largely agricultural, human-made structures of aesthetic value, such as bridges and historical homes and townsites, are located along the roadways.

The largest population centers within the legal Delta are the cities of Sacramento (population 486,189) and Stockton (population 292,133), with smaller historic town centers scattered throughout the region and suburban centers at the edges of the Delta (California Department of Finance 2010). As discussed below, those town centers include Isleton, Walnut Grove, and Courtland.

The heart of the study area is at or below sea level and generally flat; however, levees constructed to prevent flooding of populated areas, islands, and agricultural areas contribute to minor topographic variations, extending an average of 10–20 feet above mean high water. These levees form a visual barrier between most development and adjacent waterways. The elevation of the Delta's peripheral areas is higher, but slopes in these areas are generally gentle. On clear days, distant views of Mt. Diablo, portions of the Coast Ranges and the Sierra Nevada are available from many locations within the Delta. State Route (SR) 160, a two-lane, state-designated scenic highway, travels primarily along the tops of levees through the central and northern areas of the Delta and provides elevated views of various land uses and landscape types.

Suisun Marsh is the largest contiguous brackish water marsh remaining on the west coast of North America and is a critical part of the San Francisco Bay–Delta Estuary ecosystem. Encompassing 116,000 acres, Suisun Marsh consists of managed and tidal wetlands, grasslands, and bays and sloughs. Most of the wetlands in the Suisun Marsh are managed as food, cover, and nesting habitat for waterfowl. A total of 230 miles of levees within the marsh provides critical protection of the drinking water for 22 million people by preventing saltwater intrusion into the Delta (California Department of Water Resources 2010). The Suisun Marsh also provides for a variety of recreational opportunities on both private and public lands, including duck hunting, fishing, upland game hunting, and wildlife observation. Additional passive recreational opportunities are provided in the Hill Slough Wildlife Area and the Peytonia Slough Ecological Reserve (see Chapter 15, *Recreation*, for further discussion). Aside from limited water-dependent industrial areas near Collinsville, the waterfront represents one of the few remaining undeveloped areas with deep-water access in the San Francisco Bay Area.

The north and north-central portions of the study area are spanned by approximately 10,200 acres of the Yolo Bypass Wildlife Area. The Yolo Bypass Wildlife Area consists of wildlife habitat and agricultural land that is managed by the California Department of Fish and Wildlife (CDFW). Recreational activities range from hunting, fishing, and hiking to wildlife viewing, nature photography, and environmental education activities (see Chapter 15, *Recreation*, for further discussion). The Sutter County portion of the Yolo Bypass extends from the Fremont Weir in the north to the Sutter/Yolo County line in the south, and the total area consists of approximately 160 acres within the Fremont Weir Wildlife Area. The Fremont Weir Wildlife Area includes approximately 1,500 acres that are managed by CDFW and provide for hunting, fishing, and wildlife viewing (see Chapter 15, *Recreation*, for further discussion). When the Fremont Weir releases overflow waters of the Sacramento River, Sutter Bypass, and the Feather River into the Yolo Bypass, the wildlife area becomes flooded. Land uses within the bypass are primarily agricultural or other open space uses that are compatible with flood control operations. Agricultural production is limited to field and row crops. Views from the bypass are expansive when haze is at a minimum. Typical views extend over agricultural fields in the foreground to the middleground and background. The largest number of viewers of the bypass are on elevated roadways, such as those on levees, which provide views of the high-rise buildings of downtown Sacramento that can be seen in the middleground and background, with views of the Sierra Nevada foothills occasionally available on clear days or of views of the western portion of the Sacramento Valley and the Vaca Mountains. These types of landscape views are strongly characteristic of the Sacramento Valley and have contributed to the region's identity.

The attributes of the Delta landscape change over the course of a year in response to seasonal changes and weather. Vegetation, agricultural crops, and land use patterns vary according to the time of year and farming activities. For instance, a particular field may be fallow through winter and early spring and yet exhibit substantial vegetative growth through summer. Often stubble or crop remnant can be seen in fall after harvest.

Weather also has a major influence on the landscape. Winter tule fog can substantially reduce ground level visibility to a few yards and have a major effect on landscape features.

Buildings associated with farms and duck clubs in areas that receive flooding are commonly raised structures that can withstand flooding. These structures are scattered throughout the study area. The visual character of the Delta landscape is an appealing and sharp contrast against the Sacramento metropolitan region. Views are moderately high in vividness. The artificial intrusions associated with development, agriculture, and infrastructure are low, but present, resulting in moderate intactness. The visual quality of the area is also moderately high in unification because the landscape is fairly congruent and harmonious in terms of scale, color, and form.

17.1.2.2 Delta Landscape Types

The Delta's landscape can be grouped into four main landscape categories: agricultural, waterways, developed, and undeveloped open space. Each of these categories has distinctive visual and scenic attributes that contribute to the dominant visual character of the Delta landscape. Within each category, specialized dominant features in the visual landscape combine to define more distinct landscape types that share similar visual elements.

Agricultural Landscapes

Agricultural lands account for the primary land use in the Delta, as described in Chapter 13, *Land Use*. The extensive tracts of agricultural land shape the Delta's visual character. A wide mixture of crops, land management practices, and agricultural infrastructure create a pastoral visual landscape composed of a variety of colors, textures, and views from different distances.

Farmsteads are often associated with agricultural land uses. Many farmsteads have traditional farm characteristics, with structures that reflect traditional farmhouse designs. Agricultural lands are further defined according to the type of agriculture employed (i.e., orchards, row crops, and pasturelands), as described below.

Orchards

Orchards are dispersed throughout the Delta and create a distinct landscape type within the broader category of agriculture. Large plots of fruit and nut trees (e.g., pears, peaches, walnuts, almonds), often planted immediately adjacent to roadways, create broad, seasonally open vistas. In winter, the barren orchards are devoid of foliage and provide more open views of the landscape. During the rest of the year, the dense foliage of the orchards limits the field of vision. The flatness of the topography, coupled with the repetition of the planted tree rows, result in long horizontal lines that dominate the visual field. These uniform forms and textures are created by cultivation into long, linear rows defined by orchard trees that are commonly topped to uniform levels.

Color changes seasonally, with winter views dominated by gray-brown hues and skeletal trees with branches lacking leaves. In spring, these tree forms contrast with the bright green grass or yellow floral displays (e.g., mustard) of groundcover vegetation. During the spring, pale-colored flowers bloom for a short period of time, followed by the emergence of lush green foliage that lasts throughout summer and autumn. During summer, orchards provide a visual solid wall of green, and for drivers, glimpses through the rows. Summer and fall bring the harvest, with some orchards bearing bright-colored fruits amid the green foliage.

The winter and summer views are contrasted by the viewing distance or the ability to see through the orchard to what is beyond. In general, activity and movement are minor elements of this landscape. Artificial lighting is generally absent; the landscape is dark at night, except for occasional views of farmsteads dispersed through the landscape. Similarly, sources of glare are generally absent.

Row Crops

Agricultural tracts supporting row crops (e.g., corn, asparagus, strawberry, wine grapes) are a distinct visual landscape type in the Delta. Row crops share some visual attributes with orchards—repeating patterns, uniform height forms, horizontality, and seasonal variation in textures and colors. Because row crops are generally low to the ground, they allow open views to the surrounding landscape and distant vistas year-round. These patterns are repeated in widespread areas throughout the Delta and dominate the visual character of this landscape type.

Like those of orchards, views of row crops change seasonally. Winter views encompass broad areas of brown to black soil, or only the cover of low-growing grasses with relatively uniform texture. Summer textures tend to be uniform, with rows of green leafy vegetation. Vineyards have a distinctive visual appearance created by frames used to train the growth of the plants that define the center of the rows. In winter, these fields are generally open and views through and above the frames are apparent.

Springtime views include bright green grass cover, sometimes with wildflower displays or bright yellow mustard plants between the vine rows. Summer foliage is dense, however, and views may be obstructed from ground level to as high as 10–12 feet above the ground depending on crop types (e.g., corn, strawberries, lettuce, asparagus). Row crops typically exhibit uniformity in forms, patterns, textures, and seasonal colors. Active agricultural practices—planting, crop tending, and harvesting activities—are routine in these areas. During periods of intensive activity, movement of farm equipment, activities by field workers, aerial spraying, and trucking normally provide visual contrast with the otherwise static landscape. Artificial lighting is generally absent; these are dark landscapes at night, except for occasional views of farmsteads dispersed through the landscape. Similarly, sources of glare are generally absent.

Pasturelands

Pasturelands typically exist toward the edges of the Delta, particularly in the eastern and southern regions (e.g., toward Lodi and Brentwood), as the landscape transitions to higher elevations that support grasslands and oak savanna. The visual character of pasturelands is characterized primarily by broad expanses of open space, sometimes with rolling hills and sparsely scattered oak trees. This landscape type generally affords broad vistas. The presence of grazing cattle contributes to a pastoral landscape. Additionally, this landscape type can include row crops and working farms such as dairies.

During the rainy winter and spring seasons, these pastures are verdant green, a color that fades to golden brown during the drier summer and fall seasons in locations where irrigation is not provided. Where oaks are present, the foliage contributes to visually dramatic forms and textures that contrast strongly with the background uniformity of the grass cover.

In winter and spring, dark-colored tree trunks and twisting branches dominate the eye of the viewer and contrast with the color of the grass, which is gray-brown in early winter but changes to bright green in late winter and spring. In summer and fall, the foliage forms large dome forms with uniform texture and gray-green color that contrasts strongly against the yellow-golden background colors of the grass.

Where irrigation is provided, these pastures often retain their green color throughout the drier summer and fall months, creating a color mosaic pattern on the landscape that contrasts with nonirrigated lands.

Large tracts of flat or gently rolling grazing land afford open vistas to distant background views of major landscape features such as Mt. Diablo, the more distant Sierra Nevada, or human-made structures such as bridges and open canals. In general, activity and movement are minor elements of this landscape and are associated mostly with pasture animals. Lighting is generally absent; at night these are dark landscapes, except for occasional views of farmsteads dispersed through the landscape. Similarly, sources of glare are generally absent.

Waterway Landscapes

Approximately 1,000 miles of waterways traverse the Delta (Delta Science Center 2009a), making them a defining and dominant feature of the landscape. Many of the waterways follow natural courses, while others have been constructed for navigation, flood control, water supply, and drainage. The predominant features constraining and defining these waterways are artificial levees.

Waterways in the Delta span a wide range of scales in the landscape. The river corridors are large and wide, while the sloughs and associated tributaries can be quite narrow, hidden in some instances amid the flat surrounding terrain.

The Delta's waterways are unique in their diversity and wide range of distribution and abundance, adding substantially to the region's visual characteristics. Most Delta waterways have a general scenic quality that attracts and contributes to varied types of recreation. The three general types of waterway visual landscapes—open river, channels and sloughs, and marsh—are described in greater detail below.

Open River

The open river is a visual landscape dominated by a singular, expansive waterway. This landscape type is a common sight along Delta roadways that closely parallel the Sacramento and other rivers and offer views of the river corridor. Delta rivers, such as the Sacramento, San Joaquin, Mokelumne, and Cosumnes, are long and meandering, with extensive surface water visible in many locations. Because of the length of the rivers and their meandering form, they are constantly moving in and out of the field of vision, particularly as viewed from the local roadways. When rivers are present, the visual field is dominated by a large expanse of water that contrasts strongly with adjacent lands and serves as a focal point in the landscape.

In some areas of the Delta where former islands have been inundated, such as Franks Tract and Big Break, the open-river landscape expands broadly, creating an open-water visual landscape. These areas offer very wide, uniform expanses of water and afford broad vistas. At a general level, water exhibits strongly horizontal features in form, especially as distance increases from a viewpoint. In more close-in views, water forms change with wind and passage of boats and ships, inducing low vertical elements in the waves and wakes, but the horizontal component of the waves and wakes predominates. The seasonal emergence of aquatic vegetation can also introduce a variety of colors and textures to these close-in views.

River corridors are typically banked by earthen levees that rise above the water level to protect adjacent lands from flooding. These are often covered with riparian vegetation (e.g., trees, ground cover), but may also provide locations for water access in the form of docks, marinas, and related facilities. In winter and early spring, vegetation lacks foliage and tends to create relatively uniform textured gray-brown forms along the water's edge. In summer, the green foliage is dense and generally uniform in texture. Levees tend to have regularly repeated colors and textures, generating a monotonous element in the visual landscape. Riverbanks may also be lined with riprap, composed of boulders or recycled concrete rubble, to protect against erosion (Delta Science Center 2009a). Such bank materials are often regarded as visually detracting from a more natural shoreline appearance.

Visually dominant features associated with open river views are the many steel drawbridges constructed over the numerous river and waterway crossings. These structures have varied forms and colors and dominate the visual field where present. Although wind may introduce an element of movement, water in this landscape type is typically flat and still. The color of water is ever changing with time of day, weather, and wave patterns. The water may be brown, green, or blue when reflecting the sky at midday and purple, golden, or black when the sun is low at dawn and evening. Under cloud cover and tule fog, it may appear gray. The color of the water constantly contrasts with the adjacent vegetation along the banks, islands, or marshes, which changes color with the seasons.

Activity and movement are important visual components of the open river visual landscape. The ever-changing movement of the water and the visual colors, textures, and patterns that result tend to attract the eye of a viewer, and sometimes dominate the view. The great amount of recreational boating and commercial shipping creates a constantly changing level of activity on the rivers. Waterfowl activity generates additional movement and visual attractants. Lighting is generally absent; these are dark landscapes at night, except for occasional views of residences and structures dispersed along the banks and traffic headlights on roadways. Boat and ship movements generate ephemeral lighting. Natural glare is related to the waters' reflective quality. Most nonnatural sources of glare in this area are temporal and related to boats and ships.

Channels and Sloughs

Numerous channels and sloughs wind through the Delta as the large Sacramento and San Joaquin rivers mingle with smaller rivers that drain the Sierra Nevada and Coast Ranges (Delta Science Center 2009b). Sloughs meander through the landscape in a curvilinear fashion, while engineered waterways that have been channelized and diverted for agriculture and water conveyance tend to carve straighter paths. These smaller waterways intersect and contrast with the larger landscape, and although they serve as a focal point in the landscape, they are less dominant in the visual field than waterways classified under the open river landscape type. The narrower expanse of water in channels and sloughs creates a more confined visual field than in the open river visual landscape.

Channels typically have earthen banks and/or riprap and often appear less natural than waterways in the open river landscape type. Riparian vegetation may be present, but some of these waterways may appear merely as depressions in the larger vegetated landscape. Channelized waterways for shipping, water diversion, or water distribution may have banks constructed of earthen or hard materials (for example, the California Aqueduct, the largest waterway of this type, along with the Sacramento, San Joaquin, and Stockton deep water ship channels).

Some channels and sloughs are lined by trees and shrubs down to the waterline. Such vegetation tends to be relatively uniform in color, texture, and pattern and varies by season in the same way as described for the open river visual landscape. Water levels in Delta channels and sloughs fluctuate seasonally and daily depending on annual precipitation and the tides. The predominant visual feature apparent with fluctuating water levels is visible during low flows, when more of the adjacent shoreline is exposed to view. Bridges, where present, form a dominant visual element of the landscape. Residences, commercial businesses and docks along the edges, some of which are run down or abandoned, also add substantial variation in forms, patterns, textures, and colors impacting the overall visual quality of the areas.

Activity and movement are also important components of the visual landscape of channels and sloughs. Depending on the amount of recreational boating and commercial shipping, there is a constantly changing level of activity on the rivers. Additionally, waterfowl activity generates additional movement and visual attractants in this visual landscape. Lighting is generally absent; these are dark landscapes at night, except for the occasional views of residences, structures, and roadways dispersed along the banks. Boat and ship movements generate ephemeral lighting. Natural glare is related to reflective quality of the water. Most artificial glare sources are temporal and related to boats and ships.

Marsh

The marsh landscape type consists of intermixed open water and wetland vegetation. It is characterized by fluctuating water levels and/or seasonal flooding from tidal action, rain, and management actions. Suisun Marsh and the Yolo Bypass Wildlife Area are two examples of this landscape type.

The predominant visual characteristic of Delta marshes is the large, flat, open expanse absent of prominent vertical features or human-made structures. The landscape has strong horizontality in form because of the plane of the water and the uniform height of marsh vegetation. The presence of islands in a marsh, which may have riparian forest, adds the primary vertical element to the landscape and generates visual interest. Texture may be irregular, with some marshes appearing as large bodies of shallow open water and others as smaller, isolated areas of saturated ground. The marsh vegetation itself appears to have uniform texture and growth forms, such as lower growing pickleweed and saltgrass and taller growing bulrush, reed, and cattails as described in Chapter 12, *Terrestrial Biological Resources*.

In these landscapes, views may change by season of the year, particularly as water levels fluctuate. Seasonal change in form, color, and pattern is common. Additionally, both freshwater and tidal marshes provide habitat for a diversity of avian species, giving rise to a wide range of seasonal wildlife.

Activity and movement of waterfowl contribute strongly to the character of this visual landscape, and wind patterns on shallow water and marsh grasses add visual interest. Human activity is largely absent. Lighting is uniformly absent; these are dark landscapes at night. Natural glare is related to the waters' reflective quality. Artificial sources of glare are generally absent.

Developed Landscapes

Settlement patterns in the Delta are generally rural; however, small towns and pockets of urban development are distributed throughout. This section does not attempt to describe the many types of land uses in the Delta; rather, it focuses on the primary development or settlement patterns that contribute to the visual landscape (i.e., rural centers, urbanized development, and industrial development). Three main types of developed land visual landscapes are described in greater detail below.

Rural Centers

Rural centers are characterized by the small, sometimes historic towns scattered throughout the Delta. These towns are typically clustered alongside a major waterway—Clarksburg, Hood, Isleton, Walnut Grove, Locke, Courtland, and Rio Vista, which flank the Sacramento River. These communities are typically dominated by a single, main commercial street that appears characteristic of mid-nineteenth century towns. Typically, the towns were built at the turn of the twentieth century, using nineteenth-century construction techniques and architectural styles. (For a more detailed description of historic resources located in the study area, see Chapter 18, *Cultural Resources*. Additional information about rural centers in the study area is provided in the discussion of community character in Chapter 16, *Socioeconomics*.)

A small number of single-family residences typically occupy adjacent streets and may contain yards and landscaping, which break up the visual field. Vertical features are present, but buildings are generally no taller than one or two stories. Although historic storefronts display individual characteristics, there is uniformity among the buildings on the main street, and a strong, commonly repeated pattern of structures aligned in linear arrangements dominates. Building forms and textural elements are highly varied by type of structure and use. However, there are scattered low-rise commercial or industrial areas within these communities.

Building materials of brick, concrete, corrugated steel, and wood produce wide ranges of colors that dominate the visual field and contrast with the colors of the surrounding natural environment (greens, blues, and earth tones). Aesthetic quality varies with the condition of the structures in a given community. Ornamental landscaping predominates and creates highly varied forms, colors, and textures. Streets and signage are strong visual elements of the landscape.

Rural centers are compact with well-defined edges providing a clear sense of entry and departure. In some cases, rural centers are oriented along the adjacent riverfront, which serves as a focal feature. Except as related to changes in the foliage of ornamental landscaping, seasonal variation in forms, patterns, colors, and textures is generally absent from visual landscapes in rural centers.

The rural center visual landscape is characterized by considerable human activity and movement, although these are largely confined to the daytime and early evening hours. Lighting is related to the varied building sources (interior and exterior lighting and signage). Street lighting may be present but often is limited in extent. Some buildings may create sources of glare.

Urbanized Development

Most of the interior Delta is rural; large, more urban development tends to occur only on its edges. The City of Rio Vista is the single sizeable urban development center in the interior Delta and falls into the urbanized development category.

The urbanized landscape type is also characterized by medium to larger cities, some with historic downtowns such as Antioch, Oakley, Brentwood, Stockton, Lodi, and Sacramento, and scattered outlier communities, such as Discovery Bay, which are mostly on the periphery of the Delta, typically along major highways. These communities also include areas that have a general suburban visual character with single-family homes and strip commercial developments lining major streets and highways. Many of the cities have traditional industrial development and active ports and marinas along their waterfronts. Although prominent vertical features may be present in mid-rise and high-rise buildings, horizontal corridors of one or two stories that can span several miles are the dominant form.

Urbanized development sometimes occurs against a backdrop of rural agricultural land; the built forms are new, and stand in visual contrast to the built forms in historic small towns, which are characteristic of the rural centers. Color may vary, particularly where agricultural vistas may alternate with the built environment, but a similarity in built form may produce a texture that is monotonous. This is notably true for new residential subdivisions in which repetition of building forms, patterns, textures, and color palette generate visually uniform landscapes. In most instances, the presence of urbanized development hinders views or vistas.

The visual landscape of urbanized areas displays mixed uses, and can sometimes appear visually complex from a distance, making it difficult to distinguish individual visual elements. Visual connection with the surrounding natural environment of the Delta is largely absent. Urban centers are sprawling and have weakly-defined edges, providing little visual sense of entry and departure. In Rio Vista, development and visual character is oriented to the adjacent riverfront, which serves as a focal feature. Similar waterfront orientation is present, although to a lesser degree, in the other cities and today is retained largely in remnant historic districts dating back to the age when those communities had a stronger river orientation. Sacramento, Stockton, and West Sacramento have working waterfronts and Stockton and West Sacramento both have active ports.

Building forms and textural elements vary greatly by type of structure and use. Most structures are one or two stories, with mid-rise buildings common in some areas. High-rise buildings are present only in the largest cities. Building materials are highly varied and façades have wide ranges of color and texture. Aesthetic quality varies according to condition of the structures and maintenance of landscaping in a given community. Ornamental landscaping predominates and creates highly varied forms, colors, and textures. Streets and signage are strong visual elements of the landscape. Except as related to changes in the foliage of ornamental landscaping, seasonal variation in forms, patterns, colors, and textures is generally absent in urbanized development landscapes.

The urban center visual landscape is characterized by considerable human activity throughout the day and night, year-round. Lighting systems are extensive and are associated with the varied building sources (interior and exterior lighting and signage), street and highway lighting, ports and airports, and others. Many buildings may create sources of glare.

Industrial Development

The industrial visual landscape type is scattered throughout the Delta and includes ports, water conveyance facilities, transmission lines, substations, and buildings with industrial uses, such as warehouses and storage silos. The industrial landscape may occur in conjunction with other landscape types, such as grazing lands and channels and sloughs. Wind farms occur in some such areas, particularly along the western edge of the Delta in Solano County. Although elements of nature, such as grasslands and water, may be present, this landscape type contains built elements that dominate and contrast greatly with the surrounding landscape. Verticality, mass, and form of industrial features are often strong visual elements, as with transmission towers, which serve as vertical focal points with a strong pattern on a flat landscape.

Color, pattern, and texture in industrial landscapes may vary by the type of industrial facilities that are present, but these facilities typically contrast strongly with the greater landscape. As a result, the surrounding natural landscape tends to recede to the background of the visual environment, often to such an extent that the overall character of an area is wholly changed. Such features, therefore, are commonly regarded as disruptive to the visual integrity of the landscape in which they occur. In addition, lighting and glare in the environment can vary by the type of industrial structure that is present and can be a strong element in the nighttime landscape.

Only certain industrial uses generate much activity and movement. In general, warehouses and industrial uses generate considerable human activity and movement and may generate emissions plumes that have a strong visual presence in the landscape. On wind farms, the motion of wind turbine blades tends to enhance the visual dominance of those features in the landscape in combination with their vertical prominence, colors, forms, and patterns. By contrast, transmission lines and substations create little movement or activity.

Undeveloped Open Space Landscapes

Undeveloped open space landscapes in the Delta can include uncultivated lands interspersed among agricultural fields, lands that are no longer in agricultural production, and the rolling terrain of the Montezuma Hills. Uncultivated lands often contain smaller water bodies, mature trees and shrubs, and landscape signatures that suggest irregular terrain, as well as inundated lands that make the land unsuitable for agricultural production. Many of these lands are, however, suitable for habitat and wildlife viewing. Lands that are no longer in agricultural production are naturally recolonizing with vegetation, and various stages of this successional process can be seen—such as low-growing coverage over lands that were once tilled, slowly expanding hedgerows, and landscapes spotted with mature trees and shrubs where old agricultural field signatures are present. These undeveloped open space landscape types can be clearly seen on Tyler, Bradford, Mandeville, and Medford Islands and Webb and Holland Tracts. The Montezuma Hills contrast against the other low-lying lands in the Delta and provide a unique visual focal point west and north of the Sacramento River. The colors of the hills vary from green to brown with the seasons, and the rolling landform provides visual interest on the western edge of the study area.

17.1.3 Visual Character of the Areas Upstream of the Delta

In general, the major SWP and CVP water storage facilities (i.e., the potentially affected portions of the Upstream of the Delta Region) provide year-round water-based recreation areas. Generally, visual character of the SWP and CVP reservoirs that have the potential to be affected by the action alternatives consists of open water with minimal areas of rural and recreation-related development.

Because recreational activities are important at these reservoirs, the surrounding lands are primarily managed as natural areas with scattered recreational development. Shoreline vegetation varies because management focuses on water supply in these areas. Decreases in water level can result in a condition known as a *bathtub ring*, where formerly submerged, unvegetated areas become visible as bare dirt around the edge of a reservoir. The visual character upstream of the Delta at SWP and CVP reservoirs is described in this analysis because the action alternatives may have operational effects on these facilities that could affect their appearance, depending on a given water year. The reservoirs discussed are Trinity Lake (also referred to as Claire Engle Lake), Shasta Lake, Whiskeytown Reservoir, Lake Oroville, Folsom Lake, New Melones Lake, San Luis Reservoir, and Millerton Lake. A discussion of recreational uses at many of these reservoirs is provided in Chapter 15, *Recreation*.

The corresponding SWP and CVP waterways are the Trinity River downstream of Lewiston Dam, the Sacramento River downstream of Keswick Dam, the Feather River downstream of Oroville Dam, the American River downstream of Folsom Dam, the Stanislaus River downstream of New Melones Lake Dam, and the San Joaquin River downstream of Friant Dam. Because visual resources associated with these waterways would not be affected by implementation of the action alternatives, they are not discussed further in this section. A discussion of recreational uses of these waterways is provided in Chapter 15, *Recreation*.

Whiskeytown Reservoir, Shasta Lake, and Trinity Lake are central features of the Whiskeytown-Shasta-Trinity National Recreation Area, established by Congress in 1965 to provide for public outdoor recreational use and enjoyment, among other purposes.

Folsom Lake, New Melones Lake, and Millerton Lake are CVP reservoirs, whereas Lake Oroville is the primary storage reservoir for the SWP. San Luis Reservoir serves both the SWP and the CVP. New Melones Lake is surrounded by federal recreation lands, while the other four reservoirs and their surrounding lands have been designated as State Recreation Areas.

17.1.3.1 Trinity Lake

The 19-mile-long Trinity Lake is the focus of the Trinity Unit of the Whiskeytown-Shasta-Trinity National Recreation Area, managed by the USDA Forest Service. Trinity Lake is located in Trinity County and is accessed from SR 3, also known as the Trinity Heritage Scenic Byway. Much of the shoreline is undeveloped, with developed facilities concentrated primarily along the shoreline of the Stuart Fork Arm. The surrounding lands are forested, with campgrounds, picnic areas, boat ramps, resorts, and marinas. Lewiston Lake is located just south of Trinity Dam and also supports primarily passive recreational activities such as camping, fishing, wildlife viewing, bird watching, and boating (USDA Forest Service 2003).

17.1.3.2 Shasta Lake

Shasta Lake is the largest reservoir in California, with 370 miles of shoreline and 29,500 surface acres when full. It is bisected by Interstate (I-)5 in Shasta County, allowing views from the roadway as well as from the shoreline. The USDA Forest Service manages the lake and surrounding lands as the centerpiece of the Shasta Unit of the Whiskeytown-Shasta-Trinity National Recreation Area. Water-oriented recreation is the main attraction. Views of the lake and the surrounding forested areas predominate, aside from views of I-5.

17.1.3.3 Whiskeytown Reservoir

Whiskeytown Reservoir is located 8 miles west of Redding in Shasta County. It is a main feature of the National Park Service–managed Whiskeytown Unit of the Whiskeytown-Shasta-Trinity National Recreation Area. The lake provides 36 miles of shoreline, and views are primarily water-oriented or focused on the wooded area adjacent to the lake (National Park Service 1999, 2010).

17.1.3.4 Lake Oroville

Lake Oroville is located 70 miles north of Sacramento, near the city of Oroville in Butte County. The lake is at the confluence of the north, south, and middle forks of the Feather River. The lake is the focus of the Lake Oroville State Recreation Areas, which is managed by the California Department of Parks and Recreation (DPR). Lake Oroville is operated for water supply and flood management, power generation, water quality improvement in the Delta, recreation, and fish and wildlife enhancement. Forested areas, areas of scrub, steep canyons, and open areas provide a range of views (California Department of Parks and Recreation 2008).

17.1.3.5 Folsom Lake

Folsom Lake is located 25 miles east of Sacramento, between U.S. Highway (US) 50 on the south and I-80 on the north, at the confluence of the North and South Forks of the American River. It is near many urban areas, being located in El Dorado, Placer, and Sacramento Counties and adjacent to the city of Folsom. The lake is the focus of DPR's Folsom Lake State Recreation Area. Land uses adjacent to the lake are primarily related to active recreation, including swimming areas, boat launches, picnic areas, one marina, hiking trails, and campgrounds, though there are also nearby residential uses as well; these areas provide views of the lake. Approximately 80 miles of trails are located adjacent to the lake through scrub, grassland, and sparse tree cover (California Department of Parks and Recreation and Bureau of Reclamation 2003) that also provide views of the lake.

17.1.3.6 New Melones Lake

New Melones Lake is located in Calaveras and Tuolumne Counties and is bisected from north to south by SR 49. New Melones Lake and the surrounding lands provide flood control for the lower Stanislaus River and San Joaquin River Delta, irrigation and municipal water supplies, peak-use-period hydroelectric production, recreational opportunities, and fish and wildlife enhancement opportunities and improved water quality. Developed recreation areas focus views on the reservoir, and hiking and biking trails provide views through hilly areas of primarily scrub and scattered tree cover (Bureau of Reclamation 2010).

17.1.3.7 San Luis Reservoir

The 12,700-acre San Luis Reservoir is located in northern Merced County and is situated north and south of SR 152 between U.S. Highway 101 and I-5, approximately 2 hours from San Francisco and approximately 12 miles west of Los Banos. The reservoir is fed by the California Aqueduct and the Delta-Mendota Canal during winter and spring. It provides opportunities for views of open water and relatively open grassland (Bureau of Reclamation and California Department of Parks and Recreation 2005).

The Upper and Lower Cottonwood Wildlife Areas are northeast and northwest of the reservoir, respectively. These areas are owned by CDFW. Pacheco State Park is west of the reservoir. Los Banos Creek Reservoir is located southeast of San Luis Reservoir. Views to the southeast between San Luis Reservoir and Los Banos Creek Reservoir encompass ranchlands, agricultural lands, an electrical substation, and other scattered non-residential uses (Bureau of Reclamation and California Department of Parks and Recreation 2005).

17.1.3.8 Millerton Lake

Millerton Lake is in the Sierra Nevada foothills, approximately 20 miles northeast of Fresno, and is in both Fresno and Madera Counties. The lake is the centerpiece of the Millerton Lake State Recreation Area, managed by DPR. Water-based recreational activities are the predominant use of the lake, and views focus on the open water. Views of the surrounding area are of relatively steep open space and grazing land, with limited commercial and residential land uses in nearby Friant (Bureau of Reclamation and California Department of Parks and Recreation 2010).

17.1.4 Characterization of Viewers

17.1.4.1 Recreationists

Among the viewers of the landscapes within the Delta are recreationists who use the public lands and waterways to enjoy a variety of recreational activities, such as boating, fishing, windsurfing, hunting, wildlife viewing, photography, scenic drives, running/walking, and bicycling. Bicycle routes are shown in Chapter 19, *Transportation*, Figure 19-1, and most of these follow local roadways. There is ample opportunity for recreation in the Delta, which hosts numerous marinas, boat launches, campgrounds, fishing sites, and trails. Marinas, boat launches, and public fishing areas are available along the Delta's rivers, sloughs, and islands. State and county parks, State Recreation Areas, and wildlife areas are also present throughout the Delta. The Yolo Bypass Wildlife Area and Stone Lakes National Wildlife Refuge are of particular note because of their size, proximity to the major metropolitan area of Sacramento, and opportunities for passive recreation such as wildlife viewing.

A viewer situated at a publicly accessible location is characterized as sensitive when substantial changes to the visual landscape would negatively affect that viewer's experience and/or enjoyment while at that location. Recreationists are considered to have moderately high sensitivity to changes in views because they participate in outdoor recreational activity, are located close to visual resources, and are likely to be in popular recreational areas. In addition, they are more likely to regard the surrounding landscape as a holistic visual experience. However, these viewers are often only in the study area for short durations, ranging from a few hours to a couple of days.

17.1.4.2 Roadway Travelers

Travelers on the Delta's many local roads consist of residents, commuters, and travelers going to and from businesses, water access points, and other recreation areas. Three interstate highways (I-5, I-80, and I-580) are major transportation and trucking routes that traverse the periphery of the Delta (Delta Protection Commission 2010). Because travelers on the interstates would be traveling at relatively high speeds and are typically not anticipating or seeking scenic views, they are considered to have low visual sensitivity to changes in views. However, the limited topography of the region allows wide-ranging views of the area and freeways allow tens of thousands of travelers to view these areas on any given day. In consideration of these factors, the analysis addresses a key observation point along I-5 and takes into account changes to the visual environment as experienced by these viewers.

The four major state highways in the Delta (SR 4, SR 12, SR 84, and SR 160) are typically two lanes wide, sometimes built on top of levees. Originally meant for lower traffic volumes at moderate speeds, these state highways are now heavily used for regional trucking, recreational access, and commuting (Delta Protection Commission 2010:31–32). County roads generally follow the levees or traverse the islands from levee to levee. Two state routes require ferry crossings, including Howard Landing Ferry on SR 220 and Ryer Island Ferry on SR 84, that carry traffic over the waterways. In addition, the Jersey Island, Venice, and Woodward Island Ferries transport passengers to private islands, but these passengers are primarily working agricultural lands. These local roads are not particularly distinctive in designation or general Delta aesthetic quality, but viewers from these roads are be considered moderately sensitive to changes in views where scenic resources and views exist.

SR 160 runs north–south from Sacramento to Antioch and was officially designated a State Scenic Highway in 1969. Scenic qualities associated with SR 160 include historic communities such as Locke, extensive farmland, and the Sacramento River, as well as distant views of Mt. Diablo and the Sierra Nevada. A number of historic bridges, including several that are eligible for listing in the National Register of Historic Places (California Department of Transportation 2008), also cross the Sacramento River and contribute to the highway's scenic quality. The elevated nature of SR 160 affords high visibility of the landscape, contributing to its designation as a scenic highway. Many travelers choose to drive along SR 160 over other options (I-5 or I-80) that would allow for faster travel. River Road is a county road in Sacramento County that runs along the Sacramento River opposite SR 160. The portion of River Road between the Paintersville and Isleton bridges is an officially designated county scenic highway, a designation for county-maintained roads that is equivalent to an officially designated State Scenic Highway (Cadd pers. comm. 2009). Scenic qualities for River Road are similar to those for SR 160, described previously. Travelers on SR 160 and River Road are considered to have moderately high visual sensitive to changes in views because travelers often take these routes instead of other roadways to enjoy their scenic qualities, but they are still focused on driving the winding roadway, which redirects some of the focus from the surrounding visual environment.

17.1.4.3 Railway

As described in Chapter 19, *Transportation*, rail travel occurs in the Delta region and study area on Amtrak's Capitol Corridor, California Zephyr, Coast Starlight, and San Joaquin Oakland to Bakersfield routes. The Capitol Corridor passes through and passengers would have views of Conservation Zones (CZs) 2 and 3, as it travels between Davis and Sacramento, and CZ 11, as it travels between

Martinez and Fairfield (Amtrak 2012a). The Capitol Corridor generally lies west of the Delta until it approaches Sacramento and provides views of the north Delta, including the Yolo Bypass Wildlife Area. The California Zephyr and Coast Starlight routes share the same rail line and pass through the same stations as the Capitol Corridor in the Delta region (Amtrak 2012b and 2012c). Alternatives 1A–9 would not be visible from the Capitol Corridor, California Zephyr, and Coast Starlight routes, but conservations measures occurring in CZs 2, 3, and 11 may be. The San Joaquin Oakland to Bakersfield route passes through and passengers would have views CZs 6, 9, and 10 as it travels between Antioch and Stockton (Amtrak 2012d). The San Joaquin Oakland to Bakersfield route traverses over agricultural lands on Delta islands and across the San Joaquin and Middle Rivers and several sloughs. Alternatives 1A–9 would be visible from this route, in addition to conservation measures occurring in CZs 6, 9, and 10 that may be visible. For a description of the Conservation Zones, see Chapter 3, *Description of Alternatives,* and Figure 3-1.

The Altamont Commuter Express (ACE) passes through the study area and passengers would have views of CZ 7, as it travels through Tracy between Lathrop/Manteca and Livermore (Altamont Commuter Express 2012). This route passes primarily through agricultural lands and across the San Joaquin and Middle Rivers. Alternatives 1A–9 would not be visible, but conservation measures occurring in CZ 7 may be.

Rail passengers would mostly have views of the CZs and only a small portion of this viewer group (those on the Joaquin Oakland to Bakersfield route) would have views of the study area that is affected by project alternatives. Rail passengers may enjoy the scenic qualities of the views from the train; however, their views are fleeting and temporary because they pass locations at high speed. Rail passengers are considered to be moderately sensitive to changes in views in the study area and CZs, particularly for those who use rail travel for scenic touring.

17.1.4.4 Residential

Residential land uses are distributed throughout the Delta in varying degrees of density, depending on location. Major cities such as Sacramento, Stockton, and Antioch contain some of the greatest population concentrations in the Delta (U.S. Census Bureau 2000). These major urban areas are located on the periphery of the Delta. In the Delta's interior, Rio Vista is the largest population center, with a population of roughly 8,000. Rio Vista is expected to triple in size by 2020, with a considerable percentage to be generated by an active senior community (City of Rio Vista 2005). The city lies on the west bank of the Sacramento River on SR 12, and most new development is planned to the west of the existing city center (City of Rio Vista 2002). Smaller towns such as Hood, Isleton, Courtland, Walnut Grove, Locke, and Clarksburg lie on the banks of the Sacramento River, which is a key visual resource for residents of these towns.

Suburban and rural residents are located directly adjacent to the study area or are separated from them by local streets, agricultural fields, or similar. Suburban residences are mostly oriented inward toward the developments, and only residences on the outer edge of the developments have middleground and background views of the study area. The separation and orientation of rural residences allow inhabitants to have direct views over agricultural fields toward the study area. Both suburban and rural residents are likely to have a high sense of ownership over their adjacent waterways, the open space that surrounds them, the recreational opportunities they provide, and their inherent scenic quality. Residents are considered to have high sensitivity to changes in the viewshed because of their potential exposure to such views, extended viewing times, short distance from the study area, and sense of ownership.

17.1.4.5 Businesses

Viewers from industrial, commercial, government, educational, and agricultural facilities have semipermanent views from their respective facilities. Situated in different locations throughout the study area, these facilities' views range from views limited by levees in the study area to sweeping views that extend out to the background. Employees and users of these facilities are likely to be occupied with their work activities and tasks at hand. People often travel to and from work and may spend some of their leisure time recreating in the study area—for example, using the waterways. For these reasons and their limited viewing times and focus on tasks at hand, this viewer group is considered to have moderate sensitivity to changes in views.

Agricultural workers are engaged in activities such as preparing and tending to the fields in the study area; their focus is generally on the task at hand. However, they would also have moderate sensitivity to changes in the study area because they make their livelihood from the land and are more likely to hold existing views in high regard.

17.2 Regulatory Setting

17.2.1 Federal Plans, Policies, and Regulations

Goals, objectives, and policies related to visual resources in applicable federal resource management plans are discussed below. There are no federally designated National Wild and Scenic Rivers within the Plan Area.

17.2.1.1 Sierra Resource Management Plan

The Bureau of Land Management (BLM) owns 2,035 acres of the Cosumnes River Preserve. BLM manages these lands through its 2008 Final Sierra Resource Management Plan, in addition to the Cosumnes River Preserve Management Plan, which applies to the entire preserve (discussed below in *State Public Land Management Plans*). The Sierra Resource Management Plan designates the Cosumnes River Preserve an Area of Critical Environmental Concern (ACEC), an area requiring special management attention to protect important natural or cultural resource values (Bureau of Land Management 2008).

The Sierra Resource Management Plan's single visual resources goal seeks to "protect and enhance the scenic qualities and visual integrity of the characteristic landscapes in the planning area," which includes the Cosumnes River Preserve ACEC (Bureau of Land Management 2008). The subsequent objective specifically lists the Cosumnes River Preserve ACEC among those for which it is important "to maintain the existing visual quality" (Bureau of Land Management 2008). The Sierra Resource Management Plan also designates the Cosumnes River Preserve ACEC under Visual Resource Management (VRM) Class II. BLM's VRM system involves inventorying scenic values and establishing management objectives for those values through the resource management planning process. The following management objective applies to VRM Class II (Bureau of Land Management 2007).

- To retain the existing character of the landscape. The level of change to the characteristic landscape should be low.

The Sierra Resource Management Plan lists provisions designed to meet associated VRM objectives, primarily related to BLM's own projects and management activities. However, the following provision may affect the action alternatives (Bureau of Land Management 2008).

- Ensure developments do not detract from scenic integrity by working with counties, agencies, and other entities with management jurisdiction.

17.2.2 State Plans, Policies, and Regulations

Goals, objectives, and policies related to visual resources in applicable state plans, policies, and regulations are discussed below. There are no state designated California Wild and Scenic Rivers within the Plan Area.

17.2.2.1 Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992

The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992 (Section 21080.22 of the California Public Resources Code) facilitates the recognition, preservation, and protection of Delta resources for the use and enjoyment of current and future generations. The act includes a series of findings and declarations related to the quality of the Delta environment and emphasizes the national, state, and local importance of protecting the unique resources of the Delta. The act states that the protection of these resources will best be achieved if local governments implement land use planning and management practices in compliance with a comprehensive, long-term resource management plan.

17.2.2.2 Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta

The Delta Protection Act of 1992 directs the Delta Protection Commission (DPC) to prepare a comprehensive resource management plan for land uses within the Primary Zone of the Delta. The Land Use and Resource Management Plan (LURMP) for the Primary Zone of the Delta contains policies that seek to "protect, maintain, and where possible, enhance and restore the overall quality of the Delta environment" (Delta Protection Commission 1995). The Legislature has determined that local plans and decisions affecting the Primary Zone must be in conformance with the DPC's plan; and local decisions will be subject to appellate review by the DPC. DPC adopted its LURMP for the Primary Zone of the Delta on February 23, 1995. The updated plan was approved by the California Office of Administrative Law on October 7, 2010, and became effective on November 6, 2010. It contains policies to protect the Delta's unique character, expand public access and recreation, and locate new transmission lines and utilities within existing corridors to minimize impacts (Delta Protection Commission 2010). These policies may incorporate aesthetic resources and apply to the action alternatives, which fall within the Primary Zone of the Delta.

17.2.2.3 The Delta Plan

The Delta Stewardship Council approved the Delta Plan, a plan that includes "recommendations for early actions, projects, and programs" to provide a framework for effective and consistent actions of the Delta Stewardship Council. The Delta Stewardship Council adopted the Proposed Final Delta Plan on May 16, 2013. Once the State Office of Administrative Law and California Secretary of State approve the plan, the proposed policies in the Delta Plan will become enforceable regulations. Chapter 5 of the Delta Plan is entitled *Protect and Enhance the Unique Cultural, Recreational, Natural*

Resources, and Agricultural Values of the California Delta as an Evolving Place. As the title suggests and the Delta Plan recognizes, the Delta's unique environment is worthy of protection to provide enjoyment to those experiencing this environ. This enjoyment is often facilitated by viewing wildlife and natural scenery through boating; biking; using established interpretive, walking, and driving trails; driving on Delta roadways; visiting historic Delta communities; and working and living in the Delta (Delta Stewardship Council 2013).

As stated in the Delta Plan, the "California Delta is a unique place distinguished by its geography, legacy communities, a rural and agricultural setting, vibrant natural resources, and a mix of economic activities. Its 839,640 acres of land, sometimes centered on a wide river but laced with a network of narrow channels and sloughs, stretch to the horizon, are bounded only by the levees that were built to drain the Delta's marshes and floodprone riversides. The Legislature has found that the Delta's uniqueness is particularly characterized by its hundreds of miles of meandering waterways and the many islands adjacent to them, and has described the Delta's highly productive agriculture, recreational assets, fisheries, and wildlife as invaluable resources (Water Code Section 12981(b))."

The following policies in the Delta Plan pertaining to natural, agricultural, recreational and cultural heritage resources indirectly relate to aesthetic and visual resources:

DP R1: The Delta Protection Commission should complete its application for designation of the Delta and Suisun Marsh as a National Heritage Area and the federal government should complete the process in a timely manner.

DP R2: The California Department of Transportation should seek designation of State Route 160 as a National Scenic Byway and prepare and implement a scenic byway plan for it.

DP R3: Local governments, in cooperation with the Delta Protection Commission and Delta Conservancy, should prepare plans for each community that emphasize its distinctive character, encourage historic preservation, identify opportunities to encourage tourism, serve surrounding lands, or develop other appropriate uses, and reduce flood risks.

DP R4: Agencies acquiring land for water management facilities, ecosystem restoration, and flood management infrastructure should purchase from willing sellers, when feasible, including consideration of whether lands suitable for proposed projects are available at fair prices.

DP R5: The California Department of Transportation, local agencies, and utilities should plan infrastructure, such as roads and highways, to meet needs of development consistent with sustainable community strategies, local plans, Delta Protection Commission's *Land Use and Resource Management Plan for the Primary Zone of the Delt*a, and the Delta Plan.

DP R6: The Delta Stewardship Council, as part of the prioritization of State levee investments called for in RR P1 Water Code 85306, should consult with the California Department of Transportation as provided in Water Code section 85307(c) to consider the effects of flood hazards and sea level rise on State highways in the Delta.

DP R7: The following actions should be considered by the appropriate State agencies to address subsidence reversal:

- State agencies should not renew or enter into agricultural leases on Delta or Suisun Marsh islands if the actions of the lessee promote or contribute to subsidence on the leased land, unless the lessee participates in subsidence-reversal or reduction programs.

- State agencies currently conducting subsidence reversal projects in the Delta on State- owned lands should investigate options for scaling up these projects if they have been deemed successful. The Department of Water Resources should develop a plan, including funding needs, for increasing the extent of their subsidence reversal and carbon sequestration projects to 5,000 acres by January 1, 2017.
- The Council, in conjunction with the California Air Resources Board (CARB) and the Delta Conservancy, should investigate the opportunity for the development of a carbon market whereby Delta farmers could receive credit for carbon sequestration by reducing subsidence and growing native marsh and wetland plants. This investigation should include the potential for developing offset protocols applicable to these types of plants for subsequent adoption by the CARB.

DP R8: Local governments and economic development organizations, in cooperation with the Delta Protection Commission and the Delta Conservancy, should encourage value-added processing of Delta crops in appropriate locations.

DP R9: Local governments and economic development organizations, in cooperation with the Delta Protection Commission and the Delta Conservancy, should support growth in agritourism, particularly in and around legacy communities. Local plans should support agritourism where appropriate.

DP R10: The Department of Fish and Wildlife, the Delta Conservancy, and other ecosystem restoration agencies should encourage habitat enhancement and wildlife-friendly farming systems on agricultural lands to benefit both the environment and agriculture.

DP R11: Water management and ecosystem restoration agencies should provide recreation opportunities, including visitor-serving business opportunities, at new facilities and habitat areas whenever feasible, and existing recreation facilities should be protected, using California State Parks' Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh and Delta Protection Commission's Economic Sustainability Plan as guides.

DP R12: The Delta Protection Commission and Delta Conservancy should encourage partnerships between other State and local agencies, and local landowners and business people to expand recreation, including boating, promote tourism, and minimize adverse impacts to non-recreational landowners.

DP R13: California State Parks should add or improve recreation facilities in the Delta in cooperation with other agencies. As funds become available, it should fully reopen Brannan Island State Recreation Area, complete the park at Delta Meadows-Locke Boarding House, and consider adding new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta.

DP R14: The Department of Fish and Game Wildlife, in cooperation with other public agencies, should collaborate with nonprofits, private landowners, and business partners to expand wildlife viewing, angling, and hunting opportunities.

DP R16: Public agencies owning land should increase opportunities, where feasible, for bank fishing, hunting, levee-top trails, and environmental education.

DP R17: Cities, counties, and other local and State agencies should work together to protect and enhance visitor-serving businesses by planning for recreation uses and facilities in the Delta, providing infrastructure to support recreation and tourism, and identifying settings for private visitor serving development and services.

DP R19: The Energy Commission and Public Utilities Commission should cooperate with the Delta Stewardship Council as described in Water Code section 85307(d) to identify actions that should be incorporated in the Delta Plan by 2017 to address the needs of Delta energy development, storage, and distribution.

17.2.2.4 San Francisco Bay Conservation and Development Commission Suisun Marsh Protection Plan

The Suisun Marsh Protection Act of 1974 directs the preparation of a plan "to preserve the integrity and assure continued wildlife use" of the Suisun Marsh, which "represents a unique and irreplaceable resource to the people of the state and nation" (San Francisco Bay Conservation and Development Commission 1976). The eastern boundary of the Suisun Marsh extends to Collinsville Road in southern Solano County and falls within the Delta. The San Francisco Bay Conservation and Development Commission's (BCDC's) 1976 Suisun Marsh Protection Plan contains findings that recognize the value of the aesthetic resources of the marsh, as well as adjacent upland grasslands, cultivated areas, and seasonal marshes. The plan's findings specifically highlight the Potrero Hills site as unsuitable for water-related industrial development, which would "detract from the value of the Potrero Hills as a visual feature of the Suisun Marsh" (San Francisco Bay Conservation and Development Commission 1976). The following policies apply to the development of water-related industry (San Francisco Bay Conservation and Development Commission 1976).

- **Policy 1:** Future demand for the shallow-draft water-related industrial sites in the Suisun Marsh area is questionable. In addition, the Suisun and Potrero Hills sites present several physical constraints for industrial development and have considerable value as aesthetic and wildlife resources in the Suisun Marsh area. It is both unnecessary and undesirable to continue to designate these sites for industrial use and they should not be reserved for this purpose.
- **Policy 8 (g):** Industrial facilities should be located and designed to avoid visual intrusion on the Suisun Marsh. Where sloping land is to be used for industrial development, it should be terraced, rather than leveled, and soil erosion and storm water runoff should be controlled. Buildings should not be highly visible against the skyline, should have a low profile, be well designed and unobtrusive in appearance, and use colors and materials compatible with the surrounding landscapes. Appropriate landscaping should be used to reduce the impact of industrial structures on views from the Suisun Marsh.

The plan directs Solano County to develop a Local Protection Program, which must use the plan's policies to protect, preserve, and enhance natural and human-made resources and include the following course of action (San Francisco Bay Conservation and Development Commission 1976).

- **Content of Local Protection Program:** (6) Scenic resources. Procedures and standards to review the design and location of any new development or structures in or adjacent to the Marsh management areas to protect the visual characteristics of the marsh and, where possible, enhance views of the marsh.

17.2.2.5 California Scenic Highway Program

In 1963, the California Legislature created the Scenic Highway Program to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to the highways. The state regulations and guidelines governing the Scenic Highway Program are found in Section 260 et seq. of the Streets and Highways Code. A highway may be designated as scenic depending on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the travelers' enjoyment of the view.

A city or county must nominate an eligible scenic highway for official designation and adopt a corridor protection program that includes zoning and/or planning policies to preserve its scenic quality. Official designations are made by the California Legislature and can include county highways as well (California Department of Transportation 2009a), with the only difference being that a county maintains the road rather than the state (Cadd pers. comm. 2009). Examples of visual intrusions that would degrade scenic corridors as stipulated by Caltrans, and potentially lead to the revocation of a scenic highway designation, include dense and continuous development, highly reflective surfaces, parking lots not screened or landscaped, billboards, noise barriers, dominance of power lines and poles, dominance of exotic vegetation, extensive cut and fill, scarred hillsides and landscape, and exposed and unvegetated earth.

SR 160 in Sacramento County from the Contra Costa County line to the southern city limit of Sacramento (45.8 miles) is the only officially designated State Scenic Highway within the Delta (California Department of Transportation 2009b). The 28-mile section of county road between the Isleton and Paintersville bridges, known as River Road, is also an officially designated Sacramento County Scenic Highway (see Section 17.2.3.*2, County and City General Plans – Sacramento County*). These roads are within the legal Delta and may be affected by the action alternatives.

In Contra Costa County, two state highways are eligible for designation as State scenic highways: SR 160 from the county line to SR 4 near Brentwood and the SR 4 bypass from SR 160 near Antioch to SR 84[1] near Brentwood (approximately 9.5 miles) (California Department of Transportation 2009c). These highways fall within the Delta and may be affected by the action alternatives. SR 239 is also listed as an eligible State scenic highway; however, the route has never been constructed (California Department of Transportation 2009d).

17.2.2.6 State Public Land Management Plans

Cosumnes River Preserve Management Plan

The Cosumnes River Preserve consists of approximately 45,859 acres of wildlife habitat and agricultural lands along the Cosumnes River east of I-5 and near the town of Walnut Grove. The preserve is owned by seven partners—CDFW, BLM, California Department of Water Resources, California State Lands Commission, Sacramento County, Ducks Unlimited, and The Nature Conservancy—who administer the 2008 Cosumnes River Preserve Management Plan (Cosumnes River Preserve 2008). The plan seeks to restore native biological communities and promote compatible uses to improve stewardship of the land. A subgoal specifically seeks to protect and enhance the Cosumnes River Preserve's scenic and visual resources, with the objective of managing preserve lands to retain and/or improve the existing visual character of the landscape and prevent

[1] SR 84 does not presently exist near Brentwood. However, this is the legislative description provided by Caltrans because of a possible future extension of SR 84 that would serve as a connection to I-580 from the Brentwood area (Cadd pers. comm. 2011)

the disruption of distant and close views from land management changes. The plan notes the following actions that may relate to the action alternatives (Cosumnes River Preserve 2008).

- **Action 2.1.2:** Coordinate with the utility companies and other entities to relocate to underground the existing and future power lines crossing the Preserve.
- **Action 2.1.4:** As new development projects proposed around the Preserve, either in close proximity or in nearby urban areas, undergo environmental review (CEQA), ensure that project proponents consider potential effects on visual resources at the Preserve, including the effects of outdoor nighttime lighting.

Brannan Island and Franks Tract State Recreation Areas General Plan

Brannan Island State Recreation Area (336 acres) and Franks Tract State Recreation Area (3,300 acres) situated near the western edge of the central Delta, offer angling, boating, camping, picnicking, and swimming and are managed by DPR. Both State Recreation Areas fall within the Delta and may be affected by the action alternatives. A joint general plan was prepared for both State Recreation Areas in 1988 and contains DPR's long-term management objectives. The general plan includes the following resource management policy on aesthetic resources for Brannan Island State Recreation Area (California Department of Parks and Recreation 1988).

- Management of Brannan Island State Recreation Area shall be toward the maintenance of water oriented viewsheds, natural landscape, and toward a reduction or elimination of human-made intrusions. The department shall work to reduce the negative impacts of easements in Brannan Island State Recreation Area. All utility companies shall be encouraged or required to reduce these impacts by rerouting or placing underground the utility lines that currently traverse the unit, by reducing the size of and rehabilitating gas well pads, and by screening and landscaping around gas wells. The department is opposed to any new easements within the unit unless there can be mitigation work accomplished to create a clear net benefit to recreation resources.

The following resource management policy for aesthetic resources is included for Franks Tract State Recreation Area (California Department of Parks and Recreation 1988).

- Management of Franks Tract State Recreation Area shall be toward the maintenance and preservation of the natural environment of the unit.

In addition, the general plan contains a Land Use and Development Element for the Brannan Island State Recreation Area, which includes the following goals related to aesthetic resources (California Department of Parks and Recreation 1988).

- **Goal 11:** Increase the scenic quality of the Highway 160 corridor through the unit, highlighting the entrances at each end and screening the recreation use areas.
- **Goal 12:** Reduce the existing visual impacts, and improve the environmental setting of all current and future use areas through landscaping and habitat enhancement.

17.2.3 Regional and Local Plans, Policies, and Regulations

Goals, objectives, and policies related to visual resources in adopted general plans for each county, district, and incorporated city in the Delta are discussed below. Local standards are listed below for informational purposes. For further discussion of these plans, policies, and regulations, please see Chapter 13, *Land Use.*

17.2.3.1 East Bay Regional Park District Master Plan

The East Bay Regional Park District (EBRPD) manages 113,000 acres of regional parklands in Alameda and Contra Costa counties. EBRPD's 2013 master plan guides the management of EBRPD lands through policies and guidelines on resource conservation, management, interpretation, public access, and recreation. The master plan specifically recognizes the conservation of its scenic, natural, and open space resources as a primary duty. It includes scenic resources among the many resources that EBRPD seeks to protect, as illustrated in the following elements of the organization's mission and vision statements (East Bay Regional Park District 2013a).

- Acquire and preserve significant biologic, geologic, scenic, and historic resources within Alameda and Contra Costa Counties.
- Manage, maintain, and restore the parklands so that they retain their important scenic, natural, and cultural values.

The master plan references the scenic values associated with EBRPD's lands throughout the document, with policies that seek to preserve and enhance the natural and cultural resources of all of its lands. In addition to broad master plan policies that may include scenic resources, several policies related to facility development on all EBRPD lands (including by other agencies and organizations) focus specifically on visual resources, as follows (East Bay Regional Park District 2013a).

The following policy addresses the undergrounding of utilities.

- New utility lines will be placed underground on land owned, operated, or managed by the District to retain the optimal visual qualities of the area. Rights-of-way (ROWs) and easements for utilities will not be granted without undergrounding. The District will work in cooperation with the utility companies to place existing overhead utilities underground (unless so doing conflicts with applicable codes) as soon as practical and will work with other agencies and neighbors to reduce visual impacts on adjacent lands. The District will seek to avoid the construction of high voltage power lines within the parklands, particularly in areas of sensitive or aesthetically important resources and in preserve areas.

The following policy addresses communication sites.

- The District will keep its lands, including all ridges and peaks, free of additional communication facilities in order to maintain open viewshed, natural conditions, and public use as well as to limit vehicular and service activities. Communication sites will be regulated by the provisions of the 1994 Communication Site Policy. No new licenses will be granted beyond December 31, 1999, except for efforts that will consolidate sites or improve visual quality. The District will work to reduce the detrimental visual impact of buildings, towers, and access roads at existing sites and will work with other agencies and neighbors to reduce this impact on adjacent lands.

EBRPD makes some land acquisitions because the acquisitions serve important operational or land management needs or have scenic value. The EBRPD states one of the reasons land may be acquired is to prevent visual intrusion on parklands and open space. EBRPD also uses scenic easements as a technique to protect its parklands. Within specific parklands, EBRPD establishes land use designations to direct resource protection activities. A parkland may be designated a Regional Park if it contains scenic or natural resources in at least 70 percent of its area, or a Natural Unit if it contains "extremely varied topography and vistas" and the primary objective is to preserve and enhance natural habitat. As part of its Natural Unit preservation policy the District acquires and manages open space view sheds to preserve the intrinsic natural and historic qualities of state and locally designated scenic highway corridors (East Bay Regional Park District 2013a).Existing EBRPD lands in the Delta include Antioch Regional Shoreline, Big Break Regional Shoreline, Bay Point Wetlands Regional Shoreline, and Browns Island Regional Preserve. According to the master plan, a regional shoreline provides significant recreational, interpretive, natural, or scenic values on land, water, and tidal areas along the San Francisco Bay and the Sacramento/San Joaquin Delta (East Bay Regional Park District 2013a). Regional preserves protect significant natural or cultural resources, which may include scenic beauty or significant topographic resources as an essential feature.

EBRPD also owns and manages a number of regional trails, which may connect to "areas of unusual scenic beauty, vista points, San Francisco Bay, Delta or lake shoreline, natural or historic resources, or similar areas of regional significance" (East Bay Regional Park District 2013a).

The 2013 Draft Master Plan Map (East Bay Regional Park District 2013b) identifies existing and potential parkland and trails. Existing parkland includes the Delta Access Regional Shoreline, Big Break Park, Antioch-Oakley Regional Shoreline, Brown's Island, and Bay Point Wetlands, all in the Delta. Potential parkland in the Delta includes the Delta Recreation Regional Shoreline, Pittsburg Wetlands, and Point Edith Wetlands Regional Preserve. Existing trails traversing the Delta include Big Break, Marsh Creek, and Delta De Anza Regional Trails, as well as the San Francisco Bay Water Trail. Potential regional trails include the Great California Delta Trail; Delta Island Shoreline Trail; the Delta Trail Extension; Mokelumne Coast to Crest Trail; and potential trail segments along Big Break Shoreline, the Southern Pacific Railroad, Marsh Creek Trail to Discovery Bay, and Mokelumne to Discovery Bay.

17.2.3.2 County and City General Plans

Alameda County

East County Area Plan

The East County Area Plan functions as the general plan document for eastern Alameda County, which extends from the Pleasanton/Dublin ridgeline east to the San Joaquin County line, and from the Contra Costa County line south to the Santa Clara County line (Alameda County 2000). The Land Use Element contains the goal "to preserve unique visual resources and protect sensitive viewsheds" (Alameda County 2000). Policies on visual protection, trees, landscaping, alteration of landforms, and utilities seek to minimize visual impacts and enhance scenic qualities. Specifically, grading along natural watercourses is to be avoided and utility lines are to be placed underground.

Contra Costa County

Contra Costa County General Plan

The Contra Costa County General Plan 2005–2020 addresses aesthetic resources primarily in the circulation and open space elements. Under Overall Open Space Policies, the plan states that "historic and scenic features, watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced" (Contra Costa County 2005). Sections dedicated to scenic routes and resources are discussed in greater detail below.

Scenic Routes

The *Transportation and Circulation Element* identifies scenic routes as those that traverse scenic corridors of relatively high visual or cultural value. Scenic routes are designated by Contra Costa County as deserving local protections and differ from State Scenic Highways. The general plan states that "most scenic routes depend on natural landscape qualities for their aesthetics" (Contra Costa County 2005). SR 160 and the SR 4 Bypass are both Contra Costa County–designated scenic highways, as well as eligible State Scenic Highways. SR 4, County Road J4, Bethel Island Road, Jersey Island Road, Walnut Boulevard, and other roadways as mapped on Contra Costa County's Scenic Routes Plan are also county-designated scenic routes within the legal Delta and therefore may be affected by the action alternatives.

The Scenic Routes goal in the general plan is "to identify, preserve and enhance scenic routes in the county." The following related policies may be applicable to the action alternatives (Contra Costa County 2005).

- **Policy 5-35:** Scenic corridors shall be maintained with the intent of protecting attractive natural qualities adjacent to various roads throughout the county.
- **Policy 5-37:** Scenic views observable from scenic routes shall be conserved, enhanced, and protected to the extent possible.
- **Policy 5-43:** Provide special protection for natural topographic features, aesthetic views, vistas, hills and prominent ridgelines as "gateway" sections of scenic routes. Such "gateways" are located at unique transition points in topography or land use, and serve as entrances to regions of the County.

Scenic Resources

The *Open Space Element* identifies scenic resources within Contra Costa County and names the San Francisco Bay–Delta estuary system as one of the county's two main scenic resources. The general plan's map of scenic resources identifies resources that should be treated as aesthetic opportunities, including areas that have been designated as scenic waterways. The intent of the designation of scenic waterways is "to draw attention to [their] scenic character for consideration when reviewing projects" (Contra Costa County 2005). County-designated scenic waterways frame the entire western and northern perimeter of Contra Costa County and include the Sacramento and San Joaquin rivers, Franks Tract, and other waterways in the Delta. Clifton Court Forebay is also designated as a scenic waterway.

The following general plan goals for scenic resources may apply to the action alternatives (Contra Costa County 2005).

- **Goal 9-10:** To preserve and protect areas of identified high scenic value, where practical, and in accordance with the Land Use Element map.
- **Goal 9-12:** To preserve the scenic qualities of the San Francisco Bay/Delta estuary system and the Sacramento-San Joaquin River/Delta shoreline.

City of Antioch General Plan

The City of Antioch General Plan discusses aesthetic resources in the *Community Image and Design* and *Resource Management* elements (City of Antioch 2003). Identifying itself as the "Gateway to the Delta," Antioch aims to preserve and enhance visual character, including its natural features and view corridors. Goals and policies related to community design, open space preservation, and buffers seek to minimize the impacts of new developments and public facilities on the city's aesthetic resources. The SR 4 Bypass, identified as a scenic route by Contra Costa County and an eligible State Scenic Highway, traverses the City of Antioch and is located within the Delta.

City of Brentwood General Plan

Aesthetic resources are addressed in the Land Use and Community Design elements of the City of Brentwood General Plan (City of Brentwood 2006). Goals and policies aim to protect habitat areas, views of dominant natural features, and scenic view corridors of community-wide importance, which are to be delineated on a map of development constraints. The SR 4 Bypass, a Contra Costa County-designated scenic route and eligible State scenic highway also known as the Delta Expressway, runs through Brentwood and is located within the Delta. Views from this route are to be preserved and enhanced through open space designations, setbacks, and similar approaches.

City of Oakley General Plan

The *City of Oakley 2020 General Plan* states that "scenic resources in Oakley include predominant natural landscape features of the Delta waterways," and it is a specific goal of the Open Space Element "to preserve the scenic qualities of the Delta Waterway." The following additional open space policies and implementation program regarding the protection and enhancement of the City's aesthetic resources are specific to the Delta (City of Oakley 2002).

- **Policy 6.7.1:** Encourage preservation and enhancement of views of the Delta and Mount Diablo to the extent possible.
- **Policy 6.7.2:** New development and redevelopment along the Delta, adjacent to Marsh Creek and throughout the City should take advantage of view opportunities and visual impacts to the waterway and Mount Diablo, respectively.
- **Program 6.7.B:** Review development applications for discretionary actions to determine aesthetic impacts and visual compatibility with surrounding property.

The *Parks and Recreation Element* of Oakley's general plan includes the following additional policy and implementation program to preserve views of the Delta.

- **Policy 7.4.11:** Protect the visual accessibility of waterways by avoiding future development that creates visual barriers adjacent to or along the water's edge.
- **Program 7.4.B:** Require proposed development, streets, and parks along the waterfront to maintain and enhance views of the Delta through the development review process.

Sacramento County

County of Sacramento General Plan

The *County of Sacramento General Plan* addresses aesthetic resources associated with *Scenic Highways* in its *Circulation Element*, with the goal of preserving and enhancing the aesthetic quality of scenic roads. SR 160, a designated *State scenic highway*, spans Sacramento County for more than 45 miles alongside the Sacramento River. In addition, 28 miles of Sacramento County roadway between the Isleton and Paintersville bridges that comprise the River Road are an officially designated County Scenic Highway. In addition to River Road, Isleton Road is protected under scenic corridor sign controls. Sacramento County has also identified additional scenic routes that are not officially designated scenic highways by the state, including Sacramento County roads on levees and along rivers and sloughs in the Delta. These scenic routes are protected by protected by the general plan designation of Permanent Agriculture, agricultural zoning, and scenic corridor sign controls, as stipulated by Sacramento County. The general plan also proposes to provide scenic corridor protection for Twin Cities Road between SR 160 and SR 99. The Sacramento River is protected as a scenic corridor "extending 500 feet to each side of the river, as measured from the middle of the channel or by a minimum of a corridor 300 feet from the edge of the river." (Sacramento County 2011: Circulation Element 25-34)

The following objectives seek to protect Sacramento County's scenic routes.

- **Objective (1):** To retain designation of the River Road (State Highway 160) as an Official State Scenic Highway and to preserve and enhance its scenic qualities.
- **Objective (4):** To strengthen the provisions of scenic corridor regulations so as to further protect the aesthetic values of the County's freeways and scenic roads.

Related policies aim to strengthen protection of scenic routes through zoning restrictions, designation of additional roads, and coordination with the Delta Advisory Planning Council and the California Department of Water Resources regarding levee maintenance.

The Agricultural, Conservation, Land Use, Open Space, and Public Facilities Elements of the general plan contains goals and policies to preserve visual quality of Sacramento County, with an emphasis on minimizing light and glare from building exteriors and other facilities (Sacramento County 2011).

City of Sacramento General Plan

The City of Sacramento adopted its new 2030 general plan on March 3, 2009. The overarching goal identified in the *Environmental Resources Element* is to "maintain and protect significant visual resources and aesthetics that define Sacramento" (City of Sacramento 2009). The following related policies are applicable to the action alternatives (City of Sacramento 2009).

- **Policy ER 7.1.1:** Protect Scenic Views. The City shall seek to protect views from public places to the Sacramento and American rivers and adjacent greenways, landmarks, and urban views of the downtown skyline and the State Capitol along Capitol Mall.
- **Policy ER 7.1.2:** Visually Complementary Development. The City shall require new development be located and designed to visually complement the natural environment/setting when near the Sacramento and American rivers, and along streams.

Additional policies seek to minimize impacts on visual resources from new development, including the removal of significant resources (e.g., mature trees) and the creation of obtrusive lighting and glare.

The general plan's *Utilities Element* also contains the following policies related to aesthetic quality (City of Sacramento 2009).

- **Policy U 1.1.10:** Safe, Attractive, and Compatible Utility Designs. The City shall ensure that public utility facilities are designed to be safe, aesthetically pleasing, and compatible with adjacent uses.
- **Policy U 1.1.11:** Underground Utilities. The City shall require undergrounding of all new publicly owned utility lines, encourage undergrounding of all privately owned utility lines in

new developments, and work with electricity and telecommunications providers to underground existing overhead lines.

Additional policies to maximize visual access to the Sacramento River and encourage the visual quality of properties planned by government agencies that may be exempt from City of Sacramento land use control can be found in the *Land Use and Urban Design Element*.

San Joaquin County

San Joaquin County General Plan

San Joaquin County is comprehensively updating its 1992 general plan to meet the changing housing, environmental, economic, and growth needs of the county and to incorporate the community's vision for the future in the new general plan.

The *San Joaquin County General Plan 2010*, adopted in 1992, specifically seeks to protect the Delta's aesthetic resources in its *Community Development Element*, which includes the following policy (San Joaquin County 1992).

- **Policy 18:** Waterway development and development on Delta islands shall protect the natural beauty, the fisheries, wildlife, riparian vegetation, and the navigability of the waterway.

The Resources Element also contains policies that protect outstanding scenic vistas and views of waterways, including the objective "to recognize the surface waters of San Joaquin County as resources of State and national significance for which environmental and scenic values must be protected" (San Joaquin County 1992).

San Joaquin County has designated portions of roadways on Roberts Island, Bacon Island Road, SR 4, West Eight Mile Road, and I-5 in the Delta as scenic routes. These scenic routes are subject to local policies and differ from restrictions associated with officially designated State and county scenic highways. The following general plan policies relate to scenic routes (San Joaquin County 1992).

- **Policy 13:** Development proposals along scenic routes shall not detract from the visual and recreational experience.
- **Policy 23:** Scenic corridors along recreation travelways and scenic routes shall be protected from unsightly development.

Implementation measures for scenic route enhancement (San Joaquin County 1992) state San Joaquin County's responsibilities.

- **Measure (b):** Require landscape plans for development along scenic routes.
- **Measure (c):** Include in the Design Review Manual guidelines for development in the viewshed of the scenic route.

City of Lathrop General Plan

The *Comprehensive General Plan for the City of Lathrop* encourages the multipurpose use of water bodies, including for aesthetics, as policy in the *Resource Management Element*. Policies in the *Community Development Element* require the design and screening of industrial areas to avoid obtrusive visual impacts (City of Lathrop 2004).

City of Stockton General Plan

The Stockton General Plan 2035 includes the city's extensive riparian areas as among its most significant visual features (City of Stockton 2007). The *Community Design* and *Natural and Cultural Resources* elements include policies to promote visual access to waterways, protect scenic areas from incompatible development, and encourage planting of native vegetation to preserve the visual integrity of the landscape.

City of Tracy General Plan

The *City of Tracy General Plan* (City of Tracy 2006) includes *Community Character Element* policies intended to preserve and protect the city's visual character. The *Community Character Element* includes important concepts and guidelines that apply to the type, location, and character of both private and public development projects for new and existing areas of the city. This element identifies principles, goals, objectives, policies, actions, and concepts to maintain and enhance the City of Tracy's unique character, or "sense of place," as it relates to both the physical design of the city and quality of life.

Solano County

Solano County General Plan

The *Solano County General Plan* addresses aesthetic resources in its *Resources* and *Public Facilities and Services* elements, noting the Delta and marshlands as among Solano County's abundant scenic vistas (Solano County 2008). The general plan also references agriculture as a land use that "defines much of the County's visual character" (Solano County 2008:AG-1). Solano County identifies a number of scenic roadways in the study area that are subject to local protection, including I-80, I-680, SR 12, SR 113, Grizzly Island Road, and Lake Herman Road. Goals and policies seek to protect unique scenic features (e.g., water bodies) and roadways and to minimize glare, light pollution, and disruption to scenic areas from transmission lines.

The general plan's *Suisun Marsh Policy Addendum* comprises the Local Protection Program required by BCDC's *Suisun Marsh Protection Plan*. The addendum contains policies specific to the preservation of designated scenic roadways, including the following policies relevant to the action alternatives (Solano County 2008: Appendix C-17).

- **Policy 1:** Current general plan provisions of the county which designate foreground and distant view components of scenic roadways for agricultural and other open space uses should be retained.
- **Policy 2:** The number of man-made interruptions or incidents along a scenic roadway (housing, commercial uses, signs, driveways, etc.) should be limited to maintain the current visual values as the prevalent feature of the route.

The policy addendum also includes a foreground component, which regulates the area within a quarter-mile radius of a scenic roadway to preserve the delicate visual character of marshlands. Specific policies require areas immediately adjoining a marsh to remain as open space, protect habitat from encroachment because of its scenic value, and recommend the undergrounding of utility lines.

City of Rio Vista General Plan

The *City of Rio Vista General Plan 2001* contains numerous goals, policies, and implementing actions related to preserving scenic resources. The Resource Conservation Element contains a Visual Resources section with the goal "to protect the visual and scenic resources of Rio Vista—recognizing their importance in the quality of life for City residents and in promoting recreation and tourism" (City of Rio Vista 2002). The following policies are relevant to the action alternatives (City of Rio Vista 2002).

- **Policy 10.11.A:** The City shall require new development in scenic areas (e.g., river banks, Highway 12 corridor, Sacramento River waterfront, and hillsides) to use planning, design, construction, and maintenance techniques that:
  - Incorporate design and screening measures to minimize the visibility of structures and graded areas.
  - Maximize views in sensitive viewing areas and corridors.
  - Maintain the character and visual quality of the area.
- **Policy 10.11.B:** The City shall require that new development be designed to integrate natural landforms and vegetation in order to minimize alteration of scenic vistas. Figure 10-2 [of the general plan] shall be used to identify sensitive areas of particular concern during project design and development.
- **Policy 10.11.E:** The City shall require that new roads, parking, and utilities be designed to minimize visual impacts. Unless limited by geological or engineering constraints, utilities shall be installed underground, and roadways and parking areas shall be landscaped and designed to accommodate the natural terrain.

The *Community Character and Design* and *Open Space and Recreation* elements contain additional goals and policies that aim to protect waterways and scenic corridors, specifically SR 12, and minimize light pollution. The following goal and policy in the *Open Space and Recreation* element pertain specifically to the Sacramento River as an aesthetic resource (City of Rio Vista 2002).

- **Goal 9.1:** To provide public access and view opportunities on the Sacramento River to the maximum extent feasible.
  - **Policy 9.1.C:** The City shall enhance the Sacramento River and its waterfront as a scenic resource consistent with water-oriented recreation.

In addition, the following implementing action aims to preserve aesthetic resources (City of Rio Vista 2002).

- **Action OSR-14:** Environmental/Visual Constraints Map (Proposed). The City will require with each development proposal an environmental/visual constraints map, based on the findings of a project-specific biological assessment and consistent with General Plan goals and policies. These maps will consider the potential open space opportunities illustrated on Figure 9-1 [of the general plan] and on Figure 10-2 [of the general plan], the Sensitive Local Resource Areas Map.

City of Suisun City General Plan

The City of Suisun City General Plan's *Community Character and Design Element* (City of Suisun City 1992) states that the perceived character of a community is most strongly a reflection of the way a community looks and feels to residents, workers, and visitors passing through the community. Community character is greatly influenced by the pattern and fabric of development that has occurred over time. One's sense of community character is also shaped by reaction to the human environment and the interaction of human-created and natural features of a community. These natural features are often associated with so-called "quality of life" factors such as recreational opportunities, the preservation of natural resources, vegetation and landscaping, and the preservation of open areas for visual and recreational enjoyment. There is a strong interaction between the urban and natural habitats along the Suisun Marsh, which defines the southern edge of the city. Because the marsh represents a natural habitat border, development design along the marsh must be sensitive to the urban-wildland interface.

Yolo County

Yolo County General Plan

The *Yolo County General Plan* was adopted on November 10, 2009 (Yolo County 2009). Aesthetic resources are addressed in the *Land Use and Community Character Element*. Goals and policies seek to protect and enhance the rural landscape and night sky, important site features (e.g., watercourses), and scenic views, and to minimize the aesthetic impact of infrastructure and utility facilities (Yolo County 2009). The general plan Policy CC-1.13 designates local scenic roadways, including South River Road, which parallels the west bank of the Sacramento River from the West Sacramento city limits to the Sacramento County line. South River Road is referred to as CH E9 in this analysis. The following policies specific to the preservation of scenic roadways are relevant to the action alternatives (Yolo County 2009).

- **Policy LU-3.7:** Prohibit the designation of new urban development in places with one or more of the following characteristics: Areas where there are significant natural resources (e.g., groundwater recharge, wildlife habitat, mineral or timber resources, scenic areas, etc.).
- **Policy CC-1.2**: Preserve and enhance the rural landscape as an important scenic feature of the County.
- **Policy CC-1.3:** Protect the rural night sky as an important scenic feature to the greatest feasible extent where lighting is needed.
- **Policy CC-1.4:** Identify and preserve, where possible, landmarks and icons which contribute to the identity and character of the rural areas.
- **Policy CC-1.5:** Significant site features, such as trees, water courses, rock outcroppings, historic structures and scenic views shall be used to guide site planning and design in new development. Where possible, these features shall become focal points of the development.
- **Policy CC-1.8:** Screen visually obtrusive activities and facilities such as infrastructure and utility facilities, storage yards, outdoor parking and display areas, along highways, freeways, roads and trails.
- **Policy CC-1.9:** In communities, place both new and existing line utilities and telecommunications infrastructure underground where feasible. Where underground utilities are not feasible, minimize the aesthetic impact by co-locating new improvements within existing lines and facilities where possible.

- **Policy CC-1.12:** Preserve and enhance the scenic quality of the County's rural roadway system. Prohibit projects and activities that would obscure, detract from, or negatively affect the quality of views from designated scenic roadways or scenic highways.
- **Policy CC-1.15:** The following features shall be protected and preserved along designated scenic roadways and routes except where there are health and safety concerns:
  - Trees and other natural or unique vegetation
  - Landforms and natural or unique features
  - Views and vistas
  - Historic structures (where feasible), including buildings, bridges, and signs
- **Policy CC-1.16:** The following features shall be stringently regulated along designated scenic roadways and routes with the intent of preserving and protecting the scenic qualities of the roadway or route:
  - Signage
  - Architectural design of adjoining structures
  - Construction, repair and maintenance operations
  - Landscaping
  - Litter control
  - Water quality
  - Power poles, towers, aboveground wire lines, wind power and solar power devices and antennae
- **Policy CC-1.17:** Existing trees and vegetation and natural landforms along scenic roadways and routes shall be retained to the greatest feasible extent. Landscaping shall be required to enhance scenic qualities and/or screen unsightly views and shall emphasize the use of native plants and habitat restoration to the extent possible. Removal of trees, particularly those with scenic and/or historic value, shall be generally prohibited along the roadway or route.
- **Policy CC-1.18:** Electric towers, solar power facilities, wind power facilities, communication transmission facilities and/or above ground lines shall be avoided along scenic roadways and routes, to the maximum feasible extent.

City of West Sacramento General Plan

The *City of West Sacramento General Plan* includes the goal "to enhance the relationship between the City and the Sacramento River" in its *Urban Structure and Design Element* (City of West Sacramento 2004). Related policies seek to promote the development of important scenic areas and preserve vegetation along the river. In addition, the *Public Facilities and Services Element* requires the undergrounding of electrical and overhead facilities and includes the following policy (City of West Sacramento 2004).

- **Policy 1:** Public facilities, such as utility substations, water storage or treatment plants, pumping plants, and sewer treatment plants, shall be located, designed, and maintained so that noise, light, glare, or odors associated with these facilities will not adversely affect nearby land uses. Building and landscaping materials that make these facilities compatible with neighboring properties shall be used.

17.3 Environmental Consequences

17.3.1 Methods for Analysis

Using the concepts and terminology described at the beginning of this chapter and the criteria for determining adverse effects described below, analysis of the visual effects of the project alternatives is based on the factors summarized below.

- Direct field observation from vantage points, including neighboring buildings, property, and roadways as observed on a site visit conducted January 9-11, 2012 and July 29-30, 2013. These site visits represent the contrasting seasonal views of winter and summer.
- Photographic documentation of key observation points (KOPs) of the study area that provide site-specific and regional context.
- Review of the project alternatives in regard to compatibility with state and local ordinances and regulations and professional standards pertaining to visual quality, and the extent to which the affected environment contains places or features that have been designated in plans and policies for protection or special consideration (e.g., as designated scenic vistas or highways).
- The relative numbers of viewers, their sensitivity to changes in the visual environment, their activities, and the extent to which these activities are related to the aesthetic qualities affected by the expected changes.
- Review of project construction drawings.
- Evaluation of visual simulations.
- Specific changes in the affected visual environment's composition, its character, and any specially valued qualities.

The focus of this visual analysis is on the alternatives' potential to adversely affect views from publicly accessible locations. Publicly accessible locations in the communities from which residents would view the study area are therefore considered to be of primary importance in this analysis.

17.3.1.1 Site Inventory and Selection of Key Observation Points

To identify the potential effects of alternatives on Existing Conditions of the visual environment, key observation points (KOPs) where features could have visual effects were selected. The KOPs selected were determined to be most representative of the alternatives' potential effects based on the potential to change views available to sensitive receptors and from sensitive viewing areas.

KOPs are derived and selected from candidate KOPs (cKOPs). To determine cKOPs, first a 2-mile radius of the project sites were evaluated, which is the area that is considered to encompass discernible elements from the project alternatives that would be visible in the landscape. At distances of greater than 2 miles, the mass and visibility of the project elements would be reduced to be a less substantial portion of the total landscape.

Within this 2-mile radius, locations were then evaluated for their potential to have views of the project sites using Google Maps, overlain with engineering layers for each alternative, and Google Street View. These locations were evaluated for its landform, vegetation, water, and artificial features. After this, cKOPs were chosen for the purposes of surveying the project sites and surrounding area. The following criteria were used to select the cKOPs.

Include at least one of a representative range of visible project features, including, for example, canals, intakes, pumping plants, bridges, access roads, and embankments, along with all other visible project features such as soil and borrow and reusable tunnel material (RTM) areas.

Include locations where project features would be visually obtrusive, including undeveloped areas that possess at least moderate scenic values.

Include areas that would be particularly sensitive to changes in the visual landscape, including officially designated scenic areas, publicly accessible areas where viewers spend extended periods, and areas that are at least moderately traveled by the public or are especially sensitive to new sources of light and glare.

Include the potential for indirect impacts from project elements such as soil and borrow areas, RTM areas, or dredging locations.

In the field, these cKOP locations were visited and photographed to document the presence or absence of views of the sites. Additional locations were also surveyed and photodocumented by driving the roads surrounding the project alternatives and capturing the most descriptive views down the roadway corridors and toward the project alternatives at intersections or where a safe road pull-out was present along longer or winding roadways with direct views toward the sites. These were often documented in a 360° view to gain an understanding of available views from the perspective of both motorists and residents and to understand the visual setting.

Images from the cKOPs were photographed using a >10 megapixel digital single lens reflex camera equipped with a 50-millimeter equivalent focal length lens. This configuration is the de facto standard that approximates the average view cone and magnification of the human an eye. The camera positioning was determined with a sub-meter differentially corrected GPS.

Two hundred and fifty-five (255) cKOPs were photographed within the study area during an initial site visit on January 9–11, 2012. A list of the cKOPs and their latitudinal and longitudinal locations are included in Appendix 17A, *Candidate KOP Sensitivity Matrix Rating Scales*. The cKOP point locations were brought into GIS, a Google KML file was created, and then the cKOP locations were imported into Google Earth. Once in Google Earth, the cKOPs and associated photos were used as a tool, in correlation with the engineering data overlay for each alternative, to evaluate project effects based on their spatial relationship/proximity to the project sites.

Each cKOP was evaluated for its proximity/distance to the project, scenic quality, viewer concern levels, duration of the view, intactness, and number of viewers. This evaluation was completed using a matrix, also included Appendix 17A, that quantifies these qualities from the perspective of viewers at each cKOP toward the project area. These values are based on a 1 to 5 ascending scale, as defined by the *Candidate KOP Sensitivity Matrix Rating Scales* in Appendix 17A. The highest possible sensitivity would be a score of 30 and the lowest possible sensitivity would be a score of 0. Sensitivity in the Plan Area ranges from 27 as the highest sensitivity and 12 as the lowest sensitivity. cKOPs were selected and designated as KOPs to be used as the basis to describe the effects of the various features of the alternatives within this analysis because they were determined to be the most representative sampling of the proposed alternatives' potential effects on the viewshed across all of the spectrum of sensitivity ranges. The KOPs are identified by their previous cKOP designations. 72 KOPs were selected for representative photographs. KOPs were re-photographed on July 29–30, 2013, to show the same view but in the summer. One new KOP was added to accommodate the revised Alternative 4 so that the total number of KOPs was increased to 73. All KOPs are shown in Figure 17-1, *Key Observation Point and Photosimulation Locations*. Photographs taken from these representative KOPs showing winter and summer views are presented in Figures 17-2 through 17-75. Note that KOP 258 does not have a winter view because Alternative 4 was modified after January 2012. It should also be noted that, while Figures 17-2 through 17-75 typically show only one or two views from any given KOP, each KOP in fact represents an effective 360° field of view, as described above. Consequently, KOPs may be referenced in the discussions of project alternatives that are not mentioned in the figure captions, because the particular view depicted in the figure does not reflect the location of alternative-specific features.

An important consideration in KOP selection was that visual impacts are generally based on public views (i.e., views from public roads, trails, towns, or bridges rather than from individual residences), as described above. However, views from individual private properties are also considered in evaluating overall change to the visual character of an area. In addition, another consideration is that late fall through early spring views generally possess the greatest potential for visual impact because many trees and shrubs are dormant and without leaves that act to partially or fully screen project features in the landscape during the late spring to early fall. Vegetation's ability to screen features is dependent upon viewer location in relation to the structure and intervening vegetation and distance from both (i.e., an intake will appear smaller if the viewer is farther away or larger if the viewer is closer to the structure).

17.3.1.2 Preparation of Visual Simulations

Computer-generated visual simulations were produced using digitized photographs and computer modeling and rendering techniques to document and evaluate the visual changes that would result from implementation of the action alternatives. The simulations illustrate specific project elements from eleven locations. Simulation vantage points were selected to provide representative public views from which specific project elements would be most visible, and 13 KOPs, mapped on Figure 17-1, were selected for simulating project features. Note that one KOP was simulated to show the change from January 2012 and July 2013 conditions and another KOP was simulated to show views in different directions toward different project features. Simulations are shown in Figures 17-76 through 17-90. These KOPs are also referenced in the text to help illustrate existing conditions. As with regular KOPs, existing views for simulated KOPs also represent an effective 360° field of view, as described above, and existing views for simulated KOPs may be referenced in the discussions of alternatives that are not mentioned in the figure captions. Elements chosen for simulation were intakes on the Sacramento River; the intermediate forebay from SR 160; a tunnel shaft site from Isleton Road, the fish screen at Walnut Grove and Locke; canals that would be visible from I-5 near the Lambert Road overpass, SR 4 near Discovery Bay, SR 4 near South Whiskey Slough Road, and SR 12 near Guard Road; and the redirection of Old River near the Clifton Court Forebay. These simulation locations and features represent visual effects across the alternatives, illustrate a representative sample of potential visual changes, and serve to help readers correlate how visual effects would translate to other site-specific locations that were not simulated.

The before and after visual simulations provide clear images of the location, scale, and visual appearance of alternative features. The simulations were developed through an objective analytical and computer modeling process and are accurate within the constraints of the available site and alternative data (three-dimensional computer model was created using a combination of AutoCAD files and geographic information system [GIS] layers and exported to Autodesk's 3-dimensional Studio Max for production). Design data—engineering drawings, elevations and cross sections, site and topographical contour plans, concept diagrams, and reference pictures—were used as a platform from which digital models were created. In cases where detailed design data were unavailable, more general descriptions about alternative facilities and their locations were used to prepare the digital models. Data and assumptions used in the simulations are provided in Appendix 17B, *Photo Simulation Data Sources and Assumptions*.

The simulations were prepared using available design data. Although the project elements will continue to undergo design refinement through final design stages, these refinements would not be expected to result in substantial differences in individual features that would affect the outcome of the visual effects analysis. The planning is far enough along and engineers have developed preliminary design of the water conveyance facilities and related structures to meet the operational criteria for the alternatives. Some of the factors incorporated into these considerations include appropriate intake and pump capacities, foundation and housing facility dimensions, extent of levee modification and upgrades to prevent flooding of the intake facilities, conveyance pipe and canal dimensions, the amount of electricity needed to power the alternatives and the associated structures and placement of transmission lines, placement of temporary and permanent access roads, and estimates of landform modifications (cut-and-fill) to accommodate structures. Finally, the analysis assumes that any shifts in specific feature configurations or new alternative components would be minor. Therefore, the simulations are considered appropriate and representative of the type and extent of possible visual changes to the study area.

After the viewshed and sensitive receptors were established and visualization created, the visual impact assessment process, which identifies the existing scenic quality of the visual setting, was completed. For this analysis, an adaptation of the BLM's VRM visual resource inventory method was used because it allows the various landscape elements that make up scenic quality to be quantified and rated, with a minimum of ambiguity or subjectivity. BLM's VRM visual resource inventory assigns lands an A, B, or C rating based on the apparent scenic quality, determined by using seven key factors (landscape features): landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications. The cKOP sensitivity matrix and the Scenic Quality evaluation form should not to be construed as interrelated from a quantification perspective. The sensitivity matrix uses visual quality as an evaluation criterion where the value is extrapolated from a regional overview perspective. The Scenic Quality evaluation however, uses additional criteria to evaluate place-based scenic quality; therefore the two values are independent of each other. These landscape features were evaluated by three reviewers (interdisciplinary team) and rated numerically on a comparative basis with similar features within the viewshed, and a total score of scenic quality was tabulated (see Appendix 17C, *Scenic Quality Rating Summaries*). The three reviewers scores were averaged to determine the score used in the analysis.

A total of 32 points is possible according to the rating scheme. View scores are as follows.

- 29 to 32 points: A rating indicates a very high visual quality.
- 24 to 28 points: B rating indicates a high visual quality.
- 19 to 23 points: C rating indicates a moderately high visual quality.
- 14 to 18 points: D rating indicates a moderate visual quality.

- 9 to 13 points: E rating indicates a moderately low visual quality.
- 4 to 8 points: F rating indicates a low visual quality.
- 0 to 3 points: G rating indicates a very low visual quality.

The landscape was evaluated for its existing and simulated conditions. A reduction in the existing conditions to a lower Scenic Quality Rating constitutes an adverse effect.

17.3.1.3 Analysis of the Alternatives' Impact on Visual Resources

The alternatives' level of impact can be measured by assessing the existing physical environment, including *landscape sensitivity* and evaluating the *visual dominance* that features would have compared with major features in the existing landscape to determine the *overall effect on viewers* as a result of BDCP implementation. Visual impacts were evaluated by reviewing the alignments for Alternatives 1A, 1B, 1C, 4, and 9 and grouping segments of the alignment by similar visual features and homogeneous character, including viewer groups present and viewer sensitivity levels. The existing visual character was determined for each of these areas, and changes to the visual environment were evaluated in accordance with criteria listed in Section 17.3.2, *Determination of Effects*. In addition, landscape sensitivity and visual dominance of project features were evaluated to determine the overall effect on viewers in that specific area. These areas include the various KOPs along or near the conveyance alignment. These discussions are presented in Appendix 17D, *Permanent Impacts after Construction is Complete*, in Tables 17D-1 through 17D-7. The remainder of the alternatives were evaluated using information gleaned from Alternatives 1A, 1B, 1C, 4, and 9. Alternatives 1A, 1B, 1C, 4, and 9 are the all-encompassing alternatives and all of the other alternatives are a reduced version of one of those four alternatives. The reduced alternatives share the same conveyance method and alignments, the same intake locations, the same shaft site locations, etc. and the primary difference, as it relates to aesthetic resources, is the number of intakes that are included under each reduced alternative. A more comprehensive discussion of feature- and site-specific visual effects on views and viewer groups is presented in Appendix 17E, *Permanent Features*.

Scenic vistas are also mapped and included in Appendix Figure 17D-1, *Key Observation Point and Photosimulation Locations*, which also includes all cKOPs, KOPs, and simulated KOPs. It is important to note that this mapping does not include all scenic vistas within the study area. The mapping focuses on vistas from public roadways only, with the exception of vistas mapped in proximity to Brannan Island State Recreation Area, that are in direct or very close proximity to alternative features and that were directly surveyed during the January 9–11, 2012, site evaluation of the cKOPs. Scenic vistas generally encompass a wide area with long-range views to surrounding elements in the landscape. Because of this, it is very common that residents and businesses in the immediate area, open agricultural lands, and roadways that run parallel and/or perpendicular to roadways mapped with a scenic vista are contained within and also have scenic vistas even though they are not mapped in Appendix Figure 17D-1. In addition, it is important to note that vistas have a directional range. That is to say that some areas have scenic vistas with a 360° view in all directions, while others may be limited in one direction in a manner that reduces the line of sight angle and amount of vista that is visible for a narrower vista view. Water-based vistas are not mapped.

Evaluation of Landscape Sensitivity

The BLM Visual Resource Inventory system involves evaluating sensitivity levels based on the measure of public concern over the scenic quality of a particular landscape. This concern is measured by considering the types of users, amount of use, public interest, adjacent land uses, special areas (e.g., scenic roadways), and other factors or special circumstances that may apply to a particular location that would affect sensitivity (Bureau of Land Management 1984:3). Landscape sensitivity levels help to determine the management actions that should be applied to various landscapes in order to maintain their visual integrity (Bureau of Land Management 1984:24–29). While the study area does not include lands under BLM jurisdiction, this method of inventory is helpful for identifying landscape sensitivity levels, and the following landscape sensitivity levels were defined for use in this analysis for the alternatives.

- **High Sensitivity:** There are special areas of interest, a higher number of viewers in the area, highly sensitive viewer groups present, high public interest in changes to the area, and high concern over how changes may affect adjacent land uses. The existing character of the landscape in areas of high sensitivity should be preserved. Natural ecological changes are preferred; however, this does not preclude very limited development activity. The level of change to the landscape should be very low and must not attract attention.
- **Moderate Sensitivity:** There are a moderate number of viewers in the area with moderate sensitivity, moderate public interest in changes to the area, and moderate concern over how changes may affect adjacent land uses. The existing character of the landscape in areas of high sensitivity should be preserved. The existing character of the landscape in areas of moderate sensitivity should be retained. The level of change to the characteristic landscape should be low. Development activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
- **Low Sensitivity:** There are few viewers in the area with moderate to low sensitivity, moderate to low public interest in changes to the area, and moderate to low concern over how changes may affect adjacent land uses. The existing character of the landscape in areas of high sensitivity should be preserved. The existing character of the landscape in areas of low sensitivity should be partially retained. The level of change to the characteristic landscape should be moderate. Development activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- **Very Low Sensitivity:** There are few viewers in the area with low sensitivity, low public interest in changes to the area, and low concern over how changes may affect adjacent land uses. The level of change to the characteristic landscape in areas of very low sensitivity can be high. Development activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic elements.

Evaluation of Visual Dominance

Visual resource change is analyzed in terms of visual dominance of proposed facilities and features, together with change in visual quality. Viewer responses to these changes are interpreted on the basis of viewer types and viewer sensitivity. For evaluation of the alternatives, viewer types and their sensitivities were inferred on the basis of the characteristics, activities, and duration of views of various viewer groups.

Visual dominance refers to the contrast between BDCP features and their setting characterized in terms of vegetation, landform, and structural changes. Dominance is a function of how visually prominent the project is to the viewer and is described using the following terminology.

- **In-evident:** Project is visible but generally not visually prominent.
- **Subordinate:** Project is visually prominent, but attracts less attention than other components of the setting.
- **Co-dominant:** Project attracts attention equally with other components of the setting.
- **Dominant:** Project dominates the view and attracts more attention than other components of the setting.

As part of determining visual dominance, the relative degree of visual contrast that project features would create with the visual landscape is characterized. The determination of a project's overall effect on viewers is based largely on identifying the level of visual dominance a project feature would present over the landscape.

Evaluation of Overall Effect on Viewers

A project's level of visual dominance can be measured by comparing the project's features with major features in the existing landscape. The combination of the visual dominance rating (from FHWA guidelines) and the landscape sensitivity level (from BLM guidelines) was used to determine the overall effect of project-related landscape changes on viewers. The project's overall effect on viewers can be classified in one of the five following ways.

- **Negligible:** No visual change and no reduction or increase in visual quality, with no negative or positive viewer responses expected.
- **Minimally Noticeable:** A perceptible and tangible visual change and minimal reduction in visual quality, with minimal negative viewer responses expected.
- **Moderately Noticeable:** A tangible degree of visual change and some reduction in overall visual quality, with some moderately negative viewer responses expected.
- **Noticeable:** Moderate degrees of visual change and a reduction in the overall visual quality, with negative viewer responses expected.
- **Very Noticeable:** Substantial visual change and considerable reduction in the overall visual quality, with strongly negative viewer responses expected.

Table 17-1 illustrates how visual dominance ratings interact with landscape sensitivity levels, thereby determining the project's overall effect on viewers, detailed in Appendix 17D.

Table 17-1. Project's Overall Effect on Viewers

Project's Visual Dominance	Landscape Sensitivity Level			
	High	Moderate	Low	Very Low
In-evident	Negligible	Negligible	Minimally noticeable	Minimally noticeable
Subordinate	Noticeable	Moderately noticeable	Minimally noticeable	Minimally noticeable
Co-dominant	Very noticeable	Noticeable	Moderately noticeable	Minimally noticeable
Dominant	Very noticeable	Very Noticeable	Noticeable	Moderately noticeable

17.3.2 Determination of Effects

The impacts of the alternatives on aesthetics and visual resources may result from both construction and operation of project features. In fashioning the thresholds set forth below, the lead agencies considered the questions on the subject of Aesthetics from Appendix G to the CEQA Guidelines, as well as professional judgment and commonly accepted professional standards. Further, for purposes of this analysis, the determination of whether a change in the visual conditions would be *substantial* was performed using the methods described in detail under Section 17.3.1, *Methods for Analysis*, and considers site-specific landscape sensitivity (see Appendix 17A, *Candidate KOP Sensitivity Matrix Rating Scales*) and project feature visual dominance characteristics (see Table 17-1 and Appendix 17D, *Permanent Impacts after Construction is Complete*), and the expected change in scenic quality ratings as determined through photo simulation evaluation (see Section 17.3.1.2, *Preparation of Visual Simulations*, and Appendix 17C, *Scenic Quality Rating Summaries*). This impact analysis assumes that an action alternative could have an adverse effect (under NEPA) and a significant impact (under CEQA) on aesthetics and visual resources if it would result in any one of the following conditions.

- Substantially alter the existing visual quality or character of the site and its surroundings. For purposes of this analysis, substantially alter the existing visual quality or character is defined as circumstances in which construction or operational activities would result in a reduction in the Scenic Quality Rating and/or introduce dominant visual elements that, based on the landscape sensitivity level, would result in noticeable to very noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes could be viewed by sensitive receptors (i.e., residents, recreationists) and from public viewing areas. Changes to visual quality and character could involve one or more of the following components.
    - Substantially alter existing viewsheds, including changing existing terrain, vegetative cover, or other natural or built features and introducing incompatible visual elements.
    - Substantially alter the existing visual quality of a site and/or the region or eliminate visual resources.
    - Substantially obstruct or permanently reduce visually important features.
- Have a substantial adverse effect on a scenic vista. For purposes of this analysis, a substantial adverse effect on a scenic vista is defined as circumstances in which construction or operational activities would result in a reduction in the Scenic Quality Rating and/or introduce dominant visual elements that, based on the landscape sensitivity level, would result in noticeable to very noticeable changes in the visual character of a vista viewshed that do not blend and are not in

keeping or are incompatible with the existing visual environment. These changes can be viewed by sensitive receptors (i.e., residents, recreationists) and from public viewing areas.

- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. For the purposes of this analysis, substantial damage is defined as circumstances in which construction or operational activities would alter or change a scenic resource within a state scenic highway to the extent that it would result in a reduction in the Scenic Quality Rating and/or introduce dominant visual elements that, based on the landscape sensitivity level, would result in noticeable to very noticeable changes in the visual character of a state scenic highway's viewshed that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes can be viewed by sensitive receptors (i.e., residents, recreationists) and from public viewing areas.
- Create a new source of substantial light or glare that would adversely affect day or nighttime public views in the area. For purposes of this analysis, an adverse effect on day or nighttime public views is defined as circumstances in which construction or operational activities would result in a reduction in the Scenic Quality Rating and/or introduce dominant visual elements that, based on the landscape sensitivity level, would result in noticeable to very noticeable changes in the viewshed. Elements that could affect light or glare in the study area could involve one or more of the following.
    - Substantially increase light and glare in the project vicinity.
    - Substantially increase the backscatter of light into the nighttime sky.
    - Substantially reduce the amount sunlight present or the introduction of shadows in community areas.

Glare can be caused by a direct light source (direct glare) or, more commonly, by the reflection of the sun, moon, or artificial light source from a reflective surface (reflective glare). The intensity of direct glare is a function of the brightness of the surroundings and the intensity of the light source. Similarly, the intensity of reflective glare is a function of the reflectivity of the surface, the intensity of the light source, and the angle of the light source hitting the reflective surface. Highly reflective surfaces include water, glass, and metal. However, any surface may be a source of reflective glare based on its coloring and size. Lighter surfaces are more reflective than darker surfaces. For example, flat white has a reflectivity of 85–95%, whereas yellow has a reflectivity of 70%. Reflectivity decreases as the color gets darker because lighter colors reflect light and darker colors absorb light. Similarly, larger surfaces have a bigger area from which light will reflect than do smaller surfaces (Smardon et al. 1986:126–128).

- Result in long-term (persisting for 2 years or more) adverse visual changes or contrasts to the existing landscape as viewed from areas with high visual sensitivity. For purposes of this analysis, adverse visual changes or contrasts are defined as circumstances in which construction or operational activities would result in a reduction in the Scenic Quality Rating and/or introduce dominant visual elements that do not blend and are not in keeping or are incompatible with the existing visual environment, based on the landscape sensitivity level, and would result in noticeable to very noticeable changes in the viewshed; and areas of high visual sensitivity are residences and recreation areas. Incompatibility with federal, state, or local plans, policies, or regulations dealing with the subject of aesthetics and visual impacts. Incompatibility alone would not result in an adverse effect or significant impact. If, however the incompatibility relates to an applicable plan, policy, or regulation adopted to avoid or mitigate visual effects, then an incompatibility might be indicative of a related significant or adverse effect under CEQA and NEPA, respectively.

For the purposes of this analysis, temporary effects are those that occur for a time period less than two years. Long-term effects refer to time periods greater than two years.

17.3.3 Effects and Mitigation Approaches

The visual resources analysis addresses primarily the study area, in which proposed intake and conveyance facilities and related structures and operations would be located. The analysis also addresses the proposed BDCP CM2–CM21, although the assessment is programmatic in scope, because specific plans have not been developed for those areas. In addition, this analysis covers the non-HCP alternatives (Alternatives 4A, 2D, and 5A) that are detailed in Chapter 3, *Description of Alternatives*, and analyzed in Section 17.3.4, *Effects and Mitigation Approaches—Alternatives 4A, 2D, and 5A*. No new structures are proposed upstream of the Delta or in the SWP and CVP export service areas under any of the proposed alternatives. In addition, no conservation actions are proposed under any of the alternatives in either of these regions.

As described in Section 17.3.1, *Methods for Analysis*, the evaluation of visual effects considers areas where the proposed project facilities would be visually dominant features in the context of the evaluation topic being considered. Acreages and areas of the proposed features and facilities described in the impact analysis below are detailed in Chapter 3, *Description of Alternatives*, and Chapter 13, *Land Use*. Project features that would not result in a direct or indirect physical change to the visual environment are not discussed under the impact analysis. The conveyance pipelines and some of the intake tunnels would not be visible because they would be underground. Project features that would result in physical changes to the visual environment are listed below.

- Intake structures.
- Forebays with embankments.
- Pumping plants.
- Control structures.
- Soil spoil and borrow sites.
- RTM areas.
- Work/staging areas.
- Shaft sites (Alternatives 1A, 2A, 2D, 3, 4, 4A, 5, 5A, 6A, 7, and 8).
- Canals (Alternatives 1B, 1C, 2B, 2C, 6B, 6C, and 9).
- Bridges (Alternatives 1B, 1C, 2B, 2C, 6B, 6C, and 9).
- Operable barrier(s) (Alternatives 2A, 2B, 2C, 2D, 4, 4A, 5A, and 9).
- Temporary and permanent access roads.
- Transmission lines.
- Concrete batch plants and fuel stations.
- Restoration actions.

Impacts that would result in physical changes to the visual environment because of alternative features are discussed below in Impacts AES-1 through AES-6.

Operational changes would occur in the Upstream of the Delta Region and within the SWP and CVP Export Service Areas, and would result in noticeable changes in the visual setting. As described above, Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, New Melones Lake, and San Luis Reservoir would experience slight variations in the storage and elevation patterns as a result of the operation of the alternatives. These effects could affect recreation viewer groups and are discussed in Chapter 15, *Recreation*, under *Impact REC-6: Cause a change in reservoir or lake elevations resulting in substantial reductions in water-based recreation opportunities and experiences at north- and south-of-Delta reservoirs.* In addition, CALSIM modeling results indicate that effects, if any, to river flows are so minor as to have no effect. Each intake would take in up to 3,000 cfs of water at each location. Hydraulic measurements indicate that there would be a localized 1- to 2-inch drawdown, but this would be negligible compared to the 1-foot tidal variation seen at Freeport every day. Additionally, tidal variations are greater further downstream. Therefore, there would be no disruption of water-based views in the vicinity of the intakes and this is not discussed further.

17.3.3.1 No Action Alternative

The No Action Alternative includes continued implementation of SWP/CVP operations, maintenance, enforcement, and protection programs by federal, state, and local agencies and non-profit groups, as well as projects that are permitted or are assumed to be constructed by 2060. Climate change that would occur with or without the BDCP is also part of the No Action Alternative. A complete list and description of programs, plans, and other assumptions considered under the No Action Alternative is provided in Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*.

Changes to land use have the greatest potential to affect visual resources and viewer groups under continuation of existing policies and programs in the absence of the BDCP alternatives. Under the No Action Alternative, state and federal programs to preserve open space and agricultural lands would continue to be implemented, as described in Chapter 13, *Land Use*. The land uses in the Delta would be similar to those of today because only limited types of development are allowed in the Primary Zone of the Delta. However, some changes in the study area could occur as a result of localized population growth, continued land subsidence on Delta islands, levee instability and potential flood risk, sea level rise, and restoration activities. These changes could result in the conversion of additional agricultural land uses and would consequently affect the visual landscape.

Localized population growth would convert agricultural lands on the outskirts of towns and cities in the Delta, but would not entail new suburban developments in undeveloped areas because of the limits associated with the Primary Zone of the Delta.[2] This would limit the amount of agricultural land conversion to rural and suburban development perceived by viewers in the area but could result in site-specific adverse effects through temporary construction activities and the alteration of the existing visual character. The severity of such effects would depend on the density and appearance of new development. In addition, new rural and suburban development would increase the amount of light and glare present in these areas.

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[2] Land Use Policy P-4 states "New non-agricultural residential development, if needed, shall be located within the existing Primary Zone communities where support infrastructure and flood protection are already provided" (Delta Protection Commission 2011).

Land subsidence, sea level rise, catastrophic levee failure, or a combination thereof should they occur, would result in flooding and inundation that could significantly damage existing facilities and infrastructure, uproot and damage vegetation to an unknown extent, permanently flood Delta islands, and drastically alter the visual landscape of the Delta. Should such events occur, as anticipated, natural processes and vegetative succession would restore the visual environment to a certain degree over time. However, permanent scarring or visual remnants of damaged infrastructure could remain on the landscape. In addition, some Delta islands could become partially or completely submerged by water and be visible to varying degrees. Such an event could cause a substantial change in the existing study area visual character. Scenic vistas would also be significantly altered for an extended period of time or irreparably damaged, because views across this landscape could be visually changed and crops damaged. To reclaim land or rebuild levees after such an event would introduce considerable heavy equipment and associated vehicles, including dozers, excavators, water trucks, and haul trucks, into the viewshed of existing viewers. The visual effect of these activities may or may not be adverse based on the intervals of time during which viewers would be in visual contact with the site and extent of construction activities required. Potential catastrophic levee failure and the resulting submerged landscape would alter the visual character of affected areas. These potential effects cannot be quantified based on available information, but can be equated to similar events in recent history. (See Appendix 3E, *Potential Seismic and Climate Change Risks to SWP/CVP Water Supplies*, for more detailed discussion)

Restoration and environmental enhancement projects may benefit visual resources within the Delta. These projects include recently completed, ongoing, or planned restoration and enhancement projects within the north Delta, Lower Yolo Bypass, and Suisun Marsh and implementation of land management plans for Stone Lakes National Wildlife Refuge, Yolo Bypass, and Lower Sherman Island. Additionally, the 2008 and 2009 Biological Opinions issued by NMFS and USFWS require 8,000 acres of tidal habitat restoration. Conversion of agricultural lands to restoration sites would typically involve some topographic grading, exposure of bare soil, and change in vegetation that could be visually adverse. However, the construction impacts on the visual landscape would be temporary. The visual changes associated with constructing a restoration site would be very similar to the visual character seen in much of the Delta with the ongoing agricultural and restoration operations that are already occurring. Agricultural activities include ground-clearing (disking and tilling) and planting activities. Restoration projects may enhance wildlife viewing, nonmotorized boating, and other passive recreation opportunities and visual access within the Delta by increasing wildlife habitat and public access. These areas may increase glare for a short period of time until vegetation becomes established, or if restoration projects include built facilities that produce glare or require lighting.

As described in Chapter 15, *Recreation*, ongoing projects and programs such as operation of the Delta Cross Channel, the South Delta Temporary Barriers Program, and the Georgiana Slough Nonphysical Fish Screen would also affect water-dependent recreation by hindering boat passage and access to portions of the Delta’s waterways when in place. Other ongoing resource management plans such as controlling nonnative aquatic vegetation, Delta levee protection and repair programs, hatchery and stocking programs, maintenance of channels and sloughs, and other similar projects and programs help maintain access to Delta waterways, keep levees in working order, and keep lands protected. All these ongoing activities are a part of the existing visual environment and would not have adverse effects on the existing visual landscape.

Many of the ongoing programs include development of future projects that would require additional project-level environmental review. Future federal actions would be required to comply with NEPA, the federal Endangered Species Act, and other federal laws and regulations. Compliance and permit requirements would be implemented on a case-by-case basis. Overall, the No Action Alternative would result in an array of effects on existing visual quality and character in the Delta. Overall, implementing on-going programs and projects under the No Action Alternative, including changes in farmland are not expected to result in adverse changes to the visual environment because development in much of the study area is restricted by the primary zone designation and city and county ordinances.

CEQA Conclusion: In total, the ongoing programs and plans under the No Action Alternative would result in the potential for temporary and permanent effects on the study area visual environment that are not expected to substantially change visual resource elements in the Delta because of the current restrictions on development in the primary zone and city and county ordinances to preserve the visual quality of the Delta. Future state and local actions would be required to comply with CEQA, the California Endangered Species Act, and other state and/or local laws and regulations. This potential impact is considered less than significant. No mitigation is required.

17.3.3.2 Alternative 1A—Dual Conveyance with Pipeline/Tunnel and Intakes 1–5 (15,000 cfs; Operational Scenario A)

Table 17D-1 in Appendix 17D, *Permanent Impacts after Construction is Complete*, describes existing visual characteristics and the BDCP-related permanent effects of Alternative 1A on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Construction of all structural components under Alternative 1A would take 9–14 years. However, construction of each individual facility would be phased within that period and would occur over a shorter period. The estimated construction times for individual features are included below. The duration and schedule for construction of the water conveyance facilities (CM1) is provided in Appendix 3C, *Construction Assumptions for Water Conveyance Facilities*. In addition, Appendix 22A, *Air Quality Analysis Methology*, details the construction schedules and defines the length and sequence of each construction phase. Appendix 17F, *Surge Tower Shadow Data Sources and Assumptions*, details the methods for analyzing and the durations of shade and shadowing effects of Alternative 1A surge towers on the Stone Lakes National Wildlife Refuge.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

Construction of conveyance facilities under Alternative 1A would result in substantial alteration of the existing visual quality or character in the vicinity of project elements that can be viewed from local sensitive receptors and public viewing areas. Visual quality effects at Alternative 1A project element construction sites would take place beginning with construction mobilization through completion of project elements. Once construction mobilization under Alternative 1A occurs, all viewer groups would begin to see visual changes to the portions of the study area where project features would be built. Construction mobilization, as used herein, is defined as the moment approval has been given for any materials and supplies, construction equipment, construction facilities and staging, and staffing to be physically on-site and site modifications to begin. A generalized sequence of construction mobilization includes first clearing the work area sites and building and setting up staging areas, temporary field offices, worker parking, equipment and materials laydown and storage areas, and establishing other construction-related needs. This may occur after or simultaneously with construction of temporary and permanent transmission lines. Once the work areas are established, then there is a place set up to begin delivery of materials and additional equipment to build the alternative features, discussed in more detail below. However, in general, the sites would first be cleared of vegetation and structures, earthwork and grading would occur, the built structures and facilities would be constructed, and then landscaping would be installed. Once a project feature is completed, the work area would be removed and revegetated. This process would occur in phases, constructing different features at different times, until the project has been fully completed and would apply to all action alternatives.

Intakes

The Sacramento River channel and bank would be affected by construction of the five north Delta intake facilities (Intakes 1–5) between River Mile (RM) 44 (south of Freeport) and RM 37 (north of the town of Courtland) (Figure 3-2 and Mapbook Figure M3-1 in Chapter 3, *Description of Alternatives*). Construction of each intake would take approximately 4 years to complete and would occur primarily Monday through Friday for up to 24 hours per day. In addition, because of the relatively high groundwater level at all intake locations and pumping plant sites, dewatering would be necessary to provide a dry workspace. Dewatering would also be needed where intake pipelines cross waterways and major irrigation canals east of the Sacramento River. Conveyance pipelines constructed for Intakes 2, 4, and 5 would not be anticipated to intersect with waterways or major irrigation canals. Dewatering would take place 7 days per week and 24 hours per day and would be initiated 1–4 weeks prior to excavation. Dewatering would continue until excavation is completed and the construction site is protected from areas with high groundwater levels (Chapter 3, *Description of Alternatives*). Scattered rural residences are located along County Highway (CH) E9 and SR 160 along both banks of the river, throughout the corridor between where Intakes 1–5 would be built; some of these would be near or directly adjacent to construction activities (KOPs 1, 3, 4, 18, 30, 41, and 49). The towns of Clarksburg, Hood, and Courtland have a higher concentration of residential viewers and are also near the intakes (KOPs 12, 38, 72, 73, and 74). Recreationists on local roadways and waterways, roadway users on local roadways, and nearby businesses would have direct views of intake construction.

Construction of five intake structures and associated facilities would introduce considerable heavy equipment—excavators, graders, dozers, sheepsfoot rollers, dump trucks, and end loaders, in addition to support pickups and water trucks—into the viewshed of all viewer groups in the vicinity, especially between Clarksburg and Walnut Grove. Work areas of approximately 125 acres would be located adjacent to each intake site and would be used for staging, temporary field offices, worker parking, equipment and materials laydown and storage, and would support other construction-related needs. While farm equipment is common in this area, the presence of long-term and large-scale construction is not common and would adversely affect viewers who would see work areas over an extended period of time where they once saw agricultural lands. Construction of all the intakes would require that properties first be acquired, resulting in the relocation of several residences and razing of buildings on these properties during construction. The intakes would dissect the parcels, disrupting the continuity of rural land and affecting free-flowing visual access from lands on either side of the intakes. In addition, residences and businesses may experience loss of landscaping, fencing, or other landscape features of personal importance. The landscape sensitivity level is high, and impacts on viewers are substantial because the residents would experience disruptive construction activities near to their homes.

Once the site is cleared of built features, earthmoving activities would result in the removal of mature vegetation and topographical changes to areas that are presently flat. Earthmoving activities and associated heavy equipment and vehicles would be readily visible throughout operation of these sites and have the potential to create dust clouds that would attract attention from visual receptors and reduce the availability of short-range views. As set forth in Chapter 22, *Air Quality and Greenhouse Gases*, the BDCP proponents have identified environmental commitments (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) to reduce emissions of construction-related criteria pollutants, including basic and enhanced fugitive dust control measures and measures for entrained road dust that would help to reduce the creation of dust clouds that would negatively affect short-range views. As described in Chapter 3, *Description of Alternatives*, revegetation of disturbed areas would occur as a part of the project and revegetation would be determined in accordance with guidance given by DWR's WREM No. 30a, *Architectural Motif, State Water Project* and through coordination with local agencies through an architectural review process. Because revegetation is included as part of Alternative 1A, it would help to lessen visual impacts. However, impacts may still be substantial, as described further in this analysis. This guidance from DWR WREM No 30a is set forth as follows and would apply to the other features described under Impact AES-1.

> If possible, the natural environment will be preserved. If not possible, a re-vegetation plan will be developed. Landscaping plans may be required if deemed appropriate to enhance facility attractiveness, for the control of dust/mud/wind/unauthorized access, for reducing equipment noise/glare, for screening of unsightly areas from visually sensitive areas. Planting will use low water-use plants native to the Delta or the local environment, with an organic/natural landscape theme without formal arrangements. For longevity and minimal visual impact, low maintenance plants and irrigation designs will be chosen. Planting plans will use native trees, shrubs or grasses and steps will be taken to avoid inducing growth of non-native invasive plant species/CA Plant Society weedy species. Planting of vegetation will be compatible with density and patterns of existing natural vegetation areas and will be placed in a manner that does not compromise facility safety and access. Planting will be done within the first year following the completion of the project and a plant establishment plan will be implemented.

Water-based construction would also be required to construct water intakes and levee modifications. Water-based recreational viewers would have the most direct views toward in-water construction, which would likely require partial channel closures and use of equipment within the waterways (KOP 26). All such construction would have temporary in-water construction zone speed restrictions where high-speed recreation (e.g., waterskiing, wakeboarding, and tubing) would effectively be eliminated. In-water construction activities would constrict boat passage, increase boat traffic congestion during peak use (primarily summer weekends), and extend viewing times of these facilities. In-water construction at all locations would result in adverse visual effects due to the elongated viewing times during periods of congestion, temporary partial channel closures that could impede recreational opportunities and create negative visual perceptions of these facilities, and a reduced recreational experience due to the industrial nature of views of such facilities.

Once construction of the conveyance facilities is complete, Intakes 1–5 would introduce large, industrial concrete and steel intake structures, approximately 55 feet from river bottom to the top of the structure with a total structure length of 700-2,300 feet, pumping plants that are approximately 70 feet tall, landscaping, fencing, and other similar anthropogenic features into an area with an existing rural visual character and a riparian, riverine, and agricultural nature. The design of the intakes and associated facilities could play a large part in helping to improve the quality of affected and degraded viewsheds. Landscaping that would be incorporated as part of the facility design would help to improve the quality of views. Because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, changes to topography through grading, and addition of large-scale industrial structures where none presently exist, this effect is considered adverse.

The intake facilities would result in adverse visual effects upon the landscape. As seen in Figure 17-76a, *Existing and Simulated Views of Intake 3 East from SR 160 in January 2012*, the removal of a substantial amount of riparian vegetation along the east bank acts to open up the vista but also increases the visual prominence of the pumping plant in the landscape. The introduction of tall, steel 230 kV transmission lines visually contrasts to existing views where there are no transmission lines and in an area where transmission lines primarily consist of wooden utility poles. The pumping plant introduces a large-scale building, similar in appearance to a warehouse facility, that is a focal point and visually discordant in scale and mass to the surrounding rural character within the vista. It also adds monotone solid color mass into a landscape where the natural colors of the landscape are earth-tones and more muted. Overall, the existing vista from KOP 34 on SR 160 toward Intake 3 would be substantially impaired by vegetation removal and introduction of the pumping plant and the Scenic Quality Rating would be reduced from a **D** to an **E**. A reduction in the Scenic Quality Rating associated with Intake 3 is representative of the effects that could occur to other vistas through the removal of vegetation, obscuring and limiting views beyond the foreground, and introducing large industrial features into a rural landscape and this effect would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). However, as shown in Figure 17-76b, *Existing and Simulated Views of Intake 3 East from SR 160 in July 2013*, fast-growing poplar or cottonwood trees that were newly planted in January 2012 have since grown and would act to obscure portions of the pumping plant. However, the pumping plant would still be visually discordant in scale and mass to the surrounding rural character within the vista and the Scenic Quality Rating would be reduced from a **D** to an **E**. Note that, over time, the trees will continue to grow and views of Intake 3 from KOP 34 could be further limited.

Figure 17-77, *Existing and Simulated Views of Intake 2 West from SR 160*, shows an intake associated with the west alignment (Alternatives 1C, 2C, and 6C). However, this view is representative of how an intake under this alternative would look on the east bank of the river from CH E9. It is also representative of how intakes could affect this and other vista views from SR 160 and CH E9, as mapped in Appendix 17D, Figure 17D-1. The conversion of the riverbank that is grassy with riparian vegetation to the industrial looking on-bank intake is a stark visual and color contrast against the more natural colors and textures of a vegetated riverbank that is absent of structures. The pumping plant introduces a large warehouse type of building that is a focal point and visually discordant in scale and mass to the surrounding rural character within the vista. It also adds monotone solid color mass into a landscape where the natural colors of the landscape are earth-tones and more muted. The pumping plant and on-bank intake would limit and detract from the visual quality of views beyond the foreground. The introduction of tall, steel 230 kilovolt (kV) transmission lines visually contrasts to existing views of wooden utility poles. In addition, at a closer distance, views of available sky would be interrupted by the transmission lines and pumping plant. Overall, the existing vista from KOP 15 on SR 160 toward Intake 2 West, which would is representative of views looking toward the east bank of the river from CH E9, would be substantially impaired by vegetation removal and introduction of the pumping plant and the Scenic Quality Rating would be reduced from a **C** to an **E**. A reduction in the Scenic Quality Rating associated with Intake 2 West is representative of the effects that could occur to other vistas through the removal of vegetation, obscuring and limiting views beyond the foreground, and introducing large industrial features into a rural landscape, and this effect would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

Similarly, as seen in Figure 17-78, *Existing and Simulated Views of Intake 4 East from SR 160*, a substantial amount of riparian vegetation along east bank would be removed and landscaping associated with the residences along SR 160 would no longer be present. The removal of vegetation along the river serves to remove screening of the pumping plant and intake that could have been provided by that vegetation. The realigned roadway slightly increases the prominence of the roadway surface, but removal of roadside vegetation is what serves to increase the visual prominence of the roadway. The pumping plant introduces a large-scale building, similar in appearance to a warehouse facility, that is a focal point and visually discordant in scale and mass to the surrounding smaller scale rural structures. It also adds monotone solid color mass into a landscape where the colors of buildings do not detract from the viewshed because vegetation screens the buildings, softening their appearance and contributing to a unified view. However, the large scale of the pumping plant, combined with vegetation removal, precludes unified views with the surrounding landscape. The on-bank intake is not highly visible in from this vantage, due to distance, the bend in the river, and vegetation on the riverbank that helps to provide some screening. Overall, existing views from KOP 45 on SR 160 toward Intake 4 would be substantially impaired by vegetation removal, roadway realignment, and introduction of the pumping plant and the Scenic Quality Rating would be reduced from a **C** to an **E**. This effect would be adverse (see discussion under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

Surge towers would be needed for Intakes 1 and 2 and have the potential to shade Stone Lakes National Wildlife Refuge (SLNWR), as shown in Appendix 17F, *Surge Tower Shadow Data Sources and Assumptions*, Table 17F-1 and illustrated in Figures 17F-1a through 17F-1d and Figures 17F-2a through 17F-2d. Intake 1 would shade SLNWR for 11 minutes during the summer solstice. Therefore, SLNWR would be shaded for no more than 11 minutes for most of the summer. It would be shaded for 10 minutes or less during the winter, spring, and fall months. Intake 2 would shade SLNWR for 23 minutes during the summer solstice. SLNWR would be shaded for 20 minutes or less during the spring, summer, and fall months. Mature trees and shrubs are located on either side of the Southern Pacific Rail Line and, as shown in Figures 17F-1c and 17F-2d, these trees would cast long shadows in the same location and at the time that the surge towers would cast shadows upon SLNWR. The surge tower shadows, which would be more distinct and defined near the base of the tower, would grow fainter over distance and as the sun angle declines. Therefore, the surge tower shadows would not stand out from the shadows cast by vegetation along the Southern Pacific Rail Line and would not adversely affect SLNWR.

Forebays

Construction of a 760-acre intermediate forebay (south of Hood and west of Stone Lakes National Wildlife Refuge) (KOPs 41, 45, 54, and 86) and 600-acre Byron Tract Forebay (south of Clifton Court Forebay) (KOPs 103, 106, and 107) would take less than 2 years. Generally, construction would occur Monday through Friday for up to 24 hours per day. Dewatering is anticipated where the forebay pipelines cross waterways or major irrigation canals less than 0.25 mile north of the connection with the intermediate forebay. Dewatering would take place 7 days per week and 24 hours per day and would be initiated 1–4 weeks prior to excavation. After construction is complete, disturbed areas of exposed soil would be seeded for erosion control and would revegetate after a short time. The intermediate forebay would be constructed southeast of Intakes 4 and 5 and would be seen from SR 160 and Lambert Road, between Snodgrass Slough and Stone Lakes National Wildlife Refuge. Views from Lambert Road are obscured west of Snodgrass Slough by vineyards and riparian vegetation along Snodgrass Slough (KOP 84). Because the intermediate forebay is in proximity to the towns of Clarksburg, Hood, and Courtland, there are a concentration of residential, recreational, and roadway viewers using those roadways. Rural residences would have construction occurring near or directly adjacent to their homes along SR 160 through construction of Intakes 4 and 5 and the intermediate forebay. Construction of the intermediate forebay would require that the residential property north of Lambert Road be acquired, resulting in the relocation of those residences and razing of buildings on that property during construction. The landscape sensitivity level is high, and impacts on viewers are substantial because the residents along SR 160 and north of Lambert Road, between Snodgrass Slough and Stone Lakes National Wildlife Refuge, would experience disruptive construction activities near their homes. The existing ground surface elevation at this location is -6 to +8 feet, while embankments surrounding the forebay would be approximately 32 feet above the ground surface.

Surge towers would be needed for the intermediate forebay pumping plant that have the potential to shade SLNWR. As shown in Appendix 17F, *Surge Tower Shadow Data Sources and Assumptions*, Table 17F-1, surge towers would generally not cast shadows that would affect SLNWR for more than 30 minutes during the winter, spring, and summer solstices. They would shade the refuge for no more than 37 minutes during the fall. Mature trees and shrubs are located predominantly on east side of the Southern Pacific Rail Line and, as shown in Figures 17F-3a through 17F-3d in Appendix 17F, these trees would cast long shadows in the same location and at the time that the surge towers would cast shadows upon the refuge. The surge tower shadows, which would be more distinct and defined near the base of the tower, would grow fainter over distance and as the sun angle declines. Therefore, the surge tower shadows would not stand out from the shadows cast by vegetation along the Southern Pacific Rail Line and would not adversely affect the refuge.

Construction of the Byron Tract Forebay would be near residences and businesses in and near the Rivers End Marina & Storage, at the junction of Lindeman Road, CVP Canal, and Old River. Ground-level construction activities would not be visible from this area because of existing levees but would likely be visible from Byron Highway and Herdlyn and Lindeman Roads, where views are elevated. The existing ground surface elevation at this location is -5 to +5 feet, and embankments surrounding the forebay would also be approximately 32 feet above the ground surface.

Earthmoving activities would result in topographical changes to areas that are presently flat and would introduce heavy equipment and vehicles that would be readily visible throughout construction of the forebays and have the potential to create dust clouds that would attract attention from visual receptors and reduce the availability of short-range views. As set forth in Chapter 22, *Air Quality and Greenhouse Gases*, the BDCP proponents have identified environmental commitments (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) to reduce emissions of construction-related criteria pollutants, including basic and enhanced fugitive dust control measures and measures for entrained road dust that would help to reduce the creation of dust clouds that would negatively affect short-range views. Once construction of the intermediate forebay is complete, it would be immediately and prominently visible in the foreground from vantages surrounding it. This forebay would convert agricultural lands to a large, geometrically shaped water body that would conflict with the existing forms, patterns, colors, and textures associated with agricultural lands. As seen in Figure 17-79, *Existing and Simulated Views of Intermediate Forebay from SR 160*, the scenic vista across agricultural fields from SR 160 is fairly open but contains existing transmission lines.

The forebay embankments would be tall enough to limit views of the existing patchwork of agricultural field it would occupy and the tree line on the horizon. The intermediate forebay embankments would add a man-made visual massing and the embankments would have a visible geometric shape. However, because embankments are approximately 0.5 mile away from both SR 160 and Lambert Road, the distance would reduce the apparent scale of the embankments, allowing them to blend somewhat with the grass field in the foreground. Overall, the existing vista from KOP 45 (Figure 17-79) on SR 160 toward the intermediate forebay would alter and reduce the available views of agricultural lands and background views but would not substantially reduce the Scenic Quality Rating which would remain an **E**. This effect would not be adverse, when seen from SR 160 and Lambert Road (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). However, it may be adverse when seen from nearby residential properties along SR 160, which are in closer proximity to the intermediate forebay than SR 160.

The Byron Tract Forebay would have a similar effect on the existing visual quality and character as seen from Byron Highway. While Byron Tract Forebay would convert a large area of agricultural land, the forebay in this location would not have as great a negative effect on the landscape as the intermediate forebay, due to the predominance of the existing Clifton Court Forebay, other water conveyance features, and fewer sensitive viewers. However, the Byron Tract Forebay would result in noticeable changes that do not blend, are not in keeping or are incompatible with the existing visual environment, and could be viewed by sensitive receptors and from public viewing areas. This effect on visual quality and character would be adverse.

Overall, because of the large footprints of the forebays combined with the proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading resulting noticeable changes from public viewing areas, this effect would be adverse.

Spoil and Borrow Areas

There would be large spoil/borrow areas near Intakes 1 and 2 (202 acres) (KOPs 1, 4, and 15), the intermediate forebay (350 acres) (KOP 86), and south of Byron Highway (632 acres) (KOPs 103 and 106) that would be needed under Alternative 1A to store excess spoils from excavation and tunnel boring and to borrow material to construct levees and to meet other fill requirements. There would be a total of 1,185 acres of land affected by spoil/borrow areas under Alternative 1A. These sites would be near the intake structures and forebay locations and would consequently affect the same viewer groups described above for those features. Changes to the spoil/borrow areas south of Byron Highway near the proposed Byron Tract Forebay would primarily affect roadway users on the highway and nearby local roadways. Because these viewers are not as sensitive and there is nearby rolling terrain, these spoil/borrow areas would not appear as visually obtrusive as the other spoil/borrow areas for Alternative 1A. The spoil/borrow areas between Intakes 1 and 2 would have the greatest effect because they have available views from SR 160 and are near the town of Clarksburg with a higher concentration of residential, recreational, and roadway viewers (see Mapbook Figure M3-1 in Chapter 3, *Description of Alternatives*). In addition, the spoil/borrow area south of the intermediate forebay would affect views from Lambert Road. Views from Stone Lakes National Wildlife Refuge are not available because the levees and vegetation along Snodgrass Slough prevent views of the ground surface where this spoil/borrow area would be located. Recreationists on local roadways, roadways users on local roadways, residents, and nearby businesses would have direct views of construction activities at spoil/borrow areas. The landscape sensitivity level is moderate to high, and impacts on these viewers are substantial, especially for residences that would experience disruptive construction activities near their homes.

Earthmoving activities would likely result in the removal of mature vegetation and topographical changes to areas that are presently flat. Earthmoving activities and associated heavy equipment and vehicles would be readily visible throughout operation of these sites and have the potential to create slowly moving dust clouds that would attract attention from visual receptors and reduce the availability of short-range views. As set forth in Chapter 22, *Air Quality and Greenhouse Gases*, BDCP proponents have identified environmental commitments (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) to reduce emissions of construction-related criteria pollutants, including basic and enhanced fugitive dust control measures and measures for entrained road dust that would help to reduce the creation of dust clouds that would negatively affect short-range views. Spoil and borrow sites would be in use for close to 7.5 years, and construction operations at these locations would take place Monday through Friday for up to 24 hours per day. Because of the long-term nature of construction, proximity to sensitive receptors, removal of vegetation, and changes to topography through grading, this effect is considered adverse.

Once construction of the BDCP facilities is complete, the spoils/borrow area adjacent to the intermediate forebay would result in a large-scale landscape effect that would alter the agrarian visual character, further compounding the effect at this location. The spoil/borrow area between Intakes 1 and 2 would result in a large-scale landscape effect that would also alter the agrarian visual character. In addition to spoils/borrow in the study area, offsite borrow sites may be needed to provide suitable materials for intake pipeline foundations, berms around RTM storage areas and canal embankments. It is not known how much import material would be needed and where it would come from. It is assumed that effects at import borrow sites would be similar in scale and have similar adverse visual effects to those within the study area. Alterations at these locations would result in sunken or elevated landforms introduced into a landscape that is currently predominantly flat. These features would be visually discordant with the area's existing forms, patterns, colors, textures associated with the existing agrarian character in the study area. Accordingly, spoil and borrow areas would result in an adverse effect on visual resources. Mitigation Measure AES-1c is available to address this effect.

Reusable Tunnel Material Areas

RTM areas would be needed to store excess material from tunnel boring and later may be used to construct levees and to meet other fill requirements or be transported to spoils sites. Five RTM areas are proposed for Alternative 1A: one immediately north of Intake 2 (104 acres) (KOPs 1, 4, and 15) north of Scribner Road, east of the Sacramento River; one south of Isleton Road (303 acres) (KOP 95) on northern Brannan-Andrus Island; and one each on southeastern Tyler Island, eastern Bacon Island, and northwestern Victoria Island (288 acres, 329 acres, 572 acres, respectively) (see Mapbook Figure M3-1 in Chapter 3, *Description of Alternatives*). There would be a total of 1,596 acres of land affected by RTM areas under Alternative 1A. The RTM areas near Intake 2 and Isleton Road would have the greatest effect because of proximity to nearby residents and visibility from nearby roadways. Activities associated with placing and spreading the RTM would occur near or directly adjacent to the homes of residential viewers. The RTM area near Intake 2 would be visible from SR 160. However, the RTM area near Isleton Road would not be visible from SR 160 because the construction area would be across the river, at a lower ground elevation than the raised roadway, and the RTM area would not be visible because of intervening vegetation along SR 160 and Isleton Road. The RTM areas on Tyler, Bacon, and Victoria Islands generally lack nearby sensitive viewers, and most views of these areas are in passing from rural roadways. The RTM area on Victoria Island would be visible from SR 4. The landscape sensitivity level is moderate to high, and impacts on viewers near Intake 2 and Isleton Road are substantial because the residents would experience disruptive construction activities near their homes.

Earthmoving activities would likely result in the removal of mature vegetation and topographical changes to areas that are presently flat. Earthmoving activities and associated heavy equipment and vehicles would be readily visible throughout operation of these sites and has the potential to create slowly moving dust clouds that would attract attention from visual receptors and reduce the availability of short-range views. As set forth in Chapter 22, *Air Quality and Greenhouse Gases*, BDCP proponents have identified environmental commitments (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) to reduce emissions of construction-related criteria pollutants, including basic and enhanced fugitive dust control measures and measures for entrained road dust that would help to reduce the creation of dust clouds that would negatively affect short-range views.

RTM areas would be in use for close to 7.5 years, and operations at these locations would take place Monday through Friday for up to 24 hours per day. Because of the long-term nature of construction, proximity to sensitive receptors, and changes to topography through grading, resulting in noticeable to very noticeable changes to the visual setting, this effect is considered adverse.

Once construction of the water conveyance facilities is complete, the RTM areas between Intakes 1 and 2 and near Isleton Road would result in large-scale landscape effects that would alter the agrarian visual character. The RTM areas on Tyler, Bacon, and Victoria Islands may be visible in passing from rural roadways and SR 4, but there is generally a lack of nearby sensitive viewers at these locations. Alterations at these locations would result in sunken or elevated landforms introduced into a landscape that is currently predominantly flat. These features would be visually discordant with the area's existing forms, patterns, colors, and textures associated with the existing agrarian character in the study area. Mitigation Measure AES-1c is available to address this effect.

Shaft Sites

Shaft sites distributed from Tyler Island south to the proposed Byron Tract Forebay are in areas where there are no immediate viewers and, therefore, have a low landscape sensitivity level (KOPs 15, 45, 86, 95, 98, and 107). Rural roadways pass near these sites, but views of construction activities would be fleeting as travelers or recreationists on these roadways travel by the sites. However, shaft sites between Intake 2 and just south of Isleton Road are in areas with nearby residences, and the landscape sensitivity level is moderate to high. Construction of the shaft sites would take just under 2.5 years; they would then be in operation for close to 7.5 years, Monday through Friday for up to 24 hours per day. This would introduce considerable heavy equipment, vehicles, and cranes needed to bore and construct the tunnel and remove excavated materials from the tunnels into the viewshed of sensitive viewers. The shaft sites would have associated work areas where materials would be stockpiled and pieces needed to construct the finished tunnel structure would be stored. In addition, launching, retrieval, and ventilation shaft sites would be built on raised earthen pads to elevate them above the flood level, and these pads would be approximately 16 to 20feet high (or at the 100-year design flood elevation for each island). The shaft would rise approximately another 20 feet above the grade of the raised pad, and there would be construction office and storage buildings located at the base of the raised pad. The shaft site would be surrounded by fencing. Construction activities associated with the shaft sites may constitute an adverse effect on visual resources due to the physical introduction of these features and the duration of time that they would be visible in the landscape. Once construction is completed, the construction office and storage buildings would be removed. As seen in Figure 17-80, *Existing and Simulated Views of Launch/Retrieval Shaft Site near Isleton Road*, construction of shaft sites would convert agricultural lands for a period of time and may require the removal of landscaping or vegetation and structures and would introduce the raised pad, raised shaft, construction buildings, and fencing would be introduced into the viewshed, as illustrated in "Simulated View during Construction." As shown in "Simulated View after Construction," the raised pad would be left in place, but the construction buildings and fencing would be removed. In addition, the introduction of tall, steel 230 kV transmission lines visually contrasts to existing views where the existing transmission lines consist of wooden utility poles. Overall, existing views from KOP 95 on SR 160 toward the launch/retrieval site would be impaired by the removal of the building and vegetation and introduction of the transmission lines and the Scenic Quality Rating would be reduced from a **D** to an **E**. This effect would be adverse (see discussion under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

Shaft sites would be located just north of Hood (KOP 74), along SR 160, 0.85 mile northwest of Twin Cities Road, the northern portion of Tyler Island, north of SR 12 (KOP 98), on Mandeville Island, on the southern portion of Bacon Island, and north of Victoria Canal. Locations where viewer groups would be able to see shaft sites in the foreground include the site just north of Hood, along SR 160 0.85 mile northwest of Twin Cities Road, and north of SR 12. The Amtrak San Joaquin Oakland to Bakersfield route passes by the ventilation shaft site on southern portion of Bacon Island but the site would only be seen by passengers sitting in window seats on the north side of the train. In addition, trains would pass by at a high rate of speed, making views the steel plates indiscernible. All other locations are not in proximity to sensitive viewers.

Docks and Barge Traffic

New barge unloading facilities would be built in the viewshed of recreationists, businesses, public roadways, and residential properties that have views and vistas that include the sites, and would result in temporary long-term changes in views in the immediate area. These facilities would be constructed in areas where the landscape sensitivity levels range from low to high. New facilities would convert vegetated areas to large, unvegetated swaths of land and piles of sand and gravel with associated loading infrastructure, introducing these features into a viewshed where none presently exist. These features would contrast sharply with the more natural areas that were present prior to construction of the new facility. New facilities would convert agricultural and other open space lands to a land use that is industrial in nature and from one that is vegetated to one that is largely unvegetated, creating new landscape effects.

Alternative 1A includes six barge unloading facilities to be built on or near the pipeline/tunnel alignment at riverbank locations about 5–6 miles apart (except on Woodward Canal). As described in more detail in Chapter 15, *Recreation*, the facilities would be built on the following waterways: Sacramento River, North Fork Mokelumne River, San Joaquin River, Middle River, and Woodward Canal (which would have two facilities) and would affect water-based recreation. Water-based recreational viewers would have the most direct views toward barge traffic and loading/offloading activities involving equipment and materials for pipeline construction. Construction of the barge facilities may require partial channel closures and use of equipment within the waterways. All barge facilities would have temporary in-water construction zone speed restrictions where high-speed recreation (e.g., waterskiing, wakeboarding, tubing) would effectively be eliminated. Once built, docks would be in use for approximately 5 years. During this time, loading facilities and barge traffic would constrict boat passage, increase boat traffic congestion during peak use (primarily summer weekends), and extend viewing times of these facilities.

The North Fork Mokelumne River location is a known location for waterskiing and wakeboarding. The San Joaquin River location is very wide, so boats could avoid the loading facility entirely. The Middle River location could constrict boat traffic, which may be high at this location; however, alternative routes are available to avoid this location. The two Woodward Canal barge unloading facilities would be located across from one another and, if both facilities are in operation, the entire canal may be constricted and could prevent boat passage in a known location for waterskiing and wakeboarding area that supports high peak boat traffic volumes. Once construction of the conveyance facilities is complete, docks would be removed and barge traffic would cease.

Construction and use of barges and barge unloading facilities during construction at all locations would introduce dominant visual elements resulting in noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes may result in adverse visual effects due to the elongated viewing times during periods of congestion, temporary partial channel closures that could impede or eliminate recreational opportunities and create negative visual perceptions of these facilities, and a reduced recreational experience due the industrial nature of views of such facilities. Thus, this effect would be adverse.

Access Roads

Construction of temporary and permanent access roads would take less than 2 years and would follow linear paths; consequently, construction of these features would not be focused on one specific location for an extended period of time. Construction of access roads would occur Monday through Friday for up to 24 hours per day. Access roads would be located in areas in where the landscape sensitivity levels range from low to high. Most of the temporary and permanent access roads follow alignments that have previously been cleared and that serve as agricultural access routes. Construction would include improving the condition of these existing access routes to accommodate construction access. Vegetation removal would likely occur along the rights-of-way of access roads and would negatively affect views from SR 160, River Road, and other roadways in the study area. After construction is complete, disturbed areas of exposed soil would be seeded for erosion control and would revegetate after a short time. Because of the temporary nature of construction and the regular relocation of activities and because roads follow alignments that have previously been cleared and that serve as agricultural access routes, this would not constitute a long-term adverse effect.

Transmission Lines

Proposed transmission line corridors are shown in Mapbook Figure M3-1 in Chapter 3, *Description of Alternatives*. Construction of the temporary 12 kV and 69 kV transmission lines would take less than 2 years and would require vegetation clearing along the linear ROWs. Construction of the permanent 69 and 230 kV transmission lines would also take less than 2 years and would require vegetation clearing along the linear ROWs. Construction of transmission lines would occur Monday through Friday for up to 24 hours per day, and transmission lines would be located in areas in where the landscape sensitivity levels range from low to high (KOPs 1, 3, 4, 15, 16, 18, 19, 20, 26, 30, 34, 41, 42, 49, 54, 69, 72, 73, 86, 89, 95, 98, 103, 107,254, and 255.

The temporary 12 kV lines would be wooden poles that are 40–45 feet tall and spaced 300 feet apart. The temporary and permanent 69 kV lines would be wooden or steel poles, depending on the utility, which are 60 feet tall and spaced 450 feet apart. The temporary 230 kV lines would be steel poles that are 95–100 feet tall and spaced 750 feet apart; however, lattice steel towers may be used at Western interconnections. Construction of transmission lines move along these linear ROW corridors that are 25–40 feet wide for 12 kV lines and 100 feet wide along the lines and 150 feet wide at poles for 69 kV and 230 kV lines. For every 2 miles of line and where the line takes a turn greater than 15 degrees, a conductor pulling location that is 50 feet wide with 200 feet of length along the corridor for 12 kV lines and 150 feet wide with 350 feet of length along the corridor for 69 kV and 230 kV lines would be required adjacent to the pole.

Construction would require clearing the corridor of vegetation, erecting the towers or poles, and then stringing the power lines using the conductor pulling locations. Construction of these features would move in a linear fashion and would not take place in any specific location for an extended period of time. Cranes would be used to string 12 kV and 69 kV lines, while towers, cranes and helicopters would be used for 230 kV lines. Site preparation, tower erection, and stringing would introduce disruptive visual elements, such as construction equipment and activity, into the landscape and temporarily detract from views. Construction of the 230 kV lines would be the most disruptive during construction because towers, cranes, and helicopters would be more visible and draw more attention toward construction activities because of movement associated with helicopters and cranes and noise associated with helicopters. Temporary power would be supplied by 69 kV transmission lines that would tap into the Hood, Grand Island, Middle River, and Herdlyn Substations and would run parallel to existing transmission corridors. These temporary lines would be in keeping with the existing visual character of the transmission corridor. In addition, 12 kV lines would supply temporary power by tapping into existing transmission routes, or the newly constructed 69 kV lines, extending power to construction sites. These would be new lines and would generally not run parallel to existing transmission corridors.

Permanent power would be supplied by the Banks Substation near the Banks pumping plant. Permanent 230 kV transmission lines are shown on Figure 3-25 in Chapter 3, *Description of Alternatives*, and would travel from the south to north. The line would not parallel existing transmission corridors and would introduce a transmission corridor into the landscape where none presently exists. This would create or add to the amount of visible transmission lines, based on location, and not be in keeping with the existing visual character. New permanent 69 kV lines would branch from the northern terminus of the 230 kV line to supply power to the intermediate forebay pumping plant and Intakes 1–5. Each intake would have an electrical substation and transformer located to the right of the sedimentation basins and intake pumping plants (refer to Figure 3-20 in Chapter 3, *Description of Alternatives*).

Most of the transmission lines would follow access roads constructed for the BDCP conveyance facilities or other existing access roads and roadways that are within the study area. After construction is complete, disturbed areas of exposed soil would be seeded for erosion control and would revegetate after a short time. However, tree and shrub removal would likely occur within the ROWs and would negatively affect views from SR 160, River Road, and other roadways in the study area. Once the proposed 230 kV electrical power transmission lines are constructed, tall steel poles that would be highly visible landscape features would contrast strongly with their surroundings. The 69 kV electrical power transmission lines would also be larger than wood-poled transmission lines commonly seen in the Delta. While wood-poled transmission lines are part of most existing views, new 69 and 230 kV transmission lines and their cleared ROWs would adversely affect the existing visual character by introducing large towering structures in a linear pattern that appear to march through the landscape. The temporary nature of construction and movement of construction activities to different locations, combined with tree and shrub removal within ROWs and appearance of transmission lines once in place, would make changes in views associated with transmission lines adverse. Mitigation Measures AES-1a through AES-1c are available to address these effects.

The Banks Substation is immediately south of the California Aqueduct, and would require over 2 miles to connect to the Byron Tract Forebay area. A substation, office buildings, and warehouse facility buildings at the Banks pumping plant currently make this area industrial in nature. However, the new substation would increase utility infrastructure present at this location, and the new 230 kV electrical transmission lines would compound the amount of visible industrial elements and result in adverse visual effects.

Concrete Batch Plants and Fuel Stations

Approximately 2-acre concrete batch plants would be located at Intakes 2 and 4 and along the tunnel alignment on Byron Highway and 40-acre concrete batch plants 2.5 miles north of SR 12, and along the tunnel alignment approximately 8.5 miles south of SR 12 (see Mapbook Figure M3-1 in Chapter 3, *Description of Alternatives*). Concrete batch plants would have visible features that are likely to include silos to hold materials for mixes, material unloading areas and storage piles, concrete truck loading areas and washouts, liquid storage tanks, conveyors, heavy equipment and trucks for material movement and transport, lighting, and mixing equipment. Built features would be largely made of steel that is painted. Batch plants would convert agricultural lands to industrial facilities.

Approximately 2-acre fuel stations would be located at Intakes 2 and 4, 2.5 miles north of SR 12, along the tunnel alignment approximately 8.5 miles south of SR 12, and along the tunnel alignment on Byron Highway (KOP 106). Fuel stations may have aboveground storage tanks that are painted and fuel pumps that would be visible and would convert agricultural lands to industrial facilities.

Construction of a concrete batch plant and fuel station north of Intake 2 would have the greatest effect because construction would take place immediately adjacent to SR 160. Construction of a batch plant and fuel station south of Intake 4 (KOP 45) would also have adverse effects because construction would occur within the foreground of view from SR 160 but to a lesser degree because activities would be screened, in part, by the existing orchards to the west. Construction of the concrete batch plant and fuel station 2.5 miles north of SR 12 would be on Tyler Island and would not have a substantial effect because it would not occur in proximity to sensitive visual receptors. Elements of construction may be visible to recreationists on North Mokelumne River and agricultural workers on Tyler Island, but these viewers would only have intermittent visual access and construction would be temporary in nature, lasting less than 2 years. Construction of a concrete batch plant and fuel station east of Byron Highway, just south of the Mendota Canal would be located in close proximity to similar industrial looking facilities that are associated with the Clifton Court Forebay and existing transmission lines that course the area. The primary viewers of this area are roadway travelers on Byron Highway that pass by the site at highway speeds and would have intermittent visual access of temporary construction activities that would last less than 2 years. Once the project is complete, these facilities would be removed.

Construction of the concrete batch plants and fuel stations would introduce heavy equipment and vehicles that would be readily visible throughout construction of the facilities and have the potential to create dust clouds that would attract attention from visual receptors and reduce the availability of short-range views. As set forth in Chapter 22, *Air Quality and Greenhouse Gases*, the BDCP proponents have identified environmental commitments (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) to reduce emissions of construction-related criteria pollutants, including basic and enhanced fugitive dust control measures and measures for entrained road dust that would help to reduce the creation of dust clouds that would negatively affect short-range views. Once construction of the concrete batch plants and fuel stations are complete, these structures would be immediately and prominently visible in the foreground from surrounding vantages. Agricultural lands would be converted to industrial structures and facilities that conflict with the existing forms, patterns, colors, and textures associated with agricultural lands. Converting agricultural lands to industrial facilities, especially those in close proximity to SR 160 is considered adverse.

Summary

***NEPA Effects*:** The primary features that would affect the existing visual quality and character under Alternative 1A, once the facility has been constructed, would be Intakes 1–5, the intermediate forebay and Byron Tract Forebay, transmission lines, and resulting landscape effects left behind from spoil/borrow and RTM areas, and concrete batch plants and fuel stations. These changes would be most evident in the northern portion of the study area, which would undergo extensive changes from the permanent establishment of large industrial facilities and the supporting infrastructure along and surrounding the 8.5-mile segment of the Sacramento River where the intakes would be situated.

Overall, construction would take 9–14 years, and the intensity of the activities in contrast to the current rural/agricultural nature of the area would be substantial. Construction of Intakes 1–5 and the accompanying pumping plants, surge towers, borrow/spoil areas, and RTM areas would introduce visually dominant and discordant features in the foreground and middleground views, and these elements would be very noticeable to all viewer groups. A construction shaft, tunnel work area, and RTM area and transmission lines would be visible from SR 4. While not officially designated state scenic highways, and therefore not discussed under *Impact AES-3: Permanent damage to scenic resources along a state scenic highway from construction of conveyance facilities*, this road is a San Joaquin County Scenic Route (see *San Joaquin County* under Section 17.2.3.2, *County and City General Plans*). These features would detract from the visual quality of views from these routes.

After construction, areas surrounding Intakes 1–5, spoil/borrow areas, RTM areas, shaft sites, and locations where concrete batch plants and fuel stations were located may be denuded of vegetation for a short period of time until the landscaping plans designed under WREM No. 30a are implemented. Once installed, the landscape would still appear to be denuded of vegetation or to have little vegetative cover because immature landscaping would be similar in appearance to tilled or newly planted agricultural fields. The sites would be in a transitional state, and over a period of a few years, plant species would mature and vegetation would recolonize the sites. These changes would happen in an area known for its open space, agricultural landscapes, and rural characteristics and would segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and eliminate valued visual resources. The effects of permanent access roads on visual resources would not be adverse. The effects of raised shaft site pads on the existing scenic character may be adverse. Operation of the intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines would result in adverse effects on the existing visual character. In addition, construction of all of these features has the potential to negatively affect wildlife viewing and the overall enjoyment of scenic views in the study area.

Therefore, because of the long-term nature of construction combined with the proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this overall effect of conveyance facility construction on existing visual quality and character is considered adverse. Mitigation Measures AES-1a through AES-1g are available to address visual effects resulting from construction of Alternative 1A water conveyance facilities.

CEQA Conclusion**:** Construction of Alternative 1A would substantially alter the existing visual quality and character present in the study area. The long-term nature of construction of the intakes, pipeline/tunnel, work areas, spoil/borrow and RTM areas, shaft sites, barge unloading facilities; presence and visibility of heavy construction equipment; proximity to sensitive receptors; relocation of residences and agricultural buildings; removal of riparian vegetation and other mature vegetation or landscape plantings; earthmoving and grading that result in changes to topography in areas that are predominantly flat; addition of large-scale industrial structures (intakes and related facilities); remaining presence of large-scale borrow/spoil and RTM area landscape effects; and introduction of tall, steel transmission lines would all contribute to this impact.

Overall, construction would last up to 9–14 years and would change the existing visual character in the vicinity of project elements from those of agricultural, rural residential, or riparian and riverine settings to areas involving heavy construction equipment, temporary construction structures, work crews, other support vehicles and other activities that would modify and disrupt short- and long-range views. These activities would be disruptive to viewers. Once construction is complete, the alternative would result in the placement of large, multi-story industrial concrete and steel structures, pumping plants, fencing, and other similar anthropogenic features where none presently exist. Because of the landscape sensitivity and visual dominance of these features, these changes would result in reduced scenic quality throughout the study area (see Section 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Thus, Alternative 1A would result in significant impacts on the existing visual quality and character in the study area.

Mitigation Measures AES-1a through AES-1g would partially reduce impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, Alternative 1A would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

BDCP proponents will make site-specific design decisions to locate new permanent transmission lines and access routes to minimize effects on vegetation where feasible. Design considerations will include the following actions.

- Working with the design engineer, site-specific location adjustments will be identified to avoid adversely affecting mature tree and shrub groupings to the extent feasible and to avoid creating large, linear swaths of vegetation clearing through the construction of new transmission lines and access routes.
- Where new transmission lines are located near trees along designated scenic route portions of SR 160 and River Road, the construction contractor will be required to utilize selective pruning techniques to avoid hard pruning of tree canopies that would negatively affect those scenic resources and views along those routes.
- Existing transmission corridors will be evaluated for placement of the new transmission lines to avoid creating new transmission corridors to the extent feasible.
- Undergrounding transmission lines.

Implementation of this measure will minimize the effects on existing visual quality and character that would result from removal and pruning of mature vegetation within proposed new transmission lines and access road routes. This measure will provide for a reduction in the number of trees and shrubs removed from installation of transmission lines and development of access roads.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

To reduce the impact on sensitive receptors from the change in existing visual quality, the BDCP proponents will install temporary visual barriers at the construction work areas with direct line-of-sight from sensitive receptors. Barriers will be placed to obscure views of work areas where construction activity and equipment would be disruptive and lower the existing visual quality. These efforts will include the following actions and performance standards.

- Visual barriers will be installed to minimize sensitive receptors (i.e., residents and recreational areas) views of construction work areas.
    - The visual barriers will be placed to protect residents and recreational areas that are located within 0.25 mile of a BDCP-related construction site and where views to the work areas represent a significant visual impact.
    - The visual barrier may include chain link fencing with privacy slats, fencing with windscreen material, cofferdam, silt fence, wood or concrete barrier/soundwall, or other similar barrier.
    - The visual barrier will be a minimum of 6 feet high to help to maintain the privacy of residents and block long-term ground-level views toward construction activities.

While the visual barriers would introduce a visual intrusion, they would greatly reduce the visual effects associated with visible construction activities and screening construction activities and protecting privacy is deemed desirable. The visual barriers are an effective means of reducing the visibility of active construction work areas, thereby minimizing the impact on existing localized visual quality.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

The BDCP proponents will develop and implement a spoil/borrow and RTM area management plan consistent with the "Disposal and Reuse of Spoils, RTM, and Dredged Material," in Appendix 3B, *Environmental Commitments, AMMs, and CMs*, to reduce the extent of negative visual alteration of existing visual quality or character of spoil, and especially borrow, sites from construction through remediation of terrain, revegetation, and other practices as described below. The purpose of this measure is to prevent flattened, highly regular, or engineered slopes which create visual discordance and incongruence from native topography and to re-establish natural looking vegetative communities that are indigenous to the project environment. The exception to grading flattened, regular sites is if the intended use of the site is agriculture. This mitigation measure will complement and is related to activities described under Mitigation Measure SOILS-2b, Chapter 10, *Soils*, Impact SOILS-2.

Prior to construction mobilization, the BDCP proponents will develop a management plan that identifies site-specific measures to remediate exposed soil and terrain to make it suitable for planned development, agriculture, or reuse as natural habitat and to mitigate visual effects. Existing information, such as topographical maps, vegetative surveys or records, and historical and existing photographs, that show preexisting, site-specific (or reference site) conditions prior to the conversion to agriculture will be evaluated and used as tools for restoring disturbed sites. Where appropriate, the management plan will consider recreational or mixed uses. In general, however, the majority of the sites will be evaluated for restoration to native habitat due to the amount of terrain alteration and vegetation and habitat loss resulting from construction of the water conveyance facilities. At a minimum, the management plan will meet the following performance standards.

- Plantings will be native and indigenous to the area, and no invasive plant species will be used under any conditions. If indigenous plantings are not available, BDCP proponents will coordinate with CDFW to use a mutually acceptable plant mix palette.
- In areas to be used for agriculture, the management grading plan will mimic the preexisting landform pattern to the greatest degree possible, given geotechnical or environmental constraints.
- In areas of habitat restoration, the terrain will be designed and graded to be undulating, avoiding large, flat-sloped areas.
- In areas of proposed development, a combination of terrains may be implemented to encourage visual variety.
- Terrain will be designed and graded to be rounded, avoiding sharp angles and steep or abrupt grade breaks except for areas involved with agriculture.
- Special attention will be paid to transitions between undisturbed and disturbed terrains to ensure that the transition appears as natural as possible and to blend the lines between the two for a natural, organic appearance.

- The site will be visually surveyed prior to any vegetation removal for the presence of rock outcroppings, downed trees, or similar features.
- Any restoration with trees will be placed to mimic natural patterns during reclamation to provide visual congruity once revegetation plantings mature and to restore the habitat values they provide.

Implementation of this measure would be expected to result in successful management of borrow/spoils and RTM areas, thereby reducing the overall impact on the visual quality in the study area.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

The BDCP proponents will restore barge unloading facility sites once the facilities are decommissioned and removed to minimize the impact on visual quality and character at these sites. Restoration of the decommissioned sites will meet the following performance standards.

- Grading or re-contouring disturbed terrain.
- Replacement plantings will be installed in areas where vegetation was removed.
  - Replacement plantings will be native and indigenous to the area. If indigenous plantings are not available, DWR will coordinate with CDFW to use a mutually acceptable plant mix palette.
  - No invasive plant species will be used under any conditions.

Implementation of this measure will result in restoration of the barge unloading facility sites.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

The BDCP proponents will use aesthetic design treatments, where and to the extent feasible, to minimize the impact on existing visual quality and character in the study area associated with the introduction of water conveyance structures.

The BDCP proponents will evaluate similar, local well-designed water conveyance structures, including those with historic value and use these features as design precedent to develop designs for the intake facilities, pumping plants, control structures, fish screens, operable barriers, and bridges, so that the resultant design will complement the natural landscape, be aesthetically pleasing, and minimize the effects of visual intrusion of the BDCP facilities on the landscape, to the extent feasible.

Where no local design precedent exists, the BDCP proponents will research structure designs outside the local area. For example, the Freeport Regional Water Project intake facility design incorporates aesthetic design treatments that create a landmark feature in the landscape. The BDCP proponents will consider design details to ensure that all intake structures are complementary of one another so that these facilities do not create further visual discordance in the landscape.

The following minimum performance standards will apply.

- The height of new structures will be minimized as feasible. In addition, the visual intrusion of ancillary features (e.g., antennas or other equipment) will be minimized through proper siting.
- New structures will be painted with a shade that is two to three shades darker than the general surrounding area, unless aesthetic design treatments indicate another color selection with the intent to specifically improve aesthetics. Otherwise, colors shall be chosen from the BLM Standard Environmental Colors Chart CC-001: June 2008. Because color selection will vary by location, the BDCP proponents, working with the facility designers, will employ the use of color panels evaluated from key observation points during common lighting conditions (front versus backlighting) to aid in the appropriate color selection. The BDCP proponents will select colors for the coloring of the most prevalent season. Panels will be a minimum of 3 by 2 feet in dimension and will be evaluated from various distances, but within 1,000 feet, to ensure the best possible color selection. Refer to http://www.blm.gov/bmp for more information on this technique and other best management practices and techniques for visual screening.
    - All paints used for the color panels and structures will be color matched directly from the physical color chart, rather than from any digital or color-reproduced versions of the color chart.
    - Paints will be of a dull, flat, or satin finish only. Appropriate paint type will be selected for the finished structures to ensure long-term durability of the painted surfaces.
    - The BDCP proponents will maintain the paint color over time.
- In the design of permanent transmission poles and chain link fencing, DWR will consult with utility providers on incorporating the following design measures.
    - Transmission poles and towers will be painted or powder coated with colors selected using the BLM selection techniques to make the structures recede into the visual landscape.
    - Chain link fences will be plastic or vinyl coated with colors selected using the BLM selection techniques to make chain link fences to appear more see-through than non-treated, light grey fencing that acts as a visual barrier to a degree.
    - Finishes will be selected for their ability to achieve the correct color selection, durability, and environmental safety.
- The BDCP proponents will implement aesthetic design features at concrete or shotcrete structures that are highly visible to the public. These features may include mimicking natural material (e.g., stone or rock surfacing) and integral color, in the same theme, to reduce visibility and to better blend with the landscape.
- The BDCP proponents will evaluate bridge crossing designs using lattice steel, consistent with other bridges in the Delta. Such a structure would be less visually confining than concrete structures, provide better visual access to points beyond, allow light to travel through the structure, and may appear less like a visual barrier within the landscape.
- The BDCP proponents will ensure that visible pipelines, guardrails, and signs will be of a material or color that helps surfaces to blend better with the surroundings. These elements

will be constructed with low-sheen and non-reflective surface materials to reduce potential for glare, and the use of glossy paints or surfaces would be avoided.

Implementation of this measure and application of the aesthetic design treatments for alternative structure would help minimize the impact on visual quality from the development of the water conveyance structures in the study area, using techniques that serve to make the structures blend into the surrounding environment, to the extent possible. However, the overall change in visual character would still be substantial because physical structures of this scale do not presently exist.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

The BDCP proponents will locate concrete batch plants and fuel stations in construction work areas away from sensitive visual resources (i.e., state scenic highways) and receptors to minimize the impact on visual quality. In addition, these sites will be restored after construction to minimize the long-term impact on localized visual character. The relocation approach for the individual facilities is described below. The BDCP proponents will incorporate these facility location changes into the design plans prior to construction.

- Locate the concrete batch plants and fuel stations that are proposed to be adjacent to SR 160, near the intakes, so that these operations are set back from the state scenic highway as far as site conditions allow. These features will be located toward the east side of the intakes, in closer proximity to the shaft sites.
- Structures associated with the concrete batch plants and fuel stations will be designed, to the extent feasible, to be low-profile to reduce their apparent scale and visual prominence within the viewshed.
- In addition, the structures and storage piles associated with the concrete batch plants and fuel stations for the canal alignment just south of Snodgrass Slough and on Webb Tract north of False River will be set as far west from the waterways, as possible.
- Structures and storage piles associated with the concrete batch plants and fuel stations east of Byron Highway will be set back off of the highway as much as possible and toward the northern edge of the proposed sites. The same principles will be applied to the concrete batch plant and fuel station along Willow Point Road, for the western canal alignment.
- Locate the concrete batch plant and fuel station proposed between Intakes W3 and W4 to an arrangement opposite each other along the agricultural access road, instead of adjacent to one another. They will be placed in closer proximity to the existing development at this location so that they appear to be more of a continuation of existing development.
- All concrete batch plant and fuel station sites will be restored to preconstruction conditions once the facilities are decommissioned and removed.
- All disturbed terrain will be restored.
- Replacement plantings will be installed in areas where vegetation was removed.
    - Replacement plantings will be native and indigenous to the area or will match surrounding agricultural plantings.
    - No invasive plant species will be used under any conditions.

Implementation of this measure will minimize the impact on visual quality from the construction and use of the concrete batch plant and fuel station facilities. In addition, this measure will help restore the concrete batch plant and fuel station locations to a preconstruction condition.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

The BDCP proponents will apply additional landscape treatments and use best management practices as part of implementing the project landscaping plan (as set forth by DWR's WREM No. 30a requirements) to restore and maintain local character, improve aesthetics, and reduce the visual scale of the proposed water conveyance elements in the study area.

In addition to the guidance set forth in DWR's WREM No. 30a, *Architectural Motif, State Water Project,* in those aesthetic areas significantly impacted by the project, the BDCP proponents will utilize landscaping to minimize such impacts by relying on one or more of the following: street trees, welcome signs, decorative lighting, and other streetscape design techniques. In addition, native trees, shrubs, and grasslands native to the study area will be planted to preserve the visual integrity of the landscape, provide habitat conditions suitable for native vegetation and wildlife, and ensure that a maximum number and variety of well-adapted plants are maintained.

The following practices will be adhered to in implementing the project landscaping plan.

- Design and implement low impact development (LID) measures that disperse and reduce runoff by using such features as vegetated buffer strips between paved areas that catch and infiltrate runoff, bioswales, cisterns, and detention basins. In addition, the BDCP proponents will evaluate the potential use of pervious paving to improve infiltration and to reduce the amount of surface runoff from entering waterways and the stormwater system. However, LID measures will not be used where infiltration could result in adverse environmental effects.
- Vegetative accents and screening will be used to aid in a perceived reduction in the scale and mass of the built features, while accentuating the design treatments that will be applied to built features. Plant selection will be based on its ability to screen built features and provide aesthetic accents.
- Realignments of SR 160 and South River Road will be landscaped in a manner that visually ties the new alignment in to the old alignment by implementing roadside landscaping that helps achieve a continuation of the existing roadside vegetation while screening built features.
- Landscape berms, combined with tree and shrub plantings will be used to help screen built features from existing viewpoints by allowing for additional height. The landscape berms will be constructed in a manner that has a more natural form, as opposed to one that is highly regular and levee-like. The berms will be seeded with a native meadow erosion control seed mix and be planted to comply with directions set forth below.
    - Plantings will be native and indigenous to the area, and no invasive plant species will be used under any conditions. If indigenous plantings are not available, BDCP proponents will coordinate with CDFW to use a mutually acceptable plant mix palette.

    - The species list will include trees, shrubs, and an herbaceous understory of varying heights, as well as both evergreen and deciduous types. Plant variety will increase the effectiveness of revegetated areas by providing multiple layers, seasonality, diverse habitat, and reduced susceptibility to disease.
- The use of native grass and wildflower seed in erosion control measures will be required where such a measure would improve aesthetics.
    - Wildflowers will provide seasonal interest to areas where trees and shrubs are removed or grading has occurred.
    - Species will be chosen that are native and indigenous to the study area and for their appropriateness to the surrounding habitat. For example, upland grass and wildflower species will be chosen for drier, upland areas and wetter grass species will be chosen for wetland areas.
    - If not appropriate to the surrounding habitat, wildflowers will not be included in the seed mix.
    - Under no circumstances will invasive plant species be used in any erosion control measures.
- Vegetation will be planted within 2 years following project completion.
- Design of the landscaping plan will maximize the use of planting zones that do not need irrigation, such as seeding with a native grassland and wildflower meadow mix, which reduces or eliminates the need for a permanent irrigation system.
- If an irrigation system is required, an irrigation and maintenance program will be implemented during the plant establishment period and carried on, as needed, to ensure plant survival. Areas that are irrigated will use a smart watering system that evaluates the existing site conditions and plant material against weather conditions to avoid overwatering of such areas. To avoid undue water flows, the irrigation system will be managed in such a manner that any broken spray heads, pipes, or other components are fixed within 1–2 days, or the zone or system will be shut down until it can be repaired.
- All measures prescribed above to screen facilities will not act to degrade or eliminate scenic vistas or be designed in a manner that negatively affects views from scenic roadways.
- These measures will not be implemented where implementation would constitute an adverse effect on sensitive habitats or sensitive species.

Implementation of this measure will reduce the effects on local visual quality from introduction of the water conveyance facilities.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

***NEPA Effects*:** Scenic vistas are mapped and included in Appendix 17D, Figure 17D-1. Once built, permanent access roads would not adversely affect views available from scenic vistas. Permanent access roads generally follow ROWs that have already previously been cleared to serve as agricultural access routes and would be improved for BDCP-related activities. Because the permanent access routes follow preexisting routes, they would not result in perceived visual changes from scenic vistas.

Following completion of construction, the 16- to 20-foot-high raised pads associated with shaft sites would remain in place; these could be seen from vistas along Lambert Road (KOP 86), Twin Cities Road, Isleton Road (KOP 95), SR 12 (KOP 98), and SR 4. Mitigation Measure AES-1e is available to address this effect.

The primary features that would affect scenic vistas subsequent to completion of construction of Alternative 1A are Intakes 1–5, the intermediate forebay and Byron Tract Forebay, landscape effects remaining from spoil/borrow and RTM areas, and permanent transmission lines. These features would introduce visually dominant and discordant features in the foreground and middleground views in vistas that would be very noticeable to all viewer groups. Scenic vistas that would be affected are primarily views from roadways on levees and bridges that offer elevated vantages and views that extend from the foreground to the background of the surrounding landscape in areas with low to high landscape sensitivity levels. In addition, scenic vistas are available from ground-level views where vegetation, infrastructure, and atmospheric haze do not limit and preclude such views. Alternative 1A would result in a very noticeable effect on viewer experiences from scenic vista opportunities areas that encompass a total of about 8.5 miles of scenic vistas along public roads (SR 160 and CH E9). All facilities would require removal of visually important features such as mature trees and shrubs and agricultural land, which are scenic elements that contribute to the viewing experience from scenic vistas.

Intakes 1–5 would introduce large, multi-story industrial concrete and steel structures, pumping plants, landscaping, fencing, and other similar anthropogenic features along an 8.5-mile area and into rural vistas with riparian, riverine, and agricultural characteristics. KOPs falling within scenic vistas that be affected by Intakes 1–5 include KOPs 15, 18, 20, 34, 41, 42, and 45. Each intake facility would consist of the intake structure along the river and the intake pumping plant. The intake structures on the river would range from 700–2,300 feet long (total structure length–intake and transitions) by 40–60 feet wide and rise 55 feet from the river bottom to top of the structure. The 20-acre intake pumping plant facility would be built on a ground plane that is elevated 24–27 feet above the surrounding landscape to avoid flooding. The facility would contain a structure that is 262 feet long by 98 feet wide by 58–73 feet tall, and there would be 70 to 85-foot-tall concrete surge towers at Intakes 1–3. The design of the intakes and associated facilities could play a large part in helping to improve the quality of affected and degraded vista viewsheds. Landscaping that would be incorporated into the facility would help to slightly improve views. As seen in Figure 17-76a, *Existing and Simulated Views of Intake 3 East from SR 160 in January 2012*, the removal of a substantial amount of riparian vegetation along the east bank opens up the vista but also increases the visual prominence of the pumping plant in the landscape. The introduction of tall, steel 230 kV transmission lines visually contrasts to existing views where there are no transmission lines and in an area where transmission lines primarily consist of wooden utility poles. The pumping plant introduces a large building, similar in appearance to a warehouse facility, that is a focal point and visually discordant in scale and mass to the surrounding rural character within the vista. It also adds monotone solid color mass into a landscape where the natural colors of the landscape are earth-tones and more muted. Overall, the existing vista from KOP 34 on SR 160 toward Intake 3 would be substantially impaired by vegetation removal and introduction of the pumping plant and the Scenic Quality Rating would be reduced from a **D** to an **E**. A reduction in the Scenic Quality Rating associated with Intake 3 is representative of the effects that could occur to other vistas through the removal of vegetation, obscuring and limiting views beyond the foreground, and introducing large industrial features into a rural landscape and would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual*

Resources). However, as shown in Figure 17-76b, *Existing and Simulated Views of Intake 3 East from SR 160 in July 2013*, fast-growing poplar or cottonwood trees that were newly planted in January 2012 have since grown and would act to obscure portions of the pumping plant. However, the pumping plant would still be visually discordant in scale and mass to the surrounding rural character within the vista and the Scenic Quality Rating would be reduced from a **D** to an **E**. Note that, over time, the trees will continue to grow and views of Intake 3 from KOP 34 could be further limited.

Figure 17-77, *Existing and Simulated Views of Intake 2 West from SR 160*, shows an intake associated with the west alignment (Alternatives 1C, 2C, and 6C). However, this view is representative of how an intake under this alternative would look from CH E9 and could affect vista views from that roadway. The conversion of the riverbank that is grassy with riparian vegetation to the industrial looking on-bank intake is a stark visual and color contrast against the more natural colors and textures of a vegetated riverbank that is absent of structures. The pumping plant introduces a large warehouse type of building that is a focal point and visually discordant in scale and mass to the surrounding rural character within the vista. It also adds monotone solid color mass into a landscape where the natural colors of the landscape are earth-tones and more muted. The pumping plant and on-bank intake would limit and detract from the visual quality of views beyond the foreground. The introduction of tall, steel 230 kV transmission lines visually contrasts to existing views of wooden utility poles. In addition, at a closer distance, views of available sky would be interrupted by the transmission lines and pumping plant. Overall, the existing vista from KOP 15 on SR 160 toward Intake 2 West, which would is representative of views looking toward the east bank of the river from CH E9, would be substantially impaired by vegetation removal and introduction of the pumping plant and the Scenic Quality Rating would be reduced from a **C** to an **E**. A reduction in the Scenic Quality Rating associated with Intake 2 West is representative of the effects that could occur to other vistas through the removal of vegetation, obscuring and limiting views beyond the foreground, and introducing large industrial features into a rural landscape, and this effect would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

Scenic vistas that would be affected by the intermediate forebay include those available from Lambert Road (KOP 86) and SR 160 (KOPs 41, 45, and 54). The intermediate forebay would be visible in the foreground from both of these scenic vistas, would encompass a 760-acre water surface area, and include a 92-acre pumping plant facility that would house a 76-foot tall structure. This forebay would convert agricultural lands to a large, geometrically shaped water body that would conflict with the existing forms, patterns, colors, and textures associated with agricultural lands. The water surface of the intermediate forebay may be partially visible in vistas from vantages that are elevated on levees, such as from where Lambert Road crosses over Snodgrass Slough. However, the majority of views would be from the ground-level and would be of the berms that would prevent views of the water surface within the vista. As seen in Figure 17-79, *Existing and Simulated Views of Intermediate Forebay from SR 160*, the scenic vista across agricultural fields from SR 160 is fairly open but contains existing transmission lines. The forebay embankments would be tall enough to limit views of the existing patchwork of agricultural field it would occupy and the tree line on the horizon. The intermediate forebay embankments would add a man-made visual massing and the embankments would have a visible geometric shape. However, because embankments are approximately 0.5 mile away from both SR 160 and Lambert Road, the distance would reduce the apparent scale of the embankments, allowing them to blend somewhat with the grass field in the foreground. Overall, the existing vista from KOP 45 on SR 160 toward the intermediate forebay would alter and reduce the available views of agricultural lands and background views in the vista but would not substantially reduce the Scenic Quality Rating which would remain an **E**. The effect of the forebay on the scenic quality would therefore not be adverse. The Byron Tract Forebay would have a similar or more prominent effect on scenic vistas available from Lindemann Road depending on location. Views from Lindemann Road that are closer to Herdlyn Road would be adversely affected because they would be in closer proximity to and would have more direct views of the forebay (KOP 107). The embankments would be prominent features that would replace agricultural fields and the water surface could be visible. Views from Lindemann Road that are closer to Rivers End Marina & Storage would be partially or fully obstructed by intervening roadside vegetation and infrastructure. The Byron Tract Forebay would encompass 600 acres. However, while it would convert a large area of agricultural land, the forebay in this location would not an adverse effect on the landscape intermediate forebay due to the predominance of the existing adjacent Clifton Court Forebay and other water conveyance features.

The spoils/borrow area south of the intermediate forebay would result in a large-scale landscape effect that would be within the scenic vistas available from Lambert Road, further compounding the effect on scenic vistas from this location (KOP 86). The spoil/borrow and RTM area between Intakes 1 and 2 would result in a contiguous, large-scale landscape effect that would be included within the two scenic vistas available from SR 160 between these two intakes (KOP 15). The RTM area near Isleton Road would not be visible from SR 160 because the work area would be across the river at a lower ground elevation than the raised roadway, and the RTM area would not be visible because of intervening vegetation along SR 160 and Isleton Road (KOP 95). It would be visible from Isleton Road, though. The RTM areas on Tyler, Bacon, and Victoria Islands may be visible from vista vantage points; however, there is generally a lack of nearby sensitive viewers, and most views of these areas are in passing from rural roadways and SR 4. Alterations at these locations would result in sunken or elevated landforms that would be introduced into a landscape that is currently predominantly flat. These features would be visually discordant with the area's existing forms, patterns, colors, and textures associated with views from scenic vistas of agricultural lands in the study area.

Most of the transmission lines would follow access roads constructed for the BDCP conveyance facilities or other existing access roads and roadways that are outside the immediate area (KOPs 15, 16, 18, 19, 20, 34, 41, 42, 54, 86, 89, 95, 98, and 255). Once the proposed 230 kV electrical power transmission lines are constructed, tall steel lattice structures that would be highly visible landscape features would contrast strongly with their surroundings. The 69 kV electrical power transmission lines would also be larger than wood-poled transmission lines commonly seen in the Delta. While wood-poled transmission lines are part of most existing views, new 69 and 230 kV transmission lines and their cleared ROWs would adversely affect the existing visual character by introducing large towering structures in a linear pattern that appear to march through the landscape.

The effects of permanent access roads on scenic vistas would not be adverse. The effects of shaft site pads and access hatches on scenic vistas could be adverse. The large scale of intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and the presence of new transmission lines may result in adverse effects on scenic vistas. Overall, effects on scenic vistas associated with Alternative 1A would be adverse. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

***CEQA Conclusion*:** Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the Scenic Quality Rating in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measure AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 1A would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

***NEPA Effects*:** Conveyance facilities under Alternative 1A would result in an overall noticeable effect on viewers relative to their current experience and enjoyment of the study area's scenic resources along SR 160 and River Road, where the landscape sensitivity level is high (KOPs 1, 4, 15, 18, 20, 34, 41, 45, 54, and 55). All five intakes, the spoils/borrow and RTM area north of Intake 2, and the intermediate forebay would be immediately and prominently visible in the foreground from SR 160, including construction activities described in Impact AES-1. These conveyance facility components would introduce visually dominant and discordant features into views available from scenic highways, and these elements would be very noticeable to all viewer groups.

As seen in Figure 17-76a, *Existing and Simulated Views of Intake 3 East from SR 160 in January 2012*, the removal of a substantial amount of riparian vegetation along the east bank acts to increase the visual prominence of the pumping plant in the landscape. Figure 17-76b, *Existing and Simulated Views of Intake 3 East from SR 160 in July 2013*, shows how fast-growing poplar or cottonwood trees that were newly planted in January 2012 have since grown and would act to obscure portions of the pumping plant. The introduction of tall, steel 230 kV transmission lines visually contrasts to existing views where there are no transmission lines and in an area where transmission lines primarily consist of wooden utility poles and would result in adverse visual effects. Overall, existing views from KOP 34 on SR 160 toward Intake 3 would also be substantially impaired by vegetation removal and introduction of the pumping plant and the Scenic Quality Rating would be reduced from a **D** to an **E**. In Figure 17-77, *Existing and Simulated Views of Intake 2 West from SR 160*, the pumping plant has the same visual effect as shown in Figures 17-76a and 17-76b because it introduces a large-scale building, similar in appearance to a warehouse facility, that is a focal point and visually discordant in scale and mass to the surrounding rural character. It also adds monotone solid color mass into a landscape where the natural colors of the landscape are earth-tones and more muted. The Scenic Quality Rating for KOP 15 would be reduced from a **C** to an **E** for Intake 2 West. A reduction in the Scenic Quality Ratings associated with Intakes 3 and 2 West are representative of the effects that would occur as a result of all intakes on SR 160 at each location through the removal of vegetation, obscuring and limiting views beyond the foreground, and introducing large industrial features into a rural landscape and this effect would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Each intake would result in an adverse visual effect on views from SR 160 and adverse effects on SR 160 would be substantially compounded by the presence of each additional intake to dramatically alter views associated with SR 160.

Similarly, as seen in Figure 17-78, *Existing and Simulated Views of Intake 4 East from SR 160*, a substantial amount of riparian vegetation along the east bank would be removed and landscaping associated with the residences along SR 160 would no longer be present. The removal of vegetation along the river serves to remove screening of the pumping plant and intake that could have been provided by that vegetation. The realigned roadway slightly increases the prominence of the roadway surface, but removal of roadside vegetation is what increases the visual prominence of the roadway. The pumping plant introduces a large-scale building, similar in appearance to a warehouse facility, that is a focal point and visually discordant in scale and mass to the surrounding smaller scale rural structures. It also adds monotone solid color mass into a landscape where the colors of buildings do not detract from the viewshed because vegetation screens the buildings, softening their appearance and contributing to a unified view. However, the large scale of the pumping plant, combined with vegetation removal, precludes unified views with the surrounding landscape. The on-bank intake is not highly visible from this vantage, due to distance, the bend in the river, and vegetation on the riverbank that helps to provide some screening. Overall, existing views from KOP 45 on SR 160 toward Intake 4 would be substantially impaired by vegetation removal, roadway realignment, and introduction of the pumping plant and the Scenic Quality Rating would be reduced from a **C** to an **E**. This effect would be adverse (see discussion under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

The intermediate forebay would be visible in foreground views across agricultural fields from SR 160 where the view is fairly open but contains existing transmission lines. As described under Impact AES-3 and shown in Figure 17-79, *Existing and Simulated Views of Intermediate Forebay from SR 160*, the forebay embankments would be tall enough to limit views of the existing patchwork of agricultural field it would occupy and the tree line on the horizon. The intermediate forebay embankments would add a man-made visual massing and the embankments would have a visible geometric shape. However, because embankments are approximately 0.5 mile away from SR 160, the distance would reduce the apparent scale of the embankments, allowing them to blend somewhat with the grass field in the foreground. Overall, the existing view from KOP 45 on SR 160 toward the intermediate forebay would alter and reduce the available views of agricultural lands and background views but would not substantially reduce the Scenic Quality Rating, which would remain an **E**. The effect of the forebay on the scenic quality from a state scenic highway would therefore not be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

Spoil and borrow areas and RTM area between Intakes 1 and 2 would result in a large-scale landscape effect that would also alter the agrarian visual character and result in adverse visual effects when seen from SR 160. The RTM area near Isleton Road would not be visible from SR 160 because the work area would be across the river at a lower ground elevation than the raised roadway, and the RTM area would not be visible because of intervening vegetation along SR 160 and Isleton Road.

Implementation of this alternative would require removal of visually important features such as mature trees and shrubs and agricultural land, which are scenic elements that contribute to the viewing experience available to travelers along scenic highways in the study area. These features would be replaced by multi-story industrial concrete and steel structures, multiple-acre mounds of dirt, earthen embankments, and paved areas associated with the five intake facilities, pumping plant pads elevated 30 feet above the surrounding landscaping, fencing and security lights, and new access roads. These visual elements would conflict with the existing forms, patterns, colors, and textures along River Road and SR 160; would dominate riverfront views available from SR 160; and would alter broad views and the general nature of the visual experience presently available from River Road and SR 160 and would result in adverse effects. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these adverse effects.

CEQA Conclusion: Because visual elements associated with this alternative would conflict with the existing forms, patterns, colors, and textures along River Road and SR 160; would dominate riverfront views available from SR 160; and would alter broad views and the general nature of the visual experience presently available from River Road and SR 160 (thereby permanently damaging the scenic resources along a scenic highway), these impacts are considered significant. Mitigation Measures AES-1a, AES-1c, and AES-1e would help reduce these impacts through the application of aesthetic design treatments to all structures, to the extent feasible. However, impacts on visual resources resulting from damage to scenic resources that may be viewed from a state scenic highway would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes to the visual character of a scenic highway viewshed that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, overall, this impact would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

***NEPA Effects*:** The following NEPA effects would result from the introduction of new sources of daytime and nighttime glare and nighttime lighting.

Daytime and Nighttime Glare

BDCP conveyance facilities would result in new sources of glare if they were made of materials that easily reflect light. Intakes 1–5 and their associated pumping plants, surge towers, and facilities and the pumping plant at the intermediate forebay would create very noticeable effects relating to light and glare. This is illustrated in the simulations showing intake facilities in Figures 17-76 through 17-78, where light building colors over a large surface area would reflect off of those surfaces and increase glare, especially when combined with the removal of vegetation that absorbs light, provides shade, and screens glare. The amount of glare associated with surfaces would be increased if highly glossy paints or surface treatments or highly reflective materials are used, compared to satin or flat paints or surface treatments or materials that are less reflective. Sunlight would reflect off the new water surfaces of the forebay, creating new sources of glare where none presently exists. In addition, the use of nighttime lighting, described below, would result in nighttime glare of the lights reflecting off water surfaces. Because there are a large number of viewers in and around the waterways, intake structures, and forebay, effects associated with glare are considered adverse. Conversely, as vegetation and waterfowl become established following completion of the new forebays, some of these net visual impacts may be diminished.

Nighttime Lighting

Construction of each intake structure would take up to 4 years to complete and would occur Monday through Friday for up to 24 hours per day. As discussed in AES-1, dewatering near intakes, pumping plants, and certain pipeline construction areas and north of the intermediate forebay would take place 7 days per week and 24 hours per day. Evening and nighttime construction activities would require the use of extremely bright lights, and this would negatively affect nighttime views of and from the work area. Nighttime construction could also result in headlights flashing into nearby residents' homes when construction vehicles are turning onto or off of construction access routes. Proposed surge towers and transmission towers would require the use of safety lights that would alert low-flying aircraft to the presence of these structures because of their height. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the surge tower for aircraft safety. Given the height of the towers, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers.

Establishment of BDCP facilities in the Delta would require the use of safety lighting once built. Lighting equipment associated with BDCP facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels. In particular, security lighting for Intakes 1–5 and their associated pumping plants and facilities would create very noticeable effects relating to increased nighttime light at those locations. As described in Chapter 3, *Description of Alternatives*, lighting would be designed in accordance with guidance given by DWR's WREM No. 30a, *Architectural Motif, State Water Project* and through coordination with local agencies through an architectural review process. This guidance is set forth as follows.

> All artificial outdoor lighting is to be limited to safety and security requirements. All lighting is to provide minimum impact on the surrounding environment and is to be shielded to direct the light only towards objects requiring illumination. Lights shall be downcast, cut-off type fixtures with non-glare finishes set at a height that casts low-angle illumination to minimize incidental spillover of light onto adjacent properties, open spaces or backscatter into the nighttime sky. Lights shall provide good color rendering with natural light qualities with the minimum intensity feasible for security, safety and personnel access. All outdoor lighting will be high pressure sodium vapor with individual photocells. Lighting will be designed per the guidelines of the Illuminating Engineering Society (IES). Additionally, all lights shall be consistent with energy conservation and are to be aesthetically pleasing. Lights will have a timed on/off program or will have daylight sensors. Lights will be programmed to be on whether personnel is present or not.

Although the lighting would be designed to be shielded and oriented in such a manner as not to subject the immediate surroundings to extremes in the levels of light, these types of light generate an ambient nighttime luminesce that is visible for substantial distances from a large portion of the Delta. This glow contrasts with the rural character. In addition, using LED lighting can result in a substantial increase in light and glare if not properly designed. This is because LED lights can negatively affect humans by increasing nuisance light and glare that can negatively affect circadian rhythms and sleep patterns, in addition to increasing light trespass and disruptive glare, if proper shielding is not provided and blue-rich white light lamps (BRWL) are used (International Dark-Sky Association 2010a, 2010b, 2015). Often, BRWL light fixtures do not have a cover so that LED bulbs are exposed and such bright light can be very harsh to the human eye at night, when humans are used to lower light levels. Also, while LED lighting is often recessed and directed downwards, replacing existing street lights with BRWL LED lighting can result in a substantial amount of light trespass because LED lighting is installed at the same height as the existing light. However, BRWL are much brighter than traditional street lighting and can light a much larger area at that same height, resulting in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Such changes to lighting would be particularly noticeable in rural areas where ambient light levels are currently low and there are nearby viewers. Because the study area currently experiences low levels of light because there are fewer light/glare producers than are typical in urban areas, and because there are a larger number of viewers in and around the waterways, intake structures, and intermediate forebay, effects associated with nighttime light are considered adverse. Mitigation Measures AES-4a through AES-4d are available to address these effects.

***CEQA Conclusion*:** The impacts associated with light and glare under Alternative 1A are significant because there are a larger number of viewers in and around the waterways, intake structures, and intermediate forebay; BDCP facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels; and the study area currently experiences low levels of light because there are fewer light/glare producers than are typical in urban areas. Mitigation Measures AES-4a through AES-4d would help reduce these impacts by limiting construction to daylight hours within 0. 5 mile of residents; minimizing fugitive light from portable sources used for construction; installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences; and avoiding the use of BRWL LED lighting; however, these mitigation measures would not reduce impacts to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the new light and glare sources would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 1A would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction Outside of Daylight Hours Within 0.5 Mile of Residents at the Intakes

To the extent feasible and within safety standards, the BDCP proponents will minimize the effect of nighttime construction light and glare on residences within 0.25 miles of the intake construction sites by limiting non-tunnel related surface construction past daylight hours (which varies according to season), minimizing the use of high-wattage lighting sources to operate in the dark, and minimizing introduction of new nighttime light and glare sources in these areas.

DWR will establish a construction hotline which will enable residents to report any construction violation including construction activities outside of daylight hours.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

The BDCP proponents will minimize fugitive light from portable lighting sources used during construction by adhering to the following practices, at a minimum.

- Project-related light and glare will be minimized to the maximum extent feasible, given safety considerations.
- Color-corrected halide lights will be used.
- Portable lights will be operated at the lowest feasible wattage and height.
- All lights will be screened and directed down toward work activities and away from the night sky and nearby residents to the maximum extent safely possible.
- The number of nighttime lights used will be minimized to the greatest extent possible.

Implementation of this measure will reduce—to the extent feasible as governed by site-specific safety requirements—the overall amount of new daytime and nighttime light and glare introduced to the project vicinity during construction.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

BDCP proponents will evaluate construction routes and identify portions of access routes where the use of visual barriers would minimize the introduction of new light and glare from construction truck headlights and the impact on nearby residents.

The BDCP proponents will install a visual barrier along portions of access routes where screening would prevent excessive light spill toward residents from truck headlights being used during nighttime construction activities. The BDCP proponents will also coordinate with local recreational stakeholders to protect sensitive nighttime recreational resources, such as nighttime fishing spots, from construction truck headlight light spill. These visual barriers will meet the following performance criteria.

- The visual barrier will be a minimum of 5 feet high and will provide a continuous surface impenetrable by light. This height may be obtained by installing a temporary structure, such as fencing (e.g., chain link with privacy slats) or a semi-permanent structure, such as a concrete barrier (e.g., a roadway median barrier or architectural concrete wall system) retrofitted with an approved visual screen, if necessary, to meet the required height.
- The visual barriers will be of a material or have a color treatment appropriate for the location and traffic safety requirements. The use of glossy materials will be avoided.

Implementation of this measure will minimize the extent of construction truck headlight glare intruding into nearby residential areas.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

The BDCP proponents will install exterior LED lighting that avoids the use of blue rich white light lamps and use a correlated color temperature that is no higher than 3,000 Kelvin, consistent with the International Dark-Sky Associations Fixture Seal of Approval program (International Dark-Sky Association 2010a, 2010b, 2015). In addition, LED lights will use shielding to ensure that nuisance glare and light spill does not affect materially sensitive residential viewers. Lights will be placed at the lowest feasible height to ensure that light trespass affecting residences is limited. If needed, the height of lights will be lowered to account for the increase in lighting area provided by LED lighting. Implementation of this measure will minimize the effects of light and glare associated with blue rich white LED lighting from intruding into nearby areas.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

NEPA Effects: Once in operation, visible maintenance activities on the intakes, tunnels, and forebays, and transmission lines would be required periodically. Intakes would require painting, cleaning, and repairs. Forebays would be dredged to remove sediment at approximately 50-year intervals and embankments would receive vegetation removal and repairs. Tunnels would require periodic inspection and would have vehicles parked near shaft sites while tunnels are accessed for inspection. Transmission lines would require periodic vegetation removal within the ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. The greatest visual effects resulting from operations would be maintenance of the intakes and dredging of the forebays. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete, and effects on the existing visual quality and character during operation would not be adverse.

***CEQA Conclusion*:** Maintenance of the conveyance facilities (i.e., intakes, tunnels, forebays and transmission lines) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at forebays (at approximately 50-year intervals); vegetation removal and care along embankments; tunnel inspection; and vegetation removal within transmission line ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These visible maintenance activities would be temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would be considered less than significant. Maintenance and operation of Alternative 1A, once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features. Thus, overall, Alternative 1A would have a less-than-significant impact on existing visual quality and character during maintenance and operation of the facilities in the study area. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of CM2–CM21

Under Alternative 1A, CM3 (natural communities protection and restoration) would be the mechanism to preserve lands to aid in implementing measures CM4–CM11. CM12 (methylmercury management) and CM13 (invasive aquatic vegetation control) would be integrated into site-specific restoration designs and operations under CM3–CM11 (discussed below) and would appear to be an integrated part of those measures and not independent visual features. CM14 (operation of the Stockton Deep Water Ship Channel Aeration Facility), CM17 (illegal harvest reduction), CM19 (urban stormwater treatment), CM20 (recreational users invasive species program) are management measures that would not result in changes to the visual environment. Thus, CM14, CM17, CM19, and CM20 are not discussed further.

Existing Visual Quality and Character

Under Alternative 1A, CM2 could introduce many features that would be visible in the landscape; these are described in Chapter 3, *Description of Alternatives*. These features include fish management facilities (e.g., screens, ladders, ramps, barriers); realignment of waterways; additional hydrologic monitoring stations; a floodplain fish rearing pilot project at Knaggs Ranch; support facilities (operations buildings, parking lots, access facilities such as roads and bridges) necessary to provide safe access for maintenance and monitoring; modification, removal, and construction of berms, levees, and water control structures. These actions have the potential to have adverse visual effects because of their proximity to sensitive receptors, duration of construction activities, and changes to the visual environment resulting from these proposed actions.

The Yolo Bypass, under CM2, would also be flooded for longer periods to improve habitat and spawning for covered fish species and to reduce stranding. While the increase in duration of flooding is not known, it is anticipated that there would not be an adverse effect on visual resources because the flooding, which is an existing visual condition, would occur during the normal flood season of the bypass and just extend that season. Therefore, the extended flood duration is not considered adverse.

CM4–CM11 would result in the conversion of primarily agricultural lands to restored or enhanced habitat. Activities associated with the implementation of restoration and habitat enhancement would take place over 40 years across all conservation measures, often during a relatively short window each year, and the overall intensity and duration of each action would vary based on the individual project. CM15 (predator control) may result in temporary, localized changes by removing predator hiding spots, modifying channel geometry, physically removing predators, and utilizing other control methods as dictated by site-specific conditions. This could result in physical changes to the visual environment at site-specific locations that could be visible to water- and land-based recreationists and other viewer groups, based on location. This may have beneficial or adverse effects based on the size of proposed projects and pre-and post-project conditions (e.g., if restoration is implemented and improves pre-project conditions or if natural vegetation is removed and replaced with riprap which would degrade pre-project conditions). CM16 (nonphysical fish barriers) would use sound, light, and bubbles at the Head of Old River, the Delta Cross Channel, and Georgiana Slough and, potentially, at Turner Cut and Columbia Cut (note that Turner and Columbia Cut each have two channels, and thus would require two barriers) to direct fish passage. The lights and bubbles may be visible to water-based recreationists, especially at dusk and night, and sound (if audible) could attract viewers' attention toward the nonphysical barriers. Small scale changes may be visible on the banks or in the water to be used for anchoring that could result in adverse visual effects. CM18 (conservation hatcheries) would result in visual changes to the environment by building a new hatchery that consists of a facility on the edge of the Sacramento River and a larger supplementation production facility nearby. This would require conversion of existing land uses along the river and nearby to a built facility. CM21 (nonproject diversions) would result in changes to the visual environment due to removal of individual diversions; consolidation of multiple unscreened diversions to a single or fewer screened diversions placed in lower quality habitat; relocation of diversions from high quality to lower quality habitat, in conjunction with screening; and reconfiguration and screening of individual diversions in high quality habitat. This could result in the removal and restoration at some locations that would result in beneficial effects or could introduce new structures where none presently exist that could be adverse.

Presently, it is not uncommon for heavy equipment to be seen, intermittently, for existing levee maintenance, agricultural, and dredging operations; site-specific construction; and use in managing wetlands and other land uses. Implementation of restoration and enhancement features would also introduce considerable heavy equipment and associated vehicles, including dozers, graders, scrapers, and trucks, into the viewshed of all viewer groups in the vicinity. Construction may include the creation of new levees; breeching existing levees; the creation of habitat levees; increasing connectivity between marshes and waterways; grading; planting; and redirecting intakes, discharges, and outfalls. In addition, acquiring public and private property to restore or enhance lands could displace occupants and would require infrastructure improvements such as roadways, parking lots, and utilities. These actions may also include the construction of new public features such as interpretive facilities and restrooms at some locations. These proposed actions would create changes in views of and from the study area throughout the construction period, which may last longer than 2 years depending on the specific project and effort required for construction. Because of the unknown location of site-specific restoration activities, potential presence of sensitive viewers, the potential for construction periods to last longer than 2 years, and varying intensity of construction, effects associated with implementation of these conservation measures are considered adverse.

Implementation of restoration actions and conservation measures under Alternative 1A would have a noticeable effect on the visual character and quality of the study area and its surroundings. Locations that are currently characterized by physical features associated with agricultural activities would be altered through the establishment of new wetlands, marshes, or restored riparian corridors. These areas may be denuded of vegetation, or may appear to be so from a distance because of immature planted vegetation that would be similar in appearance to tilled or newly planted agricultural fields. The sites would be in a transitional state, and over a period of from one to several years, plant species would mature and vegetation would recolonize the sites. Because these sites would be scattered throughout the conservation zones, they would not create a visual imposition on the landscape or be perceived as a centralized, large-scale visual change. In addition, restored/enhanced sites would increase the amount of native vegetative communities that attract wildlife, thus befitting the visual quality and diversity of the study area. The visual characteristics of these new landscapes would be consistent with other natural marsh or wetland areas of the Delta. In this sense, the BDCP would have a beneficial effect on the visual character and quality of the restoration areas and their surroundings.

Scenic Vistas

Under Alternative 1A, CM2 has the potential to visually alter scenic vistas depending on the location of various modifications, such as levee construction or removal. CM4–CM11 would result in the conversion of primarily agricultural lands to restored or enhanced habitat. CM16, CM18, CM15, and CM21 have the potential to introduce visually discordant features into scenic vistas, if they are located within a vista viewshed. Once constructed, large-scale changes to scenic vistas would result from conversion of agriculture lands to restored/enhanced areas that have more topographic variation and variable vegetative cover. Because exact locations of restoration/enhancement sites have not been identified, effects on site-specific scenic vistas cannot be determined. However, views of the large areas proposed for restoration/enhancement could likely change from agricultural or developed uses to areas with more natural features such as marshes and wetlands.

Depending on the location, the effect on scenic vistas could be beneficial or adverse. Beneficial effects would occur where flat agricultural lands and row crops are replaced by restored wetlands and riparian vegetation, because natural areas are rarer scenic features in the Delta and such a change would increase visual diversity. In general, wetlands would provide excellent vista opportunities because the restored vegetation cover would provide visual interest and would not block distant background views. However, at some sites, restoration/enhancement of agricultural lands to riparian forest could block long-distance vistas from scenic vista areas. For example, riparian forest plantings installed along a river segment where roadway travelers currently have open vistas of the waterway would mature and result in more restricted views of the river and vistas beyond. Restoration/enhancement actions could also result in the creation of new scenic vistas, perhaps through the removal of existing agricultural tree rows and the establishment of vista points at specific locations or viewing opportunity areas along newly created recreational trails.

After completion of construction activities necessary for restoration, areas surrounding the restored/enhanced area may be denuded of vegetation, or appear to be so from a distance because of immature planted vegetation would be similar in appearance to tilled or newly planted agricultural fields. The sites would be in a transitional state, and over a period of one to several years, plant species would mature and vegetation would recolonize the sites. The sites would be scattered throughout the conservation zones so would not create a visual imposition on the landscape or be perceived as a centralized, large-scale visual change. In addition, restored/enhanced sites would increase the amount of native vegetative communities that attract wildlife, thus helping to improve the visual quality and diversity of the restored areas. The visual characteristics of these restored/enhanced landscapes would be similar to other areas of the Delta that are in a natural marsh or wetland state and more limited in extent than the widespread areas of agricultural development. In this sense, the BDCP would have an overall beneficial effect related to the enhancement and creation of scenic vistas in the Delta. However, site-specific restoration information and plans need to be developed before the site-specific effects on scenic vistas can be determined.

Scenic Highways

No restoration actions are expected to be established in areas along SR 160. However, it is possible that actions proposed for some areas would be visible in the middleground and background views from SR 160. These areas are: the portions of CZ 3 on the west side of the Sacramento River that extends from Sacramento to the confluence with the Yolo Bypass; CZ 5, on the east/south side of the Sacramento River that extends from Intake 1 to Pittsburg; and CZ 10, just south of CZ 5 and spanning both sides of SR 4 near Antioch. In addition, CZ 7 would be visible in the middleground and background views from I-580, which is a state-designated scenic route in San Joaquin County. CM15, CM16, CM18, and CM21 have the potential to introduce visually discordant features as viewed from scenic highways, if they are located within the viewshed of a scenic highway. During the near term, changes to the visual environment resulting from vegetation removal may be noticeable to travelers along these routes. These areas may be denuded of vegetation, or appear to be so from a distance because of immature planted vegetation that would be similar in appearance to tilled or newly planted agricultural fields. The sites would be in a transitional state, and over a period of one to several years, plant species would mature and vegetation would recolonize the sites. The sites would be scattered throughout the conservation zones so would not create a visual imposition on the landscape or be perceived as a centralized, large-scale visual change. In addition, restored/enhanced sites would increase the amount of native vegetative communities that attract wildlife, thus helping to improve the visual quality and visual diversity of the restoration area. Due to the distance, changes associated with restoration activities would not affect the visual quality along these scenic highway corridors and would not result in adverse effects.

Light and Glare

The intent of the restoration actions would be to establish native vegetation along riparian corridors by allowing inundation of areas or by converting existing agricultural lands to tidal wetlands. Given the nature of CM2–CM21, only a few new project-related sources of light and glare would be expected to result from their implementation. Restored areas would largely be natural habitat areas. CM16 and CM18 have the potential to introduce new lighting sources through project features while it is not likely that CM15 and CM21 would introduce new sources of light. Limited lighting could be installed at some facilities, such as flood gates/pumping facilities, operations buildings, and visitor facilities. At this time, it is not known where these facilities would be proposed; however, it is anticipated that there would be a very limited number of such facilities and that the lighting would be reduced to the minimum necessary to provide safety and security and that effects would not be adverse.

Summary

***NEPA Effects*:** There may be site-specific, localized adverse visual effects. These conservation measures would alter the Delta landscape by incrementally, and substantially, introducing elements into the study area over time. This could pave the way for the gradual transition of a much valued cultural and regional landscape and make it easier for other similar projects to be implemented over time because of the devalued baseline conditions, compared to Existing Conditions, if conservation measures are not planned and implemented in a manner that protects visual resources. CM2–CM21, when combined with CM1, could substantially alter the visual character of the study area, which is strongly identified by its agricultural and water-based Delta landscapes and communities. These landscapes and communities could be adversely affected by the introduction of discordant visual features, removal of existing buildings and landscape elements of value, and through the potential for indirect impacts associated with other development potentially setting a precedent for other development to occur. All of these effects would alter the visual character of the existing regional landscape. While many planning and regulatory documents recognize the unique visual resources of the Delta and the importance of this regional visual landscape as a shared and endangered resource, there is no comprehensive planning or regulatory document to aid in the preservation of this resource and to serve as guidance for development within this landscape.

Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-4a through AES-4d are available to address effects from habitat restoration and enhancement actions under CM2–CM21. In addition, Mitigation Measures AES-6a and AES-6b are available to help reduce adverse visual effects. Upon development of site-specific design information and plans, additional mitigation measures may be identified to address action-specific adverse effects. However, each individual project under CM2–CM21 would undergo the environmental compliance process that would be used to determine what additional mitigation measures, would be deemed appropriate to reduce adverse effects and to assess compliance with relevant regulations. Finally, Mitigation Measure AES-6c is available to help inventory, classify, and protect the unique visual landscape of the Delta.

CEQA Conclusion: Implementation of conservation measures under Alternative 1A has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. Impacts on the existing visual quality and character would be significant where use of large numbers of heavy construction equipment, changes in topography, and introduction of new structures or facilities where none presently exist would take place in the vicinity of sensitive receptors. However, because a number of factors that would determine the level of change are unknown—the location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction—impacts associated with implementation of these conservation measures (CM2–CM21) on visual quality and character, scenic vistas, and light and glare sources, are considered significant. Because of the distance of implemented conservation measures from scenic highways, changes associated with these activities would not affect the visual quality along these scenic highway corridors and this impact would be less than significant. Site-specific restoration information and plans need to be developed before the site-specific effects on the existing visual character, scenic vistas, and light and glare can be determined.

Several mitigation measures are available to minimize the impacts on visual quality and character in the study area that could result from implementation of CM2–CM21. As summarized below, these measures could be applied to individual restoration projects or actions as appropriate for the site-specific conditions and design considerations. In addition, each restoration project or action would undergo an environmental compliance process that would be used to determine what additional mitigation measures would be deemed appropriate to reduce significant effects. Mitigation Measures AES-1a through AES-1g could be applied to minimize impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. Mitigation Measures AES-4a through AES-4d could be used to reduce the effects of new light and glare sources by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. In addition, Mitigation Measures AES-6a and AES-6b would further minimize impacts on visual resources by undergrounding new or relocated utility lines, where feasible, and through an evaluation of an afterhours low-intensity and lights off policy. Finally, implementation of Mitigation Measure AES-6c would provide a strategy for the protection of the unique visual landscape of the Delta.

While some of these conservation measures could result in beneficial impacts through the restoration of natural habitat and mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a less-than-significant level because of uncertainties associated with future implementation of CM2–CM21. In addition, the size of the study area and the nature of changes introduced by these conservation measures would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend with or be in keeping with the existing visual environment. Thus, implementation of these conservation measures would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

BDCP proponents will underground new or relocated utility lines, where feasible, to reduce or improve adverse visual effects associated with the visual intrusion of such features in the landscape. New or relocated utility lines will not be underground where undergrounding would constitute an adverse effect on sensitive habitats or sensitive species or require the removal of healthy native trees that would fall under the definition of a native heritage tree. For the purpose of this mitigation measure, a native heritage tree is defined for this project using guidance set forth in the City of Sacramento Heritage Tree Ordinance, as follows.

- Any tree of any species with a trunk circumference of one hundred (100) inches or more, which is of good quality in terms of health, vigor of growth and conformity to generally accepted horticultural standards of shape and location for its species.
- Any native *Quercus* species, *Aesculus California,* or *Platanus Racemosa*, having a circumference of 36-inches or greater when a single trunk, or a cumulative circumference of 36-inches or greater when a multi-trunk, which is of good quality in terms of health, vigor of growth and conformity to generally accepted horticultural standards of shape and location for its species.
- Any tree 36-inches in circumference or greater in a riparian zone. The riparian zone is measured from the centerline of the water course to 30-feet beyond the high water line (City of Sacramento 2012).

Other trees may also be protected, as deemed appropriate by BDCP proponents to be of special historical or environmental value or of significant community benefit.

Implementation of this measure, where possible, will avoid the introduction of new aboveground utility lines and result in an improved view in areas where existing utility lines could be relocated underground.

Mitigation Measure AES-6b: Develop and Implement an Afterhours Low-Intensity and Lights Off Policy

The BDCP proponents will evaluate measures and develop and implement a commercial and public buildings lighting policy to minimize the impact of building lighting on nearby sensitive viewers. The policy will include the following performance standards.

- Require building design to include low-intensity interior safety lighting for use during afterhours. This practice would decrease the amount of nighttime light that would occur from using standard interior lighting as safety lighting.
- Prevent unnecessary overuse of interior nighttime lighting, requiring that offices and businesses implement a "lights-off" policy. This practice requires that all non-safety lighting be turned off at night (such as in offices and hallways), after business hours. This standard can be accomplished through use of movement activated lighting systems.
- Prohibit use of harsh mercury vapor or low-pressure sodium bulbs.
- Ensure that exterior LED lighting avoids the use of blue rich white light lamps and uses a correlated color temperature that is no higher than 3,000 Kelvin, consistent with the International Dark-Sky Associations Fixture Seal of Approval program (International Dark-Sky Association 2010a, 2010b, 2015). In addition, exterior LED lights will use shielding to ensure that nuisance glare and light spill does not affect sensitive viewers. The height of lights will be assessed to ensure that light trespass affecting nearby land uses is limited. If needed, the height of lights will be lowered to account for the increase in lighting area provided by LED lighting.

Such a policy can greatly reduce the amount of nighttime light pollution that is created by standard office and business practices.

Mitigation Measure AES-6c: Implement a Comprehensive Visual Resources Management Plan for the Delta and Study Area

The BDCP project proponents will work with federal, state, and local stakeholders to implement a visual resources management plan for the Delta and study area. The visual resources management plan will be developed based on the following considerations and performance standards.

- The purpose of the visual resources management plan will be to protect and enhance the visual landscape and will not serve as a mechanism to allow for undue development or to facilitate advanced development of the Delta and study area.
- The visual resources management plan will implement a prescribed methodology for inventorying and classifying all visual landscapes within the study area. This methodology will utilize measures similar to BLM and USDA Forest Service inventorying techniques or will develop its own methodology for inventorying study area visual landscapes. This methodology will incorporate a quantifiable measure of visual landscapes that can be used to determine areas for preservation, enhancement, and smart development, and to measure and monitor visual effects on the study area landscape over time. This inventory will include an inventory of viewer groups and viewer responses to adequately identify publicly valued visual landscapes.

- The inventory of visual landscapes within the study area will be used as a tool to preserve the visual landscape and to guide smart growth and development.
- The visual resources management plan will implement regulatory language to protect visual resources of the study area, based on preserving important and sensitive visual landscapes. It will also identify design and management measures for avoidance of adverse effects.
- The visual resources management plan will identify and facilitate the preservation of sensitive visual landscapes through the planning and establishment of scenic easements and official federal and/or state designation for the protection of scenic resources (e.g., historic and/or scenic trails, designated scenic areas, scenic highways/byways, and wild and scenic rivers).
- The visual resources management plan will serve to encourage the integrated use of environmental design arts, as outlined in Section 102(A) of NEPA, so that projects within the study area are designed to be self-mitigating instead of waiting until the environmental analysis process to establish design measures that mitigate a project's visual effects.
- The visual resources management plan will recognize and work with the evolving visual landscape as it relates to climate change and sea level rise. It will establish proactive design and management measures that protect the evolving landscape and visual integrity of the study area and will not facilitate reactive design and management measures that could adversely alter the visual landscape of the study area.
- The visual resources management plan for the study area will be an adaptive management tool and will undergo periodic updates every 20 years.
- CM2–CM21 will comply with this visual resources management plan.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 1A could result in the potential for incompatibilities with plans and policies related to preserving the visual quality and character of the Delta. A number of plans and policies that coincide with the study area boundaries provide guidance for visual resource issues as overviewed in Section 17.2, *Regulatory Setting*. This overview of plan and policy compatibility evaluates whether Alternative 1A is compatible or incompatible with such enactments, rather than whether impacts are adverse or not adverse or significant or less than significant. If the incompatibility relates to an applicable plan, policy, or regulation adopted to avoid or mitigate visual effects, then an incompatibility might be indicative of a related significant or adverse effect under CEQA and NEPA, respectively. These physical effects of Alternative 1A on visual resources are addressed in Impacts AES-1 through AES-6, above. The following is a summary of compatibility evaluations related to visual resources for plans and policies relevant to the BDCP.

Conveyance Facilities

- The Sierra Resource and Cosumnes River Preserve Management Plans protect the Cosumnes River Preserve. Views within the Cosumnes River Preserve would not be affected by Alternative 1A because it is located east of I-5 and public views of the project site available from trails are obscured by riparian vegetation and I-5.

- The Suisun Marsh is protected by the San Francisco Bay Conservation and Development Commission Suisun Marsh Protection Plan. The eastern boundary of the Suisun Marsh extends to Collinsville Road in southern Solano County and falls within the westernmost portion of the study area. Views from Suisun Marsh would not be affected by this alternative because project features would be obscured by distance, the Altamont Hills, and intervening trees, infrastructure, and development.
- EBRPD parks within the study area include Browns Island, Antioch/Oakley Shoreline, and Big Break Parks (East Bay Regional Park District 2013b). Views from these parks would not be affected by this alternative because project features would be obscured by distance, the Altamont Hills, and intervening trees, infrastructure, and development.
- The cities of Antioch, Brentwood, Oakley, Sacramento, Lathrop, Stockton, Tracy, Rio Vista, Suisun City, and West Sacramento would not be affected by this alternative because there are no project features within or visible from these cities. Therefore, this alternative would be consistent with the protection of visual resources covered under those general plans.
- The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan are all focused on the protection of resources, including visual resources, within the Delta. While constructing and operating conveyance facilities under this alternative are intended to provide ecosystem benefits in the Delta, constructing these conveyance elements could be considered incompatible with measures to protect the unique visual environment of the Delta because agricultural lands and riverbanks would be converted to other uses and the scale of construction would result in changes to the landscape that may be considered disruptive to the current Delta environment and visual quality.
- Contra Costa, Sacramento, San Joaquin, and Solano Counties all have policies to preserve and protect the scenic qualities of the Delta as summarized in Section 17.2, *Regulatory Setting*. In addition, Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties are focused on the protection of visual resources and preserving agricultural lands. The general plans for these counties include policies for the protection of visual resources, trees, waterways, and landscaping and for avoiding impacts such as the alteration of landforms and the introduction of utilities and new sources of light. These policies seek to minimize visual impacts and enhance scenic qualities and also encourage placing utility lines underground. The conversion of agricultural lands and riverbanks to intake facilities, conveyance facility changes and introduction of new lighting and transmission lines where none presently exist would substantially alter the landscape and could be considered incompatible with local policies aimed at protecting visual resources in these counties. Potential incompatibilities with Sacramento County and San Joaquin County policies would be most likely because most of the project features occur in these counties. Alameda and Contra Costa Counties have much smaller portions of project features that surround the Clifton Court Forebay. Yolo County would be affected by intakes located on the east bank of the Sacramento River that would affect views from South River Road. Alternative 1A would not be incompatible with Solano County policies because conveyance facilities would not be located in this area.

Other Conservation Measures

- The Yolo Bypass would be altered under CM2. Views of and from South River Road would not be affected. However, new fish screens, ladders, ramps, barriers, realignment of waterways, additional hydrologic monitoring stations, fish rearing pilot project at Knaggs Ranch, operations buildings, parking lots, access facilities such as roads and bridges, and modification, removal, and construction of berms, levees, and water control structures would result in changes to the landscape that may be incompatible with the Yolo County General Plan Policies LU-3.7, CC-1.2, CC-1.3, and CC-1.4 that protect scenic areas, the rural landscape character, and the night sky.

- CM4–CM11 would result in the conversion of primarily agricultural lands to restored or enhanced habitat across all 11 CZs, with specific focus on ROAs (refer to Figure 3-1 in Chapter 3, *Description of Alternatives*). Therefore, associated regulations may apply. Restored areas would largely be natural habitat areas. Alterations such as channel and levee modifications, landform alteration from dredge spoil placement, and floodplain lowering could change the visual landscape. Restoring areas and views to natural, native habitat would likely be beneficial and would increase visual diversity. However, converting agricultural lands may be incompatible with one or more regulation protecting visual resources, although it may facilitate regulations set in place to protect and restore the Delta. If facilities, such as buildings, parking lots, or roads, are built, they would also have the potential to be incompatible with relevant regulations that protect scenic areas, the landscape character, the night sky, and the Delta.

- CM15 and CM21 would occur across all 11 CZs and could result in physical changes to the visual environment at a number of locations and where relevant regulations may apply. This may have beneficial or adverse effects based on the size of proposed projects and pre-and post-project conditions (e.g., if restoration is implemented and improves pre-project conditions or if natural vegetation is removed and replaced with rip rap or a new diversion structure that degrades pre-project conditions). Vegetation removal and replacement with rip rap or a diversion structure could be incompatible with be incompatible with relevant regulations that protect scenic areas, the landscape character, the night sky, and the Delta.

- CM16 could use sound, light, and bubbles at the head of the Delta Cross Channel and Georgiana Slough in Sacramento County and at the Head of Old River and potentially at Turner Cut and Columbia Cut in San Joaquin County (note that Turner and Columbia Cut each have two channels, and thus would require two barriers)to direct fish passage. Small scale changes may be visible on the banks or in the water used for anchoring that could result in adverse visual effects, but it is anticipated that these changes would be consistent with County general plan policies that protect visual resources.

- Building a new hatchery that consists of a facility on the edge of the Sacramento River and a larger supplementation production facility nearby, through CM18, would result in visual changes and conversion of existing land uses along and near the river would be required to build facilities. These facilities could be located in Sacramento, Yolo, or Solano Counties and also fall within the Delta. Therefore, corresponding regulations may apply. The size and locations of these facilities are unknown, but it is likely that conversion of existing land uses, and potentially undeveloped land would alter the visual character along the Sacramento River and would be incompatible with one or more plans or policies for the protection of visual resources in these regions.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts

AES-1 through AES-6, above, and no additional CEQA conclusion is required related to the compatibility of Alternative 1A with relevant plans and policies.

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

Table 17D-2 in Appendix 17D, *Permanent Impacts after Construction is Complete*, describes the existing visual characteristics and the BDCP-related permanent effects of Alternative 1B on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Construction of all structural components under Alternative 1B could potentially occur over a period of 9–14 years. However, construction of each individual facility would be phased within that period and would occur over a shorter period. The estimated construction times for individual features are included below. The duration and schedule for construction of the water conveyance facilities (CM1) is provided in Appendix 3C, *Construction Assumptions for Water Conveyance Facilities*. In addition, Appendix 22A, *Air Quality Analysis Methodology*, details the construction schedules and defines the length and sequence of each construction phase.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

Under Alternative 1B, effects related to Intakes 1–5 would be the same as those discussed under Alternative 1A, Impact AES-1, because they would be built in the same locations (see Figures 17-76 through 17-78 and Chapter 3, *Description of Alternatives*, Mapbook Figure M3-2). The primary conveyance, however, would be a lined or unlined canal in the east delta rather than pipelines/tunnels and there would be no intermediate forebay. After construction, areas surrounding Intakes 1–5, canals, spoil/borrow areas, RTM areas (tunnel siphons), and shaft sites may be denuded of vegetation for a short period of time until the landscaping plans designed under WREM No. 30a are implemented. Once installed, the landscape would still appear to be denuded of vegetation or to have little vegetative cover because immature landscaping would be similar in appearance to tilled or newly planted agricultural fields.

Because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, changes to topography through grading, and addition of large-scale industrial structures where none presently exist, this effect on existing visual quality and character of the study area is considered adverse.

Effects related to construction of access roads and transmission lines would occur within a 2-year period under this alternative and would be the same as those described for Alternative 1A, Impact AES-1, because the relevant components would be similar under both alternatives. However, substantial differences associated with other facilities are described below.

Canals

Construction of canals and pumping plants would introduce considerable heavy equipment—excavators, graders, dozers, sheepsfoot rollers, dump trucks, and end loaders, in addition to support pickups and water trucks—into the viewshed of all viewer groups in the vicinity. Work areas would be situated adjacent to the intake sites and would be used for staging, temporary field offices, worker parking, equipment and materials laydown and storage, and to support other construction-related needs. Canal construction would be performed in a linear pattern over a 5-year period and would occur primarily Monday through Friday for up to 24 hours per day. In addition, because of the relatively high groundwater level along the canal alignment, dewatering would be necessary to provide a dry workspace for excavation of the canal foundation. Dewatering would take place 7 days per week and 24 hours per day and would be initiated 1–4 weeks prior to excavation. Dewatering would continue until excavation is completed and the construction site is protected from areas with high groundwater levels (Chapter 3, *Description of Alternatives*). Construction of the canal would require that properties be acquired, resulting in the relocation of residences and razing of buildings on affected properties during construction. This effect is most prominent between Intake 1 and West Walnut Grove Road, near I-5 (KOP 74, 86, 113, 115, 119, and 120). South of West Walnut Grove Road fewer residences and buildings would be acquired and razed (KOPs 124, 136, 140, 141, 152, and 154). In addition, residences and businesses may experience loss of landscaping, fencing, or other landscape features of personal importance. Such losses would further evoke negative visual perceptions of the conveyance facilities. Scattered rural residences are present on CH E9 and SR 160, along both banks of the river throughout the corridor between where the canals would be built; construction would take place near or directly adjacent to some of these homes (KOPs 1, 3, 4, 15, 18, 20,34, 41, and 49). The areas between Clarksburg and Hood have a higher concentration of residential viewers and are also near the intakes (KOPs 12, 72, 73, and 74). South of Lambert Road, the canal alignment jogs to the east and runs closer to I-5, allowing direct foreground and middleground views of construction from the interstate. This is generally the case until the northern limits of Stockton where I-5 enters the city and veers away from the alignment, which continues south until it jogs west after it crosses SR 4. The canal would also be visible from the Amtrak San Joaquin Oakland to Bakersfield route as it crosses by the canal near Holt. The canal would be seen by passengers sitting in window seats on the north and south sides of the train. The canal would dead end to the north and south of the railway and siphon under the tracks. While trains would pass by at a high rate of speed, the canal would be a unique and prominent feature that would draw viewers' attention as they pass by the feature that would appear as a brief pinch point in views.

Transmission lines following the canals would introduce tall, lattice steel structures that would draw more attention to the linearity of the canal and its industrial nature. Recreationists on local roadways and waterways, roadways users on local roadways, and nearby businesses would have direct views of canal construction. The landscape sensitivity level ranges from low to high and effects on these viewers would be substantial, especially for residences that would experience disruptive construction activities.

As seen in Figure 17-81, *Existing and Simulated Views of the East Canal from I-5 at Lambert Road*, construction of the canal would convert agricultural lands to a water conveyance facility and would require the removal of landscaping, vegetation, and structures and would introduce the raised canal embankments into the viewshed, as illustrated in "Simulated View". The canal would be located 1.9 miles away from I-5, decreasing the visual prominence of the canal embankments due to distance. However, the embankments would appear larger the closer they get to I-5, as seen in the simulation when comparing the embankment on the left side of the photo to the right side of the photo, where the canal would be farther away. The canal would be most prominent near Twin Cities Road where the nearest embankment would be 0.75 mile away. The canal would limit views to trees on horizon line. In addition, the introduction of tall, steel 230 kV transmission lines paralleling the canal would add to the amount of utility lines seen from I-5. Overall, existing views from KOP 113 on I-5 toward the canal would be impaired by the removal of the buildings and vegetation and introduction of the canal and transmission lines and the Scenic Quality Rating would be reduced from an **E** to an **F**. This effect would be adverse (see discussion under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

As seen in Figure 17-82, *Existing and Simulated Views of the East Canal from SR 12*, construction of the canal would displace agricultural lands and agrarian infrastructure and require the removal of vegetation. The canal would introduce a prominent visual massing into viewshed, as illustrated in "Simulated View". The canal embankments would limit views to the foreground and prevent views to the middleground. Trees lining SR 12 would also be removed to allow for construction. The roadway surface would be more visible as it ascends to bridge over the canal. In addition, the introduction of tall, steel 69 kV transmission lines add to the amount of utility lines present and visually contrasts to existing views where the existing transmission lines consist of wooden utility poles. Overall, existing views from KOP 128 on SR 12 toward the canal would be impaired by the removal of the agrarian structures and vegetation and introduction of the canal, bridging over the canal, and transmission lines that would alter the visual character of the roadway corridor. While the visual character would be lowered, the Scenic Quality Rating would remain an **E**. The effect of the east canal on the scenic quality would therefore not be adverse at this location (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

As seen in Figure 17-83, *Existing and Simulated Views of the East Canal from SR 4*, construction of the canal would displace agricultural lands. The canal would introduce a visual massing into viewshed, as illustrated in "Simulated View". The canal embankments would limit views to the foreground and prevent views to the middleground. Infrastructure and buildings in the foreground of this view act to screen views of the canal and are foreground focal points that draw attention somewhat away from focusing on the canal. The roadway surface would be more visible as it ascends to bridge over the canal. In addition, the introduction of tall, steel 69 kV transmission lines add to the amount of utility lines present and visually contrasts to existing views where the existing transmission lines consist of wooden utility poles. Overall, existing views from KOP 114 on SR 4 toward the canal would be impaired by the alteration of agricultural lands and introduction of the canal, bridging over the canal, and transmission lines that would alter the visual character of the roadway corridor. While the visual character would be lowered, the Scenic Quality Rating would remain an **F**. The effect of the east canal on the scenic quality would therefore not be adverse at this location (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

Earthmoving activities would result in the removal of mature vegetation and large-scale, linear topographical changes to areas that are presently flat. The canal would dissect numerous parcels, disrupting the continuity of rural land and affecting free-flowing visual access from lands on either side of the canal. Earthmoving activities and associated heavy equipment and vehicles would be readily visible throughout construction and have the potential to create slowly moving dust clouds that would attract attention from visual receptors and reduce the availability of short-range views. As set forth in Chapter 22, *Air Quality and Greenhouse Gases*, the BDCP proponents have identified environmental commitments (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) to reduce emissions of construction-related criteria pollutants, including basic and enhanced fugitive dust control measures and measures for entrained road dust that would help to reduce the creation of dust clouds that would negatively affect short-range views.

Canals, along with intakes, bridge crossings, and spoil/borrow and RTM areas would compound effects on available views in the study area. These views would be greatly altered by the presence of a large-scale, concrete lined and water filled channel traversing through the landscape between the intakes that would introduce a visually dominant conveyance facility that would be very noticeable within available views. Because the scale of landscape level changes, long-term nature of construction, proximity to sensitive receptors, removal of vegetation, and changes to topography through grading, would reduce the visual quality in some locations along the canal and result in noticeable changes that could be viewed by sensitive receptors and from public viewing areas, this effect on existing visual quality and character would be adverse.

Forebays

Under Alternative 1B, the intermediate forebay would not be constructed. The Byron Tract Forebay would take 3.5 years to construct and would encompass 600 acres (same as Alternative 1A). Other than the construction timeframe, the visual effects of construction would be the same as those described for Alternative 1A, Impact AES-1 because the proposed components would be similar under both alternatives. Because of the large footprint of the forebay, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, construction of the forebay would result in noticeable changes that could be viewed by sensitive receptors and from public viewing areas, this effect on visual quality and character would be adverse.

Bridges

Nineteen bridge crossings would be constructed under Alternative 1B along the conveyance alignment within a 2-year period. Bridges would be built on a residential access road south of Intake 2 and west of North Stone Lake; on River/Scribner, Lambert, Dierssen, Twin Cities, West Barber, West Walnut Grove, West Peltier, West Woodbridge, North Grand, West Eight Mile, West McDonald, West Kingston School, Cal Pack, and Clifton Court Roads; on SR 12 and SR 4; and on Tracy Boulevard (KOPs 73, 86, 115, 119, 120, 124, 141, 152, and 154). Construction activities would introduce considerable heavy equipment and associated vehicles, including dozers, graders, scrapers, and trucks, into the viewsheds of public roadways and residential and commercial properties. Safety and directional signage would also be a visible element. Nearby residences and businesses would have construction occurring in close proximity to them and some residences would have construction activities occurring directly adjacent to their properties. The landscape sensitivity level near residences is moderate to high, and effects on these viewers are substantial, especially because they would experience disruptive construction activities. In addition, residences may experience loss of landscaping, fencing, or other landscape features of personal importance, further evoking negative visual perceptions of these components. Some of these bridges would be constructed in areas where residences would be acquired and razed to construct the canal.

Bridges would create opportunities for views to the surrounding area, but would also introduce noticeable elevated structures and raised visual masses that would disrupt the continuity of views by preventing free flowing access from lands on either side of the bridges. This disrupted access would be both physical and visual. However, because the bridges are on existing roadways, they would be co-dominant visual features. Effects on roadway users would not be substantial because of the brief periods that they are in visual contact with the bridge site and because of familiarity with construction along roadways in the region. Effects on recreationists would not be substantial because of the brief periods that they are in visual contact with the bridge site. Nevertheless, construction of bridges would introduce a noticeable change from public viewing areas and could result in an adverse effect on existing visual quality and character in the study area.

Spoil and Borrow Areas

Effects related to spoil/borrow areas are similar to those described for Alternative 1A, Impact AES-1. However, under Alternative 1B, the extent of spoil/borrow areas would be much greater due to the amount of excavation required and the area needed to store excess spoils from canal construction (KOPs 45, 54, 55, 86, 103, 106, 119, 140, 141, 152, and 154). Spoil/borrow areas would take up a much greater area between Intake 1 and Dierssen Road. Under Alternative 1B, there would be a total of 1,931 acres within this area as compared to a total of 372 acres under Alternative 1A. These changes would have a much greater effect on available views from SR 160 and near the towns of Clarksburg and Hood, which have a higher concentration of residential, recreational, and roadway viewers. Because spoil/borrow areas between Dierssen Road and Terminous Tract (595 acres) generally hug the canal alignment, they would appear to be a visual extension of canal construction. Spoil/borrow areas south of Terminous Tract, from King Island to Byron Tract Forebay (8,142 acres), would cover large areas of land, similar to those in the northern portion of the alignment. There are fewer sensitive visual receptors in this area, but some residential, recreational, commercial, and roadway viewers are present. In addition, railway viewers would be able to see the spoil/borrow areas located to the north and south of the railway near Holt. These areas would be seen by passengers sitting in window seats on the north and south sides of the train. While trains would pass by at a high rate of speed, the landscape effects would be unique and prominent features that would draw viewers' attention as they pass by them. Spoil/borrow areas would result in large-scale, sunken or elevated landscape effects that would alter the existing visual character of a landscape that is predominantly flat. Under Alternative 1B there would be a total of 10,667 acres of land affected by spoil/borrow areas compared to a total of 1,185 acres under Alternative 1A. In addition to spoils/borrow in the study area, offsite borrow sites may be needed to provide suitable materials for intake pipeline foundations, berms around RTM storage areas and canal embankments. It is not known how much import material would be needed and where it would come from. It is assumed that effects at import borrow sites would be similar in scale and have similar adverse visual effects to those within the study area.

Overall, recreationists on local roadways, roadway users on local roadways, residents, and nearby businesses would have direct views of construction activities taking place at spoil/borrow areas. Impacts on these viewers would substantial and introduce noticeable to very noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment, especially for residences that would experience disruptive construction activities near their homes. Because of the scale of landscape-level changes, long-term nature of construction, proximity to sensitive receptors, removal of vegetation, and changes to topography through grading, and the introduction of noticeable changes that could be viewed by sensitive receptors and from public viewing areas, this effect on existing visual quality and character would be adverse.

Reusable Tunnel Material Areas

RTM areas would be greatly reduced under this alternative but would be needed to store excess material from tunnel siphon boring under Snodgrass Slough and the Mokelumne River, near Twin Cities Road (274 acres); the San Joaquin River near Stockton (137 acres); and near the Byron Tract Forebay (28 acres). The RTM area near Twin Cities Road would mostly be visible from scattered rural residences, local roadways, and I-5 to the east (KOP 113 and 119). The RTM area near the San

Joaquin River would mostly be visible from West Rindge Road, a levee road, on Rindge Tract. This area generally lacks sensitive land-based viewers that would see the area, and the levee obscures water-based views. The RTM area near Byron Tract Forebay lacks sensitive viewers. RTM areas would be in use for close to 7.5 years; operations at these locations would take place Monday through Friday for up to 24 hours per day. If evening and nighttime construction activities are conducted they would require the use of extremely bright lights, which would adversely affect nighttime views of and from the construction area. Under Alternative 1B there would be a total of 438 acres of land affected by RTM areas compared to a total of 1,549 acres under Alternative 1A. Because the long-term nature of construction, proximity to sensitive receptors, and changes to topography through grading would introduce noticeable changes that could be viewed by sensitive receptors and from public viewing areas, this effect on visual quality and character would be adverse.

Shaft Sites

Effects related to shaft sites are similar to those described for Alternative 1A, Impact AES-1 (see Figure 17-80). However, Under Alternative 1B, there would be fewer shaft sites because there would be only three main tunnel siphons, under Snodgrass Slough and the Mokelumne River, near Twin Cities Road; the San Joaquin River near Stockton; and near the Byron Tract Forebay, as described above under *Reusable Tunnel Material Areas*.

Transmission Lines

Proposed transmission line corridors are shown in Mapbook Figure M3-2 in Chapter 3, *Description of Alternatives*. The effects of 12 kV, 69 kV and 230 kV transmission lines would be similar under Alternative 1B to those under Alternative 1A, Impact AES-1 (see Figures 17-76, 17-77, and 17-80). The permanent transmission lines would be located in areas in where the landscape sensitivity levels range from low to high (KOPs 1, 3, 4, 15, 16, 18, 19, 20, 26, 30, 34, 41, 42, 49, 54, 72, 73, 86, 103, 107, 115, 119, 120, 124, 136, 140, 141, 152, and 154). Temporary power would be supplied by 69 kV transmission lines that would tap into the Hood, New Hope, Terminous, Stagg, North Hooper Street, and Herdlyn Substations and would run parallel to existing transmission corridors. Two of these 69 kV transmission line tie-ins for temporary power would enter the Stockton city limits. One would traverse through Brookside and be located north of West March Lane and tie into the Stagg Substation west of Feather River Drive. The other would traverse through Rough and Ready Island, north of West Fyffe Street and tie into an existing substation east of North Hooper Street. These temporary lines would be visible to a large number of viewers in all viewer groups but the transmission lines would be in keeping with the existing visual character of the transmission corridor. In addition to the 69 kV transmission lines, 12 kV lines would supply temporary power by tapping into existing transmission routes, or the newly constructed 69 kV lines, extending power to construction sites. These would be new lines and would generally not run parallel to existing transmission corridors.

Permanent power would be supplied by the Banks Substation near the Banks pumping plant. Permanent 230 kV transmission lines shown on Figure 3-25 in Chapter 3, *Description of Alternatives*, would travel from the south to north. The line would parallel existing transmission corridors south of SR 4 and then turn north and cross SR 4, after which it would not parallel an existing transmission corridor. It would travel north for 1.5 miles and would introduce a transmission corridor into the landscape where none presently exists. New permanent 69 kV lines would start at the northern terminus of the 230 kV lines, at a new switchyard at the intermediate pumping plant north of Holt, and parallel the canal to supply power to the intakes. Effects at these locations would be the same as described for Alternative 1A. The presence of temporary and permanent transmission lines would constitute an adverse effect where they do not run parallel to an existing transmission corridor.

Concrete Batch Plants and Fuel Stations

Effects related to concrete batch plants and fuel stations are similar to those described for Alternative 1A, Impact AES-1. However, under Alternative 1B, the location of some concrete batch plants and fuel stations would differ. Approximately 2-acre concrete plants would be located at Intakes 2 and 4, 0.4 mile southeast of SR 4 south of Holt, and north of Byron Highway and a 25-acre concrete plant would be located along the canal alignment just south of Snodgrass Slough. Approximately 2-acre fuel stations would be located at Intakes 2 and 4 (KOP 45), 0.4 mile southeast of SR 4 south of Holt, along the canal alignment just south of Snodgrass Slough, along the canal alignment approximately 8.5 miles south of SR 12, and north of Byron Highway. Construction of the concrete batch plant and fuel station south of Snodgrass Slough would be within 200 feet of the slough's levee and in close proximity to and south of a residence. Elements of construction may be visible to recreationists on Snodgrass Slough, agricultural workers in the area, and the nearby residence but construction would be temporary in nature, lasting less than 2 years. Converting agricultural lands to industrial facilities, especially those in close proximity to SR 160, would introduce a noticeable change in the existing visual quality and character and would be an adverse effect.

Summary

***NEPA Effects*:** The construction period would last for 9–14 years and the intensity of the activities in contrast to the current rural/agricultural nature of the area would be substantial. Construction of Intakes 1–5 and the accompanying pumping plants, surge towers, canals, borrow/spoil areas, RTM areas, forebay, access roads, transmission lines, and concrete batch plants and fuel stations would introduce visually discordant features into foreground and middleground views with low to high landscape sensitivity level. These elements would introduce visually dominant features that would be very noticeable to all viewer groups and would segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and eliminate valued visual resources. Accordingly, because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this effect on existing visual quality and character would be adverse. In San Joaquin County, the canal would be visible in the middleground from I-5; the canal and a bridge would cross West Eight Mile Road; and the canal, a bridge, and borrow/spoil areas would cross and be in foreground views from roads on Roberts Island north of SR 4 and SR 4. While not officially designated state scenic highways, and therefore not discussed under *Impact AES-3: Permanent damage to scenic resources along a state scenic highway from construction of conveyance facilities*, these roads are San Joaquin County Scenic Routes (see *San Joaquin County* in Section 17.2.3.2, *County and City General Plans*). These features would detract from the visual quality of views from these routes. In addition, construction of all these features has the potential to adversely affect wildlife viewing and the overall enjoyment of scenic views in the study area. Effects on the existing visual character under Alternative 1B would be greater than under Alternative 1A due to the extent of the canals visible on the landscape surface, landscape effects left behind by spoil/borrow areas, and introduction of bridges. Overall, effects on the existing visual character associated with construction of Alternative 1B would be adverse because the alternative would result in reductions to the visual quality in some locations and introduce dominant visual elements that would result in very noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes would be viewed by sensitive receptors and from public viewing areas. Mitigation Measures AES-1a through AES-1g are available to address these adverse effects.

***CEQA Conclusion*:** Because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, the impacts associated with constructing Intakes 1–5 and the accompanying pumping plants, surge towers, canals, borrow/spoil areas, RTM areas, forebay, access roads, and transmission lines are considered significant. These changes under Alternative 1B would result in reductions to the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes would be viewed by sensitive receptors and from public viewing areas. Impacts on the existing visual quality and character under Alternative 1B would be greater than under Alternative 1A due to the extent of the canals visible on the landscape surface, landscape effects left behind by spoil/borrow areas, and introduction of bridges.

Mitigation Measures AES-1a through AES-1g would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, Alternative 1B would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

***NEPA Effects*:** Scenic vistas are mapped and included in Appendix 17D, Figure 17D-1. Permanent effects on scenic vistas related to the presence of Intakes 1–5 and permanent access routes would be the same as those described for Alternative 1A, Impact AES-2 (see Figures 17-76, 17-77, and 17-78). Effects related to shaft sites, RTM areas, and forebays under Alternative 1B would be substantially decreased relative to Alternative 1A. The spoil/borrow areas near Lambert Road would be visible in vistas available from Lambert Road (KOP 86) and I-5 (KOP 113), east of the canal. The RTM area south of Snodgrass Slough would mostly be visible in the vista available from North Vail and Blossom Roads (KOP 119), where there are few roadway users that would have low visual sensitivity to changes. However, there are residences in the area that would be highly sensitive to changes. The RTM area on Rindge Tracts has a small number of sensitive viewers. The RTM area near Byron Tract Forebay may be partially visible from scenic vistas available from Clifton Court Road but lacks a large number of sensitive viewers (KOP 154). The shaft sites would not be noticeable in views from scenic vistas due to distance from viewing locations. Effects on scenic vistas from the presence of forebays would also be reduced under this alternative, relative to Alternative 1A. The intermediate forebay would not be constructed. However, effects on scenic vistas related to bridges, canals, and spoil/borrow areas during operation would differ under this alternative may adversely affect available views from scenic vistas.

Scenic vistas available from SR 160 (KOPs 18, 20, 34, 41, and 45), SR 4 South Tracy Boulevard (KOP 152), and Lambert (KOP 86), Twin Cities (KOP 115), North Vail, Blossom (KOP 119 and 124), North

Rio Blanco, North Holt, Windmill Cove, and Clifton Court (KOP 154) Roads would be greatly altered by the presence of a large-scale, concrete-lined and water-filled channel traversing the landscape within vista views. South of Lambert Road, the canal alignment jogs to the east and runs closer to I-5, allowing direct foreground and middleground views of the canal from the interstate. Recreationists on local roadways and waterways, roadways users on local roadways, and nearby businesses would have direct views of the canal that would introduce visually discordant features in the foreground and middleground views of scenic vistas. The large-scale canal would considerably change the nature of these scenic vistas by introducing large, industrial structures that would conflict in form, pattern, color, texture, and general character with existing surroundings and landscape features that comprise scenic vista opportunities. In addition, transmission lines following the canals would introduce tall, lattice steel structures that would draw more attention to the linearity of the canal and its industrial nature.

As seen in Figure 17-81, *Existing and Simulated Views of the East Canal from I-5 at Lambert Road*, construction of the canal would convert agricultural lands to a water conveyance facility and would require the removal of landscaping, vegetation, and structures and would introduce the raised canal embankments into the available scenic vista, as illustrated in “Simulated View”. The canal would be located 1.9 miles away from I-5, decreasing the visual prominence of the canal embankments due to distance. However, the embankments would appear larger the closer they get to I-5, as seen in the simulation when comparing the embankment on the left side of the photo to the right side of the photo, where the canal would be farther away. The canal would be most prominent near Twin Cities Road where the nearest embankment would be 0.75 mile away. The canal would limit views to trees on horizon line. In addition, the introduction of tall, steel 230 kV transmission lines paralleling the canal would add to the amount of utility lines seen from I-5. Overall, existing views from KOP 113 on I-5 toward the canal would be impaired by the removal of the buildings and vegetation and introduction of the canal and transmission lines and the Scenic Quality Rating would be reduced from an **E** to an **F**. This effect on scenic vistas would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives’ Impact on Visual Resources*).

As seen in Figure 17-83, *Existing and Simulated Views of the East Canal from SR 4*, construction of the canal would displace agricultural lands. The canal would introduce a visual massing into viewshed, as illustrated in “Simulated View”. The canal embankments would limit views to the foreground and prevent views to the middleground. Infrastructure and buildings in the foreground of this view act to limit vista views along this portion of SR 4 and screen views of the canal and are foreground focal points that draw attention somewhat away from focusing on the canal. The roadway surface would be more visible as it ascends to bridge over the canal. In addition, the introduction of tall, steel 69 kV transmission lines add to the amount of utility lines present and visually contrasts to existing views where the existing transmission lines consist of wooden utility poles. Overall, existing views from KOP 114 on SR 4 toward the canal would be impaired by the alteration of agricultural lands and introduction of the canal, bridging over the canal, and transmission lines that would alter the visual character of the roadway corridor. While the visual character would be lowered, the Scenic Quality Rating would remain an **F**. The effect of the east canal on the scenic vista would therefore not be adverse at this location (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives’ Impact on Visual Resources*). Spoil/borrow areas would take up a much greater area between Intake 1 and Dierssen Road than under Alternative 1A. These changes would have a much greater effect on available views from SR 160 and near the towns of Clarksburg and Hood, which have a higher concentration of residential, recreational, and roadway viewers. Spoil/borrow areas between Dierssen Road and King Island generally hug the canal alignment, so would appear to be more of a visual extension of canal construction. Spoil/borrow areas south of King Island to Byron Tract Forebay would cover large areas of land, like those in the northern portion of the alignment. There are fewer sensitive visual receptors in this area, but some residential, recreational, commercial, and roadway viewers are present. Spoil/borrow areas would result in large-scale, sunken or elevated landscape effects that would be visible in the scenic vistas available from these locations.

Bridges would create opportunities for vista views, but would also introduce elevated structures and raised visual masses that would disrupt the continuity of vista views by preventing free-flowing access from lands on either side of the bridges. This disrupted access would be both physical and visual.

Operations and maintenance activities in these areas would occur at existing facilities but would not require substantial new structures or changes to the landscape that would have noticeable visual effects on vistas. Overall, permanent effects on scenic vistas associated with the large scale of intakes, visual presence of large-scale borrow/spoil and RTM area landscape effects, and presence of new transmission lines may result in adverse effects on scenic vistas under Alternative 1B. Effects on scenic vistas under Alternative 1B would be greater than under Alternative 1A due to the extent of the canals visible on the landscape surface, landscape effects left behind by spoil/borrow areas, and introduction of bridges. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

***CEQA Conclusion*:** Permanent impacts on scenic vistas associated with Alternative 1B would be significant because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas. Impacts on scenic vistas under Alternative 1B would be greater than those under Alternative 1A due to the extent of the canals visible on the landscape surface, landscape effects left behind by spoil/borrow areas, and introduction of bridges.

Mitigation Measures AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because the changes would remain noticeable and introduce elements that do not blend with the existing visual character of the vista viewsheds. Thus, impacts on scenic vistas associated with Alternative 1B would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

NEPA Effects: Effects on scenic highways related to the presence of Intakes 1–5 and permanent access routes would be the same as those described for Alternative 1A, Impact AES-3 (see Figures 17-76, 17-77, and 17-78) and would result in an overall noticeable effect on viewers relative to their current experience and enjoyment of the study area's scenic resources. The intermediate forebay would not be constructed. However, bridges, canals, and spoil/borrow areas may compound adverse effects on available views from SR 160. These views would be greatly altered by the presence of a large-scale, concrete-lined and water-filled channel traversing the landscape. Spoil/borrow areas would take up a much greater area between Intake 1 and Dierssen Road under this alternative than under Alternative 1A. These changes would have a much greater effect on available views from SR 160. In addition, transmission lines following the canals would introduce tall, lattice steel structures that would draw more attention to the linearity of the canal and its industrial nature. Bridges that would be built on River/Scribner Road and a residential access road south of Intake 2 and west of North Stone Lake would be visible from SR 160. These bridges would introduce elevated structures into a landscape that is predominantly flat. This disrupted access would be both physical and visual. Because of the introduction of large obtrusive artificial elements into the viewshed of a designated scenic highway, this may be an adverse effect. Mitigation Measures AES-1a, AES-1c, and AES-1e would be available to address this effect.

CEQA Conclusion: Impacts on scenic highways associated with the presence of conveyance facilities under Alternative 1B would be significant because visual elements associated with the alternative would conflict with the existing forms, patterns, colors, and textures visible from SR 160; would dominate riverfront views available from SR 160; and would alter broad views and the general nature of the visual experience presently available from SR 160 (thereby permanently damaging the scenic resources along the scenic highway). Impacts on scenic highways under Alternative 1B would be greater than those under Alternative 1A due to the extent of the canals visible on the landscape surface, landscape effects left behind by spoil/borrow areas, and introduction of bridges. Mitigation Measures AES-1a, AES-1c, and AES-1e would help to reduce these impacts through the application of aesthetic design treatments to all structures, to the extent feasible. However, impacts on visual resources resulting from damage to scenic resources that may be viewed from a state scenic highway would not be reduced to a less-than-significant level. Thus, overall, this impact on views from a scenic highway would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes to the visual character of a scenic highway viewshed that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, overall, this impact would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

***NEPA Effects*:** Light and glare effects related to construction and operation of Intakes 1–5 and permanent access routes would be the same as those described for Alternative 1A, Impact AES-4. Intakes 1–5 and their associated pumping plants, surge towers, and facilities would create very noticeable effects relating to light and glare (see Figures 17-76 through 17-78). Effects related to shaft sites, RTM areas, and forebay would be substantially decreased. The spoils/borrow areas would be denuded of vegetation, similar to tilled agricultural fields. The intermediate forebay would not be constructed, but the presence of canals would increase glare over a greater area. Light and glare effects related to the presence of bridges, canals, and transmission lines during operation would differ under this alternative and would adversely affect daytime and nighttime views.

Daytime and Nighttime Glare

Sunlight would reflect off the new water surfaces created by the canals, creating new sources of glare where none presently exists. In addition, the use of nighttime lighting of conveyance facilities would result in nighttime glare of the lights reflecting off water surfaces. Because of the areal extent of the canals and introduction of a substantial glare-producing water body, this effect would be adverse.

Nighttime Lighting

In addition to the lighting of intakes and pumping plants described under Alternative 1A, Alternative 1B would necessitate the establishment of safety lighting along the canals as part of normal operations and maintenance, resulting in the introduction of new sources of light to parts of the study area that currently experience low levels of light and glare due to the lesser number of light/glare producers compared to those found in urban areas. Transmission lines would have lighting for aircraft safety that would draw attention to the alignment. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the transmission tower for aircraft safety. Given the height of the towers, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers. In addition, using LED lighting can result in a substantial increase in light and glare if not properly designed. This is because LED lights can negatively affect humans by increasing nuisance light and glare that can negatively affect circadian rhythms and sleep patterns, in addition to increasing light trespass and disruptive glare, if proper shielding is not provided and blue-rich white light lamps (BRWL) are used (International Dark-Sky Association 2010a, 2010b, 2015). Often, BRWL light fixtures do not have a cover so that LED bulbs are exposed and such bright light can be very harsh to the human eye at night, when humans are used to lower light levels. Also, while LED lighting is often recessed and directed downwards, replacing existing street lights with BRWL LED lighting can result in a substantial amount of light trespass because LED lighting is installed at the same height as the existing light. However, BRWL are much brighter than traditional street lighting and can light a much larger area at that same height, resulting in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Because the study area currently experiences low levels of light and because there would be a larger number of viewers in and around the waterways, intake structures, forebay, and canals, effects associated with nighttime light would be adverse. Mitigation Measures AES-4a through AES-4d are available to address these effects.

CEQA Conclusion: The impacts associated with light and glare under Alternative 1B are significant because there are a larger number of viewers in and around the waterways, intake structures, forebay, and canals; alternative facilities would create new sources of substantial nighttime lighting in the Delta above existing ambient light levels; and the study area currently experiences no or very low levels of light. Mitigation Measures AES-4a through AES-4d would help reduce impacts by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. However, these mitigation measures would not reduce impacts to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the new light and glare sources would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 1B would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

NEPA Effects**:** As described under Alternative 1A, once the facility is in operation, visible regular and periodic maintenance would be required on all major structures. Activities such as painting, cleaning, vegetation maintenance (removal), repairs, and inspections would be visible from viewpoints on water and land. Operations under Alternative 1B would be very similar to those under Alternative 1A. Although under Alternative 1B there would not be an intermediate forebay, the canals and Byron Tract Forebay would require cleaning and dredging. These activities could be visible from the water or land by sensitive viewers in proximity to these features. The greatest visual effects resulting from operations would be maintenance of the intakes and cleaning of the canals. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the structures and cleaning the facilities and keeping transmission line ROWs cleared of vegetation; the dredged forebay and canals would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within short periods of time and cease when complete, and effects on the existing visual quality and character during operation would not be adverse.

CEQA Conclusion**:** Maintenance of the conveyance facilities (i.e., intakes, canals, forebay, transmission lines, and operable barrier) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at the Byron Tract forebay, cleaning canals; vegetation removal and care along embankments; canal inspection; and vegetation removal within transmission line ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the structures and cleaning the facilities and keeping transmission line ROWs cleared of vegetation; the dredged forebay and canals would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These visible maintenance activities would be temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would be considered less than significant. Maintenance and operation of Alternative 1B, once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanent reduce visually important features. Thus, overall, Alternative 1B would have a less-than-significant impact on existing visual quality and character during maintenance and operation of the facilities in the study area. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of CM2–CM21

***NEPA Effects*:** Under Alternative 1B, these conservation measures would be identical to those under Alternative 1A. Therefore, visual effects related to the existing visual character, scenic vistas, scenic highways, and light and glare resulting from conservation measures would be the same as those described under Alternative 1A, Impact AES-6. There may be site-specific, localized adverse visual effects. These conservation measures would alter the Delta landscape by incrementally, and substantially, introducing elements into the study area over time. CM2–CM21, when combined with CM1, could substantially alter the visual character of the study area, which is strongly identified by its agricultural and water-based Delta landscapes and communities. These landscapes and communities could be adversely affected by the introduction of discordant visual features, removal of existing buildings and landscape elements of value, and through the potential for indirect impacts associated with other development potentially setting a precedent for other development to occur. All of these effects would alter the visual character of the existing regional landscape.

Because of the unknown location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction, effects associated with implementation of CM2–CM21 are considered adverse. However, the visual characteristics of restored/enhanced landscapes would be similar to other areas of the Delta that are in a natural marsh or wetland state and more limited in extent than the widespread areas of agricultural development. In this sense, the BDCP would have an overall beneficial effect related to the enhancement and creation of scenic vistas in the Delta.

Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-4a through AES-4d are available to address effects from habitat restoration and enhancement actions under CM2–CM21. In addition, Mitigation Measures AES-6a and AES-6b are available to help reduce adverse visual effects. Upon development of site-specific design information and plans, additional mitigation measures may be identified to address action-specific adverse effects. However, each individual project under CM2–CM21 would undergo the environmental compliance process that would be used to determine what additional mitigation measures, would be deemed appropriate to reduce adverse effects and to assess compliance with relevant regulations. Finally, Mitigation Measure AES-6c is available to help inventory, classify, and protect the unique visual landscape of the Delta.

CEQA Conclusion: Implementation of conservation measures under Alternative 1B has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. Impacts on the existing visual quality and character would be significant where use of large numbers of heavy construction equipment, changes in topography, and introduction of new structures or facilities where none presently exist would take place in the vicinity of sensitive receptors. However, because a number of factors that would determine the level of change are unknown—the location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction—impacts associated with implementation of CM2–CM21 on visual quality and character, scenic vistas, and light and glare sources, are considered significant. Because of the distance of implemented conservation measures from scenic highways, changes associated with these activities would not affect the visual quality along these scenic highway corridors and this impact would be less than significant. Site-specific restoration information and plans need to be developed before the site-specific effects on the existing visual character, scenic vistas, and light and glare can be determined.

Several mitigation measures are available to minimize the impacts on visual quality and character in the study area that could result from implementation of these conservation measures. As summarized below, these measures could be applied to individual restoration projects or actions as appropriate for the site-specific conditions and design considerations. In addition, each restoration project or action would undergo an environmental compliance process that would be used to determine what additional mitigation measures would be deemed appropriate to reduce significant effects. Mitigation Measures AES-1a through AES-1g could be applied to minimize impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. Mitigation Measures AES-4a through AES-4d could be used to reduce the effects of new light and glare sources by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. In addition, Mitigation Measures AES-6a and AES-6b would further minimize impacts on visual resources by undergrounding new or relocated utility lines, where feasible, and through an evaluation of an afterhours low-intensity and lights off policy. Finally, implementation of Mitigation Measure AES-6c would provide a strategy for the protection of the unique visual landscape of the Delta.

While some of the conservation measures could result in beneficial impacts through the restoration of natural habitat and these mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a less-than-significant level because of uncertainties associated with future implementation of CM2–CM21. In addition, the size of the study area and the nature of changes introduced by these conservation measures would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend with or be in keeping with the existing visual environment. Thus, implementation of these conservation measures would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6b: Develop and Implement an Afterhours Low-Intensity and Lights Off Policy

Please refer to Mitigation Measure AES-6b under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6c: Implement a Comprehensive Visual Resources Management Plan for the Delta and study area

Please refer to Mitigation Measure AES-6c under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

NEPA Effects: Constructing conveyance facilities and implementing CM2–CM21 under Alternative 1B could result in the potential for incompatibilities with plans and policies related to preserving the visual quality and character of the Delta. A number of plans and policies that coincide with the study area boundaries provide guidance for visual resource issues as overviewed in Section 17.2, *Regulatory Setting*. This overview of plan and policy compatibility evaluates whether Alternative 1B is compatible or incompatible with such enactments, rather than whether impacts are adverse or not adverse or significant or less than significant. If the incompatibility relates to an applicable plan, policy, or regulation adopted to avoid or mitigate visual effects, then an incompatibility might be indicative of a related significant or adverse effect under CEQA and NEPA, respectively. These physical effects of Alternative 1B on visual resources are addressed in Impacts AES-1 through AES-6, above. The following is a summary of compatibility evaluations related to visual resources for plans and policies relevant to the BDCP.

Conveyance Facilities

- The Sierra Resource and Cosumnes River Preserve Management Plans protect the Cosumnes River Preserve. Views within the Cosumnes River Preserve would not be affected by Alternative 1B because it is located east of I-5 and public views of the project site available from trails are obscured by riparian vegetation and I-5.
- The Suisun Marsh is protected by the San Francisco Bay Conservation and Development Commission Suisun Marsh Protection Plan. The eastern boundary of the Suisun Marsh extends to Collinsville Road in southern Solano County and falls within the westernmost portion of the study area. Views from Suisun Marsh would not be affected by this alternative because project features would be obscured by distance, the Altamont Hills, and intervening trees, infrastructure, and development.
- EBRPD parks within the study area include Browns Island, Antioch/Oakley, and Big Break Parks (East Bay Regional Park District 2013b). Views from these parks would not be affected by this alternative because project features would be obscured by distance, the Altamont Hills, and intervening trees, infrastructure, and development.
- The cities of Antioch, Brentwood, Oakley, Sacramento, Lathrop, Tracy, Rio Vista, Suisun City, and West Sacramento would not be affected by this alternative because there are no project features within or visible from these cities. Therefore, this alternative would be consistent with the protection of visual resources covered under those general plans.
- Alternative 1B would involve construction of two 12 kV temporary power transmission lines along existing corridors in the city of Stockton: one through Brookside, north of West March Lane with a tie in at the Stagg Substation west of Feather River Drive, and the other through Rough and Ready Island, north of West Fyffe Street with a tie in at an existing substation east of North Hopper Street. These temporary lines would be in keeping with the existing visual character of the transmission corridor. Therefore, this alternative would be compatible with the protection of visual resources covered under the general plan.
- The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan are all focused on the protection of resources, including visual resources, within the Delta. While constructing and operating conveyance facilities under this alternative are intended to provide ecosystem benefits in the Delta, constructing these conveyance elements could be considered incompatible with measures to protect the unique visual environment of the Delta because agricultural lands and riverbanks would be converted to other uses and the scale of construction would result in changes to the landscape that may be considered disruptive to the current Delta environment and visual quality.
- Contra Costa, Sacramento, San Joaquin, and Solano Counties all have policies to preserve and protect the scenic qualities of the Delta as summarized in Section 17.2, *Regulatory Setting*. In addition, Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties are focused on the protection of visual resources and preserving agricultural lands. The general plans for these counties include policies for the protection of visual resources, trees, waterways, and landscaping and for avoiding impacts such as the alteration of landforms and the introduction of utilities and new sources of light. These policies seek to minimize visual impacts and enhance scenic qualities and also encourage placing utility lines underground. The conversion of

agricultural lands and riverbanks to intake facilities, canal and related conveyance facility changes, landscape effects, and introduction of new lighting and transmission lines where none presently exist would substantially alter the landscape and could be considered incompatible with local policies aimed at protecting visual resources in these counties. Potential incompatibilities with Sacramento County and San Joaquin County policies would be most likely because most of the project features occur in these counties. Alameda and Contra Costa Counties have much smaller portions of project features that surround the Clifton Court Forebay. Yolo County would be affected by intakes located on the east bank of the Sacramento River that would affect views from South River Road. Alternative 1B would not be incompatible with Solano County policies because conveyance facilities would not be located in this area.

Other Conservation Measures

- The Yolo Bypass would be altered under CM2. Views of and from South River Road would not be affected. However, new fish screens, ladders, ramps, barriers, realignment of waterways, additional hydrologic monitoring stations, fish rearing pilot project at Knaggs Ranch, operations buildings, parking lots, access facilities such as roads and bridges, and modification, removal, and construction of berms, levees, and water control structures would result in changes to the landscape that may be incompatible with the Yolo County General Plan Policies LU-3.7, CC-1.2, CC-1.3, and CC-1.4 that protect scenic areas, the rural landscape character, and the night sky.
- CM4–CM11 would result in the conversion of primarily agricultural lands to restored or enhanced habitat across all 11 CZs, with specific focus on ROAs (refer to Figure 3-1 in Chapter 3, *Description of Alternatives*). Therefore, associated regulations may apply. Restored areas would largely be natural habitat areas. Alterations such as channel and levee modifications, landform alteration from dredge spoil placement, and floodplain lowering could change the visual landscape. Restoring areas and views to natural, native habitat would likely be beneficial and would increase visual diversity. However, converting agricultural lands may be incompatible with one or more regulation protecting visual resources, although it may facilitate regulations set in place to protect and restore the Delta. If facilities, such as buildings, parking lots, or roads, are built, they would also have the potential to be incompatible with relevant regulations that protect scenic areas, the landscape character, the night sky, and the Delta.
- CM15 and CM21 would occur across all 11 CZs and could result in physical changes to the visual environment at a number of locations and where relevant regulations may apply. This may have beneficial or adverse effects based on the size of proposed projects and pre-and post-project conditions (e.g., if restoration is implemented and improves pre-project conditions or if natural vegetation is removed and replaced with rip rap or a new diversion structure that degrades pre-project conditions). Vegetation removal and replacement with rip rap or a diversion structure could be incompatible with be incompatible with relevant regulations that protect scenic areas, the landscape character, the night sky, and the Delta.
- CM16 could use sound, light, and bubbles at the head of the Delta Cross Channel and Georgiana Slough in Sacramento County and at the Head of Old River and potentially at Turner Cut and Columbia Cut in San Joaquin County (note that Turner and Columbia Cut each have two channels, and thus would require two barriers)to direct fish passage. Small scale changes may be visible on the banks or in the water used for anchoring that could result in adverse visual effects, but it is anticipated that these changes would be consistent with County general plan policies that protect visual resources.

- Building a new hatchery that consists of a facility on the edge of the Sacramento River and a larger supplementation production facility nearby, through CM18, would result in visual changes and conversion of existing land uses along and near the river would be required to build facilities. These facilities could be located in Sacramento, Yolo, or Solano Counties and also fall within the Delta. Therefore, corresponding regulations may apply. The size and locations of these facilities are unknown, but it is likely that conversion of existing land uses, and potentially undeveloped land would alter the visual character along the Sacramento River and would be incompatible with one or more plans or policies for the protection of visual resources in these regions.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6 above, and no additional CEQA conclusion is required related to the compatibility of Alternative 1B with relevant plans and policies.

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

Table 17D-3, in Appendix 17D, *Permanent Impacts after Construction is Complete*, describes existing visual characteristics and the BDCP-related permanent effects of Alternative 1C on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Construction of all structural components under Alternative 1C could potentially occur over a period of 9–14 years. However, construction of each individual facility would be phased within that period and would occur over a shorter period. The estimated construction times for individual features are included below. The duration and schedule for construction of the water conveyance facilities (CM1) is provided in Appendix 3C, *Construction Assumptions for Water Conveyance Facilities*. In addition, Appendix 22A, *Air Quality Analysis Methodology*, details the construction schedules and defines the length and sequence of each construction phase. A map and schematic depicting the conveyance facilities associated with Alternative 1C are provided in Figures 3-6 and 3-7 in Chapter 3, *Description of Alternatives*.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

Visual effects related to Intakes W1–W5, canals, spoils/borrow areas, RTM areas, shaft sites, Byron Tract Forebay, access roads, and transmission lines would be similar to those described under Alternative 1B, Impact AES-1. While site-specific locations of features under Alternative 1C differ, these components would result in the same visual effects across the same landscape types and would have the same or similar effects on visual resources and viewer groups (see Figures 17-76 through 17-78 and Figure 17-80 and Chapter 3, *Description of Alternatives,* Mapbook Figure M3-3). The conveyance facilities would be visible throughout the construction areas from various local roadways and would have concentrated viewers in some locations. Site-specific differences associated with the locations of the various features are described below.

Intakes

Intakes W1–W5 would essentially be built in the same order and size directly across the Sacramento River from the locations established for Intakes 1–5 (see Figures 17-76 through 17-78 and Chapter 3, *Description of Alternatives*, Mapbook Figure M3-3). Construction of each intake would take approximately 4 years to complete and would occur primarily Monday through Friday for up to 24 hours per day. In addition, because of the relatively high groundwater level at all intake locations and pumping plant sites, dewatering would be necessary to provide a dry workspace. Dewatering would also be needed where intake pipelines cross waterways and major irrigation canals west of the Sacramento River. Dewatering would take place 7 days per week and 24 hours per day and would be initiated 1–4 weeks prior to excavation. Dewatering would continue until excavation is completed and the construction site is protected from areas with high groundwater levels (Chapter 3, *Description of Alternatives*). Construction of the west intakes would be visible from SR 160. Intake W2 is immediately south of Clarksburg, exposing a concentration of sensitive viewers in the immediate vicinity surrounding the construction area to views of this intake (KOPs 1, 3, 4, 12, 16, 18, 30, 38, 49, and 56).

Canals

A conveyance pipeline between Intakes W1 and W2 would require wide, linear trenching to install. The proposed canal alignment starts near Intake W2, passes by Intakes W3–W5, and then heads west toward the Sacramento River Deep Water Ship Channel where it turns and heads south to the control structure 1 mile south of SR 220 (KOPs 16, 19, 20, 42, 158, 165, 168, 173, 174, 176, 177, 179, and 180). The conveyance alignment would be in a tunnel south from this structure for approximately 17 miles, where it would daylight back into a canal 0.5 mile south of East Cypress Road. The alignment continues south through a fairly developed area, crosses SR 4, and then jogs east to the Byron Tract Forebay, which would be constructed on the northwest side of the Clifton Court Forebay (KOPs 103, 184, 189, 192, 197, and 198). The top width of the isolated conveyance canal would be approximately 700 feet (see Table 3-15 in Chapter 3, *Description of Alternatives*).

The canal is considered as northern and southern segments (i.e., separated by the tunnel) for the purposes of discussing visual impacts. Construction would be performed in a linear pattern over a 5-year period and would occur primarily Monday through Friday for up to 24 hours per day. In addition, because of the relatively high groundwater level along the canal alignment, dewatering would be necessary to provide a dry workspace for excavation of the canal foundation. Dewatering would take place 7 days per week and 24 hours per day and would be initiated 1–4 weeks prior to excavation. Dewatering would continue until excavation is completed and the construction site is protected from areas with high groundwater levels (Chapter 3, *Description of Alternatives*). Construction of the northern segment would require the relocation of several residents and razing of residential and agricultural buildings, although much of the area within the alignment is not developed. The southern canal segment, however, is more developed. The relocation of residents and businesses and the razing of residential, commercial, and agricultural buildings would be most concentrated immediately east of Byron Highway, between Delta Road and just south of SR 4 to 0.5 mile east of Bixler Road. This area has fairly dense rural development, in addition to nearby suburban development associated with Discovery Bay. This development increases the number of sensitive viewers that would be directly adjacent or very close to the construction activities associated with building the canal in this location. In addition, the canal would also be visible from Amtrak San Joaquin Oakland to Bakersfield route as it crosses by the canal north of Orwood Road and east of Byron Highway. The canal would be seen by passengers sitting in window seats on the north and south sides of the train. The canal would dead end to the north and south of the railway and siphon under the tracks. While trains would pass by at a high rate of speed, the canal would be a unique and prominent feature that would draw viewers' attentions as they pass by the feature that would appear as a brief pinch point in views. Transmission lines following the canals would introduce tall, lattice steel structures that would draw more attention to the linearity of the canal and its industrial nature.

As seen in Figure 17-84, *Existing and Simulated Views of the West Canal from SR 4*, construction of the canal would displace agricultural lands and agrarian infrastructure and require the removal of vegetation. The canal would introduce a prominent visual massing into viewshed, as illustrated in "Simulated View", which limits views to the foreground and prevents views to the suburban development, beyond. However, landscape appears more rural because suburban development is obscured by the large, human-made levee. Trees and shrubs lining the south side of SR 4 would also be removed to allow for construction. The roadway, roadway signage, and relocated wooden transmission lines would be more prominent because there would be no more vegetation to screen and reduce the apparent scale of these features. In addition, the roadway surface would be more visible as it ascends to a bridge over the canal. Overall, existing views from KOP 195 on SR 4 toward the canal would be impaired by the removal of the agrarian structures and vegetation and introduction of the canal, bridging over the canal, and transmission lines that would alter the visual character of the roadway corridor. The Scenic Quality Rating would be reduced from an **E** to an **F**. This effect would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

Byron Tract Forebay

Under Alternative 1C, the Byron Tract Forebay would take just over 3 years to construct. The visual effects of construction would be similar to those discussed under Alternatives 1A and 1B, Impact AES-1, except that the forebay would be constructed northwest of the Clifton Court Forebay (KOP 101). Construction activities would still be visible from Byron Highway, although from a different portion of the highway, and would be visible to more sensitive viewers because the forebay is south of the development in the Discovery Bay area. The Byron Tract Forebay would convert a large area of agricultural land but is beside the Clifton Court Forebay in an area that already has a visual predominance of water conveyance features. Nevertheless, construction of the forebay would result in noticeable changes associated with the presence of expanded conveyance features that could be viewed by sensitive receptors and from public viewing areas. This effect on visual quality and character would be considered adverse.

Bridges

Effects related to construction of bridges would occur within a 2-year period and would be similar to those described for Alternative 1B, Impact AES-1, because the proposed components would be similar but would be constructed in different locations west of the Sacramento River. Under Alternative 1C, up to sixteen bridges would be built on CR 142 and CR 161; SR 84, SR 220, and SR 4 (Taylor Lane); Jefferson Boulevard; Elevator, Delta, Orwood, Balfour, Point of Timber, Marsh Creek, and Bixler Roads; Cow Poke and Eagle Lanes; and Byron Highway (KOPs 165, 168, 177, 179, 184, 189, 192, and 198). Construction activities would introduce considerable heavy equipment and associated vehicles, including dozers, graders, scrapers, and trucks, into the viewsheds of public roadways and residential and commercial properties. Safety and directional signage would also be a visible element. Bridges would create opportunities for views to the surrounding area, but would also introduce noticeable elevated structures and raised visual masses that would disrupt the continuity of views by preventing free flowing access from lands on either side of the bridges. This disrupted access would be both physical and visual. Overall, construction of bridges would introduce a noticeable change from public viewing areas and could result in an adverse effect on existing visual quality and character in the study area.

Spoil and Borrow Areas

There would be vast areas of spoil/borrow near Intakes W1–W5 and the northern canal segment near the Sacramento River Deep Water Ship Channel (5,105 acres). Large spoil/borrow areas would also be situated along the southern canal segment (699 acres) and surrounding and south of the Byron Tract Forebay (967 acres) (KOPs 16, 19, 101, 162, 165, 168, 173, 176, 180, 189, and 192). Spoil/borrow areas along the northern canal segment may be visible from some locations along SR 160, and they would be visible from CH E9, SR 84, SR 220, and other smaller local roadways in the area. Spoil/borrow areas along the southern canal segment would be visible from multiple roadways in the area, as listed in Table 17D-3 in Appendix 17D, *Permanent Impacts after Construction is Complete*. Railway viewers would also be able to see the spoil/borrow areas located to the north and south of the railway between Bixler Road and Byron Highway. These areas would be seen by passengers sitting in window seats on the north and south sides of the train. While trains would pass by at a high rate of speed, the landscape effects would be unique and prominent features that would draw viewers' attentions as they pass by them. Under Alternative 1C there would be a total of 6,770 acres of land affected by spoil/borrow areas compared to a total of 1,185 acres under Alternative 1A and 10,667 acres under Alternative 1B. In addition to spoils/borrow in the study area, offsite borrow sites may be needed to provide suitable materials for intake pipeline foundations, berms around RTM storage areas and canal embankments. It is not known how much import material would be needed and where it would come from. It is assumed that effects at import borrow sites would be similar in scale and have similar adverse visual effects to those within the study area. The spoils/borrow areas would introduce large sunken or elevated landforms into a landscape that is predominantly flat. Because of the scale of landscape-level changes, long-term nature of construction, proximity to sensitive receptors, removal of vegetation, and changes to topography through grading, and the introduction of noticeable changes that could be viewed by sensitive receptors and from public viewing areas, this effect on existing visual quality and character would be adverse.

Reusable Tunnel Material Areas

RTM areas would be more extensive under this alternative than under Alternative 1B but would be considerably less than under Alternative 1A. A dual-bore tunnel would be constructed from the control structure 1 mile south of SR 220 (KOP 180) to 0.5 mile south of East Cypress Road. RTM areas to store excess material from tunnel boring would be established near the control structure (181 acres), north of SR 12 on Brannan Island (334 acres) (KOP 181), and north of Delta Road (400 acres). Railway viewers would be able to see the RTM area located north of Delta Road, to the east. These areas would be seen by passengers sitting in window seats on the eastern side of the train. While trains would pass by at a high rate of speed, the landscape effects would be unique and prominent features that would draw viewers' attentions as they pass by them. Under Alternative 1C there would be a total of 914 acres of land affected by RTM areas compared to a total of 1,549 acres under Alternative 1A and 438 acres under Alternative 1B. RTM areas would be in use for close to 7.5 years; operations at these locations would take place Monday through Friday for up to 24 hours per day. If evening and nighttime construction activities are conducted they would require the use of extremely bright lights, which would adversely affect nighttime views of and from the construction area. Because the long-term nature of construction, proximity to sensitive receptors, and changes to topography through grading would introduce noticeable changes that could be viewed by sensitive receptors and from public viewing areas, this effect on visual quality and character would be adverse.

Shaft Sites

Effects related to shaft sites would be similar to those described for Alternative 1A, Impact AES-1. However, under Alternative 1C, there would be fewer shaft sites because the tunnel segment would be roughly half as long as under Alternative 1A (see Figure 17-80). Nevertheless, construction activities associated with the shaft sites would constitute an adverse effect on visual resources. Air vents and access shafts would be located on Twitchell and Bethel Islands and only the ones on Bethel Island would have fencing that would be visible in the foreground from Bethel Island Road, to the east.

Transmission Lines

Proposed transmission line corridors are shown in Mapbook Figure M3-3 in Chapter 3, *Description of Alternatives*. Construction of 69 kV and 230 kV transmission lines would take less than 2 years and would require vegetation clearing along the linear ROWs. As under Alternative 1A, Impact AES-1, the effects would be adverse, although the specific locations of these lines would differ (see Figures 17-76, 17-77, and 17-80). The permanent transmission lines would be located in areas in where the landscape sensitivity levels range from low to high (KOPs 1, 3, 4, 15, 16, 18, 19, 20, 26, 30, 34, 38, 41, 42, 45, 49, 56, 158, 162, 165, 168, 173, 174, 176, 177, 179, and 180). Temporary power would be supplied by 12kV and 69 kV transmission lines that would tap into the Grand Island, EBMUD Pumping Plant, and Herdlyn Substations and would run parallel to existing transmission corridors. The 69 kV transmission lines tap into existing 115/69 kV lines off of SR 160, south of Grand Island Road, and north of SR 12. In addition to the 69 kV transmission lines, 12 kV lines would supply temporary power by tapping into existing transmission routes, or the newly constructed 69 kV lines, extending power to construction sites. These would be new lines and would generally not run parallel to existing transmission corridors.

Permanent power for Alternative 1C would be supplied by the Lambie Substation. Permanent 230 kV transmission lines are shown on Figure 3-25 in Chapter 3, *Description of Alternatives*, and would travel from the west to east where it terminates at the proposed pumping plant east of SR 84 and south of SR 220. The Lambie Substation is located approximately 1 mile northeast of SR 113/12, immediately north of Lambie Road and just west of Bithell Lane. The new substation would be located at an existing substation and would be of a similar industrial nature. This location would require more than 25 miles of 230 kV electrical transmission lines to connect this substation to the northern study area, would introduce a transmission corridor into the landscape where none presently exists, and would be visible from local roadways and SR 113/12, SR 84, and SR 220. New permanent 69 kV lines would start at the northern terminus of the 230 kV lines, at a new switchyard at the pumping plant, and parallel the canal and head north to supply power to the intakes. The proposed permanent 69 kV and 230 kV electrical power transmission lines would be carried on tall steel poles that would be highly visible landscape features contrasting strongly with their surroundings, resulting in adverse visual effects. The type of effects at these locations would be the same as described for Alternative 1A, Impact AES-1. The presence of temporary and permanent transmission lines would constitute an adverse effect where they do not run parallel to an existing transmission corridor.

Concrete Batch Plants and Fuel Stations

Effects related to concrete batch plants and fuel stations are similar to those described for Alternative 1A, Impact AES-1, except that locations would differ. Approximately 2-acre concrete plants would be located along the canal alignment adjacent to Willow Point Road, between Intakes 3 and 4 (KOP 42), and along the canal alignment approximately 1 mile north of the Byron Highway and an approximately 40-acre concrete plant along the canal alignment approximately 1 mile south of the SR 84/SR 220 junction (KOP 180) and along the canal alignment just north of Franks Tract. Approximately 2-acre fuel stations would be located along the canal alignment adjacent to Willow Point Road, between Intakes 3 and 4, along the canal alignment approximately 1 mile south of the SR 84/SR 220 junction, along the canal alignment just north of Franks Tract, and along the canal alignment approximately 1 mile north of the Byron Highway.

Construction of a concrete batch plant and fuel station along Willow Point Road would be immediately visible from the roadway with unobstructed views. Construction of the concrete batch plant and fuel station proposed between Intakes 3 and 4 would be partially screened by existing buildings and vegetation but would still be visible from CH E9, down the agricultural access road they are located along. Construction of a concrete batch plant and fuel station along the canal alignment approximately 1 mile south of the SR 84/SR 220 junction would occur in the middle of agricultural lands and not along or in immediate proximity to a roadway or waterway and would be seen by the nearby residence to the northwest, agricultural workers, and roadway users on SR 84. Construction of a concrete batch plant and fuel station along the canal alignment just north of Franks Tract would not have a substantial effect because it would not occur in proximity to sensitive visual receptors. Elements of construction may be visible to recreationists on False River and agricultural workers on Franks Tract, but these viewers would only have intermittent visual access and construction would be temporary in nature, lasting less than 2 years. Construction of a concrete batch plant and fuel station along the canal alignment approximately 1 mile north of the Byron Highway would be located in close proximity to similar industrial looking facilities that are associated with the Clifton Court Forebay and existing transmission lines that course the area. The primary viewers of this area are roadway travelers on Byron Highway that pass by the site at highway speeds that would have intermittent visual access of temporary construction activities that would last less than 2 years. Once the project is complete, these facilities would be removed.

Summary

NEPA Effects: The construction period would last for 9–14 years and the intensity of activities in contrast to the current rural/agricultural nature of the area would be substantial. Construction of Intakes W1–W5 and accompanying pumping plants, surge towers, canals, borrow/spoil areas, RTM areas, forebay, access roads, transmission lines, and concrete batch plants and fuel stations would introduce visually discordant features in the foreground and middleground views of scenic vistas and from scenic roadways, and these elements would be visible to all viewer groups. The existing visual character would be greatly altered by the presence of a large-scale intakes and concrete-lined and water-filled channels traversing the landscape. In addition, construction of all these features has the potential to adversely affect wildlife viewing and the overall enjoyment and segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and eliminate valued visual resources within scenic views in the study area Because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this effect is considered adverse. Effects on the existing visual quality and character under Alternative 1C would be greater than those under Alternatives 1A and 1B due to the extent of the canals visible on the landscape surface, landscape effects left behind by spoil/borrow areas, introduction of bridges, and closer proximity to a greater number of sensitive viewers. Overall, effects on the existing visual character associated with construction of Alternative 1C would be adverse because the alternative would result in reductions to the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes would be viewed by sensitive receptors and from public viewing areas. Mitigation Measures AES-1a through AES-1g are available to address these effects.

CEQA Conclusion: Because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, the impacts associated with constructing Intakes W1–W5 and accompanying pumping plants, surge towers, canals, borrow/spoil areas, RTM areas, and forebays are considered significant. These changes under Alternative 1C would result in reductions to the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes would be viewed by sensitive receptors and from public viewing areas. Impacts on the existing visual quality and character under Alternative 1C would be greater than those under Alternative 1A and 1B due to the extent of the canals visible on the landscape, landscape effects left behind by spoil/borrow areas, introduction of bridges, and closer proximity to a greater number of sensitive viewers.

Mitigation Measures AES-1a through AES-1g would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, Alternative 1C would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

NEPA Effects**:** Scenic vistas are mapped and included in Appendix 17D, Figure 17D-1. Effects on scenic vistas related to operation of Intakes W1–W5, canals, spoils/borrow areas, RTM areas, shaft sites, Byron Tract Forebay, permanent access roads, and transmission lines would be similar to those described under Alternative 1B, Impact AES-2 (see Figures 17-76, 17-77, and 17-79). While specific locations of components under Alternative 1C differ, they would introduce the same features across the same landscape types and would have the same or similar effects on visual resources and viewer groups. Site-specific differences associated with the location of the various features are described below.

Scenic vistas available from SR 160, SR 84, SR 220, SR 12, CH E9, SR 4, and Byron Highway would be noticeably altered by the presence of a large-scale intakes and concrete-lined and water-filled channels traversing the landscape. Intakes W1–W5 would be prominent visual features in vista views from SR 160 and CH E9. The spoil/borrow areas would mostly be visible in the vistas from CH E9, SR 84, SR 220, SR 4, and Byron Highway. The RTM area on Ryer Island would mostly be visible in the vista from SR 84 and SR 220, where there are few roadway users with low visual sensitivity to changes. The RTM area on Brannan Island would mostly be visible in the vista from SR 160 and SR 12, where there are few roadway users with low visual sensitivity to changes. The shaft sites would be built on raised earthen pads to elevate them above the flood level, and these pads would be approximately 16- to 20-feet high (or at the 100-year design flood elevation for each island) and would be noticeable in views from scenic vistas because the shaft would rise approximately another 20 feet above the grade of the raised pad, and there would be construction office and storage buildings located at the base of the raised pad. The shaft site would be surrounded by fencing. Construction activities associated with the shaft sites may constitute an adverse effect on scenic vistas due to the physical introduction of these features and the duration of time that they would be visible in the landscape. Once construction is completed, the construction office and storage buildings would be removed.

The intermediate forebay would not be constructed. The Byron Tract Forebay would encompass 600 acres—the same size as Alternative 1A—but would be in a different location. Like Alternative 1A, it would convert a large area of agricultural land but would be next to the Clifton Court Forebay in an area that already has a visual predominance of water conveyance features. Nevertheless, construction of the forebay may result in adverse visual effects associated with the presence of expanded conveyance features in views.

Bridges would create opportunities for vista views, but would also introduce elevated structures and raised visual masses that would disrupt the continuity of vista views by preventing free-flowing access from lands on either side of the bridges. This disrupted access would be both physical and visual.

Operations and maintenance activities in these areas would occur at existing facilities but would not require substantial new structures or changes to the landscape that would have noticeable visual effects on vistas. Overall, permanent effects on scenic vistas associated with the large scale of intakes, visual presence of large-scale borrow/spoil and RTM area landscape effects, and presence of new transmission lines may result in adverse effects on scenic vistas under Alternative 1C. Effects on scenic vistas under Alternative 1C would be greater than those under Alternatives 1A and 1B due to the extent of the canals visible on the landscape, landscape effects left behind by spoil/borrow areas, introduction of bridges, and closer proximity to a greater number of sensitive viewers. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

***CEQA Conclusion*:** Permanent impacts on scenic vistas associated with operation of Alternative 1C would be significant because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas. Impacts on scenic vistas under Alternative 1C would be greater than under Alternatives 1A and 1B due to the extent of the canals visible on the landscape surface, landscape effects left behind by spoil/borrow areas, introduction of bridges, and closer proximity to a greater number of sensitive viewers.

Mitigation Measures AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation

Measure AES-1e requires the use of aesthetic design treatments to all structures and would reduce the impact of shaft site access hatches to less than significant; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because the changes would remain noticeable and introduce elements that do not blend with the existing visual character of the vista viewsheds. Thus, impacts on scenic vistas associated with Alternative 1C would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

***NEPA Effects*:** Effects on scenic highways related to the presence of Intakes W1–W5, canals, spoils/borrow areas, bridges, permanent access roads, and transmission lines would be similar to those described under Alternatives 1A and 1B, Impact AES-3 (see Figures 17-76, 17-78, and 17-79) and would result in an overall noticeable effect on viewers relative to their current experience and enjoyment of the study area's scenic resources. While specific locations of features under Alternative 1C differ, these components would introduce the same features across the same landscape types and would have the same or similar effects on visual resources and viewer groups. The intakes would be visible from SR 160. However, bridges, canals, and spoil/borrow areas may or may not be visible from SR 160 because the work areas would be across the river at a lower ground elevation than the raised roadway, and the views could be obscured by intervening vegetation along SR 160 and CH E9. Where visible, views would be greatly altered by the presence of large-scale, concrete-lined and water-filled channels traversing the landscape, large sunken or elevated landforms, and elevated structures between the intakes. In addition, transmission lines following the canals would introduce tall, lattice steel structures that would draw more attention to the linearity of the canal and its industrial nature and would be visible from SR 160. Effects on scenic highways under Alternative 1C may not be as great as those under Alternative 1B, due to the potential for obscured views of the bridges, canals, and spoil/borrow areas from SR 160; however, these effects may be adverse. Mitigation Measures AES-1a, AES-1c, and AES-1e would be available to address these effects.

***CEQA Conclusion*:** Impacts on scenic highways associated with the presence of conveyance facilities under Alternative 1C would be significant because visual elements associated with the alternative would conflict with the existing forms, patterns, colors, and textures visible from SR 160; would dominate riverfront views available from SR 160; and would alter broad views and the general nature of the visual experience presently available from SR 160 (thereby permanently damaging the scenic resources along the scenic highway). Impacts on scenic highways under Alternative 1C may not be as great as Alternative 1B due to the potential for obscured views of the bridges, canals, and spoil/borrow areas from SR 160. However, the intakes would be very visible. Mitigation Measures AES-1a, AES-1c, and AES-1e would help to reduce these impacts through the application of aesthetic design treatments to all structures, to the extent feasible. However, impacts on visual resources resulting from damage to scenic resources that may be viewed from a state scenic highway would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes to the visual character of a scenic highway viewshed that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, overall, this impact would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

***NEPA Effects*:** Light and glare effects related to operation of Intakes W1–W5, canals, spoils/borrow areas, RTM areas, shaft sites, Byron Tract Forebay, permanent access roads, and transmission lines would be similar to those described for Alternatives 1A and 1B, Impact AES-4. Intakes W1–W5 and their associated pumping plants, surge towers, and facilities would create very noticeable effects relating to light and glare (see Figures 17-76 through 17-78). While specific locations of components under Alternative 1C would differ, these features would introduce the same light and glare effects across the same landscape types and would have the same or very similar effects on visual resources and viewer groups. The spoils/borrow areas would be denuded of vegetation, similar to tilled agricultural fields. The presence of canals and the Byron Tract Forebay would increase glare over a large area. Light and glare effects related to the operation of intakes, bridges, canals, forebay, and transmission lines during operation would adversely affect daytime and nighttime views.

Daytime and Nighttime Glare

Sunlight would reflect off the new water surfaces created by the canals, creating new sources of glare where none presently exists. In addition, the use of nighttime lighting of conveyance facilities would result in nighttime glare of the lights reflecting off water surfaces. Because of the extent of the canals and introduction of a substantial glare-producing water body, this effect would be adverse.

Nighttime Lighting

In addition to the lighting of intakes and pumping plants, Alternative 1C would entail the establishment of safety lighting along the canals as part of normal operations and maintenance and would result in the introduction of new sources of light to parts of the study area that currently experience low levels of light and glare. Transmission lines would be required to have lighting for aircraft safety, drawing attention to the alignment. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the transmission tower for aircraft safety. Given the height of the towers, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers. In addition, using LED lighting can result in a substantial increase in light and glare if not properly designed. This is because LED lights can negatively affect humans by increasing nuisance light and glare that can negatively affect circadian rhythms and sleep patterns, in addition to increasing light trespass and disruptive glare, if proper shielding is not provided and blue-rich white light lamps (BRWL) are used (International Dark-Sky Association 2010a, 2010b, 2015). Often, BRWL light fixtures do not have a cover so that LED bulbs are exposed and such bright light can be very harsh to the human eye at night, when humans are used to lower light levels. Also, while LED lighting is often recessed and directed downwards, replacing existing street lights with BRWL LED lighting can result in a substantial amount of light trespass because LED lighting is installed at the same height as the existing light. However, BRWL are much brighter than traditional street lighting and can light a much larger area at that same height, resulting in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Because the study area currently experiences low levels of light and because there are a larger number of viewers in and around the waterways, intake structures, forebay, and canals, effects associated with nighttime light would be adverse. Mitigation Measures AES-4a through AES-4d are available to address these effects.

***CEQA Conclusion*:** The impacts associated with light and glare under Alternative 1C are significant because there are a larger number of viewers in and around the waterways, intake structures, forebay, and canals; alternative facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels; and the study area currently experiences low levels of light Mitigation Measures AES-4a through AES-4d would help reduce impacts by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. However, these mitigation measures would not reduce impacts to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the new light and glare sources would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 1C would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

***NEPA Effects*:** Operations under Alternative 1C would be very similar to those under Alternatives 1A and 1B, and once the facility is in operation, visible regular and periodic maintenance would be required on all major structures. Activities such as painting, cleaning, vegetation maintenance (removal), repairs, and inspections would be visible from viewpoints on water and land. Although under Alternative 1C there would not be an intermediate forebay (same as Alternative 1B), the canal and Byron Tract Forebay would require cleaning and dredging. These activities could be visible from the water or land by sensitive viewers in proximity to these features. The greatest visual effects resulting from operations would be maintenance of the intakes and cleaning the canals. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within short periods of time and cease when complete, and effects on the existing visual quality and character during operation would not be adverse.

***CEQA Conclusion*:** Maintenance of the conveyance facilities (i.e., intakes, canals, forebay, transmission lines, and operable barrier) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at the Byron Tract forebay, cleaning canals; vegetation removal and care along embankments; canal inspection; and vegetation removal within transmission line ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These visible maintenance activities would be temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would be considered less than significant. Maintenance and operation of Alternative 1C, once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features. Thus, overall, Alternative 1C would have a less-than-significant impact on existing visual quality and character during maintenance and operation of the facilities in the study area. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of CM2–CM21

***NEPA Effects*:** Under Alternative 1C, these conservation measures would be identical to those under Alternatives 1A and 1B. Therefore, visual effects related to the existing visual character, scenic vistas, scenic highways, and light and glare resulting from conservation measures would be the same as those described under Alternative 1A, Impact AES-6. There may be site-specific, localized adverse visual effects. These conservation measures would alter the Delta landscape by incrementally, and substantially, introducing elements into the study area over time. CM2–CM21, when combined with CM1, could substantially alter the visual character of the study area, which is strongly identified by its agricultural and water-based Delta landscapes and communities. These landscapes and communities could be adversely affected by the introduction of discordant visual features, removal of existing buildings and landscape elements of value, and through the potential for indirect impacts associated with other development potentially setting a precedent for other development to occur. All of these effects would alter the visual character of the existing regional landscape.

Because of the unknown location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction, effects associated with implementation of CM2–CM21 are considered adverse. However, the visual characteristics of restored/enhanced landscapes would be similar to other areas of the Delta that are in a natural marsh or wetland state and more limited in extent than the widespread areas of agricultural development. In this sense, the BDCP would have an overall beneficial effect related to the enhancement and creation of scenic vistas in the Delta.

CEQA Conclusion: Implementation of conservation measures under Alternative 1C has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. Impacts on the existing visual quality and character would be significant where use of large numbers of heavy construction equipment, changes in topography, and introduction of new structures or facilities where none presently exist would take place in the vicinity of sensitive receptors. However, because a number of factors that would determine the level of change are unknown—the location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction—impacts associated with implementation of CM2–CM21 on visual quality and character, scenic vistas, and light and glare sources, are considered significant. Because of the distance of implemented conservation measures from scenic highways, changes associated with these activities would not affect the visual quality along these scenic highway corridors and this impact would be less than significant. Site-specific restoration information and plans need to be developed before the site-specific effects on the existing visual character, scenic vistas, and light and glare can be determined.

Several mitigation measures are available to minimize the impacts on visual quality and character in the study area that could result from implementation of these conservation measures. As summarized below, these measures could be applied to individual restoration projects or actions as appropriate for the site-specific conditions and design considerations. In addition, each restoration project or action would undergo an environmental compliance process that would be used to determine what additional mitigation measures would be deemed appropriate to reduce significant effects. Mitigation Measures AES-1a through AES-1g could be applied to minimize impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. Mitigation Measures AES-4a through AES-4d could be used to reduce the effects of new light and glare sources by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. In addition, Mitigation Measures AES-6a and AES-6b would further minimize impacts on visual resources by undergrounding new or relocated utility lines, where feasible, and through an evaluation of an afterhours low-intensity and lights off policy. Finally, implementation of Mitigation Measure AES-6c would provide a strategy for the protection of the unique visual landscape of the Delta.

While some of the conservation measures could result in beneficial impacts through the restoration of natural habitat and these mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a less-than-significant level because of uncertainties associated with future implementation of CM2–CM21. In addition, the size of the study area and the nature of changes introduced by these conservation measures would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend or be in keeping with the existing visual environment. Thus, implementation of these conservation measures would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6b: Develop and Implement an Afterhours Low-Intensity and Lights Off Policy

Please refer to Mitigation Measure AES-6b under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6c: Implement a Comprehensive Visual Resources Management Plan for the Delta and study area

Please refer to Mitigation Measure AES-6c under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

NEPA Effects**:** Constructing water conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 1C could result in the potential for incompatibility with plans and policies related to preserving the visual quality and character of the Delta. A number of plans and policies that coincide with the study area boundaries provide guidance for visual resource issues as overviewed in Section 17.2, *Regulatory Setting*. This overview of plans and policies evaluates whether Alternative 1C is compatible with such enactments, rather than whether impacts are adverse or not adverse or significant or less than significant. If an incompatibility relates to an applicable plan, policy, or regulation adopted to avoid or mitigate visual effects, then it might be indicative of a related significant or adverse effect under CEQA and NEPA, respectively. These physical effects of Alternative 1C on visual resources are addressed in Impacts AES-1 through AES-6, above. The following is a summary of the compatibility evaluation related to visual resources for plans and policies relevant to the BDCP.

Conveyance Facilities

- The Sierra Resource and Cosumnes River Preserve Management Plans protect the Cosumnes River Preserve. Views within the Cosumnes River Preserve would not be affected by Alternative 1C because it is located east of I-5 and public views of the project site available from trails are obscured by riparian vegetation and I-5.
- The Suisun Marsh is protected by the San Francisco Bay Conservation and Development Commission Suisun Marsh Protection Plan. The eastern boundary of the Suisun Marsh extends to Collinsville Road in southern Solano County and falls within the westernmost portion of the study area. Views from Suisun Marsh could be altered by this alternative and potentially incompatible with Policy 8(g) of the plan because a new permanent transmission line would be constructed and follow Flannery, Goose Haven, and Lambie Roads and tie into the existing Lambie Substation.
- EBRPD parks within the study area include Browns Island, Antioch/Oakley, and Big Break Parks (East Bay Regional Park District 2013b). Views from these parks would not be affected by this alternative because project features would be obscured by distance, the Altamont Hills, and intervening trees, infrastructure, and development.
- The cities of Antioch, Brentwood, Oakley, Sacramento, Lathrop, Tracy, Rio Vista, Suisun City, and West Sacramento would not be affected by this alternative because there are no project features within or visible from these cities. Therefore, this alternative would be consistent with the protection of visual resources covered under those general plans.
- Alternative 1C would involve construction of two 12 kV temporary power transmission lines along existing corridors in the city of Stockton: one through Brookside, north of West March Lane with a tie in at the Stagg Substation west of Feather River Drive, and the other through Rough and Ready Island, north of West Fyffe Street with a tie in at an existing substation east of North Hopper Street. These temporary lines would be in keeping with the existing visual character of the transmission corridor. Therefore, this alternative would be consistent with the protection of visual resources covered under the general plan.
- The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan are all focused on the protection of resources, including visual resources, within the Delta. While constructing and operating conveyance facilities under this alternative are intended to provide ecosystem benefits in the Delta, constructing these conveyance elements could be considered incompatible with measures to protect the unique visual environment of the Delta because agricultural lands and riverbanks would be converted to other uses and the scale of construction would result in changes to the landscape that may be considered disruptive to the current Delta environment and visual quality.
- Contra Costa, Sacramento, San Joaquin, and Solano Counties all have policies to preserve and protect the scenic qualities of the Delta as summarized in Section 17.2, *Regulatory Setting*. In addition, Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties are focused on the protection of visual resources and preserving agricultural lands. The general plans for these counties include policies for the protection of visual resources, trees, waterways, and landscaping and for avoiding impacts such as the alteration of landforms and the introduction of utilities and new sources of light. These policies seek to minimize visual impacts and enhance

scenic qualities and also encourage placing utility lines underground. The conversion of agricultural lands and riverbanks to intake facilities, canal and related conveyance facility changes, landscape effects, and introduction of new lighting and transmission lines where none presently exist would substantially alter the landscape and could be considered incompatible with local policies aimed at protecting visual resources in these counties. Potential incompatibilities with Yolo, Solano, and Contra Costa Counties policies would be most likely because most of the alternative features occur in these counties. Sacramento County would be affected by intakes located on the west bank of the Sacramento River that would affect views from SR 160 and views within the county would also be affected by the shaft site and RTM areas that are on Brannan Island and the shaft site on Twitchell Island. Alameda County has a much smaller portion of project features that tie into the Delta-Mendota Canal, south of Byron Highway. Alternative 1C would not be incompatible with San Joaquin County policies because alternative facilities would not be located in this area.

Other Conservation Measures

- The Yolo Bypass would be altered under CM2. Views of and from South River Road would not be affected. However, new fish screens, ladders, ramps, barriers, realignment of waterways, additional hydrologic monitoring stations, fish rearing pilot project at Knaggs Ranch, operations buildings, parking lots, access facilities such as roads and bridges, and modification, removal, and construction of berms, levees, and water control structures would result in changes to the landscape that may be incompatible with the Yolo County General Plan Policies LU-3.7, CC-1.2, CC-1.3, and CC-1.4 that protect scenic areas, the rural landscape character, and the night sky.

- CM4–CM11 would result in the conversion of primarily agricultural lands to restored or enhanced habitat across all 11 CZs, with specific focus on ROAs (refer to Figure 3-1 in Chapter 3, *Description of Alternatives*). Therefore, associated regulations may apply. Restored areas would largely be natural habitat areas. Alterations such as channel and levee modifications, landform alteration from dredge spoil placement, and floodplain lowering could change the visual landscape. Restoring areas and views to natural, native habitat would likely be beneficial and would increase visual diversity. However, converting agricultural lands may be incompatible with one or more regulation protecting visual resources, although it may facilitate regulations set in place to protect and restore the Delta. If facilities, such as buildings, parking lots, or roads, are built, they would also have the potential to be incompatible with relevant regulations that protect scenic areas, the landscape character, the night sky, and the Delta.

- CM15 and CM21 would occur across all 11 CZs and could result in physical changes to the visual environment at a number of locations and where relevant regulations may apply. This may have beneficial or adverse effects based on the size of proposed projects and pre-and post-project conditions (e.g., if restoration is implemented and improves pre-project conditions or if natural vegetation is removed and replaced with rip rap or a new diversion structure that degrades pre-project conditions). Vegetation removal and replacement with rip rap or a diversion structure could be incompatible with be incompatible with relevant regulations that protect scenic areas, the landscape character, the night sky, and the Delta.

- CM16 could use sound, light, and bubbles at the head of the Delta Cross Channel and Georgiana Slough in Sacramento County and at the Head of Old River and potentially at Turner Cut and Columbia Cut in San Joaquin County (note that Turner and Columbia Cut each have two channels, and thus would require two barriers) to direct fish passage. Small scale changes may be visible on the banks or in the water used for anchoring that could result in adverse visual effects, but it is anticipated that these changes would be compatible with county general plan policies that protect visual resources.

- Building a new hatchery that consists of a facility on the edge of the Sacramento River and a larger supplementation production facility nearby, through CM18, would result in visual changes and conversion of existing land uses along and near the river would be required to build facilities. These facilities could be located in Sacramento, Yolo, or Solano Counties and also fall within the Delta. Therefore, corresponding regulations may apply. The size and locations of these facilities are unknown, but it is likely that conversion of existing land uses, and potentially undeveloped land would alter the visual character along the Sacramento River and would be incompatible with one or more plans or policies for the protection of visual resources in these regions.

CEQA Conclusion: The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6, above and no additional CEQA conclusion is required related to the compatibility of Alternative 1C with relevant plans and policies.

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

Table 17D-1 in Appendix 17D, *Permanent Impacts after Construction is Complete*, describes existing visual characteristics and the BDCP-related permanent effects of Alternative 2A on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Effects would be similar for this alternative. The only differences between Alternative 2A and Alternative 1A pertaining to visual resources is the possible variance in the location of two intakes and the addition of an operable barrier at the head of Old River (see Figures 3-2 and 3-3 in Chapter 3, *Description of Alternatives*). Alternative 2A would entail construction of Intakes 1–5 or Intakes 1–3, 6, and 7 (KOPs 62, 65, and 68). The effects associated with construction of Intakes 1–5 is discussed under Alternative 1A, and those effects would be the same if Intakes 1–5 would be constructed under this alternative. Accordingly, only the effects related to the differing intake locations, specifically in regards to Intakes 6 and 7, and the operable barrier are discussed below.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

***NEPA Effects*:** Effects related to visual resources under this alternative would be similar to those described for Alternative 1A, Impact AES-1. Intakes 6 and 7 would be located farther south than Intakes 4 and 5, between Grand Island Road and the town of Vorden, 3.5–4 miles southwest of the intermediate forebay. Substantial effects on existing visual quality and character would result if intakes are constructed at these locations, as described for Alternative 1A. These effects would include introduction of considerable heavy equipment into the viewshed for all viewer groups where visual character was predominantly agricultural; removal of residences and other buildings dissecting parcels and disrupting the continuity of rural land; loss of landscaping and other mature vegetation; and topographical changes from earthwork. Construction dust would be addressed by using basic and enhanced fugitive dust control measures and measures for entrained road dust (Chapter 22, *Air Quality and Greenhouse Gases*, and Appendix 3B, *Environmental Commitments,* *AMMs, and CMs*). Revegetation and landscaping would be determined in accordance with DWR's WREM No. 30a, *Architectural Motif, State Water Project* and through coordination with local agencies through an architectural review process. In addition, in-water construction at all intake locations would result in adverse visual effects for recreationists and other water-based views because of the elongated viewing times during periods of boating-related congestion, temporary partial channel closures that could impede recreational opportunities and create negative visual perceptions of these facilities, and a reduced recreational experience due the industrial nature of views of such facilities. Because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, changes to topography through grading, and addition of large-scale industrial structures where none presently exist, the visual quality would be reduced and there would be noticeable to very noticeable changes. This effect is considered adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

The operable barrier at the head of Old River would take up to 3 years to construct, introducing a large structure across the existing channel that would limit physical and visual access to views of the horizon beyond. Mount Diablo would still be visible over the structure. Because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this effect is considered adverse.

The primary features that would affect the existing visual quality and character under Alternative 2A, once the facility has been constructed, would be Intakes 1–5 (or Intakes 1–3, 6, and 7), the intermediate forebay and Byron Tract Forebay, transmission lines, the operable barrier, and resulting landscape effects left behind from spoil/borrow and RTM areas, and concrete batch plants and fuel stations. These changes would be most evident in the northern portion of the study area, which would undergo extensive changes from the permanent establishment of large industrial facilities and the supporting infrastructure along and surrounding the segment of the Sacramento River where the intakes would be situated. As with Alternative 1A, the surge tower shadows from Intakes 1 and 2 and the intermediate forebay pumping plant would not stand out from the shadows cast by vegetation along the Southern Pacific Rail Line and would not adversely affect the SLNWR.

Overall, construction would take 9–14 years, and the intensity of the activities in contrast to the current rural/agricultural nature of the area would be substantial. Construction of Intakes 1–5 (or Intakes 1–3, 6, and 7) and the accompanying pumping plants, surge towers, borrow/spoil areas, and RTM areas would introduce visually dominant and discordant features in the foreground and middleground views, and these elements would be very noticeable to all viewer groups. A construction shaft, tunnel work area, and RTM area and transmission lines would be visible from SR 4. While not officially designated state scenic highways, and therefore not discussed under *Impact AES-3: Permanent damage to scenic resources along a state scenic highway from construction of conveyance facilities*, this road is a San Joaquin County Scenic Route (see *San Joaquin County* in Section 17.2.3.2, *County and City General Plans*). These features would detract from the visual quality of views from these routes.

After construction, areas surrounding Intakes 1–5 (or Intakes 1–3, 6, and 7), spoil/borrow areas, RTM areas, shaft sites, and locations where concrete batch plants and fuel stations were located may be denuded of vegetation for a short period of time until the landscaping plans designed under WREM No. 30a are implemented. Once installed, the landscape would still appear to be denuded of vegetation or to have little vegetative cover because immature landscaping would be similar in appearance to tilled or newly planted agricultural fields. The sites would be in a transitional state, and over a period of a few years, plant species would mature and vegetation would recolonize the sites. These changes would happen in an area known for its open space, agricultural landscapes, and rural characteristics and would segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and eliminate valued visual resources. The effects of permanent access roads on visual resources would not be adverse. The effects of shaft site access hatches on the existing scenic character may be adverse. Operation of the intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines would result in adverse effects on the existing visual character. In addition, construction of all of these features has the potential to negatively affect wildlife viewing and the overall enjoyment of scenic views in the study area. Therefore, because of the long-term nature of construction combined with the proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this overall effect of conveyance facility construction on existing visual quality and character is considered adverse. Mitigation Measures AES-1a through AES-1g are available to address visual effects resulting from construction of Alternative 2A water conveyance facilities.

CEQA Conclusion: Construction of Alternative 2A would substantially alter the existing visual quality and character present in the study area. The long-term nature of construction of the intakes, pipeline/tunnel, work areas, spoil/borrow and RTM areas, shaft sites, barge unloading facilities; presence and visibility of heavy construction equipment; proximity to sensitive receptors; relocation of residences and agricultural buildings; removal of riparian vegetation and other mature vegetation or landscape plantings; earthmoving and grading that result in changes to topography in areas that are predominantly flat; addition of large-scale industrial structures (intakes and related facilities); remaining presence of large-scale borrow/spoil and RTM area landscape effects; and introduction of tall, steel transmission lines would all contribute to this impact.

Overall, construction would last up to 9–14 years and would change the existing visual character in the vicinity of project elements from those of agricultural, rural residential, or riparian and riverine settings to areas involving heavy construction equipment, temporary construction structures, work crews, other support vehicles and other activities that would modify and disrupt short- and long-range views. These activities would be disruptive to viewers. Once construction is complete, the alternative would result in the placement of large, multi-story industrial concrete and steel structures, pumping plants, fencing, and other similar anthropogenic features where none presently exist. Because of the landscape sensitivity and visual dominance of these features, these changes would result in reduced scenic quality throughout the study area (see Section 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Thus, Alternative 2A would result in significant impacts on the existing visual quality and character in the study area.

Mitigation Measures AES-1a through AES-1g would partially reduce impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, Alternative 2A would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities.

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

NEPA Effects: Scenic vistas are mapped and included in Appendix 17D. Figure 17D-1. Effects on scenic vistas under this alternative would be similar to those under Alternative 1A, with the exception of the possible variance in the location of two intakes and the addition of an operable barrier at the head of Old River. Intakes 6 and 7, located farther south, would affect vista views. Substantial visual effects would result from intake construction at these locations, as described for Alternative 1A, Impact AES-2. During construction the introduction of construction equipment and removal of vegetation would alter the scenic elements that contribute to the viewing experience from scenic vistas. The intakes would introduce visually dominant and discordant features in the foreground and middleground views in vistas that would be very noticeable to all viewer groups in areas of low to high landscape sensitivity levels. The operable barrier at the head of Old River would introduce a large structure across the existing channel that would limit physical and visual access to vista views toward Frank's Tract, beyond. Mount Diablo would still be visible over the structure. The large scale of intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, the operable barrier, and transmission lines may result in adverse effects on scenic vistas (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, the operable barrier, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measure AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with other structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 2A would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

NEPA Effects: Effects on state scenic highways under this alternative would be similar to those described for Alternative 1A, Impact AES-3. Intakes 1–5, the spoils/borrow and RTM area north of Intake 2, and the intermediate forebay would be immediately and prominently visible in the foreground from SR 160 and would result in an overall noticeable effect on viewers relative to their current experience and enjoyment of the study area's scenic resources along SR 160 and River Road, where the landscape sensitivity level is high. Intakes 6 and 7, if constructed, would also be visible from SR 160 and would result in the same adverse effects, only farther south. As described under Alternative 1A, the visual elements introduced by the intakes, spoil/borrow and RTM areas north of Intake 2, and intermediate forebay would conflict with the existing forms, patterns, colors, and textures along River Road and SR 160; would dominate riverfront views available from SR 160; and would alter broad views and the general nature of the visual experience presently available from River Road and SR 160. These changes would reduce the visual quality near intake structure locations and result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas. This effect would be adverse (see discussion under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). The operable barrier on the head of Old River would not be visible from a scenic route. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measures AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with other structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 2A would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

***NEPA Effects*:** Effects resulting from light and glare under this alternative would be similar to those described for Alternative 1A, Impact AES-4. Intakes 1–5 and their associated pumping plants, surge towers, and facilities and the pumping plant at the intermediate forebay would create very noticeable effects relating to light and glare (Figures 17-76 through 17-78). Light building colors over a large surface area would reflect off of those surfaces and increase glare, especially when combined with the removal of vegetation that absorbs light, provides shade, and screens glare. The amount of glare associated with surfaces would be increased if highly glossy paints or surface treatments or highly reflective materials are used, compared to satin or flat paints or surface treatments or materials that are less reflective. Sunlight would reflect off the new water surfaces of the forebay, creating new sources of glare where none presently exist. Nighttime construction could also result in headlights flashing into nearby residents' homes when construction vehicles are turning onto or off of construction access routes. Proposed surge towers and transmission towers would require the use of safety lights that would alert low-flying aircraft to the presence of these structures because of their height. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the surge tower for aircraft safety. Given the height of the towers, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers. If Intakes 6 and 7 were constructed, these facilities would result in the same adverse effects as Intakes 4 and 5, only areas farther south would be affected. The operable barrier at the head of Old River may have limited safety lighting. In addition, using LED lighting can result in a substantial increase in light and glare if not properly designed. This is because LED lights can negatively affect humans by increasing nuisance light and glare that can negatively affect circadian rhythms and sleep patterns, in addition to increasing light trespass and disruptive glare, if proper shielding is not provided and blue-rich white light lamps (BRWL) are used (International Dark-Sky Association 2010a, 2010b, 2015). Often, BRWL light fixtures do not have a cover so that LED bulbs are exposed and such bright light can be very harsh to the human eye at night, when humans are used to lower light levels. Also, while LED lighting is often recessed and directed downwards, replacing existing street lights with BRWL LED lighting can result in a substantial amount of light trespass because LED lighting is installed at the same height as the existing light. However, BRWL are much brighter than traditional street lighting and can light a much larger area at that same height, resulting in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Overall, because the study area currently experiences low levels of light and because there are a larger number of viewers in and around the waterways, intake structures, operable barrier, and forebay that would be affected by these noticeable changes that contrast with the existing rural character, effects associated with new sources of daytime and nighttime light and glare are considered adverse. Mitigation Measures AES-4a through AES-4d are available to address these effects.

CEQA Conclusion: The impacts associated with light and glare under Alternative 2A are significant because there are a larger number of viewers in and around the waterways, intake structures, and intermediate forebay; BDCP facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels; and the study area currently experiences low levels of light because there are fewer light/glare producers than are typical in urban areas. Mitigation Measures AES-4a through AES-4d would help reduce these impacts by limiting construction to daylight hours within 0.5 mile of residents; minimizing fugitive light from portable sources used for construction; installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences; and avoiding the use of BRWL LED lighting; however, these mitigation measures would not reduce impacts to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the new light and glare sources would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that do not blend or are not in keeping with the existing visual environment based upon the viewer’s location in the landscape relative to the seen change. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 2A would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

***NEPA Effects*:** Effects on the visual environment through operations and maintenance of the water conveyance facilities (CM1) under this alternative would be similar to those described for Alternative 1A, Impact AES-5. Once the facility is in operation, visible regular and periodic maintenance would be required on all major structures, including the operable barrier at the head of Old River. Activities such as painting, cleaning, vegetation maintenance (removal), repairs, and inspections would be visible from viewpoints on water and land. If Intakes 6 and 7 are constructed, activities at these sites would result in the same effects as Intakes 4 and 5, only farther south. The greatest visual effects resulting from operations would be maintenance of the intakes and dredging the forebays. The operable barrier would also require periodic dredging. These activities could be visible from the water or land by sensitive viewers in proximity to these features. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete, and effects on the existing visual quality and character during operation would not be adverse because the activities would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features.

CEQA Conclusion: Maintenance of the conveyance facilities (i.e., intakes, tunnels, forebays and transmission lines) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at forebays (at approximately 50-year intervals); vegetation removal and care along embankments; tunnel inspection; and vegetation removal within transmission line ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These visible maintenance activities would be temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would be considered less than significant. Maintenance and operation of Alternative 2A once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features. Thus, overall, Alternative 2A would have a less-than-significant impact on existing visual quality and character during maintenance and operation of the facilities in the study area. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of CM2–CM21

NEPA Effects: Under Alternative 2A, these conservation measures would be identical to those under Alternative 1A. Therefore, visual effects related to the existing visual character, scenic vistas, scenic highways, and light and glare resulting from implementation of CM2–CM21 would be the same as those described under Alternative 1A, Impact AES-6. There may be site-specific, localized adverse visual effects. These conservation measures would alter the Delta landscape by incrementally, and substantially, introducing elements into the study area over time. CM2–CM21, when combined with CM1, could substantially alter the visual character of the study area, which is strongly identified by its agricultural and water-based Delta landscapes and communities. These landscapes and communities could be adversely affected by the introduction of discordant visual features, removal of existing buildings and landscape elements of value, and through the potential for indirect impacts associated with other development potentially setting a precedent for other development to occur. All of these effects would alter the visual character of the existing regional landscape.

Because of the unknown location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction, effects associated with implementation of CM2–CM21 are considered adverse. However, the visual characteristics of restored/enhanced landscapes would be similar to other areas of the Delta that are in a natural marsh or wetland state and more limited in extent than the widespread areas of agricultural development. In this sense, the BDCP would have an overall beneficial effect related to the enhancement and creation of scenic vistas in the Delta.

Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-4a through AES-4d are available to address effects from habitat restoration and enhancement actions under CM2–CM21. In addition, Mitigation Measures AES-6a and AES-6b are available to help reduce adverse visual effects. Upon development of site-specific design information and plans, additional mitigation measures may be identified to address action-specific adverse effects. However, each individual project under CM2–CM21 would undergo the environmental compliance process that would be used to determine what additional mitigation measures, would be deemed appropriate to reduce adverse effects and to assess compliance with relevant regulations. Finally, Mitigation Measure AES-6c is available to help inventory, classify, and protect the unique visual landscape of the Delta.

CEQA Conclusion: Implementation of conservation measures under Alternative 2A has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. Impacts on the existing visual quality and character would be significant where use of large numbers of heavy construction equipment, changes in topography, and introduction of new structures or facilities where none presently exist would take place in the vicinity of sensitive receptors. However, because a number of factors that would determine the level of change are unknown—the location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction—impacts associated with implementation of CM2–CM21 on visual quality and character, scenic vistas, and light and glare sources, are considered significant. Because of the distance of implemented conservation measures from scenic highways, changes associated with these activities would not affect the visual quality along these scenic highway corridors and this impact would be less than significant. Site-specific restoration information and plans need to be developed before the site-specific effects on the existing visual character, scenic vistas, and light and glare can be determined.

Several mitigation measures are available to minimize the impacts on visual quality and character in the study area that could result from implementation of these conservation measures. As summarized below, these measures could be applied to individual restoration projects or actions as appropriate for the site-specific conditions and design considerations. In addition, each restoration project or action would undergo an environmental compliance process that would be used to determine what additional mitigation measures would be deemed appropriate to reduce significant effects. Mitigation Measures AES-1a through AES-1g could be applied to minimize impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. Mitigation Measures AES-4a through AES-4d could be used to reduce the effects of new light and glare sources by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. In addition, Mitigation Measures AES-6a and AES-6b would further minimize impacts on visual resources by undergrounding new or relocated utility lines, where feasible, and through an evaluation of an afterhours low-intensity and lights off policy. Finally, implementation of Mitigation Measure AES-6c would provide a strategy for the protection of the unique visual landscape of the Delta.

While some of the conservation measures could result in beneficial impacts through the restoration of natural habitat and these mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a less-than-significant level because of uncertainties associated with future implementation of CM2–CM21. In addition, the size of the study area and the nature of changes introduced by these conservation measures would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend or be in keeping with the existing visual environment. Thus, implementation of CM2–CM21 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6b: Develop and Implement an Afterhours Low-Intensity and Lights Off Policy

Please refer to Mitigation Measure AES-6b under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6c: Implement a Comprehensive Visual Resources Management Plan for the Delta and Study Area

Please refer to Mitigation Measure AES-6c under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

NEPA Effects**:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 2A would generally have the same potential for incompatibilities with one or more plans and policies related to preserving the visual quality and character of the Delta as described for Alternative 1A, Impact AES-7. Variation would result from two potentially different intake locations and inclusion of an operable barrier at the head of Old River. However, Intakes 6 and 7 and the operable barrier would fall under the same jurisdictions as discussed under Alternative 1A, and so, overall the potential for incompatibility is the same. As described under Alternative 1A, there would be potential for the alternative to be incompatible with plans and policies related to preserving the visual quality and character of the Delta (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

CEQA Conclusion: The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6, above and no additional CEQA conclusion is required related to the compatibility of Alternative 2A with relevant plans and policies.

17.3.3.6 Alternative 2B—Dual Conveyance with East Alignment and Five Intakes (15,000 cfs; Operational Scenario B)

Table 17D-2 in Appendix 17D, *Permanent Impacts after Construction is Complete*, describes existing visual characteristics and the BDCP-related permanent effects of Alternative 2B on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Effects would be similar under Alternative 2B. Under Alternative 2B, the conveyance alignment from the intakes to the Byron Tract Forebay, along with the associated shaft sites, access road, transmission line, pumping plants, canals, and spoil/borrow and RTM areas would be identical to those under Alternative 1B. Conservation measures would be identical to those under Alternative 1A. The only differences between Alternative 2B and Alternative 1B pertaining to visual resources is the possible variance in the location of two intakes and the addition of an operable barrier at the head of Old River. Alternative 2B would entail construction of Intakes 1–5 or Intakes 1–3, 6, and 7 (KOPs 62, 65, and 68). The effects associated with construction of Intakes 1–5 is discussed in detail under Alternative 1B, and those effects would be the same if Intakes 1–5 would be constructed under this alternative. The effects associated with Intakes 6 and 7 and the operable barrier at the head of Old River would be the same as discussed under Alternative 2A. All other effects, including construction of Intakes 1–5 and other major features would be the same as under Alternative 1B.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

NEPA Effects: Effects related to visual resources under this alternative would be similar to those described for Alternative 1B and Alternative 2A. Intakes 6 and 7 would be located farther south than Intakes 4 and 5, between Grand Island Road and the town of Vorden. The operable barrier at the head of Old River would take up to 3 years to construct, introducing a large structure across the existing channel that would limit physical and visual access to views of the horizon beyond. Mount Diablo would still be visible over the structure.

The construction period would last for 9–14 years and the intensity of the activities in contrast to the current rural/agricultural nature of the area would be substantial. Construction of Intakes 1–5 (or Intakes 1–3, 6, and 7) and the accompanying pumping plants, surge towers, canals, borrow/spoil areas, RTM areas, forebay, operable barrier, access roads, transmission lines, and concrete batch plants and fuel stations would introduce visually discordant features into foreground and middleground views with low to high landscape sensitivity level. These elements would introduce visually dominant features that would be very noticeable to all viewer groups and would segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and eliminate valued visual resources. Accordingly, because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this effect on existing visual quality and character would be adverse. In San Joaquin County, the canal would be visible in the middleground from I-5; the canal and a bridge would cross West Eight Mile Road; and the canal, a bridge, and borrow/spoil areas would cross and be in foreground views from roads on Roberts Island north of SR 4 and SR 4. While not officially designated state scenic highways, and therefore not discussed under *Impact AES-3: Permanent damage to scenic resources along a state scenic highway from construction of conveyance facilities*, these roads are San Joaquin County Scenic Routes (see *San Joaquin County* in Section 17.2.3.2, *County and City General Plans*). These features would detract from the visual quality of views from these routes. In addition, construction of all features has the potential to adversely affect wildlife viewing and the overall enjoyment of scenic views in the study area. Effects on the existing visual character under Alternative 2B would be greater than under Alternative 2A due to the extent of the canals visible on the landscape surface, landscape effects left behind by spoil/borrow areas, and introduction of bridges.

Overall, effects on the existing visual character associated with construction of Alternative 2B would be adverse because the alternative would result in reductions to the visual quality in some locations and introduce dominant visual elements that would result in very noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes would be viewed by sensitive receptors and from public viewing areas. Mitigation Measures AES-1a through AES-1g are available to address visual effects resulting from construction of Alternative 2B water conveyance facilities.

CEQA Conclusion: Because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, the impacts associated with constructing intakes and the accompanying pumping plants, surge towers, canals, borrow/spoil areas, RTM areas, forebay, operable barrier, access roads, and transmission lines are considered significant. These changes under Alternative 2B would result in reductions to the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes would be viewed by sensitive receptors and from public viewing areas. Impacts on the existing visual quality and character under Alternative 2B would be greater than under Alternative 2A because of the extent of the canals visible on the landscape surface, landscape effects left behind by spoil/borrow areas, and introduction of bridges.

Mitigation Measures AES-1a through AES-1g would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, Alternative 2B would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

***NEPA Effects*:** Scenic vistas are mapped and included in Appendix 17D, Figure 17D-1. Effects on scenic vistas under this alternative would be similar to those under Alternative 1B, with the exception of the possible variance in the location of two intakes and the addition of an operable barrier at the head of Old River, which would be similar to 2A. Intakes 6 and 7, located farther south, would affect vista views. Substantial visual effects would result from intake construction at these locations, as described for Alternative 1A, Impact AES-2. During construction the introduction of construction equipment and removal of vegetation would alter the scenic elements that contribute to the viewing experience from scenic vistas. The intakes would introduce visually dominant and discordant features in the foreground and middleground views in vistas that would be very noticeable to all viewer groups in areas of low to high landscape sensitivity levels. The operable barrier at the head of Old River would introduce a large structure across the existing channel that would limit physical and visual access to vista views toward Frank's Tract, beyond. Mount Diablo would still be visible over the structure. The large scale of intakes, the visual presence of large-scale borrow/spoil area landscape effects, the canals, the operable barrier, transmission lines, and introduction of bridges may result in adverse effects on scenic vistas (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

***CEQA Conclusion*:** Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil area landscape effects, the canals, the operable barrier, transmission lines and the introduction of bridges would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measure AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 2B would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

NEPA Effects: Effects on state scenic highways under this alternative would be similar to those described for Alternatives 1A and 1B, Impact AES-3. Intakes 1–5, the spoils/borrow and RTM area north of Intake 2, and the intermediate forebay would be immediately and prominently visible in the foreground from SR 160 and would result in an overall noticeable effect on viewers relative to their current experience and enjoyment of the study area's scenic resources along SR 160 and River Road, where the landscape sensitivity level is high. Intakes 6 and 7, if constructed, would also be visible from SR 160 and would result in the same adverse effects, only farther south. As described under Alternative 1A, the visual elements introduced by the intakes, spoil/borrow and RTM areas north of Intake 2, and intermediate forebay would conflict with the existing forms, patterns, colors, and textures along River Road and SR 160; would dominate riverfront views available from SR 160; and would alter broad views and the general nature of the visual experience presently available from River Road and SR 160. These changes would reduce the visual quality near intake structure locations and result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas. This effect would be adverse (see discussion under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). The operable barrier on the head of Old River would not be visible from a scenic route. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measures AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 2B would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

***NEPA Effects*:** Effects resulting from light and glare under this alternative would be similar to those described for Alternatives 1A, Impact AES-4. Intakes 1–5 and their associated pumping plants, surge towers, and facilities and the pumping plant at the intermediate forebay would create very noticeable effects relating to light and glare (Figures 17-76 through 17-78). Light building colors over a large surface area would reflect off of those surfaces and increase glare, especially when combined with the removal of vegetation that absorbs light, provides shade, and screens glare. The amount of glare associated with surfaces would be increased if highly glossy paints or surface treatments or highly reflective materials are used, compared to satin or flat paints or surface treatments or materials that are less reflective. Sunlight would reflect off the new water surfaces of the forebay, creating new sources of glare where none presently exist. Nighttime construction could also result in headlights flashing into nearby residents' homes when construction vehicles are turning onto or off of construction access routes. Proposed surge towers and transmission towers would require the use of safety lights that would alert low-flying aircraft to the presence of these structures because of their height. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the surge tower for aircraft safety. Given the height of the towers, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers. If Intakes 6 and 7 were constructed, these facilities would result in the same adverse effects as Intakes 4 and 5, only areas farther south would be affected. The operable barrier at the head of Old River may have limited safety lighting. In addition, using LED lighting can result in a substantial increase in light and glare if not properly designed. This is because LED lights can negatively affect humans by increasing nuisance light and glare that can negatively affect circadian rhythms and sleep patterns, in addition to increasing light trespass and disruptive glare, if proper shielding is not provided and blue-rich white light lamps (BRWL) are used (International Dark-Sky Association 2010a, 2010b, 2015). Often, BRWL light fixtures do not have a cover so that LED bulbs are exposed and such bright light can be very harsh to the human eye at night, when humans are used to lower light levels. Also, while LED lighting is often recessed and directed downwards, replacing existing street lights with BRWL LED lighting can result in a substantial amount of light trespass because LED lighting is installed at the same height as the existing light. However, BRWL are much brighter than traditional street lighting and can light a much larger area at that same height, resulting in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Overall, because the study area currently experiences low levels of light and because there are a larger number of viewers in and around the waterways, intake structures, operable barrier, and forebay that would be affected by these noticeable changes that contrast with the existing rural character, effects associated with new sources of daytime and nighttime light and glare are considered adverse. Mitigation Measures AES-4a through AES-4d are available to address these effects.

***CEQA Conclusion*:** The impacts associated with light and glare under Alternative 2B are significant because there are a larger number of viewers in and around the waterways, intake structures, and intermediate forebay; BDCP facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels; and the study area currently experiences low levels of light because there are fewer light/glare producers than are typical in urban areas. Mitigation Measures AES-4a through AES-4d would help reduce these impacts by limiting construction to daylight hours within 0.5 mile of residents; minimizing fugitive light from portable sources used for construction; installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences; and avoiding the use of BRWL LED lighting; however, these mitigation measures would not reduce impacts to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the new light and glare sources would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 2B would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

NEPA Effects**:** Effects on the visual environment through operations and maintenance of the water conveyance facilities (CM1) under this alternative would be similar to those described for Alternative 1A and 1B, Impact AES-5. Once the facility is in operation, visible regular and periodic maintenance would be required on all major structures, including the operable barrier at the head of Old River. Activities such as painting, cleaning, vegetation maintenance (removal), repairs, and inspections would be visible from viewpoints on water and land. If Intakes 6 and 7 are constructed, activities at these sites would result in the same effects as Intakes 4 and 5, only farther south. Although under Alternative 2B there would not be an intermediate forebay, the canal, operable barrier on the head of Old River, and Byron Tract Forebay would require cleaning and periodic dredging. The greatest visual effects resulting from operations would be maintenance on the intakes and cleaning the canals. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; the dredged forebay and canals would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within short periods of time and cease when complete, and effects on the existing visual quality and character during operation would not be adverse because the activities would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features.

CEQA Conclusion**:** Maintenance of the conveyance facilities (i.e., intakes, canals, forebay, transmission lines, and operable barrier) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at the Byron Tract Forebay and operable barrier, cleaning canals; vegetation removal and care along embankments; canal inspection; and vegetation removal within transmission line ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; the dredged forebay and canals would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These visible maintenance activities would be temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would be considered less than significant. Maintenance and operation of Alternative 2B, once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanent reduce visually important features. Thus, overall, Alternative 2B would have a less-than-significant impact on existing visual quality and character during maintenance and operation of the facilities in the study area. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of CM2–CM21

***NEPA Effects*:** Under Alternative 2B, these conservation measures would be identical to those under Alternative 1A. Therefore, visual effects related to the existing visual character, scenic vistas, scenic highways, and light and glare resulting from implementation of CM2–CM21 would be the same as those described under Alternative 1A, Impact AES-6. There may be site-specific, localized adverse visual effects. These conservation measures would alter the Delta landscape by incrementally, and substantially, introducing elements into the study area over time. CM2–CM21, when combined with CM1, could substantially alter the visual character of the study area, which is strongly identified by its agricultural and water-based Delta landscapes and communities. These landscapes and communities could be adversely affected by the introduction of discordant visual features, removal of existing buildings and landscape elements of value, and through the potential for indirect impacts associated with other development potentially setting a precedent for other development to occur. All of these effects would alter the visual character of the existing regional landscape.

Because of the unknown location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction, effects associated with implementation of CM2–CM21 are considered adverse. However, the visual characteristics of restored/enhanced landscapes would be similar to other areas of the Delta that are in a natural marsh or wetland state and more limited in extent than the widespread areas of agricultural development. In this sense, the BDCP would have an overall beneficial effect related to the enhancement and creation of scenic vistas in the Delta.

Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-4a through AES-4d are available to address effects from habitat restoration and enhancement actions under CM2–CM21. In addition, Mitigation Measures AES-6a and AES-6b are available to help reduce adverse visual effects. Upon development of site-specific design information and plans, additional mitigation measures may be identified to address action-specific adverse effects. However, each individual project under

CM2–CM21 would undergo the environmental compliance process that would be used to determine what additional mitigation measures, would be deemed appropriate to reduce adverse effects and to assess compliance with relevant regulations. Finally, Mitigation Measure AES-6c is available to help inventory, classify, and protect the unique visual landscape of the Delta.

CEQA Conclusion: Implementation of conservation measures under Alternative 2B has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. Impacts on the existing visual quality and character would be significant where use of large numbers of heavy construction equipment, changes in topography, and introduction of new structures or facilities where none presently exist would take place in the vicinity of sensitive receptors. However, because a number of factors that would determine the level of change are unknown—the location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction—impacts associated with implementation of CM2–CM21 on visual quality and character, scenic vistas, and light and glare sources, are considered significant. Because of the distance of implemented conservation measures from scenic highways, changes associated with these activities would not affect the visual quality along these scenic highway corridors and this impact would be less than significant. Site-specific restoration information and plans need to be developed before the site-specific effects on the existing visual character, scenic vistas, and light and glare can be determined.

Several mitigation measures are available to minimize the impacts on visual quality and character in the study area that could result from implementation of these conservation measures. As summarized below, these measures could be applied to individual restoration projects or actions as appropriate for the site-specific conditions and design considerations. In addition, each restoration project or action would undergo an environmental compliance process that would be used to determine what additional mitigation measures would be deemed appropriate to reduce significant effects. Mitigation Measures AES-1a through AES-1g could be applied to minimize impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. Mitigation Measures AES-4a through AES-4d could be used to reduce the effects of new light and glare sources by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. In addition, Mitigation Measures AES-6a and AES-6b would further minimize impacts on visual resources by undergrounding new or relocated utility lines, where feasible, and through an evaluation of an afterhours low-intensity and lights off policy. Finally, implementation of Mitigation Measure AES-6c would provide a strategy for the protection of the unique visual landscape of the Delta.

While some of the conservation measures could result in beneficial impacts through the restoration of natural habitat and these mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a less-than-significant level because of uncertainties associated with future implementation of CM2–CM21. In addition, the size of the study area and the nature of changes introduced by these conservation measures would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend or be in keeping with the existing visual environment. Thus, implementation of CM2–CM21 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6b: Develop and Implement an Afterhours Low-Intensity and Lights Off Policy

Please refer to Mitigation Measure AES-6b under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6c: Implement a Comprehensive Visual Resources Management Plan for the Delta and Study Area

Please refer to Mitigation Measure AES-6c under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 2B would generally have the same potential for incompatibilities with one or more plans and policies related to preserving the visual quality and character of the Delta as described for Alternative 1B, Impact AES-7. Intakes 6 and 7 would be located farther south than Intakes 4 and 5, between Grand Island Road and the town of Vorden, and the operable barrier would be at the head of Old River. These features would fall under the same jurisdictions as discussed under Alternative 1B, and so, overall the potential for incompatibility is the same. As described under Alternative 1B, there would be potential for the alternative to be incompatible with plans and policies related to preserving the visual quality and character of the Delta (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

CEQA Conclusion: The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6, above and no additional CEQA conclusion is required related to the compatibility of Alternative 2B with relevant plans and policies.

17.3.3.7 Alternative 2C—Dual Conveyance with West Alignment and Intakes W1–W5 (15,000 cfs; Operational Scenario B)

Table 17D-3 in Appendix 17D, *Permanent Impacts after Construction is Complete*, describes existing visual characteristics and the BDCP-related permanent effects of Alternative 2C on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Effects would be similar for Alternative 2C (see Figures 3-6 and 3-7 and Mapbook Figure M3-3 in Chapter 3, *Description of Alternatives*). Under Alternative 2C, Intakes W1–W5, the conveyance alignment from the intakes to the Byron Tract Forebay, along with the associated shaft sites, access road, transmission line, pumping plants, canals, and spoil/borrow and RTM areas would be identical to those under Alternative 1C. Conservation measures would be identical to those under Alternative 1A. The only difference between Alternative 1C and Alternative 2C in the context of visual resources is the addition of an operable barrier at the head of Old River. The location of the operable barrier is the same as under Alternative 2A and, therefore, the visual effects of the operable barrier on visual resources would be the same as discussed under Alternative 2A.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

NEPA Effects: The construction period would last up to 9–14 years and the intensity of activities in contrast to the current rural/agricultural nature of the area would be substantial. Construction of Intakes W1–W5 and accompanying pumping plants, surge towers, canals, borrow/spoil areas, RTM areas, forebay, operable barrier, access roads, and transmission lines would introduce visually discordant features in the foreground and middleground views of scenic vistas and from scenic roadways, and these elements would be visible to all viewer groups. The existing visual character would be greatly altered by the presence of large-scale intakes and concrete-lined and water-filled channels traversing the landscape. In addition, construction of all features has the potential to adversely affect wildlife viewing and the overall enjoyment and segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and eliminate valued visual resources within scenic views in the study area.

After construction, areas surrounding Intakes W1–W5, spoil/borrow areas, RTM areas, and shaft sites may be denuded of vegetation for a short period of time until the landscaping plans designed under WREM No. 30a are implemented. Once installed, the landscape would still appear to be denuded of vegetation from a distance because of immature planted vegetation would be similar in appearance to tilled or newly planted agricultural fields. The operable barrier at the head of Old River would take up to 3 years to construct, introducing a large structure across the existing channel that would limit physical and visual access to views of the horizon beyond. Mount Diablo would still be visible over the structure.

Because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this effect is considered adverse. Effects on the existing visual quality and character under Alternative 2C would be greater than those under Alternatives 2A and 2B because of the extent of the canals visible on the landscape surface, landscape effects left behind by spoil/borrow areas, introduction of bridges, and closer proximity to a greater number of sensitive viewers. Overall, effects on the existing visual character associated with construction of Alternative 2C would be adverse because the alternative would result in reductions to the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes would be viewed by sensitive receptors and from public viewing areas. Mitigation Measures AES-1a through AES-1g are available to address these effects.

***CEQA Conclusion*:** Because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, the impacts associated with constructing Intakes W1–W5 and accompanying pumping plants, surge towers, canals, borrow/spoil areas, RTM areas, the operable barrier, and forebay are considered significant. These changes under Alternative 2C would result in reductions to the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes would be viewed by sensitive receptors and from public viewing areas. Impacts on the existing visual character under Alternative 2C would be greater than those under Alternatives 2A and 2B due to the extent of the canals visible on the landscape, landscape effects left behind by spoil/borrow areas, introduction of bridges, and closer proximity to a greater number of sensitive viewers.

Mitigation Measures AES-1a through AES-1g would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, Alternative 2C would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

***NEPA Effects*:** Scenic vistas are mapped and included in Appendix 17D, Figure 17D-1. Overall, permanent effects on scenic vistas associated with operation of Alternative 2C may be adverse. During construction the introduction of construction equipment and removal of vegetation would alter the scenic elements that contribute to the viewing experience from scenic vistas. The intakes would introduce visually dominant and discordant features in the foreground and middleground views in vistas that would be very noticeable to all viewer groups in areas of low to high landscape sensitivity levels. As under Alternatives 2A and 2B, the operable barrier at the head of Old River would introduce a large structure across the existing channel that would limit physical and visual access to vista views toward Frank's Tract, beyond. Mount Diablo would still be visible over the structure. The large scale of intakes, the visual presence of large-scale borrow/spoil area landscape effects, the canals, the operable barrier, transmission lines and introduction of bridges may result in adverse effects on scenic vistas (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Effects on scenic vistas under Alternative 2C would be greater than those under Alternatives 2A and 2B (Impact AES-

2) because of the extent of the canals visible on the landscape, landscape effects left behind by spoil/borrow areas, introduction of bridges, and closer proximity to a greater number of sensitive viewers. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil area landscape effects, the canals, the operable barrier, transmission lines and introduction of bridges would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas. Impacts on scenic vistas under Alternative 2C would be greater than under Alternatives 2A and 2B due to the extent of the canals visible on the landscape surface, landscape effects left behind by spoil/borrow areas, introduction of bridges, and closer proximity to a greater number of sensitive viewers.

Mitigation Measures AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because the changes would remain noticeable and introduce elements that do not blend with the existing visual character of the vista viewsheds. Thus, impacts on scenic vistas associated with Alternative 2C would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

***NEPA Effects*:** Effects on scenic highways related to the presence of Intakes W1–W5, canals, spoils/borrow areas, bridges, permanent access roads, and transmission lines would be similar to those described under Alternative 1C, Impact AES-3, with the addition of the operable barrier at the head of Old River and would result in an overall noticeable effect on viewers relative to their current experience and enjoyment of the study area's scenic resources. The intakes would be visible from SR 160. However, bridges, canals, and spoil/borrow areas may or may not be visible from SR 160 because the work areas would be across the river at a lower ground elevation than the raised roadway, and the views could be obscured by intervening vegetation along SR 160 and CH E9. Where visible, views would be greatly altered by the presence of large-scale, concrete-lined and water-filled channels traversing the landscape, large sunken or elevated landforms, and elevated structures between the intakes. In addition, transmission lines following the canals would introduce tall, lattice steel structures that would draw more attention to the linearity of the canal and its industrial nature and would be visible from SR 160. Effects on scenic highways under Alternative 2C may not be as great as those under Alternative 2B, due to the potential for obscured views of the bridges, canals, and spoil/borrow areas from SR 160; however, these effects may be adverse. Mitigation Measures AES-1a, AES-1c, and AES-1e would be available to address these effects.

***CEQA Conclusion*:** Impacts on scenic highways associated with the presence of conveyance facilities under Alternative 2C would be significant because visual elements associated with the alternative would conflict with the existing forms, patterns, colors, and textures visible from SR 160; would dominate riverfront views available from SR 160; and would alter broad views and the general nature of the visual experience presently available from SR 160 (thereby permanently damaging the scenic resources along the scenic highway). Impacts on scenic highways under Alternative 2C may not be as great as those under Alternative 2B due to the potential for obscured views of the bridges, canals, and spoil/borrow areas from SR 160. However, the intakes would be very visible and result in a very noticeable change in the viewshed. Mitigation Measures AES-1a, AES-1c, and AES-1e would help to reduce these impacts through the application of aesthetic design treatments to all structures, to the extent feasible. However, impacts on visual resources resulting from damage to scenic resources that may be viewed from a state scenic highway would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes to the visual character of a scenic highway viewshed that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, overall, this impact would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

NEPA Effects: Light and glare effects related to operation of Intakes W1–W5, canals, spoils/borrow areas, RTM areas, shaft sites, Byron Tract Forebay, permanent access roads, and transmission lines would be the same as those described for Alternative 1C, Impact AES-4. Intakes W1–W5 and the associated pumping plants, surge towers, and facilities would create very noticeable effects relating to light and glare (Figures 17-76 through 17-78). Light building colors over a large surface area would reflect off of those surfaces and increase glare, especially when combined with the removal of vegetation that absorbs light, provides shade, and screens glare. The amount of glare associated with surfaces would be increased if highly glossy paints or surface treatments or highly reflective materials are used, compared to satin or flat paints or surface treatments or materials that are less reflective. Sunlight would reflect off the new water surfaces of the canals, creating new sources of glare where none presently exist. Because of the extent of the canals and introduction of a substantial glare-producing water body, the effect associated with daytime and nighttime glare is considered adverse. Nighttime construction could also result in headlights flashing into nearby residents' homes when construction vehicles are turning onto or off of construction access routes. Proposed surge towers and transmission towers would require the use of safety lights that would alert low-flying aircraft to the presence of these structures because of their height. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the surge tower for aircraft safety. Given the height of the towers, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers. The operable barrier at the head of Old River may have limited safety lighting. In addition, using LED lighting can result in a substantial increase in light and glare if not properly designed. This is because LED lights can negatively affect humans by increasing nuisance light and glare that can negatively affect circadian rhythms and sleep patterns, in addition to increasing light trespass and disruptive glare, if proper shielding is not provided and blue-rich white light lamps (BRWL) are used (International Dark-Sky Association 2010a, 2010b, 2015). Often, BRWL light fixtures do not have a cover so that LED bulbs are exposed and such bright light can be very harsh to the human eye at night, when humans are used to lower light levels. Also, while LED lighting is often recessed and directed downwards, replacing existing street lights with BRWL LED lighting can result in a substantial amount of light trespass because LED lighting is installed at the same height as the existing light. However, BRWL are much brighter than traditional street lighting and can light a much larger area at that same height, resulting in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Overall, because the study area currently experiences low levels of light and because there are a larger number of viewers in and around the waterways, intake structures, operable barrier, forebay, and canals, that would be affected by these noticeable changes that contrast with the existing rural character, effects associated with new sources of daytime and nighttime light and glare are considered adverse. Mitigation Measures AES-4a through AES-4d are available to address these effects.

CEQA Conclusion**:** The impacts associated with light and glare under Alternative 2C are significant because there are a larger number of viewers in and around the waterways, intake structures, forebay, and canals; alternative facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels; and the study area currently experiences low levels of light. Mitigation Measures AES-4a through AES-4d would help reduce impacts by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. However, these mitigation measures would not reduce impacts to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the new light and glare sources would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 2C would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

NEPA Effects: Effects on the visual environment through operations and maintenance of the water conveyance facilities (CM1) under this alternative would be similar to those described for Alternatives 1A and 1C, Impact AES-5. Once the facility is in operation, visible regular and periodic maintenance would be required on all major structures, including the operable barrier at the head of Old River. Activities such as painting, cleaning, vegetation maintenance (removal), repairs, and inspections would be visible from viewpoints on water and land. Although under Alternative 2C there would not be an intermediate forebay, the canal, operable barrier on the head of Old River, and Byron Tract Forebay would require cleaning and periodic dredging. The greatest visual effects resulting from operations would be maintenance on the intakes and cleaning the canals. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; the dredged forebay and canals would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within short periods of time and cease when complete, and effects on the existing visual quality and character during operation would not be adverse because the activities would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features.

CEQA Conclusion: Maintenance of the conveyance facilities (i.e., intakes, canals, forebay, transmission lines, and operable barrier) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at the Byron Tract Forebay and operable barrier, cleaning canals; vegetation removal and care along embankments; canal inspection; and vegetation removal within transmission line ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; the dredged forebay and canals would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These visible maintenance activities would be temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would be considered less than significant. Maintenance and operation of Alternative 2C, once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanent reduce visually important features. Thus, overall, Alternative 2C would have a less-than-significant impact on existing visual quality and character during maintenance and operation of the facilities in the study area. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of CM2–CM21

NEPA Effects: Under Alternative 2C, these conservation measures would be identical to those under Alternative 1A. Therefore, visual effects related to the existing visual character, scenic vistas, scenic highways, and light and glare resulting from implementation of CM2–CM21 would be the same as those described under Alternative 1A, Impact AES-6. There may be site-specific, localized adverse visual effects. These conservation measures would alter the Delta landscape by incrementally, and substantially, introducing elements into the study area over time. CM2–CM21, when combined with CM1, could substantially alter the visual character of the study area, which is strongly identified by its agricultural and water-based Delta landscapes and communities. These landscapes and communities could be adversely affected by the introduction of discordant visual features, removal of existing buildings and landscape elements of value, and through the potential for indirect impacts associated with other development potentially setting a precedent for other development to occur. All of these effects would alter the visual character of the existing regional landscape.

Because of the unknown location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction, effects associated with implementation of CM2–CM21 are considered adverse. However, the visual characteristics of restored/enhanced landscapes would be similar to other areas of the Delta that are in a natural marsh or wetland state and more limited in extent than the widespread areas of agricultural development. In this sense, the BDCP would have an overall beneficial effect related to the enhancement and creation of scenic vistas in the Delta.

Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-4a through AES-4d are available to address effects from habitat restoration and enhancement actions under CM2–CM21. In addition, Mitigation Measures AES-6a and AES-6b are available to help reduce adverse visual effects. Upon development of site-specific design information and plans, additional mitigation measures may be identified to address action-specific adverse effects. However, each individual project under CM2–CM21 would undergo the environmental compliance process that would be used to determine what additional mitigation measures, would be deemed appropriate to reduce adverse effects and to assess compliance with relevant regulations. Finally, Mitigation Measure AES-6c is available to help inventory, classify, and protect the unique visual landscape of the Delta.

CEQA Conclusion: Implementation of conservation measures under Alternative 2C has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. Impacts on the existing visual quality and character would be significant where use of large numbers of heavy construction equipment, changes in topography, and introduction of new structures or facilities where none presently exist would take place in the vicinity of sensitive receptors. However, because a number of factors that would determine the level of change are unknown—the location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction—impacts associated with implementation of CM2–CM21 on visual quality and character, scenic vistas, and light and glare sources, are considered significant. Because of the distance of implemented conservation measures from scenic highways, changes associated with these activities would not affect the visual quality along these scenic highway corridors and this impact would be less than significant. Site-specific restoration information and plans need to be developed before the site-specific effects on the existing visual character, scenic vistas, and light and glare can be determined.

Several mitigation measures are available to minimize the impacts on visual quality and character in the study area that could result from implementation of these conservation measures. As summarized below, these measures could be applied to individual restoration projects or actions as appropriate for the site-specific conditions and design considerations. In addition, each restoration project or action would undergo an environmental compliance process that would be used to determine what additional mitigation measures would be deemed appropriate to reduce significant effects. Mitigation Measures AES-1a through AES-1g could be applied to minimize impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. Mitigation Measures AES-4a through AES-4d could be used to reduce the effects of new light and glare sources by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. In addition, Mitigation Measures AES-6a and AES-6b would further minimize impacts on visual resources by undergrounding new or relocated utility lines, where feasible, and through an evaluation of an afterhours low-intensity and lights off policy. Finally, implementation of Mitigation Measure AES-6c would provide a strategy for the protection of the unique visual landscape of the Delta.

While some of the conservation measures could result in beneficial impacts through the restoration of natural habitat and these mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a less-than-significant level because of uncertainties associated with future implementation of CM2–CM21. In addition, the size of the study area and the nature of changes introduced by these conservation measures would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend or be in keeping with the existing visual environment. Thus, implementation of CM2–CM21 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6b: Develop and Implement an Afterhours Low-Intensity and Lights Off Policy

Please refer to Mitigation Measure AES-6b under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6c: Implement a Comprehensive Visual Resources Management Plan for the Delta and Study Area

Please refer to Mitigation Measure AES-6c under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 2C would generally have the same potential for incompatibilities with one or more plans and policies related to preserving the visual quality and character of the Delta as described for Alternative 1C, Impact AES-7. Variation would result from construction of an operable barrier at the head of Old River. However, the operable barrier would fall under the same jurisdictions as discussed under Alternative 1C, and so, overall the potential for incompatibility is the same. As described under Alternative 1C, there would be potential for the alternative to be incompatible with plans and policies related to preserving the visual quality and character of the Delta (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan). In addition, with the exception of San Joaquin County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6, above and no additional CEQA conclusion is required related to the compatibility of Alternative 2C with relevant plans and policies.

17.3.3.8 Alternative 3—Dual Conveyance with Pipeline/Tunnel and Intakes 1 and 2 (6,000 cfs; Operational Scenario A)

Table 17D-1 in Appendix 17D, *Permanent Impacts after Construction is Complete*, describes existing visual characteristics and the BDCP-related permanent effects of Alternative 3 on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Effects would be similar for this alternative. Under Alternative 3, the conveyance alignment from the intakes to the Byron Tract Forebay, along with the associated shaft site, access road, transmission line, pumping plants, barge unloading facility sites, and spoil/borrow and RTM areas, would be identical to Alternative 1A. The difference between this alternative and Alternative 1A in the context of visual resources is the number of intakes. Alternative 3 would use only two intakes: Intakes 1 and 2 (see Figures 3-2 and 3-8 in Chapter 3, *Description of Alternatives*). The effects associated with construction of Intakes 1 and 2 are discussed in detail under Alternative 1A, and those effects would be the same under Alternative 3.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

NEPA Effects: Effects related to visual resources under this alternative would be similar to those described for Alternative 1A. However, the severity of these effects would be decreased because there would be two intake structures instead of five. The primary features that would affect the existing visual quality and character under Alternative 3, once the facility has been constructed, would be the intakes, the intermediate forebay and Byron Tract Forebay, transmission lines, and resulting landscape effects left behind from spoil/borrow and RTM areas, and concrete batch plants and fuel stations. These changes would be most evident in the northern portion of the study area, which would undergo extensive changes from the permanent establishment of large industrial facilities and the supporting infrastructure along and surrounding the segment of the Sacramento River where the intakes would be situated. As with Alternative 1A, the surge tower shadows from Intakes 1 and 2 and the intermediate forebay pumping plant would not stand out from the shadows cast by vegetation along the Southern Pacific Rail Line and would not adversely affect the SLNWR.

Overall, construction would take 9–14 years, and the intensity of the activities in contrast to the current rural/agricultural nature of the area would be substantial. Construction of intakes, and the accompanying pumping plants, surge towers, borrow/spoil areas, and RTM areas would introduce visually dominant and discordant features in the foreground and middleground views, and these elements would be very noticeable to all viewer groups.

After construction, areas surrounding the intakes, spoil/borrow areas, RTM areas, shaft sites, and locations where concrete batch plants and fuel stations were located may be denuded of vegetation for a short period of time until the landscaping plans designed under WREM No. 30a are implemented. Once installed, the landscape would still appear to be denuded of vegetation or to have little vegetative cover because immature landscaping would be similar in appearance to tilled or newly planted agricultural fields. The sites would be in a transitional state, and over a period of a few years, plant species would mature and vegetation would recolonize the sites. These changes would happen in an area known for its open space, agricultural landscapes, and rural characteristics and would segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and eliminate valued visual resources. The effects of permanent access roads on visual resources would not be adverse. The effects of shaft site access pads and hatches on the existing scenic character may be adverse. Operation of the intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines would result in adverse effects on the existing visual character. In addition, construction of all of these features has the potential to negatively affect wildlife viewing and the overall enjoyment of scenic views in the study area. Therefore, because of the long-term nature of construction combined with the proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this overall effect of conveyance facility construction on existing visual quality and character is considered adverse. Mitigation Measures AES-1a through AES-1g are available to address visual effects resulting from construction of Alternative 3 water conveyance facilities.

CEQA Conclusion**:** Construction of Alternative 3 would substantially alter the existing visual quality and character present in the study area. The long-term nature of construction of the intakes, pipeline/tunnel, work areas, spoil/borrow and RTM areas, shaft sites, barge unloading facilities; presence and visibility of heavy construction equipment; proximity to sensitive receptors; relocation of residences and agricultural buildings; removal of riparian vegetation and other mature vegetation or landscape plantings; earthmoving and grading that result in changes to topography in areas that are predominantly flat; addition of large-scale industrial structures (intakes and related facilities); remaining presence of large-scale borrow/spoil and RTM area landscape effects; and introduction of tall, steel transmission lines would all contribute to this impact.

Overall, construction would last up to 9–14 years and would change the existing visual character in the vicinity of project elements from those of agricultural, rural residential, or riparian and riverine settings to areas involving heavy construction equipment, temporary construction structures, work crews, other support vehicles and other activities that would modify and disrupt short- and long-range views. These activities would be disruptive to viewers. Once construction is complete, the alternative would result in the placement of large, multi-story industrial concrete and steel structures, pumping plants, fencing, and other similar anthropogenic features where none presently exist. Because of the landscape sensitivity and visual dominance of these features, these changes would result in reduced scenic quality throughout the study area (see Section 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Thus, Alternative 3 would result in significant impacts on the existing visual quality and character in the study area.

Mitigation Measures AES-1a through AES-1g would partially reduce impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, Alternative 3 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

***NEPA Effects*:** Scenic vistas are mapped and included in Appendix 17D, Figure 17D-1. Effects related to scenic vistas under this alternative would be similar to those described for Alternative 1A, Impact AES-2. During construction the introduction of construction equipment and removal of vegetation would alter the scenic elements that contribute to the viewing experience from scenic vistas. The intakes would introduce visually dominant and discordant features in the foreground and middleground views in vistas that would be very noticeable to all viewer groups in areas of low to high landscape sensitivity levels. However, the severity of these effects related to the north Delta intakes along the Sacramento River would be decreased because there would only be two intake structures instead of five. As described for Alternative 1A, the effects of permanent access roads effects on scenic vistas would not be adverse. The effects of shaft site access hatches on scenic vistas could be adverse. The large scale of intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines may result in adverse effects on scenic vistas (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Overall, effects on scenic vistas associated with

Alternative 3, although reduced in scale for the north Delta intakes relative to Alternative 1A, may be adverse. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

***CEQA Conclusion*:** Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measure AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 3 would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

NEPA Effects: Effects on state scenic highways under this alternative would be similar to those described for Alternative 1A, Impact AES-3. Intakes 1 and 2, the spoils/borrow and RTM area north of Intake 2, and the intermediate forebay would be immediately and prominently visible in the foreground from SR 160 and would result in an overall noticeable effect on viewers relative to their current experience and enjoyment of the study area's scenic resources along SR 160 and River Road, where the landscape sensitivity level is high. However, the severity of these effects related to the north Delta intakes along the Sacramento River would be decreased because there would only be two intake structures instead of five. Nevertheless, as described for Alternative 1A, these visual elements introduced by the intakes, spoil/borrow and RTM areas north of Intake 2, and intermediate forebay would conflict with the existing forms, patterns, colors, textures along River Road and SR 160; would dominate riverfront available from SR 160; and would alter broad views and the general nature of the visual experience presently available from River Road and SR 160. These changes would reduce the visual quality near intake structure locations and result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas. This effect would be adverse (see discussion under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measures AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 3 would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

***NEPA Effects*:** Effects resulting from light and glare under this alternative would be similar to those described for Alternative 1A, Impact AES-4. Intakes 1 and 2 and their associated pumping plants, surge towers, and facilities and the pumping plant at the intermediate forebay would create very noticeable effects relating to light and glare (Figures 17-76 through 17-78). Light building colors over a large surface area would reflect off of those surfaces and increase glare, especially when combined with the removal of vegetation that absorbs light, provides shade, and screens glare. The amount of glare associated with surfaces would be increased if highly glossy paints or surface treatments or highly reflective materials are used, compared to satin or flat paints or surface treatments or materials that are less reflective. Sunlight would reflect off the new water surfaces of the forebay, creating new sources of glare where none presently exist. However, the severity of these effects related to the north Delta intakes on the Sacramento River would be decreased because there would only be two intake structures instead of five. Nighttime construction could also result in headlights flashing into nearby residents' homes when construction vehicles are turning onto or off of construction access routes. Proposed surge towers and transmission towers would require the use of safety lights that would alert low-flying aircraft to the presence of these structures because of their height. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the surge tower for aircraft safety. Given the height of the towers, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers. In addition, using LED lighting can result in a substantial increase in light and glare if not properly designed. This is because LED lights can negatively affect humans by increasing nuisance light and glare that can negatively affect circadian rhythms and sleep patterns, in addition to increasing light trespass and disruptive glare, if proper shielding is not provided and blue-rich white light lamps (BRWL) are used (International Dark-Sky Association 2010a, 2010b, 2015). Often, BRWL light fixtures do not have a cover so that LED bulbs are exposed and such bright light can be very harsh to the human eye at night, when humans are used to lower light levels. Also, while LED lighting is often recessed and directed downwards, replacing existing street lights with BRWL LED lighting can result in a substantial amount of light trespass because LED lighting is installed at the same height as the existing light. However, BRWL are much brighter than traditional street lighting and can light a much larger area at that same height, resulting in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Overall, because the study area currently experiences low levels of light and because there are a larger number of viewers in and around the waterways, intake structures, and forebay that would be affected by these noticeable changes that contrast with the existing rural character, effects associated with new sources of daytime and nighttime light and glare are considered adverse. Mitigation Measures AES-4a through AES-4d are available to address these effects.

***CEQA Conclusion*:** The impacts associated with light and glare under Alternative 3 are significant because there are a larger number of viewers in and around the waterways, intake structures, and intermediate forebay; BDCP facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels; and the study area currently experiences low levels of light because there are fewer light/glare producers than are typical in urban areas. Mitigation Measures AES-4a through AES-4d would help reduce these impacts by limiting construction to daylight hours within 0.5 mile of residents; minimizing fugitive light from portable sources used for construction; installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences; and avoiding the use of BRWL LED lighting; however, these mitigation measures would not reduce impacts to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the new light and glare sources would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 3 would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

NEPA Effects: Effects on the visual environment through operations and maintenance of the water conveyance facilities (CM1) under this alternative would be similar to those described for Alternative 1A, Impact AES-5. Once the facility is in operation, visible regular and periodic maintenance would be required on all major structures. Activities such as painting, cleaning, vegetation maintenance (removal), repairs, and inspections would be visible from viewpoints on water and land. The greatest visual effects resulting from operations would be maintenance of the intakes and dredging the forebays. However, under Alternative 3, the severity of these effects in the vicinity of the north Delta intakes relative to Alternative 1A would be decreased because there would only be two intake structures instead of five. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete, these effects on the existing visual quality and character during operation would not be adverse because the activities would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features.

CEQA Conclusion: Maintenance of the conveyance facilities (i.e., intakes, tunnels, forebays and transmission lines) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at forebays (at approximately 50-year intervals); vegetation removal and care along embankments; tunnel inspection; and vegetation removal within transmission line ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These visible maintenance activities would be temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would be considered less than significant. Maintenance and operation of Alternative 3 once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features. Thus, overall, Alternative 3 would have a less-than-significant impact on existing visual quality and character during maintenance and operation of the facilities in the study area. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of CM2–CM21

NEPA Effects: Under Alternative 3, these conservation measures would be identical to those under Alternative 1A. Therefore, visual effects related to the existing visual character, scenic vistas, scenic highways, and light and glare resulting from implementation of CM2–CM21 would be the same as those described under Alternative 1A, Impact AES-6. There may be site-specific, localized adverse visual effects. These conservation measures would alter the Delta landscape by incrementally, and substantially, introducing elements into the study area over time. CM2–CM21, when combined with CM1, could substantially alter the visual character of the study area, which is strongly identified by its agricultural and water-based Delta landscapes and communities. These landscapes and communities could be adversely affected by the introduction of discordant visual features, removal of existing buildings and landscape elements of value, and through the potential for indirect impacts associated with other development potentially setting a precedent for other development to occur. All of these effects would alter the visual character of the existing regional landscape.

Because of the unknown location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction, effects associated with implementation of CM2–CM21 are considered adverse. However, the visual characteristics of restored/enhanced landscapes would be similar to other areas of the Delta that are in a natural marsh or wetland state and more limited in extent than the widespread areas of agricultural development. In this sense, the BDCP would have an overall beneficial effect related to the enhancement and creation of scenic vistas in the Delta.

Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-4a through AES-4d are available to address effects from habitat restoration and enhancement actions under CM2–CM21. In addition, Mitigation Measures AES-6a and AES-6b are available to help reduce adverse visual effects. Upon development of site-specific design information and plans, additional mitigation measures may be identified to address action-specific adverse effects. However, each individual project under CM2–CM21 would undergo the environmental compliance process that would be used to determine what additional mitigation measures, would be deemed appropriate to reduce adverse effects and to assess compliance with relevant regulations. Finally, Mitigation Measure AES-6c is available to help inventory, classify, and protect the unique visual landscape of the Delta.

CEQA Conclusion: Implementation of conservation measures under Alternative 3 has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. Impacts on the existing visual quality and character would be significant where use of large numbers of heavy construction equipment, changes in topography, and introduction of new structures or facilities where none presently exist would take place in the vicinity of sensitive receptors. However, because a number of factors that would determine the level of change are unknown—the location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction—impacts associated with implementation of

CM2–CM21 on visual quality and character, scenic vistas, and light and glare sources, are considered significant. Because of the distance of implemented conservation measures from scenic highways, changes associated with these activities would not affect the visual quality along these scenic highway corridors and this impact would be less than significant. Site-specific restoration information and plans need to be developed before the site-specific effects on the existing visual character, scenic vistas, and light and glare can be determined.

Several mitigation measures are available to minimize the impacts on visual quality and character in the study area that could result from implementation of these conservation measures. As summarized below, these measures could be applied to individual restoration projects or actions as appropriate for the site-specific conditions and design considerations. In addition, each restoration project or action would undergo an environmental compliance process that would be used to determine what additional mitigation measures would be deemed appropriate to reduce significant effects. Mitigation Measures AES-1a through AES-1g could be applied to minimize impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. Mitigation Measures AES-4a through AES-4d could be used to reduce the effects of new light and glare sources by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. In addition, Mitigation Measures AES-6a and AES-6b would further minimize impacts on visual resources by undergrounding new or relocated utility lines, where feasible, and through an evaluation of an afterhours low-intensity and lights off policy. Finally, implementation of Mitigation Measure AES-6c would provide a strategy for the protection of the unique visual landscape of the Delta.

While some of the conservation measures could result in beneficial impacts through the restoration of natural habitat and these mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a less-than-significant level because of uncertainties associated with future implementation of CM2–CM21. In addition, the size of the study area and the nature of changes introduced by these conservation measures would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend or be in keeping with the existing visual environment. Thus, implementation of CM2–CM21 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6b: Develop and Implement an Afterhours Low-Intensity and Lights Off Policy

Please refer to Mitigation Measure AES-6b under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6c: Implement a Comprehensive Visual Resources Management Plan for the Delta and Study Area

Please refer to Mitigation Measure AES-6c under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 3 would generally have the same potential for incompatibilities with one or more plans and policies related to preserving the visual quality and character of the Delta as described for Alternative 1A, Impact AES-7. The primary difference under Alternative 3 is that only Intakes 1 and 2 would be constructed. As described under Alternative 1A, there would be potential for the alternative to be incompatible with plans and policies related to preserving the visual quality and character of the Delta (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6, above and no additional CEQA conclusion is required related to the compatibility of Alternative 3 with relevant plans and policies.

17.3.3.9 Alternative 4—Dual Conveyance with Modified Pipeline/Tunnel and Intakes 2, 3, and 5 (9,000 cfs; Operational Scenario H)

The BDCP-related permanent effects of Alternative 4 are presented in Table 17D-4 in Appendix 17D, *Permanent Impacts after Construction is Complete*. Appendix 17D describes existing visual characteristics and the BDCP-related permanent effects on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Alternative 4 includes a modified pipeline/tunnel conveyance alignment from Intakes 2, 3, and 5 on the Sacramento River between Clarksburg and Walnut Grove to the expanded Clifton Court Forebay, associated shaft sites, an intermediate forebay and control structure, access roads, transmission lines, pumping plants at Clifton Court Forebay, barge unloading facility sites, an operable barrier at the Head of Old River, and spoil/borrow and RTM areas. Construction of all structural components under Alternative 4 would take 9–14 years. However, construction of each individual facility would be phased within that period and would take place over a shorter period. The estimated construction times for individual features are included in the discussion of impacts below. The duration and schedule for construction of the water conveyance facilities (CM1) is provided in Appendix 3C, *Construction Assumptions for Water Conveyance Facilities*. In addition, Appendix 22A, *Air Quality Analysis Methodology*, details the construction schedules and defines the length and sequence of each construction phase.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

Construction of conveyance facilities under Alternative 4 would result in substantial alteration of the existing visual quality or character in the vicinity of project elements that can be viewed from local sensitive receptors and public viewing areas. Visual quality effects at Alternative 4 project element construction sites would take place beginning with construction mobilization through completion of project elements. Once construction mobilization under the alternative occurs, all viewer groups would begin to see visual changes to the portions of the study area where project features would be built.

Intakes

The Sacramento River channel and bank would be affected by construction of three north Delta intake facilities (Intakes 2, 3, and 5) between RM 41 and RM 37 (see Figure 3-9 and Mapbook Figure M3-4 in Chapter 3, *Description of Alternatives*). Construction of each intake would take approximately 4 years to complete and would occur primarily Monday through Friday for up to 24 hours per day. In addition, because of the relatively high groundwater level at all intake locations, dewatering would be necessary to provide a dry workspace. Dewatering would also be needed where intake pipelines cross waterways and major irrigation canals east of the Sacramento River. Conveyance pipelines constructed for Intakes 2, and 5 would not be anticipated to intersect with waterways or major irrigation canals. Dewatering would take place 7 days per week and 24 hours per day and would be initiated 1–4 weeks prior to excavation. Dewatering would continue until excavation is completed and the construction site is protected from areas with high groundwater levels (Chapter 3, *Description of Alternatives*). Scattered rural residences are located along CH E9 and SR 160 along both banks of the river, throughout the corridor between where Intakes 2, 3, and 5 would be built; some of these would be near or directly adjacent to construction activities (KOPs 16, 18, 19, 20, 26, and 30). The towns of Clarksburg and Hood have a higher concentration of residential viewers and are also near the intakes (KOPs 12, 38, 72, 73, and 74). Recreationists on local roadways and waterways, roadway users on local roadways, and nearby businesses would have direct views of intake construction.

Construction of the three intake structures and associated facilities would introduce considerable heavy equipment—excavators, graders, dozers, sheepsfoot rollers, dump trucks, and end loaders, in addition to support pickups and water trucks—into the viewshed of all viewer groups in the vicinity, especially between Clarksburg and Walnut Grove. Intake work areas of approximately 258 acres total for all three intakes would be located adjacent to each intake site, along the river and edges of the intakes, and south of Hood and would be used for staging, temporary field offices, worker parking, equipment and materials laydown and storage, and would support other construction-related needs. While farm equipment is common in this area, the presence of long-term and large-scale construction is not common and would adversely affect viewers who would see work areas over an extended period of time where they once saw agricultural lands.

Construction of all intakes would require that properties first be acquired, resulting in the relocation of several residences and razing of buildings on these properties during construction. The intakes would dissect the parcels, disrupting the continuity of rural land and affecting free-flowing visual access from lands on either side of the intakes. In addition, residences and businesses may experience loss of landscaping, fencing, or other landscape features of personal importance. The landscape sensitivity level is high, and impacts on viewers are substantial because the residents would experience disruptive construction activities near to their homes.

Once the site is cleared of built features, earthmoving activities would result in the removal of mature vegetation and topographical changes to areas that are presently flat. Earthmoving activities and associated heavy equipment and vehicles would be readily visible throughout operation of these sites and have the potential to create dust clouds that would attract attention from visual receptors and reduce the availability of short-range views. As set forth in Chapter 22, *Air Quality and Greenhouse Gases*, the BDCP proponents have identified environmental commitments (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) to reduce emissions of construction-related criteria pollutants, including basic and enhanced fugitive dust control measures and measures for entrained road dust that would help to reduce the creation of dust clouds that would negatively affect short-range views. As described in Chapter 3, *Description of Alternatives*, revegetation of disturbed areas would occur as a part of the project and revegetation would be determined in accordance with guidance given by DWR's WREM No. 30a, Architectural Motif, State Water Project and through coordination with local agencies through an architectural review process. Because revegetation is included as part of Alternative 4, it would help to lessen visual impacts. However, impacts may still be substantial, as described further in this analysis. This guidance from DWR WREM No 30a is set forth as follows and would apply to the other features described under Impact AES-1.

> If possible, the natural environment will be preserved. If not possible, a re-vegetation plan will be developed. Landscaping plans may be required if deemed appropriate to enhance facility attractiveness, for the control of dust/mud/wind/unauthorized access, for reducing equipment noise/glare, for screening of unsightly areas from visually sensitive areas. Planting will use low water-use plants native to the Delta or the local environment, with an organic/natural landscape theme without formal arrangements. For longevity and minimal visual impact, low maintenance plants and irrigation designs will be chosen. Planting plans will use native trees, shrubs or grasses and steps will be taken to avoid inducing growth of non-native invasive plant species/CA Plant Society weedy species. Planting of vegetation will be compatible with density and patterns of existing natural vegetation areas and will be placed in a manner that does not compromise facility safety and access. Planting will be done within the first year following the completion of the project and a plant establishment plan will be implemented.

Water-based construction would also be required to construct water intakes and levee modifications. Water-based recreational viewers would have the most direct views toward in-water construction, which would likely require partial channel closures and use of equipment within the waterways (KOP 26). All such construction would have temporary in-water construction zone speed restrictions where high-speed recreation (e.g., waterskiing, wakeboarding, and tubing) would effectively be eliminated. In-water construction activities would constrict boat passage, increase boat traffic congestion during peak use (primarily summer weekends), and extend viewing times of these facilities. In-water construction at all locations would result in adverse visual effects due to the elongated viewing times during periods of congestion, temporary partial channel closures that could impede recreational opportunities and create negative visual perceptions of these facilities, and a reduced recreational experience due the industrial nature of views of such facilities.

Once construction of the conveyance facilities is complete, Intakes 2, 3, and 5 would introduce large, industrial concrete and steel intake structures that range from approximately 46 to 58 feet from river bottom to the top of the structure with a total structure length of 1,259 (Intake 3) or 1,667 (Intakes 2 and 5) feet, intake storage and electrical buildings that are approximately one to one and a half stories tall, two large triangular sedimentation basins that are each approximately 13.5 acres, four smaller rectangular drying basins that are each approximately 1.5 acres, perimeter landscaping, fencing, a substation, and other similar anthropogenic features into an area with an existing rural visual character and a riparian, riverine, and agricultural nature. The intake facility buildings are consistent with the scale and visual character of the surrounding landscape but would be located on the elevated intake landform, so would be more visually prominent. The perimeter landscaping that would be incorporated as part of the facility design would help to improve the quality of views. Because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, changes to topography through grading, and addition of large-scale landforms, industrial structures, and sedimentation basins where none presently exist, this effect is considered adverse.

The intake facilities would result in adverse visual effects upon the landscape, and the intakes proposed for Alternative 4 are larger than those analyzed under Alternative 1A. As seen in Figure 17-85, *Existing and Simulated Views of Intake 2 East from South River Road*, the removal of a substantial amount of riparian vegetation along the east bank provides an unobscured view of the intake facility and associated features making the intake facility the prominent visual feature in the landscape. A substation would be introduced at the intake facility where none presently exists. The intake storage and electrical buildings introduce structures that are similar in scale to surrounding buildings and their darker coloring would help them recede into view. The large concrete intake adds a monotone solid color mass and the red gantery cranes stand out in a landscape where the natural colors are earth-tones and more muted. Overall, the existing vista from KOP 256 on SR 160 toward Intake 2 would be substantially impaired by vegetation removal and introduction of the on-bank intake and the Scenic Quality Rating would be reduced from a **C** to an **F**. A reduction in the Scenic Quality Rating associated with Intake 2 is representative of the effects that could occur to other views associated with intakes through the removal of vegetation, obscuring and limiting views beyond the foreground, and introducing large industrial features into a rural landscape and this effect would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

As seen in Figure 17-86a, *Existing and Simulated Views of Intake 3 East from SR 160 in January 2012*, a substantial amount of riparian vegetation would be removed along the east bank and the large, raised intake landform would be visually prominent in the landscape, but perimeter landscaping would aid in reducing the raised landform's apparent scale. However, the large, raised landform would still be a focal point and visually discordant in scale and mass to the surrounding rural character within the vista. The scale of the intake facility buildings are in keeping with existing surrounding buildings, and the darker coloring would help them to recede into view, but they would be located at a much higher elevation than surrounding buildings, on the large raised, human-made landform. When compared to Figure 17-76a that shows Intake 3 East for Alternatives 1A, 1B, 2A, 2B, 6A, 6B, 7 and 8 (PTO alternatives), the intake pad would appear to be smaller because of the perimeter landscaping that reduces its apparent scale under this alternative than for the PTO alternatives and the exclusion of a pumping plant under this alternative decreases the magnitude of visual effects from this vantage, when compared to other PTO alternatives. In addition, because of the perimeter landscaping, the intake pad appears to be somewhat of a visual continuation of the SR 160 levee from this vantage and the intake buildings are not as noticeable because they are partially screened by trees. They would be more visible in the winter when trees are dormant. While steel 230 kV transmission lines would not be introduced under this alternative, there would be a substation that would also visible and would add to the industrial look of the intake facilities and detract from the existing rural character. Overall, even with perimeter landscaping, the existing vista from KOP 34 on SR 160 toward Intake 3 would be substantially impaired by vegetation removal and introduction of the raised intake landform and associated structures and the Scenic Quality Rating would be reduced from a **D** to an **E** under this alternative. A reduction in the Scenic Quality Rating associated with Intake 3 is representative of the effects that could occur to other vistas through the removal of vegetation, obscuring and limiting views beyond the foreground, and introducing large landforms and industrial features into a rural landscape and this effect would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). However, as shown in Figure 17-86b, *Existing and Simulated Views of Intake 3 East from SR 160 in July 2013*, fast-growing poplar or cottonwood trees that were newly planted in January 2012 have since grown and act to obscure large portions of the intake pad and substation. While not be as noticeable, the large landform would still be visually discordant in scale and mass to the surrounding rural character within the vista and the Scenic Quality Rating would be reduced from a **D** to an **E**. Note that, over time, the trees will continue to grow and views of Intake 3 from KOP 34 could be further limited.

Figure 17-77, *Existing and Simulated Views of Intake 2 West from SR 160*, shows an intake associated with the west alignment. While this simulation includes a pumping plant, this view is representative of how an on-bank intake along the river under this alternative would look on the east bank of the river from CH E9. It is also representative of how intakes could affect this and other vista views from SR 160 and CH E9, as mapped in Appendix 17D, Figure 17D-1. The conversion of the riverbank that is grassy with riparian vegetation to the industrial looking on-bank intake is a stark visual and color contrast against the more natural colors and textures of a vegetated riverbank that is absent of structures. It also adds monotone solid color mass into a landscape where the natural colors of the landscape are earth-tones and more muted. The intake would detract from the visual quality of views in the foreground. Overall, the existing vista from KOP 15 on SR 160 toward Intake 2 would be substantially impaired by vegetation removal and introduction of the intake and the Scenic Quality Rating would be reduced from a **C** to an **E**. A reduction in the Scenic Quality Rating associated with Intake 2 is representative of the effects that could occur to other vistas through the removal of vegetation, obscuring and limiting views beyond the foreground, and introducing large industrial landforms and features into a rural landscape, and this effect would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

Visual changes associated with the intakes would be more apparent the closer the viewer is in relation to the intake. As illustrated in the simulations above, the sedimentation basins and ground level views of whole intake facility (refer to Figures 3-19a and 3-20a) are not available from a distance. However, when viewers are in close proximity to the intake and intake facilities, primarily when traveling by on SR 160 or on the Sacramento River, they would have more direct and up close views of the facility, in its entirety. The overall size of the intake and intake facility can be understood by comparing their sizes to the vehicles modeled in the Figure 3-19a rendering. Views from the river would not be able to be screened, allowing for direct visual contact with the large intake structure. On land, the perimeter of the facility would be fenced, with secured gate access from SR 160, but the sedimentation basins would be visible through this fencing. The tops of the sedimentation basins have larger dimensions than the bottoms and the tops are 1,000 feet wide when measured from SR 160 to the outlet shaft, making the visible water surface area of the basins wider than the Sacramento River that measures approximately 660 feet wide. In addition, the basins would be engineered water bodies with highly regular shapes and forms associated with them. Therefore, the sedimentation basins would introduce very large, visually contrasting human-made waterbodies into a landscape where the forms of existing waterways, such as the river and nearby sloughs, are much more organic. In addition, instead of tilled or vegetated agricultural lands, there would be large areas of pavement. Perimeter landscaping would help to reduce the apparent scale of the facility; however, it would take several years for landscaping to mature enough to provide benefit and the facility would still be very large in comparison to existing development within this rural landscape, and therefore this effect would be adverse.

Forebays

Construction of a 27.5-acre intermediate forebay (north of Twin Cities Road and east of Snodgrass Slough and the southerly most portion of Stone Lakes National Wildlife Refuge) (KOPs 115 and 257) and the 558 acre Clifton Court Forebay expansion to the south of the existing forebay (KOPs 103, 106, and 107) would take less than 2 years. Generally, construction would occur Monday through Friday for up to 24 hours per day. Dewatering is anticipated where the forebay pipelines cross waterways or major irrigation canals less than 0.25 mile north of the connection with the intermediate forebay. Dewatering would take place 7 days per week and 24 hours per day and would be initiated 1–4 weeks prior to excavation. After construction is complete, disturbed areas of exposed soil would be seeded for erosion control and would revegetate after a short time. The intermediate forebay would be constructed southeast of Intake 5 and would be seen from Twin Cities Road, immediately north of the road and abutting Snodgrass Slough. Views from Twin Cities Road are obscured west of Snodgrass Slough by vineyards and riparian vegetation along Snodgrass Slough. Because it is in proximity to Walnut Grove there is a concentration of residential, recreational, and roadway viewers using Twin Cities Road. Rural residences, located south of Twin Cities Road and the intermediate forebay, would have construction occurring near their homes through construction of the intermediate forebay. The landscape sensitivity level is high, and impacts on viewers are substantial because the residents south of the intermediate forebay would experience disruptive construction activities near their homes. In addition, residents of Walnut Grove using Twin Cities Road that are also highly sensitive to the Alternative 4 would view the construction as they use the roadway. The existing ground surface elevation at this location is -6 to +11 feet, while embankments surrounding the forebay would be just over 32 feet above the ground surface.

Construction to expand the Clifton Court Forebay to the south would occur near residences and businesses in and near the Rivers End Marina & Storage, at the junction of Lindeman Road, CVP Canal, and Old River. Ground-level construction activities would not be visible from this area because of existing levees but would likely be visible from Byron Highway and Herdlyn and Lindeman Roads, where views are elevated. The existing ground surface elevation at this location is

-5 to 0 feet, which would be degraded to -10 feet in certain locations, and embankments surrounding the forebay would be approximately 25 feet above the proposed ground surface.

Earthmoving activities would result in topographical changes to areas that are presently flat and would introduce heavy equipment and vehicles that would be readily visible throughout construction of the forebays and have the potential to create dust clouds that would attract attention from visual receptors and reduce the availability of short-range views. As set forth in Chapter 22, *Air Quality and Greenhouse Gases*, the BDCP proponents have identified environmental commitments (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) to reduce emissions of construction-related criteria pollutants, including basic and enhanced fugitive dust control measures and measures for entrained road dust that would help to reduce the creation of dust clouds that would negatively affect short-range views. Once construction of the intermediate forebay is complete, it would be immediately and prominently visible in the foreground from vantages surrounding it. While the water surface of the this forebay would not be visible, it would convert agricultural lands to a large, geometrically shaped levee embankment system that would conflict with the existing forms, patterns, colors, and textures associated with agricultural lands. As seen in Figure 17-87, *Existing and Simulated Views of Intermediate Forebay from Twin Cities Road*, the scenic view across agricultural fields from Twin Cities Road is fairly open but contains existing transmission lines. The forebay embankments would be tall enough to limit views of the existing tree line on the horizon. The intermediate forebay embankments would add a man-made visual massing and the embankments would have a visible geometric shape immediately adjacent to the roadway. Overall, the existing vista from KOP 257 on Twin Cities Road toward the intermediate forebay would alter and reduce the available views of agricultural lands and foreground views and would reduce the Scenic Quality Rating from an **E** to an **F**. This effect would be adverse, when seen from Twin Cities Road (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

The expanded Clifton Court Forebay would have a similar effect on the existing visual quality and character as seen from Byron Highway. While expanding Clifton Court Forebay would convert a large area of agricultural land, the forebay in this location would not have as great a negative effect on the landscape as the intermediate forebay, due to the predominance of the existing Clifton Court Forebay, other water conveyance features, and fewer sensitive viewers. However, the expanded Clifton Court Forebay would result in noticeable changes that do not blend, are not in keeping or are incompatible with the existing visual environment, and could be viewed by sensitive receptors and from public viewing areas. This effect on visual quality and character would be adverse.

Overall, because of the large footprints of the forebays combined with the proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading resulting in noticeable changes from public viewing areas, this effect would be adverse.

Pumping Plants

There would be a facility with two pumping plants located northeast of the expanded Clifton Court Forebay under Alternative 4. The area surrounding the existing Clifton Court Forebay has two existing large-scale water facilities including the Edmonston Pumping Plant at the Delta-Mendota Canal and the Banks Pumping plant at the California Aqueduct. The facility would be built on elevated landform that is 10-15 feet taller than the existing surface, directly west of West Canal and south of Kings Island. The proposed pumping plants would each be 85 feet tall, at the top of the domed roof, and 182 feet in diameter. The facility would receive perimeter landscaping similar to intake structures and this, combined with the elevated landform, would screen the large pumping plants, electrical stations, substation, water treatment plant, and associated features from residents at Kings Island that are located approximately 0.3 mile away from the closest pumping plant. The plantings would also screen water-based views of the facility from West Canal. In addition, residents accessing Kings Island via Clifton Court Road would have a direct line of site toward the facility. The pumping plant facility would, however, be visible in the background from the rolling foothills and the Bethany Reservoir State Recreation Area, which the California Aqueduct Bikeway passes and is located over 5 miles southwest of the Clifton Court Forebay. However, the existing large-scale Edmonston Pumping Plant is located just over 1.5 miles away and is visible in middleground views from Bethany Reservoir, making this a more prominent feature in views. In addition, the darker coloring of the proposed pumping facility and distance would enable the pumping facility at Clifton Court Forebay to blend with the landscape and not stand out enough to negatively affect views from the foothills, recreation area, or bikeway. While features associated with the facility would likely be screened once vegetation has matured, site features that are closer to Kings Island and West Canal may be visible, such as the substations, water treatment facility, storage tanks, and staging areas. In addition, the existing vegetation in this area would need to be removed and require large areas of fill to raise the island. This effect would be adverse because of the proximity to sensitive receptors, removal of vegetation, changes to topography through grading, and facility visibility until perimeter landscaping matures.

Tunnel Work Areas

Smaller tunnel work areas would be associated with shaft sites; these shaft sites, which incorporate their tunnel work areas, are discussed in more detail below. There would be one large tunnel work area near Intake 2 (200 acres) (KOP 15) that would be needed under Alternative 4 for construction staff and staging associated with tunnel boring activities. This site would be near the intake structures and would consequently affect the same viewer groups described above for intakes. A tunnel work area near Intake 2 would affect available views from SR 160 and is near the town of Clarksburg, with a higher concentration of residential, recreational, and roadway viewers (see Mapbook Figure M3-4 in Chapter 3, *Description of Alternatives*). Recreationists on local roadways, roadway users on local roadways, residents, and nearby businesses would have direct views of construction activities at the tunnel work area. The landscape sensitivity level is high, and impacts on these viewers are substantial, especially for residences that would experience disruptive construction activities near their homes.

Earthmoving activities would likely result in the removal of mature vegetation to accommodate the tunnel work area. Equipment and activities associated with construction staging would be visible. The tunnel work area would be in use for close to 7.5 years, and construction operations at these locations would take place Monday through Friday for up to 24 hours per day. Because of the long-term nature of construction, proximity to sensitive receptors, removal of vegetation, and presence of the staging and work area, this effect is considered adverse.

Once construction of the BDCP facilities is complete, the tunnel work north of Intake 2 would result in a large-scale landscape effect that would also alter the agrarian visual character. As described under “Forebays”, above, revegetation of disturbed areas would occur as a part of the project and revegetation would be determined in accordance with guidance given by DWR’s WREM No. 30a, *Architectural Motif, State Water Project* and through coordination with local agencies through an architectural review process. However, impacts would still be substantial. Accordingly, the tunnel work area would result in an adverse effect on visual resources. Mitigation Measures AES-1b and AES-1g are available to address this effect.

Reusable Tunnel Material Areas

RTM areas would be needed to store excess material from tunnel boring and later may be used to construct levees and to meet other fill requirements or be transported to spoils sites. Eleven RTM areas are proposed for Alternative 4: one immediately northeast of Intake 2 (54 acres) (KOPs 1, 4, and 15) south of Scribner Road, east of the Sacramento River; two south of Lambert Road and north of Dierssen Road (46 and 33 acres); two north of Twin Cities Road (39 and 43 acres) (KOP 115); one south of Twin Cities Road (114 acres) (KOP 115); one west of the intermediate forebay (131 acres);; one south of SR 12 (1,209 acres) (KOP 98) and three west of Clifton Court Forebay that are in close proximity to one another (904 acres total) (KOP 101) (see Mapbook Figure M3-4 in Chapter 3, *Description of Alternatives*). There would be a total of 2,571 acres of land affected by RTM areas under Alternative 4. In addition, many of the RTMs under Alternative 4 would be 6–10 feet high, except for the RTM areas near the proposed intermediate forebay and west of the Clifton Court Forebay that would be 10–15 feet high, instead of 6 feet high as with Alternatives 1A, 2A, 3, 5, 6A, 7, and 8, making the Alternative 4 RTM areas up to almost twice as high as RTM areas under other tunnel alternatives. The RTM areas near Intake 2; Lambert, Dierssen, Twin Cities Roads; and SR 12 would have negative effects because of proximity to nearby residents and visibility from nearby roadways. Activities associated with placing and spreading the RTM would occur near or directly adjacent to the homes of residential viewers. The RTM area near Intake 2 would be visible from SR 160. The RTM area south of SR 12 would be visible to roadway users on this busy roadway but views of construction activities would be fleeting as travelers on these roadways travel by the site. The landscape sensitivity level is moderate to high, and impacts on viewers of RTM areas are substantial because residents would experience construction activities near their homes and because of their visibility from nearby roadways that have views of the existing rural landscape. Changes to the RTM area east of Byron Highway near the Clifton Court Forebay would primarily affect roadway users on the highway and nearby local roadways. Because these viewers are not as sensitive and there is nearby rolling terrain, these RTM areas would not appear as visually obtrusive as the other RTM areas for Alternative 4. This RTM area is also just over 2 miles away from Discovery Bay. As seen in Figure 17-61 (KOP 197), the RTM area would be in the general area of the transmission lines seen in front of the Black Hills and the RTM area would not be distinguishable when seen from Discovery Bay. The RTM conveyor transporting excavated material from the launch site northeast of Clifton Court Forebay to the nearby RTM area may be visible to residents living on Kings Island and adversely affect their views by introducing an industrial conveyor system on top of the levee surrounding the forebay. Mitigation Measure AES-1b is available to address this effect.

Earthmoving activities would likely result in the removal of mature vegetation and topographical changes to areas that are presently flat. Earthmoving activities and associated heavy equipment and vehicles would be readily visible throughout operation of these sites and has the potential to create slowly moving dust clouds that would attract attention from visual receptors and reduce the availability of short-range views. As set forth in Chapter 22, *Air Quality and Greenhouse Gases*, the BDCP proponents have identified environmental commitments (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) to reduce emissions of construction-related criteria pollutants, including basic and enhanced fugitive dust control measures and measures for entrained road dust that would help to reduce the creation of dust clouds that would negatively affect short-range views.

RTM areas would be in use for close to 7.5 years, and operations at these locations would take place Monday through Friday for up to 24 hours per day. Because of the long-term nature of construction, proximity to sensitive receptors, and changes to topography through grading, resulting in noticeable to very noticeable changes to the visual setting, this effect is considered adverse. Effects may be reduced at various RTM areas if the material is reused for other purposes, reducing the amount of material on the site.

Once construction of the water conveyance facilities is complete, the RTM areas would result in large-scale landscape effects that would alter the agrarian visual character. Alterations at these locations would result in sunken or elevated landforms introduced into a landscape that is currently predominantly flat. These features would be visually discordant with the area's existing forms, patterns, colors, and textures associated with the existing agrarian character in the study area. Mitigation Measure AES-1c is available to address this effect.

Shaft Sites

Retrieval, launch, and ventilation shaft sites would be converted to access shaft sites once construction is complete and be maintained and permanent features. Tunnel work areas would be associated with each of these shaft sites that are approximately 10 to 44 acres in size. The affected area includes the area surrounding and access roads to the shaft sites. Shaft sites would be located at Intakes 2, 3, and 5; the intermediate forebay; and CCF pumping plants. The shaft sites on Mandeville and Bacon Islands are in areas where there are no immediate viewers and, therefore, have a low landscape sensitivity level. The shaft site northeast of Clifton Court Forebay would be obscured by levees along West Canal, limiting views for water-based recreationists. However, shaft sites at the intakes and north of Lambert Road (KOP 86), and on Staten Island are in areas with nearby residences and near frequently traveled roadways, and the landscape sensitivity level is moderate to high. Rural roadways pass near the shaft site on south Staten Island, which is noted for its sandhill crane wintering habitat and wildlife viewing. The shaft sites south of SR 12 (KOP 98) and north of SR 4 would be visible to roadway users on these busy roadways, but views of construction activities would be fleeting as travelers on these roadways travel by the site. Construction of the shaft sites would take just under 2.5 years; they would then be in operation for close to 7.5 years, Monday through Friday for up to 24 hours per day.

This would introduce considerable heavy equipment, vehicles, and cranes needed to bore and construct the tunnel and remove excavated materials from the tunnels into the viewshed of sensitive viewers. The shaft sites would have associated work areas where materials would be stockpiled and pieces needed to construct the finished tunnel structure would be stored. In addition, the shaft sites would be built on raised earthen pads to elevate them above the flood level, and these pads would be approximately 20 feet high or at the 100-year design flood elevation for each island). The shaft would rise approximately another 20 feet above the grade of the raised pad, and there would be construction office and storage buildings located at the base of the raised pad. The shaft site would be surrounded by fencing. Construction activities associated with the shaft sites may constitute an adverse effect on visual resources due to the physical introduction of these features and the duration of time that they would be visible in the landscape. Once construction is completed, the construction office and storage buildings would be removed. This effect can been seen in Figure 17-80, *Existing and Simulated Views of Launch/Retrieval Shaft Site near Isleton Road*, which is representative of the same effects that would result under construction of Alternative 4.
Construction of shaft sites would convert agricultural lands for a period of time and may require the removal of landscape or vegetation and structures and would introduce the raised pad into

viewshed, as illustrated in "Simulated View during Construction." In addition, the introduction of tall, steel 230 kV transmission lines would occur that could visually contrast to existing views depending on if the existing transmission lines consist of wooden utility poles or steel transmission lines. Overall, existing views from KOP 95 on SR 160, which are representative of Alternative 4, toward the launch/retrieval site would be impaired by the removal of the building and vegetation and introduction of the transmission lines. The Scenic Quality Rating would be reduced from a **D** to an **E**. This effect would be adverse (see discussion under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

In addition, tunnel construction would require safe haven work areas. These would occur at planned, two-mile intervals for atmospheric safe haven intervention areas that are approximately 10 acres in size and unplanned locations for pressurized safe haven intervention areas that would be no larger than 1 acre. Surface disturbance activities at each of the intervention sites will differ depending on the type of intervention that is being executed. Planned safe haven work areas would be used to set up equipment, construct flood protection facilities, excavate/construct the shaft, and set up and maintain the equipment necessary for the TBM maintenance work. Constructing the planned access shafts would take approximately 9 to 12 months. Surface equipment needed to construct unplanned safe haven intervention site would require a small drill rig, grout mixing and injection equipment, and facilities to control groundwater runoff at the site. Constructing the unplanned access shafts would take approximately 8 weeks. Once the TBM maintenance at safe have work areas is complete, the access shafts would be abandoned and backfilled to preexisting conditions. Excavated materials from drilling and grouting would be confined to the work site and would be disposed of offsite at a permitted facility. Disturbed areas would be returned to preconstruction conditions by careful grading, reconstruction of features such as irrigation and drainage facilities, and replanting of crops and/or compensating farmers for crop losses.

Planned safe haven areas would be at the following locations: one on the island located east of Snodgrass Slough and west of the Mokelumne River, two on Staten Island along North Staten Island Road, one on Venice Island, two on Bacon Island, and one south of SR 4. The safe haven work areas east of Snodgrass Slough and on Venice Island and north Bacon Island are in areas where there are no immediate viewers and, therefore, have a low landscape sensitivity level. The safe haven work area on south Bacon Island is in area where train travelers would pass by the site, but views of construction activities would be fleeting as railway travelers pass by the site. Rural roadways pass near the safe haven work areas on Staten Island, which is noted for its sandhill crane wintering habitat and wildlife viewing, The safe haven work areas south of SR 4 would be visible to roadway users on this busy roadways but views of construction activities would be fleeting as travelers on these roadways pass by the site. Because these sites would be in use only temporarily and then restored once maintenance is complete, there would no permanent adverse visual effects associated with planned safe have work areas. Unplanned safe haven work areas are relatively small and would be located to avoid sensitive habitats and to minimize impacts. Therefore, it is expected that there would no permanent adverse visual effects associated with unplanned safe haven work areas, as well.

Docks and Barge Traffic

New barge unloading facilities would be built in the viewshed of recreationists, businesses, public roadways, and residential properties that have views and vistas that include the sites, and would result in temporary long-term changes in views in the immediate area. These facilities would be constructed in areas where the landscape sensitivity levels range from low to high. New facilities would convert vegetated areas to large, unvegetated swaths of land and piles of sand and gravel with associated loading infrastructure, introducing these features into a viewshed where none presently exist. These features would contrast sharply with the more natural areas that were present prior to construction of the new facility. New facilities would convert agricultural and other open space lands to a land use that is industrial in nature and from one that is vegetated to one that is largely unvegetated, creating new landscape effects.

Alternative 4 includes seven barge unloading facilities to be built on or near the modified pipeline/tunnel alignment at riverbank locations about 5–6 miles apart. As described in more detail in Chapter 15, *Recreation*, the facilities would be built on the following waterways: Snograss Slough north of Lambert Road near the intermediate forebay, Potato Slough adjacent to the RTM area south of SR 12, San Joaquin River near the safe haven work area on Venice Island, San Joaquin River near the ventilation shaft site on Mandeville Island, Connection Slough near the safe haven work area on Bacon Island, Old River west of the ventilation shaft north of SR 4, and West Canal near the pumping plants just northeast of Clifton Court Forebay and would affect water-based recreation. Water-based recreational viewers would have the most direct views toward barge traffic and loading/offloading activities involving equipment and materials for pipeline construction. Construction of the barge facilities may require partial channel closures and use of equipment within the waterways. All barge facilities would have temporary in-water construction zone speed restrictions where high-speed recreation (e.g., waterskiing, wakeboarding, tubing) would effectively be eliminated. Once built, docks would be in use for approximately 5 years. During this time, loading facilities and barge traffic would constrict boat passage, increase boat traffic congestion during peak use (primarily summer weekends), and extend viewing times of these facilities.

The Snograss Slough location could constrict boat traffic, which may be moderate to low at this location due to its proximity to the populated town of Walnut Grove. The Potato Slough and San Joaquin River locations are very wide or have alternative travel routes, so boats could avoid the loading facility entirely. The Connection Slough, Old River, and West Canal locations could constrict boat traffic, which may be high at these locations; however, while circuitous, alternative routes are available to avoid these locations. Once construction of the conveyance facilities is complete, docks would be removed and barge traffic would cease.

Construction and use of barges and barge unloading facilities during construction at all locations would introduce dominant visual elements resulting in noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes may result in adverse visual effects due to the elongated viewing times during periods of congestion, temporary partial channel closures that could impede or eliminate recreational opportunities and create negative visual perceptions of these facilities, and a reduced recreational experience due the industrial nature of views of such facilities. Thus, this effect would be adverse.

Access Roads

Construction of temporary and permanent access roads would take less than 2 years and would follow linear paths; consequently, construction of these features would not be focused on one specific location for an extended period of time. Construction of access roads would occur Monday through Friday for up to 24 hours per day. Access roads would be located in areas in where the landscape sensitivity levels range from low to high. Most of the temporary and permanent access roads follow alignments that have previously been cleared and that serve as agricultural access routes. Construction would include improving the condition of these existing access routes to accommodate construction access. Vegetation removal would likely occur along the rights-of-way of access roads and would negatively affect views from SR 160, River Road, and other roadways in the study area. After construction is complete, disturbed areas of exposed soil would be seeded for erosion control and would revegetate after a short time. Because of the temporary nature of construction and the regular relocation of activities and because roads follow alignments that have previously been cleared and that serve as agricultural access routes, this would not constitute an adverse effect.

In addition, a spread diamond (Type L-2) interchange would be constructed along SR 12 to provide safe access to the shaft site and RTM area south of SR 12 to facilitate safe traffic patterns along this portion of the highway during construction. A concrete bridge with 16 feet of vertical clearance would be constructed over SR 12 that would be 40 feet wide (two 12-foot lanes with 8-foot shoulders). Auxiliary lanes would also be added in both directions for traffic merging. Additional traffic signage would also increase the presences of such features along this route. The intersection improvement would introduce a new transportation structure that would limit views beyond when traveling in either direction, because the terrain is very flat, and would obscure views of Mount Diablo on approach to the bridge when traveling west, and this would constitute an adverse effect.

Transmission Lines

Proposed transmission line corridors are shown in Mapbook Figure M3-4 in Chapter 3, *Description of Alternatives*. Construction of the temporary 69 kV transmission lines would take less than 2 years and would require vegetation clearing along the linear ROWs. Construction of the permanent 69 and 230 kV transmission lines would also take less than 2 years and would require vegetation clearing along the linear ROWs. Construction of transmission lines would occur Monday through Friday for up to 24 hours per day, and transmission lines would be located in areas where the landscape sensitivity levels range from low to high (KOPs 15, 16, 18, 19, 20, 26, 30, 34, 41, 42, 49, 54, 72, 73, 74, 86, 98, 101, 103, 106, 107, 115, 254, 255, 257, and 258).

The temporary and permanent 69 kV lines would be wooden or steel poles, depending on the utility, which are 60 feet tall and spaced 450 feet apart. The temporary 230 kV lines would be steel poles that are 95–100 feet tall and spaced 750 feet apart; however, lattice steel towers may be used at Western interconnections. Construction of transmission lines move along these linear ROW corridors that are 150 feet wide at poles for 69 kV and 230 kV lines. For every 2 miles of line and where the line takes a turn greater than 15 degrees, a conductor pulling location that is 150 feet wide with 350 feet of length along the corridor for 69 kV and 230 kV lines would be required adjacent to the pole.

Construction would require clearing the corridor of vegetation, erecting the towers or poles, and then stringing the power lines using the conductor pulling locations. Construction of these features would move in a linear fashion and would not take place in any specific location for an extended period of time. Cranes would be used to string 69 kV lines, while towers, cranes and helicopters would be used for 230 kV lines. Site preparation, tower erection, and stringing would introduce disruptive visual elements, such as construction equipment and activity, into the landscape and temporarily detract from views. Construction of the 230 kV lines would be the most disruptive during construction because towers, cranes, and helicopters would be more visible and draw more attention toward construction activities because of movement associated with helicopters and cranes and noise associated with helicopters. Temporary power would be supplied by 69 kV and 230 kV transmission lines that would tap into the Banks Substation near the Banks pumping plant or a substation located off of Sellers Avenue near Brentwood in the southern end of the alignment, and a point on the existing electrical grid north of an area of the Cosumnes River Preserve, approximately 1 mile west of Highway 99 and 5 miles south of Elk Grove, in the northern end of the alignment. These would be new lines and would generally not run parallel to existing transmission corridors. The Banks Substation is immediately south of the California Aqueduct, and would require over 2 miles to connect to the Clifton Court Forebay area. There is already a substation, office buildings, and warehouse facility buildings at the Banks pumping plant that make this area industrial in nature. However, the new substation in the Banks Substation area would increase utility infrastructure present at this location, and the new 230 kV electrical transmission lines would compound the amount of visible industrial elements and result in adverse visual effects.

Permanent power would be supplied by the line connecting to an area near the Cosumnes River Preserve, described above. Permanent 230 kV transmission lines are shown on Figure 3-25 in Chapter 3, *Description of Alternatives*. This transmission line would not parallel existing transmission corridors and would introduce a transmission corridor into the landscape where none or few presently exist. This would create or add to the amount of visible transmission lines, based on location, and not be in keeping with the existing visual character. New permanent 69 kV lines would branch from the northern terminus of the 230 kV line to supply power to the intermediate forebay control structure and Intakes 2, 3, and 5. Each intake would have an electrical substation and transformer located near the sedimentation basins (refer to Figure 3-20 in Chapter 3, *Description of Alternatives*).

This 230 kV line would pass through areas with and without existing transmission lines. The line would extend approximately 3 miles through or adjacent to agricultural lands and agricultural access roads until reaching Lambert Road where it intersects with a large agricultural operation. A new, approximately 30-acre, substation would be constructed north of Lambert Road to supply electrical power. From the Lambert Road substation, the 230 kV line would follow Lambert Road, eastward, for just over 7 miles and then extend northeast to another new substation, and another 230 kV line would travel south to the intermediate forebay control structure. New permanent 69 kV lines would branch from the substation at the northern terminus of the 230 kV line to supply power to Intakes 2, 3, and 5. Each intake would have an electrical substation and transformer located near the sedimentation basins (refer to Figure 3-20 in Chapter 3, *Description of Alternatives*).

Most of the transmission lines would follow access roads constructed for the BDCP conveyance facilities or other existing access roads and roadways that are within the study area. After construction is complete, disturbed areas of exposed soil would be seeded for erosion control and would revegetate after a short time. Environmental commitment 3B.3, Transmission Line Support Placement, would ensure that transmission lines avoid sensitive habitats to the degree feasible and that towers, poles, and substations are designed and placed to avoid existing structures. In agricultural areas, environmental commitment 3B.3 establishes measures to minimize crop damage, use single-pole structures, locate lines along existing transmission line corridors or property boundaries, use increased spans, and limit the use of guy wires. However, tree and shrub removal would still likely occur within the ROWs and would negatively affect views from SR 160, River Road, Lambert Road (under the east-west option) and other roadways in the study area. Once the proposed 230 kV electrical power transmission lines are constructed, tall steel poles that would be highly visible landscape features would contrast strongly with their surroundings. The 69 kV electrical power transmission lines would also be larger than wood-poled transmission lines commonly seen in the Delta. While wood-poled transmission lines are part of most existing views, new 69 and 230 kV transmission lines and their cleared ROWs would adversely affect the existing visual character by introducing large towering structures in a linear pattern that appear to march through the landscape. New substations would further introduce and increase utility infrastructure in areas where such features are not present. The temporary nature of construction and movement of construction activities to different locations, combined with tree and shrub removal within ROWs, and appearance of transmission lines and substations once in place, would make changes in views associated with transmission lines adverse. The transmission line alignment in combination with other temporary and permanent transmission lines throughout the study area would contribute to adverse changes in the visual quality and character. Mitigation Measures AES-1a through AES-1c are available to address these effects.

Concrete Batch Plants and Fuel Stations

Under Alternatives 1A, 2A, 3, 5, 6A, 7, and 8, precast segment yards would be located adjacent to, but within footprints identified for, concrete batch plants or other work areas. However, under Alternative 4, it is assumed that precast tunnel segments would be purchased and transported from offsite plants to the construction sites. Therefore, precast segment yards would not be needed under Alternative 4, and there would be no visual effects from such facilities.

Approximately 1-acre concrete batch plants and 1-acre fuel stations would be located within the work areas for Intakes 2, 3, and 5 (KOPs 15, 16, 18, 49, 54, 55, and 256), 38-acre concrete batch plant and a 1-acre fuel station near the intermediate forebay north of Twin Cities Road (KOP 115), 30-acre concrete batch plant and a 1-acre fuel station near the RTM area south of SR 12 (KOP 98), and a 40-acre concrete batch plant on an RTM area west of Clifton Court Forebay (KOP 101), and a 1-acre fuel station north of the pumping plants at the Clifton Court Forebay (see Mapbook Figure M3-4 in Chapter 3, *Description of Alternatives*). Concrete batch plants would have visible features that are likely to include silos to hold materials for mixes, material unloading areas and storage piles, concrete truck loading areas and washouts, liquid storage tanks, conveyors, heavy equipment and trucks for material movement and transport, lighting, and mixing equipment. Built features would be largely made of steel that is painted. Batch plants would convert agricultural lands to industrial facilities. Fuel stations may have aboveground storage tanks that are painted and fuel pumps that would be visible and would convert agricultural lands to industrial facilities.

Construction of a concrete batch plants and fuel stations at Intakes 2, 3, and 5 would have the greatest effect because construction would take place immediately adjacent to SR 160. Construction of the concrete batch plant and fuel station on Twin Cities Road would also have a substantial effect because it would be in proximity to a roadway that is highly traveled by sensitive visual receptors. Construction of a concrete batch plant and fuel station near SR 12 would introduce large industrial structures and facilities in and area that is agricultural and where there are only a few buildings. The primary viewers of this area are roadway travelers on SR 12 that pass by the site at highway speeds that would have intermittent visual access of temporary construction activities that would last less than 2 years. However, the nearby residences located north of SR 12, along the levee, would have views of longer duration. Construction of a concrete batch plant and fuel station near Clifton Court Forebay would be located in close proximity to similar industrial looking facilities that are associated with the forebay and existing transmission lines that course the area. The primary viewers of this area are roadway travelers on Byron Highway that pass by the site at highway speeds that would have intermittent visual access of temporary construction activities that would last less than 2 years. Once the project is complete, these facilities would be removed.

Construction of the concrete batch plants and fuel stations would introduce heavy equipment and vehicles that would be readily visible throughout construction of the facilities and have the potential to create dust clouds that would attract attention from visual receptors and reduce the availability of short-range views. As set forth in Chapter 22, *Air Quality and Greenhouse Gases*, the BDCP proponents have identified environmental commitments (Appendix 3B, *Environmental Commitments, AMMs, and CMs*) to reduce emissions of construction-related criteria pollutants, including basic and enhanced fugitive dust control measures and measures for entrained road dust that would help to reduce the creation of dust clouds that would negatively affect short-range views. Once construction of the concrete batch plants and fuel stations are complete, these structures would be immediately and prominently visible in the foreground from surrounding vantages. Agricultural lands would be converted to industrial structures and facilities that conflict with the existing forms, patterns, colors, and textures associated with agricultural lands. Converting agricultural lands to industrial facilities, especially those in close proximity to SR 160, is considered adverse.

Head of Old River Operable Barrier

The operable barrier at the head of Old River would be constructed to control fish passage. It would include a fishway approximately 40 feet long and 10 feet wide, constructed of reinforced concrete. Construction of the barrier would last up to 3 years and primarily take place Monday through Friday for up to 24 hours per day. The large structure across the existing channel would limit physical and visual access to views of the horizon beyond. Mount Diablo would still be visible over the structure. Because of the long-term nature of construction, proximity to sensitive receptors, removal of vegetation, and changes to topography through grading, this effect is considered adverse.

Summary

***NEPA Effects*:** The primary features that would affect the existing visual quality and character under Alternative 4, once the facility has been constructed, would be Intakes 2, 3, and 5, the intermediate forebay, CCF pumping plants, and expanded Clifton Court Forebay, resulting landscape effects left behind from tunnel work and RTM areas, the operable barrier, SR 12 interchange, and transmission lines. These changes would be most evident in the northern portion of the study area, which would undergo extensive changes from the permanent establishment of large industrial facilities and the supporting infrastructure along and surrounding the segment of the Sacramento River from Clarksburg to north of Courtland where the intakes would be situated.

Overall, construction would take 9-14 years, and the intensity of the activities in contrast to the current rural/agricultural nature of the area would be substantial. Construction of Intakes 2, 3, and 5 and the accompanying intake structure and sedimentation basins, CCF pumping plants, shaft sites, tunnel work areas, and RTM areas would introduce visually dominant and discordant features in the foreground and middleground views, and these elements would be very noticeable to all viewer groups, even with perimeter landscaping at the intakes and the CCF pumping plants. A shaft site, tunnel and safe haven work area, and transmission lines would be visible from SR 4. While not officially designated state scenic highways, and therefore not discussed under *Impact AES-3: Permanent damage to scenic resources along a state scenic highway from construction of conveyance facilities*, this road is a San Joaquin County Scenic Route (see *San Joaquin County* in Section 17.2.3.2, *County and City General Plans*). These features would detract from the visual quality of views from these routes.

After construction, areas surrounding the intakes, operable barrier, tunnel work areas, RTM areas, and shaft sites may be denuded of vegetation for a short period of time until the landscaping plans designed under WREM No. 30a are implemented. Once installed, the landscape would still appear to be denuded of vegetation or to have little vegetative cover because immature landscaping would be similar in appearance to tilled or newly planted agricultural fields. The sites would be in a transitional state, and over a period of a few years, plant species would mature and vegetation would recolonize the sites. These changes would happen in an area known for its open space, agricultural landscapes, and rural characteristics and would segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and eliminate valued visual resources. The effects of permanent access roads on visual resources would not be adverse. The effects of shaft site pads and access hatches on the existing scenic character may be adverse. Operation of the intakes, the visual presence of large-tunnel work and RTM area landscape effects, and transmission lines would result in adverse effects on the existing visual character. In addition, construction of all of these features has the potential to negatively affect wildlife viewing and the overall enjoyment of scenic views in the study area. Therefore, because of the long-term nature of construction combined with the proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this overall effect of conveyance facility construction on existing visual quality and character is considered adverse. Mitigation Measures AES-1a through AES-1g are available to address visual effects resulting from construction of Alternative 4 water conveyance facilities.

CEQA Conclusion**:** Construction of Alternative 4 would substantially alter the existing visual quality and character present in the study area. The long-term nature of construction of the intakes, CCF pumping plants, operable barrier, tunnel work and RTM areas, shaft sites, barge unloading facilities, and operable barrier; presence and visibility of heavy construction equipment; proximity to sensitive receptors; relocation of residences and agricultural buildings; removal of riparian vegetation and other mature vegetation or landscape plantings; earthmoving and grading that result in changes to topography in areas that are predominantly flat; addition of large-scale industrial structures (intakes, sedimentation, basins, and related facilities); remaining presence of large-scale tunnel work and RTM area landscape effects; and introduction of tall, steel transmission lines would all contribute to this impact.

Overall, construction would last 9–14 years and would change the existing visual character in the vicinity of project elements from those of agricultural, rural residential, or riparian and riverine settings to areas involving heavy construction equipment, temporary construction structures, work crews, other support vehicles and other activities that would modify and disrupt short- and long-range views. These activities would be disruptive to viewers. Once construction is complete, the alternative would result in the placement of large, industrial concrete and steel intake structures, CCF pumping plants, fencing, and other similar anthropogenic features where none presently exist. Because of the landscape sensitivity and visual dominance of these features, these changes would result in reduced scenic quality throughout the study area (see Section 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Thus, Alternative 4 would result in significant impacts on the existing visual quality and character in the study area.

Mitigation Measures AES-1a through AES-1g would partially reduce impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a tunnel work and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, Alternative 4 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

BDCP proponents will make site-specific design decisions to locate new permanent transmission lines and access routes to minimize effects on vegetation where feasible. Design considerations will include the following actions.

- Working with the design engineer, site-specific location adjustments will be identified to avoid adversely affecting mature tree and shrub groupings to the extent feasible and to avoid creating large, linear swaths of vegetation clearing through the construction of new transmission lines and access routes.
- Where new transmission lines are located near trees along designated scenic route portions of SR 160 and River Road, the construction contractor will be required to utilize selective pruning techniques to avoid hard pruning of tree canopies that would negatively affect those scenic resources and views along those routes.
- Existing transmission corridors will be evaluated for placement of the new transmission lines to avoid creating new transmission corridors to the extent feasible.
- Undergrounding transmission lines.

Implementation of this measure will minimize the effects on existing visual quality and character that would result from removal and pruning of mature vegetation within proposed new transmission lines and access road routes. This measure will provide for a reduction in the number of trees and shrubs removed from installation of transmission lines and development of access roads.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

To reduce the impact on sensitive receptors from the change in existing visual quality, the BDCP proponents will install temporary visual barriers at the construction work areas with direct line-of-sight fromsensitive receptors. Barriers will be placed to obscure views of work areas where construction activity and equipment would be disruptive and lower the existing visual quality. These efforts will include the following actions and performance standards.

- Visual barriers will be installed to minimize sensitive receptors (i.e., residents and recreational areas) views of construction work areas.

- The visual barriers will be placed to protect residents and recreational areas that are located within 0.25 mile of a BDCP-related construction site and where views to the work areas represent a significant visual impact.
- The visual barrier may include chain link fencing with privacy slats, fencing with windscreen material, cofferdam, silt fence, wood or concrete barrier/soundwall, or other similar barrier.
- The visual barrier will be a minimum of 6 feet high to help to maintain the privacy of residents and block long-term ground-level views toward construction activities.

While the visual barriers would introduce a visual intrusion, they would greatly reduce the visual effects associated with visible construction activities and screening construction activities and protecting privacy is deemed desirable. The visual barriers are an effective means of reducing the visibility of active construction work areas, thereby minimizing the impact on existing localized visual quality.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

The BDCP proponents will develop and implement a spoil/borrow and RTM area management plan consistent with the "Disposal and Reuse of Spoils, RTM, and Dredged Material," in Appendix 3B, *Environmental Commitments, AMMs, and CMs*, to reduce the extent of negative visual alteration of existing visual quality or character of spoil, and especially borrow, sites from construction through remediation of terrain, revegetation, and other practices as described below. The purpose of this measure is to prevent flattened, highly regular, or engineered slopes which create visual discordance and incongruence from native topography and to re-establish natural looking vegetative communities that are indigenous to the project environment. The exception to grading flattened, regular sites is if the intended use of the site is agriculture. This mitigation measure will complement and is related to activities described under Mitigation Measure SOILS-2b, Chapter 10, *Soils*.

Prior to construction mobilization, the BDCP proponents will develop a management plan that identifies site-specific measures to remediate exposed soil and terrain to make it suitable for planned development, agriculture, or reuse as natural habitat and to mitigate visual effects. Existing information, such as topographical maps, vegetative surveys or records, and historical and existing photographs, that show preexisting, site-specific (or reference site) conditions prior to the conversion to agriculture will be evaluated and used as tools for restoring disturbed sites. Where appropriate, the management plan will consider recreational or mixed uses. In general, however, the majority of the sites will be evaluated for restoration to native habitat due to the amount of terrain alteration and vegetation and habitat loss resulting from construction of the water conveyance facilities. At a minimum, the management plan will meet the following performance standards.

- Plantings will be native and indigenous to the area, and no invasive plant species will be used under any conditions. If indigenous plantings are not available, DWR will coordinate with CDFW to use a mutually acceptable plant mix palette.
- In areas to be used for agriculture, the management grading plan will mimic the preexisting landform pattern to the greatest degree possible, given geotechnical or environmental constraints.

- In areas of habitat restoration, the terrain will be designed and graded to be undulating, avoiding large, flat-sloped areas.
- In areas of proposed development, a combination of terrains may be implemented to encourage visual variety.
- Terrain will be designed and graded to be rounded, avoiding sharp angles and steep or abrupt grade breaks except for areas involved with agriculture.
- Special attention will be paid to transitions between undisturbed and disturbed terrains to ensure that the transition appears as natural as possible and to blend the lines between the two for a natural, organic appearance.
- The site will be visually surveyed prior to any vegetation removal for the presence of rock outcroppings, downed trees, or similar features.
- Any restoration with trees will be placed to mimic natural patterns during management to provide visual congruity once revegetation plantings mature and to restore the habitat values they provide.

Implementation of this measure would be expected to result in successful management of borrow/spoils and RTM areas, thereby reducing the overall impact on the visual quality in the study area.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

The BDCP proponents will restore barge unloading facility sites once the facilities are decommissioned and removed to minimize the impact on visual quality and character at these sites. Restoration of the decommissioned sites will meet the following performance standards.

- Grading or re-contouring disturbed terrain.
- Replacement plantings will be installed in areas where vegetation was removed.
    - Replacement plantings will be native and indigenous to the area. If indigenous plantings are not available, DWR will coordinate with CDFW to use a mutually acceptable plant mix palette.
    - No invasive plant species will be used under any conditions.

Implementation of this measure will result in restoration of the barge unloading facility sites.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

The BDCP proponents will use aesthetic design treatments, where and to the extent feasible, to minimize the impact on existing visual quality and character in the study area associated with the introduction of water conveyance structures.

The BDCP proponents will evaluate similar, local well-designed water conveyance structures, including those with historic value and use these features as design precedent to develop designs for the intake facilities, pumping plants, control structures, fish screens, operable barriers, and bridges, so that the resultant design will complement the natural landscape, be aesthetically pleasing, and minimize the effects of visual intrusion of the BDCP facilities on the landscape, to the extent feasible.

Where no local design precedent exists, the BDCP proponents will research structure designs outside the local area. For example, the Freeport Regional Water Project intake facility design incorporates aesthetic design treatments that create a landmark feature in the landscape. The BDCP proponents will consider design details to ensure that all intake structures are complementary of one another so that these facilities do not create further visual discordance in the landscape.

The following minimum performance standards will apply.

- The height of new structures will be minimized as feasible. In addition, the visual intrusion of ancillary features (e.g., antennas or other equipment) will be minimized through proper siting.
- New structures will be painted with a shade that is two to three shades darker than the general surrounding area, unless aesthetic design treatments indicate another color selection with the intent to specifically improve aesthetics. Otherwise, colors shall be chosen from the BLM Standard Environmental Colors Chart CC-001: June 2008. Because color selection will vary by location, the BDCP proponents, working with the facility designers, will employ the use of color panels evaluated from key observation points during common lighting conditions (front versus backlighting) to aid in the appropriate color selection. The BDCP proponents will select colors for the coloring of the most prevalent season. Panels will be a minimum of 3 by 2 feet in dimension and will be evaluated from various distances, but within 1,000 feet, to ensure the best possible color selection. Refer to http://www.blm.gov/bmp for more information on this technique and other best management practices and techniques for visual screening.
    - All paints used for the color panels and structures will be color matched directly from the physical color chart, rather than from any digital or color-reproduced versions of the color chart.
    - Paints will be of a dull, flat, or satin finish only. Appropriate paint type will be selected for the finished structures to ensure long-term durability of the painted surfaces.
    - The BDCP proponents will maintain the paint color over time.
- In the design of permanent transmission poles and chain link fencing, DWR will consult with utility providers on incorporating the following design measures.
    - Transmission poles and towers will be painted or powder coated with colors selected using the BLM selection techniques to make the structures recede into the visual landscape.
    - Chain link fences will be plastic or vinyl coated with colors selected using the BLM selection techniques to make chain link fences to appear more see-through than non-treated, light grey fencing that acts as a visual barrier to a degree.
    - Finishes will be selected for their ability to achieve the correct color selection, durability, and environmental safety.
- The BDCP proponents will implement aesthetic design features at concrete or shotcrete structures that are highly visible to the public. These features may include mimicking natural material (e.g., stone or rock surfacing) and integral color, in the same theme, to reduce visibility and to better blend with the landscape.

- The BDCP proponents will evaluate bridge crossing designs using lattice steel, consistent with other bridges in the Delta. Such a structure would be less visually confining than concrete structures, provide better visual access to points beyond, allow light to travel through the structure, and may appear less like a visual barrier within the landscape.
- The BDCP proponents will ensure that visible pipelines, guardrails, and signs will be of a material or color that helps surfaces to blend better with the surroundings. These elements will be constructed with low-sheen and non-reflective surface materials to reduce potential for glare, and the use of glossy paints or surfaces would be avoided.

Implementation of this measure and application of the aesthetic design treatments for alternative structure would help minimize the impact on visual quality from the development of the water conveyance structures in the study area, using techniques that serve to make the structures blend into the surrounding environment, to the extent possible. However, the overall change in visual character would still be substantial because physical structures of this scale do not presently exist.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

The BDCP proponents will locate concrete batch plants and fuel stations in construction work areas away from sensitive visual resources (i.e., state scenic highways) and receptors to minimize the impact on visual quality. In addition, these sites will be restored after construction to minimize the long-term impact on localized visual character. The relocation approach for the individual facilities is described below. The BDCP proponents will incorporate these facility location changes into the design plans prior to construction.

- Locate the concrete batch plants and fuel stations that are proposed to be adjacent to SR 160, near the intakes, so that these operations are set back from the state scenic highway as far as site conditions allow. These features will be located toward the east side of the intakes, in closer proximity to the shaft sites.
- Structures associated with the concrete batch plants and fuel stations will be designed, to the extent feasible to be low-profile to reduce their apparent scale and visual prominence within the viewshed.
- In addition, the structures and storage piles associated with the concrete batch plants and fuel stations for the canal alignment just south of Snodgrass Slough and on Webb Tract north of False River will be set as far west from the waterways, as possible.
- Structures and storage piles associated with the concrete batch plants and fuel stations east of Byron Highway will be set back off of the highway as much as possible and toward the northern edge of the proposed sites. The same principles will be applied to the concrete batch plant and fuel station along Willow Point Road, for the western canal alignment.
- Locate the concrete batch plant and fuel station proposed between Intakes W3 and W4 to an arrangement opposite each other along the agricultural access road, instead of adjacent to one another. They will be placed in closer proximity to the existing development at this location so that they appear to be more of a continuation of existing development.
- All concrete batch plant and fuel station sites will be restored to preconstruction conditions once the facilities are decommissioned and removed.

- All disturbed terrain will be restored.
- Replacement plantings will be installed in areas where vegetation was removed.
    - Replacement plantings will be native and indigenous to the area or will match surrounding agricultural plantings.
    - No invasive plant species will be used under any conditions.

Implementation of this measure will minimize the impact on visual quality from the construction and use of the concrete batch plant and fuel station facilities. In addition, this measure will help restore the concrete batch plant and fuel station locations to a preconstruction condition.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

The BDCP proponents will apply additional landscape treatments and use best management practices as part of implementing the project landscaping plan (as set forth by DWR's WREM No. 30a requirements) to restore and maintain local character, improve aesthetics, and reduce the visual scale of the proposed water conveyance elements in the study area.

In addition to the guidance set forth in DWR's WREM No. 30a, *Architectural Motif, State Water Project,* in those aesthetic areas significantly impacted by the project, the BDCP proponents will utilize landscaping to minimize such impacts by relying on one or more of the following: street trees, welcome signs, decorative lighting, and other streetscape design techniques. In addition, native trees, shrubs, and grasslands native to the study area will be planted to preserve the visual integrity of the landscape, provide habitat conditions suitable for native vegetation and wildlife, and ensure that a maximum number and variety of well-adapted plants are maintained.

The following practices will be adhered to in implementing the project landscaping plan.

- Design and implement low impact development (LID) measures that disperse and reduce runoff by using such features as vegetated buffer strips between paved areas that catch and infiltrate runoff, bioswales, cisterns, and detention basins. In addition, the BDCP proponents will evaluate the potential use of pervious paving to improve infiltration and to reduce the amount of surface runoff from entering waterways and the stormwater system. However, LID measures will not be used where infiltration could result in adverse environmental effects.
- Vegetative accents and screening will be used to aid in a perceived reduction in the scale and mass of the built features, while accentuating the design treatments that will be applied to built features. Plant selection will be based on its ability to screen built features and provide aesthetic accents.
- Realignments of SR 160 and South River Road will be landscaped in a manner that visually ties the new alignment in to the old alignment by implementing roadside landscaping that helps achieve a continuation of the existing roadside vegetation while screening built features.
- Landscape berms, combined with tree and shrub plantings will be used to help screen built features from existing viewpoints by allowing for additional height. The landscape berms will be constructed in a manner that has a more natural form, as opposed to one that is

highly regular and levee-like. The berms will be seeded with a native meadow erosion control seed mix and be planted to comply with directions set forth below.

- Plantings will be native and indigenous to the area, and no invasive plant species will be used under any conditions. If indigenous plantings are not available, BDCP proponents will coordinate with CDFW to use a mutually acceptable plant mix palette.
- The species list will include trees, shrubs, and an herbaceous understory of varying heights, as well as both evergreen and deciduous types. Plant variety will increase the effectiveness of revegetated areas by providing multiple layers, seasonality, diverse habitat, and reduced susceptibility to disease.

- The use of native grass and wildflower seed in erosion control measures will be required where such a measure would improve aesthetics.
  - Wildflowers will provide seasonal interest to areas where trees and shrubs are removed or grading has occurred.
  - Species will be chosen that are native and indigenous to the study area and for their appropriateness to the surrounding habitat. For example, upland grass and wildflower species will be chosen for drier, upland areas and wetter grass species will be chosen for wetland areas.
  - If not appropriate to the surrounding habitat, wildflowers will not be included in the seed mix.
  - Under no circumstances will invasive plant species be used in any erosion control measures.
- Under no circumstances will any invasive plant species be used at any location.
- Vegetation will be planted within 2 years following project completion.
- Design of the landscaping plan will maximize the use of planting zones that do not need irrigation, such as seeding with a native grassland and wildflower meadow mix, which reduces or eliminates the need for a permanent irrigation system.
- If an irrigation system is required, an irrigation and maintenance program will be implemented during the plant establishment period and carried on, as needed, to ensure plant survival. Areas that are irrigated will use a smart watering system that evaluates the existing site conditions and plant material against weather conditions to avoid overwatering of such areas. To avoid undue water flows, the irrigation system will be managed in such a manner that any broken spray heads, pipes, or other components are fixed within 1–2 days, or the zone or system will be shut down until it can be repaired.
- All measures prescribed above to screen facilities will not act to degrade or eliminate scenic vistas or be designed in a manner that negatively affects views from scenic roadways.
- These measures will not be implemented where implementation would constitute an adverse effect on sensitive habitats or sensitive species.

Implementation of this measure will reduce the effects on local visual quality from introduction of the water conveyance facilities.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

NEPA Effects: Scenic vistas are mapped and included in Appendix 17D, Figure 17D-1. Once built, permanent access roads and shaft sites would not adversely affect views available from scenic vistas. Permanent access roads generally follow ROWs that have already previously been cleared to serve as agricultural access routes and would be improved for BDCP-related activities. Because the permanent access routes follow preexisting routes, they would not result in perceived visual changes from scenic vistas.

Shaft sites would be located at Intakes 2, 3, and 5; the intermediate forebay; and CCF pumping plants. Following completion of construction, shaft site pads would remain in place and could be seen from vistas along Lambert Road (KOP 86), North Staten Island Road (KOP 258), SR 12 (KOP 98), and SR 4. Under Alternative 4, the shaft site hatches could be larger than under Alternative 1A; however, the view of the site after construction would not differ substantially. Mitigation Measure AES-1e is available to address this effect.

The primary features that would affect scenic vistas subsequent to completion of construction of Alternative 4 are Intakes 2, 3, and 5, the intermediate forebay and expanded Clifton Court Forebay, the CCF pumping plants, landscape effects remaining from tunnel work and RTM areas, and permanent transmission lines. These features would introduce visually dominant and discordant features in the foreground and middleground views in vistas that would be very noticeable to all viewer groups. Scenic vistas that would be affected are primarily views from roadways on levees and bridges that offer elevated vantages and views that extend from the foreground to the background of the surrounding landscape in areas with low to high landscape sensitivity levels. In addition, scenic vistas are available from ground-level views where vegetation, infrastructure, and atmospheric haze do not limit and preclude such views. Alternative 4 would result in a very noticeable effect on viewer experiences from scenic vista opportunities along public roads (SR 160 and CH E9). In addition, the CCF pumping plants would be very visible to residents accessing Kings Island via Clifton Court Road that would have a direct line of site toward the facility. Major landform alterations would occur and all facilities would require removal of visually important features such as mature trees and shrubs and agricultural land, which are scenic elements that contribute to the viewing experience from scenic vistas.

Intakes 2, 3, and 5 would introduce large, industrial concrete and steel intake structures, large intake landforms, sedimentation basins, landscaping, fencing, and other similar anthropogenic features and into rural vistas with riparian, riverine, and agricultural characteristics. KOPs falling within scenic vistas that could be affected by Intakes 2, 3, and 5 include KOPs 15, 18, 20, 34 (Figure 17-86a, b), and 45. Each intake facility would consist of the intake structure along the river, large sedimentation basins, storage buildings, fencing, perimeter landscaping, and ancillary site features. The intake structure on the river would be 1,259 (Intake 3) or 1,667 (Intakes 2 and 5) feet long (total structure length–intake and transitions) by 40 feet wide and rise 46 to 58 feet from the river bottom to top of the structure. The intake facility would be built on a ground plane that is elevated approximately 30 feet above the surrounding landscape to avoid flooding. The intake storage and electrical buildings are approximately one to one and a half stories tall. Landscaping that would be incorporated into the facility would help to slightly improve views. As seen in Figure 17-85, *Existing and Simulated Views of Intake 2 East from South River Road*, the removal of a substantial amount of riparian vegetation along the east bank provides an unobscured view of the intake facility and associated features making the intake facility the prominent visual feature in the landscape. A substation would be introduced at the intake facility where none presently exists. The intake storage and electrical buildings introduces structures that are scaled to surrounding buildings and their darker coloring would help them recede into view. The large concrete intake adds a monotone solid color mass and the red gantery cranes stand out in a landscape where the natural colors are earth-tones and more muted. Overall, the existing vista from KOP 256 on SR 160 toward Intake 2 would be substantially impaired by vegetation removal and introduction of the on-bank intake and the Scenic Quality Rating would be reduced from a **C** to an **F**. A reduction in the Scenic Quality Rating associated with Intake 2 is representative of the effects that could occur to other views associated with intakes through the removal of vegetation, obscuring and limiting views beyond the foreground, and introducing large industrial features into a rural landscape and this effect would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

As seen in Figure 17-86a, *Existing and Simulated Views of Intake 3 East from SR 160 in January 2012*, a substantial amount of riparian vegetation would be removed along the east bank that opens up the vista and the large, raised intake landform would be visually prominent, but perimeter landscaping would aid in reducing the raised landform's apparent scale. However, the large, raised landform would still be a focal point and visually discordant in scale and mass to the surrounding rural character within the vista. The scale of the intake facility buildings are in keeping with existing surrounding buildings, and the darker coloring would help them to recede into view, but they would be located at a much higher elevation than surrounding buildings, on the large raised, human-made landform. When compared to Figure 17-76a that shows Intake 3 East for Alternatives 1A, 1B, 2A, 2B, 6A, 6B, 7 and 8 (PTO alternatives), the intake pad would appear to be smaller because of the perimeter landscaping that reduces its apparent scale under this alternative than for the PTO alternatives and the exclusion of a pumping plant under this alternative decreases the magnitude of visual effects from this vantage, when compared to other PTO alternatives. In addition, because of the perimeter landscaping, the intake pad appears to be somewhat of a visual continuation of the SR 160 levee from this vantage and the intake buildings are not as noticeable because they are partially screened by trees. They would be more visible in the winter when trees are dormant. While steel 230 kV transmission lines would not be introduced under this alternative, there would be a substation that would also be visible and would add to the industrial look of the intake facilities and detract from the existing rural character. Overall, even with perimeter landscaping, the existing vista from KOP 34 (Figure 17-86a, b) on SR 160 toward Intake 3 would be substantially impaired by vegetation removal and introduction of the raised intake landform and associated structures and the Scenic Quality Rating would be reduced from a **D** to an **E**. A reduction in the Scenic Quality Rating associated with Intake 3 is representative of the effects that could occur to other vistas through the removal of vegetation, obscuring and limiting views beyond the foreground, and introducing large landforms and industrial features into a rural landscape and would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). However, as shown in Figure 17-86b, *Existing and Simulated Views of Intake 3 East from SR 160 in July 2013*, fast-growing poplar or cottonwood trees that were newly planted in January 2012 have since grown and act to obscure large portions of the intake pad and substation. While the substation would not be as noticeable, the large landform would still be visually discordant in scale and mass to the surrounding rural character within the vista and the Scenic Quality Rating would be reduced from a **D** to an **E**. Note that, over time, the trees will continue to grow and views of Intake 3 from KOP 34 could be further limited.

Figure 17-77, *Existing and Simulated Views of Intake 2 West from SR 160*, shows an intake associated with the west alignment. While this simulation includes a pumping plant, this view is representative of how an on-bank intake along the river under this alternative would look from CH E9 and could affect vista views from that roadway. The conversion of the riverbank that is grassy with riparian vegetation to the industrial looking on-bank intake is a stark visual and color contrast against the more natural colors and textures of a vegetated riverbank that is absent of structures. It also adds monotone solid color mass into a landscape where the natural colors of the landscape are earth-tones and more muted. The on-bank intake would detract from the visual quality of vista views. The introduction of tall, steel 230 kV transmission lines visually contrasts to existing views of wooden utility poles. In addition, at a closer distance, views of available sky would be interrupted by the transmission lines. Overall, the existing vista from KOP 15 on SR 160 toward Intake 2 would be substantially impaired by vegetation removal and introduction of the intake and the Scenic Quality Rating would be reduced from a **C** to an **E**. A reduction in the Scenic Quality Rating associated with Intake 3 is representative of the effects that could occur to other vistas through the removal of vegetation, obscuring and limiting views beyond the foreground, and introducing large landforms and industrial features into a rural landscape, and this effect would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

Changes to vistas associated with the intakes would be more apparent the closer the viewer is in relation to the intake. As illustrated in the simulations above, the sedimentation basins and ground level views of the whole intake facility (refer to Figures 3-19a and 3-20a in Chapter 3, *Description of Alternatives*) are not available from a distance. However, when viewers are in close proximity to the intake and intake facilities, primarily when traveling by on SR 160 or on the Sacramento River, they would have more direct and up close views of the facility, in its entirety. Instead of tilled or vegetated agricultural lands seen in vista views from SR 160, there would be large areas of pavement and visible features associated with the intake facility. The overall size of the intake and intake facility can be understood by comparing their sizes to the vehicles modeled in the Figure 3-19a rendering in Chapter 3. On land, the perimeter of the facility would be fenced, with secured gate access from SR 160, but the sedimentation basins would be visible through this fencing that would limit vista views. In addition, the basins would be large-scale engineered water bodies with highly regular shapes and forms would draw attention toward them, detracting from the focus of vista views. While perimeter landscaping would help to reduce the apparent scale of the facility and improve project aesthetics, it would still act to limit vista views once it matures and this effect would be adverse.

Scenic vistas that would be affected by the intermediate forebay include those available from Twin Cities Road (KOPs 115 and 257 [Figure 17-87]). The intermediate forebay would be visible in the foreground from both of these scenic vistas, would encompass a 243-acre area, and include a control structure to channel water to the tunnels. While the water surface of this forebay would not be visible, it would convert agricultural lands to a large, geometrically shaped levee embankment system that would conflict with the existing forms, patterns, colors, and textures associated with agricultural lands. However, the majority of views would be from the ground-level and would be of the berms that would prevent views of the water surface within the vista. As seen in Figure 17-87, *Existing and Simulated Views of Intermediate Forebay from Twin Cities Road*, the scenic vista across agricultural fields from Twin Cities Road is fairly open but contains existing transmission lines. As for Alternative 1A, under Alternative 4, the forebay embankments would be tall enough to limit views of the tree line on the horizon. The intermediate forebay embankments would add a man-made visual massing and the embankments would have a visible geometric shape immediately adjacent to the roadway. Overall, the existing vista from KOP 257 on Twin Cities Road toward the intermediate forebay would alter and reduce the available views of agricultural lands and foreground views and would reduce the Scenic Quality Rating from an **E** to an **F**. This effect would be adverse when seen from Twin Cities Road. The expanded Clifton Court Forebay would have a similar or more prominent effect on scenic vistas available from Lindemann Road depending on location. Views from Lindemann Road that are closer to Herdlyn Road would be adversely affected because they would be in closer proximity to and would have more direct views of the forebay (KOP 107). The embankments would be prominent features that would replace agricultural fields and the water surface could be visible. Views from Lindemann Road that are closer to Rivers End Marina & Storage would be partially or fully obstructed by intervening roadside vegetation and infrastructure. The Clifton Court Forebay would be expanded by 600 acres. However, while it would convert a large area of agricultural land, the forebay in this location would not have an adverse effect on the landscape due to the predominance of the existing adjacent Clifton Court Forebay and other water conveyance features.

The pumping plants at Clifton Court Forebay would affect foreground vista views seen by residents accessing Kings Island via Clifton Court Road and background vista views from the rolling foothills, Bethany Reservoir State Recreation Area, and California Aqueduct Bikeway that are located to the southwest. Viewers on Clifton Court Road would have a direct line of site toward the facility, which would be built on elevated landform directly west of West Canal and south of Kings Island. The proposed pumping plants would each be 85 feet tall, at the top of the domed roof, and 182 feet in diameter. The facility would receive perimeter landscaping similar to intake structures but it would take several years for plantings to mature and provide screening. Therefore, the pumping plant would draw focus and become a focal point in vista views from Clifton Court Road and would limit views beyond because of the elevated landform, large pumping plants, electrical stations, substation, water treatment plant, and other associated features. However, the darker coloring of the proposed pumping facility and distance would enable the pumping facility at Clifton Court Forebay to blend with the landscape and not stand out enough in the background to negatively affect vista views available from the foothills, recreation area, or bikeway. Effects to scenic vistas would be adverse because the pumping plant facility would become a focal point in vista views available from Clifton Court Road and limit vista views from this vantage.

The tunnel work and RTM area north of Intake 2 along SR 160 (KOP 15) and the RTM areas north of Dierssen Road, north and south of Twin Cities Road (KOP 115), west of the intermediate forebay, and south of SR 12 (KOP 98) would result in a contiguous, large-scale landscape effect that would be included within the scenic vistas available from adjacent roadways. Alterations at these locations would result in sunken or elevated landforms that would be introduced into a landscape that is currently predominantly flat. These features would be visually discordant with the area's existing forms, patterns, colors, and textures associated with views from scenic vistas of agricultural lands in the study area.

Planned and unplanned safe haven work areas would be in use only temporarily and then restored once maintenance is complete. Therefore, it is expected that there would no permanent adverse visual effects to scenic vistas associated with safe haven work areas. However, shaft sites would be visible within vistas including the shaft sites by the intakes, north of Lambert Road (KOP 86), and on Staten Island would result in alterations at these locations and would result in elevated landforms that would be introduced into a landscape that is currently predominantly flat. These features would be visually discordant with the area's existing forms, patterns, colors, and textures associated with views from scenic vistas of agricultural lands in the study area. Shaft sites located south of SR 12 (KOP 98) and north of SR 4 would have the same effect; however, these would mostly be visible to roadway users on local roadways, and views of construction activities would be fleeting as travelers on these roadways travel by the site. Construction activities associated with the shaft sites may constitute an adverse effect on visual resources due to the physical introduction of these features and the duration of time that they would be visible in the landscape. Once construction is completed, the shaft site construction pads would remain in place and the launch and retrieval shafts would be covered with earth. This effect would be adverse. Construction of permanent access roads would not generally affect scenic vistas. However, the intersection improvement along SR 12 would introduce a new transportation structure that would limit views beyond when traveling in either direction. Because the terrain is very flat, the bridge would obscure views of Mount Diablo on approach to the bridge when traveling west, and this would constitute an adverse effect on scenic vistas.

Most of the transmission lines would follow access roads constructed for the BDCP conveyance facilities or other existing access roads and roadways that are outside the immediate area (KOPs 15, 16, 18, 19, 20, 26, 30, 34, 41, 42, 49, 54, 72, 73, 74, 86, 98, 103, 106, 107, 257, and 258). Once the proposed 230 kV electrical power transmission lines are constructed, tall steel lattice structures that would be highly visible landscape features would contrast strongly with their surroundings. The 69 kV electrical power transmission lines would also be larger than wood-poled transmission lines commonly seen in the Delta. While wood-poled transmission lines are part of most existing views, new 69 and 230 kV transmission lines and their cleared ROWs would adversely affect the existing visual character by introducing large towering structures in a linear pattern that appear to march through the landscape.

Besides the SR 12 intersection bridge, the effects of permanent access roads on scenic vistas would not be adverse. The effects of shaft site pads and access hatches on scenic vistas could be adverse. The large scale of intakes and intake landforms, the visual presence of large-scale tunnel work and RTM area landscape effects, the new operable barrier at the head of Old River, and the presence of new transmission lines may result in adverse effects on scenic vistas. Overall, effects on scenic vistas associated with Alternative 4 would be adverse. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and landforms, pumping plants, large-scale tunnel work and RTM area landscape effects, shaft sites, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping with existing landscapes or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measure AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal and pruning of trees and shrubs where feasible, developing and implementing a tunnel work and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Impacts on scenic vistas associated with structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 4 would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

***NEPA Effects*:** Conveyance facilities under Alternative 4 would result in an overall noticeable effect on viewers relative to their current experience and enjoyment of the study area's scenic resources along SR 160 and River Road, where the landscape sensitivity level is high (KOPs 15, 18, 20, 34 [Figure 17-86a, b], 45, and 54). All three intakes (2, 3, and 5), and the tunnel work and RTM area north of Intake 2 would be immediately and prominently visible in the foreground from SR 160, including construction activities described in Impact AES-1. These conveyance facility components would introduce visually dominant and discordant features into vistas, and these elements would be very noticeable to all viewer groups.

As seen in Figure 17-85, *Existing and Simulated Views of Intake 2 East from South River Road*, the removal of a substantial amount of riparian vegetation along the east bank provides an unobscured view of the intake facility, and associated features making the intake facility the prominent visual feature in the landscape. A substation would be introduced at the intake facility where none presently exists. The intake storage and electrical buildings introduces structures that are, similar in scale to surrounding buildings and their darker coloring would help them recede into view. The large concrete intake adds a monotone solid color mass and the red gantery cranes stand out in a landscape where the natural colors are earth-tones and more muted. Overall, the existing vista from KOP 256 on SR 160 toward Intake 2 would be substantially impaired by vegetation removal and introduction of the on-bank intake and the Scenic Quality Rating would be reduced from **C** to an **F**. A reduction in the Scenic Quality Rating associated with Intake 2 is representative of the effects that could occur to other views associated with intakes through the removal of vegetation, obscuring and limiting views beyond the foreground, and introducing large industrial features into a rural landscape and this effect would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

As seen in Figure 17-86a, *Existing and Simulated Views of Intake 3 East from SR 160 in January 2012*, a substantial amount of riparian vegetation would be removed along the east bank and the large, raised intake landform would be visually prominent of in the landscape, but perimeter landscaping would aid in reducing the raised landform's apparent scale. The scale of the intake facility buildings are in keeping with existing surrounding buildings, and the darker coloring would help them to recede into view, but they would be located at a much higher elevation than surrounding buildings, on the large raised, human-made landform. When compared to Figure 17-76a that shows Intake 3 East for Alternatives 1A, 1B, 2A, 2B, 6A, 6B, 7 and 8 (PTO alternatives), the intake pad would appear to be smaller because of the perimeter landscaping that reduces its apparent scale under this alternative than for the PTO alternatives and the exclusion of a pumping plant under this alternative decreases the magnitude of visual effects from this vantage, when compared to other PTO alternatives. In addition, because of the perimeter landscaping, the intake pad appears to be somewhat of a visual continuation of the SR 160 levee from this vantage and the intake buildings are not as noticeable because they are partially screened by trees. However, the large, raised landform would be still a focal point and visually discordant in scale and mass to the existing SR 160 levee and the surrounding rural character within the vista. The intake facility would be more visible in the winter when trees are dormant. While steel 230 kV transmission lines would not be introduced under this alternative, there would be a substation that would also be visible and would add to the industrial look of the intake facilities and detract from the existing rural character. Overall, even with perimeter landscaping, existing views from KOP 34 on SR 160 toward Intake 3 would also be substantially impaired by vegetation removal and introduction of the raised intake landform and associated structures and the Scenic Quality Rating would be reduced from a **D** to an **E**. A reduction in the Scenic Quality Ratings associated with Intake 3 is representative of the effects that would occur as a result of all intakes on SR 160 at each location through the removal of vegetation, obscuring and limiting views beyond the foreground, and introducing large landforms and industrial features into a rural landscape and this effect would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). However, as shown in Figure 17-86b, *Existing and Simulated Views of Intake 3 East from SR 160 in July 2013*, fast-growing poplar or cottonwood trees that were newly planted in January 2012 have since grown and act to obscure large portions of the intake pad and substation. While the substation would not be as noticeable, the large landform would still be visually discordant in scale and mass to the surrounding rural character within the vista and the Scenic Quality Rating would be reduced from a **D** to an **E**. Note that, over time, the trees will continue to grow and views of Intake 3 from KOP 34 could be further limited. While trees would obscure some of the views along SR 160, such as at this location, they would not do so for the entire scenic corridor.

In addition, visual changes associated with the intakes would be more apparent the closer the viewer is in relation to the intake. SR 160 would be realigned approximately 175 to 215 feet further inland at the intakes, removing direct views of the river and riparian vegetation, and altering the riverine visual experience that SR 160 is noted for. As illustrated in the simulations above, the sedimentation basins and ground level views of whole intake facility and its associated site features (refer to Figures 3-19a and 3-20a in Chapter 3, *Description of Alternatives*) are not available from a distance. However, when viewers traveling on SR 160 are in close proximity to the intake and intake facilities, they would have more direct and up close views of the facility, in its entirety. The overall size of the intake and intake facility can be understood by comparing their sizes to the vehicles modeled in the Figure 3-19a rendering in Chapter 3. The perimeter of the facility would be fenced, with secured gate access from SR 160, but the sedimentation basins would be visible through this fencing. The tops of the sedimentation basins have larger dimensions than the bottoms, which measure 660 feet long, making the visible water surface area of the basins wider than the Sacramento River. In addition, the basins would be engineered water bodies with highly regular shapes and forms associated with them. Therefore, the sedimentation basins would introduce very large, visually contrasting human-made waterbodies into a landscape where the forms of existing waterways, such as the river and nearby sloughs, are much more organic. In addition, instead of tilled or vegetated agricultural lands, there would be large areas of pavement, storage buildings, drying basins, cranes, a substation, and other site features that would appear very industrial. Perimeter landscaping would help to reduce the apparent scale of and soften views associated with the facility; however, it would take several years for landscaping to mature enough to provide benefit and the facility would still be very large in comparison to existing development within this rural landscape, and this effect would be adverse. Therefore, each intake would result in an adverse visual effect on views from SR 160 and adverse effects on SR 160 would be substantially compounded by the presence of each additional intake to dramatically alter views associated with SR 160.The tunnel work and RTM areas near Intake 2 would be visible from SR 160 and result in the removal of mature vegetation and topographical changes to areas that are presently flat. Once construction of the BDCP facilities is complete, these areas would result in a large-scale landscape effect that would also alter the agrarian visual character. Alterations at these locations would result in sunken or elevated landforms introduced into a landscape that is currently predominantly flat. These features would be visually discordant with the area's existing forms, patterns, colors, textures associated with the existing agrarian character in the study area. Accordingly, tunnel work and RTM areas would result in an adverse effect on visual resources.

Implementation of this alternative would require removal of visually important features such as mature trees and shrubs and agricultural land, which are scenic elements that contribute to the viewing experience available to travelers along scenic highways in the study area. These features would be replaced by industrial concrete and steel structures, multiple-acre mounds of dirt, earthen embankments, and paved areas associated with the intake facilities, large-scale sedimentation basins, intake landforms that are 30 feet above the surrounding landscape, fencing and security lights, a substation and cranes, and new access roads. These visual elements would conflict with the existing forms, patterns, colors, and textures along River Road and SR 160; would dominate riverfront views available from SR 160; and would alter broad views and the general nature of the visual experience presently available from River Road and SR 160 and would result in adverse effects. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these adverse effects.

***CEQA Conclusion*:** Because visual elements associated with this alternative would conflict with the existing forms, patterns, colors, and textures along River Road and SR 160; would dominate riverfront views available from SR 160; and would alter broad views and the general nature of the visual experience presently available from River Road and SR 160 (thereby permanently damaging the scenic resources along a scenic highway), these impacts are considered significant. Mitigation Measures AES-1a, AES-1c, and AES-1e would help reduce these impacts through the application of aesthetic design treatments to all structures, to the extent feasible. However, impacts on visual resources resulting from damage to scenic resources that may be viewed from a state scenic highway would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes to the visual character of a scenic highway viewshed that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, overall, this impact would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

NEPA Effects: The following NEPA effects would result from the introduction of new sources of daytime and nighttime glare and nighttime lighting.

Daytime and Nighttime Glare

BDCP conveyance facilities would result in new sources of glare if they were made of materials that easily reflect light. Intakes 2, 3, and 5 and their associated pumping plants, and facilities would create very noticeable effects relating to light and glare. Alternative 4 would result in a reduced amount of new sources of light or glare relative to Alternative 1A because there would only be three intakes instead of five, and there would not be a pumping plant at the intermediate forebay. The effects are illustrated in the simulations showing intake facilities in Figures 17-85 and 17-86, where darker building colors would help to reduce the reflectiveness of those surfaces. In addition, while vegetation that absorbs light, provides shade, and screens glare would be removed, perimeter landscaping would be installed to offset the effects of vegetation removal. The amount of glare associated with surfaces would be increased if highly glossy paints or surface treatments or highly reflective materials are used, compared to satin or flat paints or surface treatments or materials that are less reflective. Sunlight would reflect off the new water surfaces of the large-scale sedimentation basins shown in the Figure 3-19a rendering in Chapter 3, *Description of Alternatives*. The tops of the sedimentation basins have larger dimensions than the bottoms, which measure 660 feet long, making the visible water surface area of the basins wider than the Sacramento River and creating a new source of substantial glare where none presently exists. Sunlight would reflect off the new water surfaces of the forebays, creating new sources of glare where none presently exists. In addition, the use of nighttime lighting, described below, would result in nighttime glare of the lights reflecting off water surfaces. Because there are a large number of viewers in and around the waterways, intake structures, sedimentation basins, and forebay, effects associated with glare are considered adverse. Conversely, as vegetation and waterfowl become established following completion of the new forebays, some of these net visual impacts may be diminished.

Nighttime Lighting

Construction of each intake structure would take up to 4 years to complete and the pumping plant facility would take up to 12 years to complete, and construction would occur Monday through Friday for up to 24 hours per day. As discussed in Impact AES-1, dewatering near intakes, pumping plants, and certain pipeline construction areas and north of the intermediate forebay would take place 7 days per week and 24 hours per day. If evening and nighttime construction activities take place, they would require the use of extremely bright lights, and this would negatively affect nighttime views of and from the work area. Nighttime construction could also result in headlights flashing into nearby residents' homes when construction vehicles are turning onto or off of construction access routes. Proposed transmission towers would require the use of safety lights that would alert low-flying aircraft to the presence of these structures because of their height. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the transmission tower for aircraft safety. Given the height of the towers, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers.

Establishment of BDCP facilities in the Delta would require the use of safety lighting once built. Lighting equipment associated with BDCP facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels. In particular, security lighting for the intakes and their associated pumping plants and facilities would create very noticeable effects relating to increased nighttime light at those locations. As described in Chapter 3, *Description of Alternatives*, lighting would be designed in accordance with guidance given by DWR's WREM No. 30a, *Architectural Motif, State Water Project*, and through coordination with local agencies through an architectural review process. This guidance is set forth as follows.

> All artificial outdoor lighting is to be limited to safety and security requirements. All lighting is to provide minimum impact on the surrounding environment and is to be shielded to direct the light only towards objects requiring illumination. Lights shall be downcast, cut-off type fixtures with non-glare finishes set at a height that casts low-angle illumination to minimize incidental spillover of light onto adjacent properties, open spaces or backscatter into the nighttime sky. Lights shall provide good color rendering with natural light qualities with the minimum intensity feasible for security, safety and personnel access. All outdoor lighting will be high pressure sodium vapor with individual photocells. Lighting will be designed per the guidelines of the IES. Additionally, all lights shall be consistent with energy conservation and are to be aesthetically pleasing. Lights will have a timed on/off program or will have daylight sensors. Lights will be programmed to be on whether personnel is present or not.

Although the lighting would be designed to be shielded and oriented in such a manner as not to subject the immediate surroundings to extremes in the levels of light, these types of light generate an ambient nighttime luminesce that is visible for substantial distances from a large portion of the Delta. This glow contrasts with the rural character. In addition, using LED lighting can result in a substantial increase in light and glare if not properly designed. This is because LED lights can negatively affect humans by increasing nuisance light and glare that can negatively affect circadian rhythms and sleep patterns, in addition to increasing light trespass and disruptive glare, if proper shielding is not provided and blue-rich white light lamps (BRWL) are used (International Dark-Sky Association 2010a, 2010b, 2015). Often, BRWL light fixtures do not have a cover so that LED bulbs are exposed and such bright light can be very harsh to the human eye at night, when humans are used to lower light levels. Also, while LED lighting is often recessed and directed downwards, replacing existing street lights with BRWL LED lighting can result in a substantial amount of light trespass because LED lighting is installed at the same height as the existing light. However, BRWL are much brighter than traditional street lighting and can light a much larger area at that same height, resulting in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Such changes to lighting would be particularly noticeable in rural areas where ambient light levels are currently low and there are nearby viewers. Because the study area currently experiences low levels of light because there are fewer light/glare producers than are typical in urban areas, and because there are a larger number of viewers in and around the waterways, intake structures, and intermediate forebay, effects associated with nighttime light are considered adverse. Mitigation Measures AES-4a through AES-4d are available to address these effects.

***CEQA Conclusion*:** The impacts associated with light and glare under Alternative 4 are significant because there are a larger number of viewers in and around the waterways, intake structures, the pumping plant facility, and forebays; BDCP facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels; and the study area currently experiences low levels of light because there are fewer light/glare producers than are typical in urban areas. Mitigation Measures AES-4a through AES-4d would help reduce these impacts by limiting construction to daylight hours within 0.5 mile of residents; minimizing fugitive light from portable sources used for construction; installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences; and avoiding the use of BRWL LED lighting; however, these mitigation measures would not reduce impacts to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the new light and glare sources would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 4 would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction Outside of Daylight Hours Within 0.5 Mile of Residents at the Intakes

To the extent feasible and within safety standards, the BDCP proponents will minimize the effect of nighttime construction light and glare on residences within 0.25 miles of the intake construction sites by limiting non-tunnel related surface construction past daylight hours (which varies according to season), minimizing the use of high-wattage lighting sources to operate in the dark, and minimizing introduction of new nighttime light and glare sources in these areas.

DWR will establish a construction hotline which will enable residents to report any construction violation including construction activities outside of daylight hours.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

The BDCP proponents will minimize fugitive light from portable lighting sources used during construction by adhering to the following practices, at a minimum.

- Project-related light and glare will be minimized to the maximum extent feasible, given safety considerations.
- Color-corrected halide lights will be used.
- Portable lights will be operated at the lowest feasible wattage and height.
- All lights will be screened and directed down toward work activities and away from the night sky and nearby residents to the maximum extent safely possible.
- The number of nighttime lights used will be minimized to the greatest extent possible.

Implementation of this measure will reduce—to the extent feasible as governed by site-specific safety requirements—the overall amount of new daytime and nighttime light and glare introduced to the project vicinity during construction.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

BDCP proponents will evaluate construction routes and identify portions of access routes where the use of visual barriers would minimize the introduction of new light and glare from construction truck headlights and the impact on nearby residents.

The BDCP proponents will install a visual barrier along portions of access routes where screening would prevent excessive light spill toward residents from truck headlights being used during nighttime construction activities. The BDCP proponents will also coordinate with local recreational stakeholders to protect sensitive nighttime recreational resources, such as nighttime fishing spots, from construction truck headlight light spill. These visual barriers will meet the following performance criteria.

- The visual barrier will be a minimum of 5 feet high and will provide a continuous surface impenetrable by light. This height may be obtained by installing a temporary structure, such as fencing (e.g., chain link with privacy slats) or a semi-permanent structure, such as a concrete barrier (e.g., a roadway median barrier or architectural concrete wall system) retrofitted with an approved visual screen, if necessary, to meet the required height.
- The visual barriers will be of a material or have a color treatment appropriate for the location and traffic safety requirements. The use of glossy materials will be avoided.

Implementation of this measure will minimize the extent of construction truck headlight glare intruding into nearby residential areas.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

BDCP proponents will install exterior LED lighting that avoids the use of blue rich white light lamps and use a correlated color temperature that is no higher than 3,000 Kelvin, consistent with the International Dark-Sky Associations Fixture Seal of Approval program (International Dark-Sky Association 2010a, 2010b, 2015). In addition, LED lights will use shielding to ensure that nuisance glare and light spill does not affect materially sensitive residential viewers. Lights will be placed at the lowest feasible height to ensure that light trespass affecting residences is limited. If needed, the height of lights will be lowered to account for the increase in lighting area provided by LED lighting. Implementation of this measure will minimize the effects of light and glare associated with blue rich white LED lighting from intruding into nearby areas.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

***NEPA Effects*:** Once in operation, visible maintenance activities on the intakes, tunnels, sedimentation basins, pumping plant facility, forebays, and transmission lines would be required periodically. Intake facilities would require painting, cleaning, and repairs. Sediment and debris removal would occur at intake openings to keep these facilities in Sedimentation would be dredged and sediment would be removed from drying basins annually. Forebays would be dredged to remove sediment at approximately 50-year intervals and embankments would receive vegetation removal and repairs. Tunnels would require periodic inspection and would have vehicles parked near shaft sites while tunnels are accessed for inspection. Transmission lines would require periodic vegetation removal within the ROWs. Maintenance activities could be visible from the water or land by sensitive viewers in proximity to these features. The greatest visual effects resulting from operations would be maintenance of the intakes and dredging of the sedimentation basins and forebays. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes, pumping plants, and associated site features and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged sedimentation basins and forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. However, these temporary maintenance activities are anticipated to occur within a short period of time, and effects on the existing visual quality and character during operation would not be adverse.

***CEQA Conclusion*:** Maintenance of the conveyance facilities (i.e., intakes, tunnels, forebays and transmission lines) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at forebays (at approximately 50-year intervals); vegetation removal and care along embankments; tunnel inspection; and vegetation removal within transmission line ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes, pumping plants, and associated site features and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged sedimentation basins and forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These visible maintenance activities would be temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would be considered less than significant. Maintenance and operation of Alternative 4, once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features. Thus, overall, Alternative 4 would have a less-than-significant impact on existing visual quality and character during maintenance and operation of the facilities in the study area. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of CM2–CM21

Under Alternative 4, CM3 (natural communities protection and restoration) would be the mechanism to preserve lands to aid in implementing measures CM4–CM11. CM12 (methylmercury management), CM13 (invasive aquatic vegetation control), and CM21 (nonproject diversions) would be integrated into site-specific restoration designs and operations under CM3–CM11 (discussed below) and would appear to be an integrated part of those measures and not independent visual features. CM14 (operation of the Stockton Deep Water Ship Channel Aeration Facility), CM17 (illegal harvest reduction), CM19 (urban stormwater treatment), CM20 (recreational users invasive species program) are management measures that would not result in changes to the visual environment. Thus, CM14, CM17, CM19, and CM20 are not discussed further.

Existing Visual Quality and Character

Under Alternative 4, CM2 could introduce many features that would be visible in the landscape; these are described in Chapter 3, *Description of Alternatives*. These features include fish management facilities (e.g., screens, ladders, ramps, barriers); realignment of waterways; additional hydrologic monitoring stations; a floodplain fish rearing pilot project at Knaggs Ranch; support facilities (operations buildings, parking lots, access facilities such as roads and bridges) necessary to provide safe access for maintenance and monitoring; modification, removal, and construction of berms, levees, and water control structures. These actions have the potential to have adverse visual effects because of their proximity to sensitive receptors, duration of construction activities, and changes to the visual environment resulting from these proposed actions.

The Yolo Bypass, under CM2, would also be flooded for longer periods to improve habitat and spawning for covered fish species and to reduce stranding. While the increase in duration of flooding is not known, it is anticipated that there would not be an adverse effect on visual resources because the flooding, which is an existing visual condition, would occur during the normal flood season of the bypass and just extend that season. Therefore, the extended flood duration is not considered adverse.

CM4–CM11 would result in the conversion of primarily agricultural lands to restored or enhanced habitat. Activities associated with the implementation of restoration and habitat enhancement would take place over 40 years across all conservation measures, often during a relatively short window each year, and the overall intensity and duration of each action would vary based on the individual project. CM15 (predator control) may result in temporary, localized changes by removing predator hiding spots, modifying channel geometry, physically removing predators, and utilizing other control methods as dictated by site-specific conditions. This could result in physical changes to the visual environment at site-specific locations that could be visible to water- and land-based recreationists and other viewer groups, based on location. This may have beneficial or adverse effects based on the size of proposed projects and pre-and post-project conditions (e.g., if restoration is implemented and improves pre-project conditions or if natural vegetation is removed and replaced with riprap which would degrade pre-project conditions). CM16 (nonphysical fish barriers) would use sound, light, and bubbles at the Head of Old River, the Delta Cross Channel, Georgiana Slough, and, potentially, at Turner Cut, and Columbia Cut (note that Turner and Columbia Cut each have two channels, and thus would require two barriers) to direct fish passage. The lights and bubbles may be visible to water-based recreationists, especially at dusk and night, and sound (if audible) could attract viewers' attention toward the nonphysical barriers. Small scale changes may be visible on the banks or in the water to be used for anchoring that could result in adverse visual effects. CM18 (conservation hatcheries) would result in visual changes to the environment by building a new hatchery that consists of a facility on the edge of the Sacramento River and a larger supplementation production facility nearby. This would require conversion of existing land uses along the river and nearby to a built facility. CM21 (nonproject diversions) would result in changes to the visual environment due to removal of individual diversions; consolidation of multiple unscreened diversions to a single or fewer screened diversions placed in lower quality habitat; relocation of diversions from high quality to lower quality habitat, in conjunction with screening; and reconfiguration and screening of individual diversions in high quality habitat. This could result in the removal and restoration at some locations that would result in beneficial effects or could introduce new structures where none presently exist that could be adverse.

Presently, it is not uncommon for heavy equipment to be seen, intermittently, for existing levee maintenance, agricultural, and dredging operations; site-specific construction; and use in managing wetlands and other land uses. Implementation of restoration and enhancement features would also introduce considerable heavy equipment and associated vehicles, including dozers, graders, scrapers, and trucks, into the viewshed of all viewer groups in the vicinity. Construction may include the creation of new levees; breeching existing levees; the creation of habitat levees; increasing connectivity between marshes and waterways; grading; planting; and redirecting intakes, discharges, and outfalls. In addition, acquiring public and private property to restore or enhance lands could displace occupants and would require infrastructure improvements such as roadways, parking lots, and utilities. These actions may also include the construction of new public features such as interpretive facilities and restrooms at some locations. These proposed actions would create changes in views of and from the study area throughout the construction period, which may last longer than 2 years depending on the specific project and effort required for construction. Because of the unknown location of site-specific restoration activities, potential presence of sensitive viewers, the potential for construction periods to last longer than 2 years, and varying intensity of construction, effects associated with implementation of these conservation measures are considered adverse for their potential to affect site-specific features that may be pre-existing and sensitive receptors that would witness these changes.

Implementation of restoration actions and conservation measures under Alternative 4 would have a noticeable effect on the visual character and quality of the study area and its surroundings. Locations that are currently characterized by physical features associated with agricultural activities would be altered through the establishment of new wetlands, marshes, or restored riparian corridors. These areas may be denuded of vegetation, or may appear to be so from a distance because of immature planted vegetation that would be similar in appearance to tilled or newly planted agricultural fields. The sites would be in a transitional state, and over a period of from one to several years, plant species would mature and vegetation would recolonize the sites. Because these sites would be scattered throughout the conservation zones, they would not create a visual imposition on the landscape or be perceived as a centralized, large-scale visual change. In addition, restored/enhanced sites would increase the amount of native vegetative communities that attract wildlife, thus befitting the visual quality and diversity of the study area. The visual characteristics of these new landscapes would be consistent with other natural marsh or wetland areas of the Delta. In this sense, the BDCP would have a beneficial effect on the visual character and quality of the restoration areas and their surroundings.

Scenic Vistas

Under Alternative 4, CM2 has the potential to visually alter scenic vistas depending on the location of various modifications, such as levee construction or removal. CM4–CM11 would result in the conversion of primarily agricultural lands to restored or enhanced habitat. CM16, CM18, CM15, and CM21 have the potential to introduce visually discordant features into scenic vistas, if they are located within a vista viewshed. Once constructed, large-scale changes to scenic vistas would result from conversion of agriculture lands to restored/enhanced areas that have more topographic variation and variable vegetative cover. Because exact locations of restoration/enhancement sites have not been identified, effects on site-specific scenic vistas cannot be determined. However, views of the large areas proposed for restoration/enhancement could likely change from agricultural or developed uses to areas with more natural features such as marshes and wetlands.

Depending on the location, the effect on scenic vistas could be beneficial or adverse. Beneficial effects would occur where flat agricultural lands and row crops are replaced by restored wetlands and riparian vegetation, because natural areas are rarer scenic features in the Delta and such a change would increase visual diversity. In general, wetlands would provide excellent vista opportunities because the restored vegetation cover would provide visual interest and would not block distant background views. However, at some sites, restoration/enhancement of agricultural lands to riparian forest could block long-distance vistas from scenic vista areas. For example, riparian forest plantings installed along a river segment where roadway travelers currently have open vistas of the waterway would mature and result in more restricted views of the river and vistas beyond. Restoration/enhancement actions could also result in the creation of new scenic vistas, perhaps through the removal of existing agricultural tree rows and the establishment of vista points at specific locations or viewing opportunity areas along newly created recreational trails.

After completion of construction activities necessary for restoration, areas surrounding the restored/enhanced area may be denuded of vegetation, or appear to be so from a distance because of immature planted vegetation would be similar in appearance to tilled or newly planted agricultural fields. The sites would be in a transitional state, and over a period of one to several years, plant species would mature and vegetation would recolonize the sites. The sites would be scattered throughout the conservation zones so would not create a visual imposition on the landscape or be perceived as a centralized, large-scale visual change. In addition, restored/enhanced sites would increase the amount of native vegetative communities that attract wildlife, thus helping to improve the visual quality and diversity of the restored areas. The visual characteristics of these restored/enhanced landscapes would be similar to other areas of the Delta that are in a natural marsh or wetland state and more limited in extent than the widespread areas of agricultural development. In this sense, the BDCP would have an overall beneficial effect related to the enhancement and creation of scenic vistas in the Delta. However, site-specific restoration information and plans need to be developed before the site-specific effects on scenic vistas can be determined.

Scenic Highways

No restoration actions are expected to be established in areas along SR 160. However, it is possible that actions proposed for some areas would be visible in the middleground and background views from SR 160. These areas are: the portions of CZ 3 on the west side of the Sacramento River that extends from Sacramento to the confluence with the Yolo Bypass; CZ 5, on the east/south side of the Sacramento River that extends from Intake 1 to Pittsburg; and CZ 10, just south of CZ 5 and spanning both sides of SR 4 near Antioch. In addition, CZ 7 would be visible in the middleground and background views from I-580, which is a state-designated scenic route in San Joaquin County. CM15, CM16, CM18, and CM21 have the potential to introduce visually discordant features as viewed from scenic highways, if they are located within the viewshed of a scenic highway. During the near term, changes to the visual environment resulting from vegetation removal may be noticeable to travelers along these routes. These areas may be denuded of vegetation, or appear to be so from a distance because of immature planted vegetation that would be similar in appearance to tilled or newly planted agricultural fields. The sites would be in a transitional state, and over a period of one to several years, plant species would mature and vegetation would recolonize the sites. The sites would be scattered throughout the conservation zones so would not create a visual imposition on the landscape or be perceived as a centralized, large-scale visual change. In addition, restored/enhanced sites would increase the amount of native vegetative communities that attract wildlife, thus helping to improve the visual quality and visual diversity of the restoration area. Due to the distance, changes associated with restoration activities would not affect the visual quality along these scenic highway corridors and would not result in adverse effects.

Light and Glare

The intent of the restoration actions would be to establish native vegetation along riparian corridors by allowing inundation of areas or by converting existing agricultural lands to tidal wetlands. Given the nature of CM2–CM21, only a few new project-related sources of light and glare would be expected to result from their implementation. Restored areas would largely be natural habitat areas. CM16 and CM18 have the potential to introduce new lighting sources through project features while it is not likely that CM15 and CM21 would introduce new sources of light. Limited lighting could be installed at some facilities, such as flood gates/pumping facilities, operations buildings, and visitor facilities. At this time, it is not known where these facilities would be proposed; however, it is anticipated that there would be a very limited number of such facilities and that the lighting would be reduced to the minimum necessary to provide safety and security and that effects would not be adverse.

Summary

NEPA Effects**:** There may be site-specific, localized adverse visual effects. These conservation measures would alter the Delta landscape by incrementally, and substantially, introducing elements into the study area over time. This could pave the way for the gradual transition of a much valued cultural and regional landscape and make it easier for other similar projects to be implemented over time because of the devalued baseline conditions, compared to Existing Conditions, if conservation measures are not planned and implemented in a manner that protects visual resources. CM2–CM21, when combined with CM1, could substantially alter the visual character of the study area, which is strongly identified by its agricultural and water-based Delta landscapes and communities. These landscapes and communities could be adversely affected by the introduction of discordant visual features, removal of existing buildings and landscape elements of value, and through the potential for indirect impacts associated with other development potentially setting a precedent for other development to occur. All of these effects would alter the visual character of the existing regional landscape. While many planning and regulatory documents recognize the unique visual resources of the Delta and the importance of this regional visual landscape as a shared and endangered resource, there is no comprehensive planning or regulatory document to aid in the preservation of this resource and to serve as guidance for development within this landscape.

Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-4a through AES-4d are available to address effects from habitat restoration and enhancement actions under CM2–CM21. In addition, Mitigation Measures AES-6a and AES-6b are available to help reduce adverse visual effects. Upon development of site-specific design information and plans, additional mitigation measures may be identified to address action-specific adverse effects. However, each individual project under CM2–CM21 would undergo the environmental compliance process that would be used to determine what additional mitigation measures, would be deemed appropriate to reduce adverse effects and to assess compliance with relevant regulations. Finally, Mitigation Measure AES-6c is available to help inventory, classify, and protect the unique visual landscape of the Delta.

CEQA Conclusion: As described under the relevant headers above, which correspond to the CEQA checklist, implementation of conservation measures under Alternative 4 has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. Impacts on the existing visual quality and character would be significant where use of large amounts of heavy construction equipment, changes in topography, and introduction of new structures or facilities with new sources of light and glare where none presently exist would take place in the vicinity of sensitive receptors. However, because a number of factors that would determine the level of change are unknown—the location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction—impacts associated with implementation of these conservation measures (CM2–CM21) on visual quality and character, scenic vistas, and light and glare sources, are considered significant. However, impacts to scenic highways would not be substantial because of the distance that implemented conservation measures would be away from scenic highways. Therefore, while changes associated with visual quality and character, scenic vistas, and light and glare sources are considered significant, changes associated with these activities would not affect the visual quality along scenic highway corridors and this impact would be less than significant. Site-specific restoration information and plans need to be developed before the site-specific effects on the existing visual character, scenic vistas, and light and glare can be determined.

Several mitigation measures and environmental commitments (described under Impact AES-1) are available to minimize the impacts on visual quality and character in the study area that could result from implementation of these conservation measures. As summarized below, these measures could be applied to individual restoration projects or actions as appropriate for the site-specific conditions and design considerations. In addition, each restoration project or action would undergo an environmental compliance process that would be used to determine what additional mitigation measures would be deemed appropriate to reduce significant effects. Mitigation Measures AES-1a through AES-1g could be applied to minimize impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. Mitigation Measures AES-4a through AES-4d could be used to reduce the effects of new light and glare sources by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. In addition, Mitigation Measures AES-6a and AES-6b would further minimize impacts on visual resources by undergrounding new or relocated utility lines, where feasible, and through an evaluation of an afterhours low-intensity and lights off policy. Finally, implementation of Mitigation Measure AES-6c would provide a strategy for the protection of the unique visual landscape of the Delta.

While some of these conservation measures could result in beneficial impacts through the restoration of natural habitat and these mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a less-than-significant level because of uncertainties associated with future implementation of CM2–CM21. In addition, the size of the study area and the nature of changes introduced by these conservation measures would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend or be in keeping with the existing visual environment. Thus, implementation of CM2–CM21 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

BDCP proponents will underground new or relocated utility lines, where feasible, to reduce or improve adverse visual effects associated with the visual intrusion of such features in the landscape. New or relocated utility lines will not be underground where undergrounding would constitute an adverse effect on sensitive habitats or sensitive species or require the removal of healthy native trees that would fall under the definition of a native heritage tree. For the purpose of this mitigation measure, a native heritage tree is defined for this project using guidance set forth in the City of Sacramento Heritage Tree Ordinance, as follows.

- Any tree of any species with a trunk circumference of one hundred (100) inches or more, which is of good quality in terms of health, vigor of growth and conformity to generally accepted horticultural standards of shape and location for its species.
- Any native *Quercus* species, *Aesculus California,* or *Platanus Racemosa*, having a circumference of 36-inches or greater when a single trunk, or a cumulative circumference of 36-inches or greater when a multi-trunk, which is of good quality in terms of health, vigor of growth and conformity to generally accepted horticultural standards of shape and location for its species.
- Any tree 36-inches in circumference or greater in a riparian zone. The riparian zone is measured from the centerline of the water course to 30-feet beyond the high water line (City of Sacramento 2012).

Other trees may also be protected, as deemed appropriate by BDCP proponents to be of special historical or environmental value or of significant community benefit.

Implementation of this measure, where possible, will avoid the introduction of new aboveground utility lines and result in an improved view in areas where existing utility lines could be relocated underground.

Mitigation Measure AES-6b: Develop and Implement an Afterhours Low-Intensity and Lights Off Policy

The BDCP proponents will evaluate measures and develop and implement of a commercial and public buildings lighting policy to minimize the impact of building lighting on nearby sensitive viewers. The policy will include the following performance standards.

- Require building design to include low-intensity interior safety lighting for use during afterhours. This practice would decrease the amount of nighttime light that would occur from using standard interior lighting as safety lighting.
- Prevent unnecessary overuse of interior nighttime lighting, requiring that offices and businesses implement a "lights-off" policy. This practice requires that all non-safety lighting be turned off at night (such as in offices and hallways), after business hours. This standard can be accomplished through use of movement activated lighting systems.
- Prohibit use of harsh mercury vapor or low-pressure sodium bulbs.

Such a policy can greatly reduce the amount of nighttime light pollution that is created by standard office and business practices.

Mitigation Measure AES-6c: Implement a Comprehensive Visual Resources Management Plan for the Delta and Study Area

The BDCP project proponents will work with federal, state, and local stakeholders to implement a visual resources management plan for the Delta and study area. The visual resources management plan will be developed based on the following considerations and performance standards.

- The purpose of the visual resources management plan will be to protect and enhance the visual landscape and will not serve as a mechanism to allow for undue development or to facilitate advanced development of the Delta and study area.
- The visual resources management plan will implement a prescribed methodology for inventorying and classifying all visual landscapes within the study area. This methodology will utilize measures similar to BLM and USDA Forest Service inventorying techniques or will develop its own methodology for inventorying study area visual landscapes. This methodology will incorporate a quantifiable measure of visual landscapes that can be used to determine areas for preservation, enhancement, and smart development, and to measure and monitor visual effects on the study area landscape over time. This inventory will include an inventory of viewer groups and viewer responses to adequately identify publicly valued visual landscapes.
- The inventory of visual landscapes within the study area will be used as a tool to preserve the visual landscape and to guide smart growth and development.

- The visual resources management plan will implement regulatory language to protect visual resources of the study area, based on preserving important and sensitive visual landscapes. It will also identify design and management measures for avoidance of adverse effects.
- The visual resources management plan will identify and facilitate the preservation of sensitive visual landscapes through the planning and establishment of scenic easements and official federal and/or state designation for the protection of scenic resources (e.g., historic and/or scenic trails, designated scenic areas, scenic highways/byways, and wild and scenic rivers).
- The visual resources management plan will serve to encourage the integrated use of environmental design arts, as outlined in Section 102(A) of NEPA, so that projects within the study area are designed to be self-mitigating instead of waiting until the environmental analysis process to establish design measures that mitigate a project's visual effects.
- The visual resources management plan will recognize and work with the evolving visual landscape as it relates to climate change and sea level rise. It will establish proactive design and management measures that protect the evolving landscape and visual integrity of the study area and will not facilitate reactive design and management measures that could adversely alter the visual landscape of the study area.
- The visual resources management plan for the study area will be an adaptive management tool and will undergo periodic updates every 20 years.
- CM2–CM21 will comply with this visual resources management plan.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 4 would be similar to Alternative 1A, Impact AES-7, with the key difference related to construction of only Intakes 2, 3, and 5. These facilities could result in the potential for some incompatibilities with plans and policies related to preserving the visual quality and character of the Delta. A number of plans and policies that coincide with the study area boundaries provide guidance for visual resource issues as overviewed in Section 17.2, *Regulatory Setting*. This overview of plan and policy compatibility evaluates whether Alternative 4 is compatible or incompatible with such enactments, rather than whether impacts are adverse or not adverse or significant or less than significant. If the incompatibility relates to an applicable plan, policy, or regulation adopted to avoid or mitigate visual effects, then an incompatibility might be indicative of a related significant or adverse effect under CEQA and NEPA, respectively. These physical effects of Alternative 4 on visual resources are addressed in Impacts AES-1 through AES-6, above. The following is a summary of compatibility evaluations related to visual resources for plans and policies relevant to the BDCP.

Conveyance Facilities

- The Sierra Resource and Cosumnes River Preserve Management Plans protect the Cosumnes River Preserve. Views within the Cosumnes River Preserve would not be affected by Alternative 4 because it is located east of I-5 and public views of the project site available from trails are obscured by riparian vegetation and I-5.

- The Suisun Marsh is protected by the San Francisco Bay Conservation and Development Commission Suisun Marsh Protection Plan. The eastern boundary of the Suisun Marsh extends to Collinsville Road in southern Solano County and falls within the westernmost portion of the study area. Views from Suisun Marsh would not be affected by this alternative because project features would be obscured by distance, the Altamont Hills, and intervening trees, infrastructure, and development.
- EBRPD parks within the study area include Browns Island, Antioch/Oakley, and Big Break Parks (East Bay Regional Park District 2013b). Views from these parks would not be affected by this alternative because project features would be obscured by distance, the Altamont Hills, and intervening trees, infrastructure, and development.
- The cities of Antioch, Brentwood, Oakley, Sacramento, Lathrop, Stockton, Tracy, Rio Vista, Suisun City, and West Sacramento would not be affected by this alternative because there are no project features within or visible from these cities. Therefore, this alternative would be consistent with the protection of visual resources covered under those general plans.
- The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan are all focused on the protection of resources, including visual resources, within the Delta. While constructing and operating conveyance facilities under this alternative are intended to provide ecosystem benefits in the Delta, constructing these conveyance elements could be considered incompatible with measures to protect the unique visual environment of the Delta because agricultural lands and riverbanks would be converted to other uses and the scale of construction would result in changes to the landscape that may be considered disruptive to the current Delta environment and visual quality.
- Contra Costa, Sacramento, San Joaquin, and Solano Counties all have policies to preserve and protect the scenic qualities of the Delta as summarized in Section 17.2, *Regulatory Setting*. In addition, Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties are focused on the protection of visual resources and preserving agricultural lands. The general plans for these counties include policies for the protection of visual resources, trees, waterways, and landscaping and for avoiding impacts such as the alteration of landforms and the introduction of utilities and new sources of light. These policies seek to minimize visual impacts and enhance scenic qualities and also encourage placing utility lines underground. The conversion of agricultural lands and riverbanks to intake facilities, conveyance facility changes and introduction of new lighting and transmission lines where none presently exist would substantially alter the landscape and could be considered incompatible with local policies aimed at protecting visual resources in these counties. Potential incompatibilities with Sacramento County and San Joaquin County policies would be most likely because most of the project features occur in these counties. Alameda and Contra Costa Counties have much smaller portions of project features that surround the Clifton Court Forebay. Yolo County would be affected by intakes located on the east bank of the Sacramento River that would affect views from South River Road. Alternative 4 would not be incompatible with Solano County policies because conveyance facilities would not be located in this area.

Other Conservation Measures

- The Yolo Bypass would be altered under CM2. Views of and from South River Road would not be affected. However, new fish screens, ladders, ramps, barriers, realignment of waterways, additional hydrologic monitoring stations, fish rearing pilot project at Knaggs Ranch, operations buildings, parking lots, access facilities such as roads and bridges, and modification, removal, and construction of berms, levees, and water control structures would result in changes to the landscape that may be incompatible with the Yolo County General Plan Policies LU-3.7, CC-1.2, CC-1.3, and CC-1.4 that protect scenic areas, the rural landscape character, and the night sky.
- CM4–CM11 would result in the conversion of primarily agricultural lands to restored or enhanced habitat across all 11 CZs, with specific focus on ROAs (refer to Figure 3-1 in Chapter 3, *Description of Alternatives*). Therefore, associated regulations may apply. Restored areas would largely be natural habitat areas. Alterations such as channel and levee modifications, landform alteration from dredge spoil placement, and floodplain lowering could change the visual landscape. Restoring areas and views to natural, native habitat would likely be beneficial and would increase visual diversity. However, converting agricultural lands may be incompatible with one or more regulation protecting visual resources, although it may facilitate regulations set in place to protect and restore the Delta. If facilities, such as buildings, parking lots, or roads, are built, they would also have the potential to be incompatible with relevant regulations that protect scenic areas, the landscape character, the night sky, and the Delta.
- CM15 and CM21 would occur across all 11 CZs and could result in physical changes to the visual environment at a number of locations and where relevant regulations may apply. This may have beneficial or adverse effects based on the size of proposed projects and pre-and post-project conditions (e.g., if restoration is implemented and improves pre-project conditions or if natural vegetation is removed and replaced with rip rap or a new diversion structure that degrades pre-project conditions). Vegetation removal and replacement with rip rap or a diversion structure could be incompatible with be incompatible with relevant regulations that protect scenic areas, the landscape character, the night sky, and the Delta.
- CM16 could use sound, light, and bubbles at the head of the Delta Cross Channel and Georgiana Slough in Sacramento County and at the Head of Old River and potentially at Turner Cut and Columbia Cut in San Joaquin County (note that Turner and Columbia Cut each have two channels, and thus would require two barriers) to direct fish passage. Small scale changes may be visible on the banks or in the water used for anchoring that could result in adverse visual effects, but it is anticipated that these changes would be compatible with County general plan policies that protect visual resources.
- Building a new hatchery that consists of a facility on the edge of the Sacramento River and a larger supplementation production facility nearby, through CM18, would result in visual changes and conversion of existing land uses along and near the river would be required to build facilities. These facilities could be located in Sacramento, Yolo, or Solano Counties and also fall within the Delta. Therefore, corresponding regulations may apply. The size and locations of these facilities are unknown, but it is likely that conversion of existing land uses, and potentially undeveloped land would alter the visual character along the Sacramento River and would be incompatible with one or more plans or policies for the protection of visual resources in these regions.

CEQA Conclusion: The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6, above and no additional CEQA conclusion is required related to the compatibility of Alternative 4 with relevant plans and policies.

17.3.3.10 Alternative 5—Dual Conveyance with Pipeline/Tunnel and Intake 1 (3,000 cfs; Operational Scenario C)

Table 17D-1 in Appendix 17D, *Permanent Impacts after Construction is Complete*, describes existing visual characteristics and the BDCP-related permanent effects of Alternative 5 on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Effects would be similar for this alternative. Under Alternative 5, the conveyance alignment from the intakes to the Byron Tract Forebay, along with the associated shaft site, access road, transmission line, pumping plants, barge unloading facility sites, and spoil/borrow and RTM areas would be identical to Alternative 1A. The difference between this alternative and Alternative 1A on visual resources is the location and number of intakes. Alternative 5 would use only one intake: Intake 1. The effects associated with construction of Intake 1 are discussed in detail under Alternative 1A, and those effects would be the same under Alternative 5. In addition, the Byron Tract Forebay would be 200-acres instead of 600-acres.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

NEPA Effects: Effects related to visual resources under this alternative would be similar to those described for Alternative 1A. However, the severity of these effects would be decreased because there would only be one intake structure instead of five. The primary features that would affect the existing visual quality and character under Alternative 5, once the facility has been constructed, would be the intake, the intermediate forebay and Byron Tract Forebay, transmission lines, and resulting landscape effects left behind from spoil/borrow and RTM areas, and concrete batch plants and fuel stations. As with Alternative 1A, the surge tower shadows from Intakes 1 and 2 and the intermediate forebay pumping plant would not stand out from the shadows cast by vegetation along the Southern Pacific Rail Line and would not adversely affect the SLNWR.

Overall, construction would take 9–14 years, and the intensity of the activities in contrast to the current rural/agricultural nature of the area would be substantial. Construction of intakes, and the accompanying pumping plants, surge towers, borrow/spoil areas, and RTM areas would introduce visually dominant and discordant features in the foreground and middleground views, and these elements would be very noticeable to all viewer groups.

After construction, areas surrounding the intake, spoil/borrow areas, RTM areas, shaft sites, and locations where concrete batch plants and fuel stations were located may be denuded of vegetation for a short period of time until the landscaping plans designed under WREM No. 30a are implemented. Once installed, the landscape would still appear to be denuded of vegetation or to have little vegetative cover because immature landscaping would be similar in appearance to tilled or newly planted agricultural fields. The sites would be in a transitional state, and over a period of a few years, plant species would mature and vegetation would recolonize the sites. These changes would happen in an area known for its open space, agricultural landscapes, and rural characteristics and would segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and eliminate valued visual resources. The effects of permanent access roads on visual resources would not be adverse. The effects of shaft site pads and access hatches on the existing scenic character may be adverse. Operation of the intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines would result in adverse effects on the existing visual character. In addition, construction of all of these features has the potential to negatively affect wildlife viewing and the overall enjoyment of scenic views in the study area. Therefore, because of the long-term nature of construction combined with the proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this overall effect of conveyance facility construction on existing visual quality and character is considered adverse. Mitigation Measures AES-1a through AES-1g are available to address visual effects resulting from construction of Alternative 5 water conveyance facilities.

CEQA Conclusion: Construction of Alternative 5 would substantially alter the existing visual quality and character present in the study area. The long-term nature of construction of the intake, pipeline/tunnel, work areas, spoil/borrow and RTM areas, shaft sites, barge unloading facilities; presence and visibility of heavy construction equipment; proximity to sensitive receptors; relocation of residences and agricultural buildings; removal of riparian vegetation and other mature vegetation or landscape plantings; earthmoving and grading that result in changes to topography in areas that are predominantly flat; addition of large-scale industrial structures (intakes and related facilities); remaining presence of large-scale borrow/spoil and RTM area landscape effects; and introduction of tall, steel transmission lines would all contribute to this impact.

Overall, construction would last 9–14 years and would change the existing visual character in the vicinity of project elements from those of agricultural, rural residential, or riparian and riverine settings to areas involving heavy construction equipment, temporary construction structures, work crews, other support vehicles and other activities that would modify and disrupt short- and long-range views. These activities would be disruptive to viewers. Once construction is complete, the alternative would result in the placement of large, multi-story industrial concrete and steel structures, pumping plants, fencing, and other similar anthropogenic features where none presently exist. Because of the landscape sensitivity and visual dominance of these features, these changes would result in reduced scenic quality throughout the study area (see Section 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Thus, Alternative 5 would result in significant impacts on the existing visual quality and character in the study area.

Mitigation Measures AES-1a through AES-1g would partially reduce impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, Alternative 5 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

***NEPA Effects*:** Scenic vistas are mapped and included in Appendix 17D, Figure 17D-1. Effects related to scenic vistas under this alternative would be similar to those described for Alternative 1A Impact AES-2. During construction the introduction of construction equipment and removal of vegetation would alter the scenic elements that contribute to the viewing experience from scenic vistas. The intake would introduce visually dominant and discordant features in the foreground and middleground views in vistas that would be very noticeable to all viewer groups in areas of high landscape sensitivity levels. However, the severity of these effects related to the north Delta intakes along the Sacramento River would be decreased because there would only be one intake structure instead of five. As described for Alternative 1A, the effects of permanent access roads effects on scenic vistas would not be adverse. The effects of shaft site pads and access hatches on scenic vistas could be adverse. The large scale of intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines may result in adverse effects on scenic vistas (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Overall, effects on scenic vistas associated with Alternative 5, although reduced in scale for the north Delta intakes relative to Alternative 1A, may be adverse. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measure AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 5 would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

NEPA Effects**:** Effects on state scenic highways under this alternative would be similar to those described for Alternative 1A, Impact AES-3. Intake 1, the spoils/borrow and RTM area south of Intake 1, and the intermediate forebay would be immediately and prominently visible in the foreground from SR 160 and would result in an overall noticeable effect on viewers relative to their current experience and enjoyment of the study area's scenic resources along SR 160 and River Road, where the landscape sensitivity level is high. However, the severity of these effects related to the north Delta intakes along the Sacramento River would be decreased because there would only be one intake structure instead of five. Nevertheless, as described for Alternative 1A, these visual elements introduced by the intake, spoil/borrow and RTM areas south of Intake 1, and intermediate forebay would conflict with the existing forms, patterns, colors, and textures along River Road and SR 160; would dominate the riverfront available from SR 160; and would alter broad views and the general nature of the visual experience presently available from River Road and SR 160 and may result in adverse effects. These changes would reduce the visual quality near the intake structure location and result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas. This effect would be adverse (see discussion under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion**:** Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structure and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measures AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 5 would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

***NEPA Effects*:** Effects resulting from light and glare under this alternative would be similar to those described for Alternative 1A, Impact AES-4. Intake 1 and associated pumping plant, surge tower, and facilities and the pumping plant at the intermediate forebay would create very noticeable effects relating to light and glare (Figures 17-76 through 17-78). Light building colors over a large surface area would reflect off of those surfaces and increase glare, especially when combined with the removal of vegetation that absorbs light, provides shade, and screens glare. The amount of glare associated with surfaces would be increased if highly glossy paints or surface treatments or highly reflective materials are used, compared to satin or flat paints or surface treatments or materials that are less reflective. Sunlight would reflect off the new water surfaces of the forebay, creating new sources of glare where none presently exist. However, the severity of these effects related to the north Delta intakes on the Sacramento River would be decreased because there would only be one intake structure instead of five. Nighttime construction could also result in headlights flashing into nearby residents' homes when construction vehicles are turning onto or off of construction access routes. Proposed surge towers and transmission towers would require the use of safety lights that would alert low-flying aircraft to the presence of these structures because of their height. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the surge tower for aircraft safety. Given the height of the towers, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers. In addition, using LED lighting can result in a substantial increase in light and glare if not properly designed. This is because LED lights can negatively affect humans by increasing nuisance light and glare that can negatively affect circadian rhythms and sleep patterns, in addition to increasing light trespass and disruptive glare, if proper shielding is not provided and blue-rich white light lamps (BRWL) are used

(International Dark-Sky Association 2010a, 2010b, 2015). Often, BRWL light fixtures do not have a cover so that LED bulbs are exposed and such bright light can be very harsh to the human eye at night, when humans are used to lower light levels. Also, while LED lighting is often recessed and directed downwards, replacing existing street lights with BRWL LED lighting can result in a substantial amount of light trespass because LED lighting is installed at the same height as the existing light. However, BRWL are much brighter than traditional street lighting and can light a much larger area at that same height, resulting in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Overall, because the study area currently experiences low levels of light and because there are a larger number of viewers in and around the waterways, intake structure, and forebay that would be affected by these noticeable changes that contrast with the existing rural character, effects associated with new sources of daytime and nighttime light and glare are considered adverse. Mitigation Measures AES-4a through AES-4d are available to address these effects.

***CEQA Conclusion*:** The impacts associated with light and glare under Alternative 5 are significant because there are a larger number of viewers in and around the waterways, intake structures, and intermediate forebay; BDCP facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels; and the study area currently experiences low levels of light because there are fewer light/glare producers than are typical in urban areas. Mitigation Measures AES-4a through AES-4d would help reduce these impacts by limiting construction to daylight hours within 0.5 mile of residents; minimizing fugitive light from portable sources used for construction; installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences; and avoiding the use of BRWL LED lighting; however, these mitigation measures would not reduce impacts to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the new light and glare sources would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 5 would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

NEPA Effects: Effects on the visual environment through operations and maintenance of the water conveyance facilities (CM1) under this alternative would be similar to those described for Alternative 1A, Impact AES-5. Once the facility is in operation, visible regular and periodic maintenance would be required on all major structures. Activities such as painting, cleaning, vegetation maintenance (removal), repairs, and inspections would be visible from viewpoints on water and land. The greatest visual effects resulting from operations would be maintenance of the intake and dredging the forebays. However, under Alternative 5, the severity of these effects in the vicinity of the north Delta intakes and Byron Tract Forebay relative to Alternative 1A would be decreased because there would only be one intake structure instead of five and the Byron Tract Forebay would be reduced from 600 to 200 acres. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete, these effects on the existing visual quality and character during operation would not be adverse because the activities would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features.

CEQA Conclusion: Maintenance of the conveyance facilities (i.e., intake, tunnels, forebays and transmission lines) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at forebays (at approximately 50-year intervals); vegetation removal and care along embankments; tunnel inspection; and vegetation removal within transmission line ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These visible maintenance activities would be temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would be considered less than significant. Maintenance and operation of Alternative 5 once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features. Thus, overall, Alternative 5 would have a less-than-significant impact on existing visual quality and character during maintenance and operation of the facilities in the study area. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of CM2–CM21

***NEPA Effects*:** Under Alternative 5, these conservation measures would be identical to those under Alternative 1A. Therefore, visual effects related to the existing visual character, scenic vistas, scenic highways, and light and glare resulting from implementation of CM2–CM21 would be the same as those described under Alternative 1A, Impact AES-6. There may be site-specific, localized adverse visual effects. These conservation measures would alter the Delta landscape by incrementally, and substantially, introducing elements into the study area over time. CM2–CM21, when combined with CM1, could substantially alter the visual character of the study area, which is strongly identified by its agricultural and water-based Delta landscapes and communities. These landscapes and communities could be adversely affected by the introduction of discordant visual features, removal of existing buildings and landscape elements of value, and through the potential for indirect impacts associated with other development potentially setting a precedent for other development to occur. All of these effects would alter the visual character of the existing regional landscape.

Because of the unknown location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction, effects associated with implementation of CM2–CM21 are considered adverse. However, the visual characteristics of restored/enhanced landscapes would be similar to other areas of the Delta that are in a natural marsh or wetland state and more limited in extent than the widespread areas of agricultural development. In this sense, the BDCP would have an overall beneficial effect related to the enhancement and creation of scenic vistas in the Delta.

Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-4a through AES-4d are available to address effects from habitat restoration and enhancement actions under CM2–CM21. In addition, Mitigation Measures AES-6a and AES-6b are available to help reduce adverse visual effects. Upon development of site-specific design information and plans, additional mitigation measures may be identified to address action-specific adverse effects. However, each individual project under CM2–CM21 would undergo the environmental compliance process that would be used to determine what additional mitigation measures, would be deemed appropriate to reduce adverse effects and to assess compliance with relevant regulations. Finally, Mitigation Measure AES-6c is available to help inventory, classify, and protect the unique visual landscape of the Delta.

CEQA Conclusion: Implementation of conservation measures under Alternative 5 has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. Impacts on the existing visual quality and character would be significant where use of large numbers of heavy construction equipment, changes in topography, and introduction of new structures or facilities where none presently exist would take place in the vicinity of sensitive receptors. However, because a number of factors that would determine the level of change are unknown—the location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction—impacts associated with implementation of CM2–CM21 on visual quality and character, scenic vistas, and light and glare sources, are considered significant. Because of the distance of implemented conservation measures from scenic highways, changes associated with these activities would not affect the visual quality along these scenic highway corridors and this impact would be less than significant. Site-specific restoration information and plans need to be developed before the site-specific effects on the existing visual character, scenic vistas, and light and glare can be determined.

Several mitigation measures are available to minimize the impacts on visual quality and character in the study area that could result from implementation of these conservation measures. As summarized below, these measures could be applied to individual restoration projects or actions as appropriate for the site-specific conditions and design considerations. In addition, each restoration project or action would undergo an environmental compliance process that would be used to determine what additional mitigation measures would be deemed appropriate to reduce significant effects. Mitigation Measures AES-1a through AES-1g could be applied to minimize impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. Mitigation Measures AES-4a through AES-4d could be used to reduce the effects of new light and glare sources by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. In addition, Mitigation Measures AES-6a and AES-6b would further minimize impacts on visual resources by undergrounding new or relocated utility lines, where feasible, and through an evaluation of an afterhours low-intensity and lights off policy. Finally, implementation of Mitigation Measure AES-6c would provide a strategy for the protection of the unique visual landscape of the Delta.

While some of the conservation measures could result in beneficial impacts through the restoration of natural habitat and these mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a less-than-significant level because of uncertainties associated with future implementation of CM2–CM21. In addition, the size of the study area and the nature of changes introduced by these conservation measures would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend or be in keeping with the existing visual environment. Thus, implementation of CM2–CM21 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6b: Develop and Implement an Afterhours Low-Intensity and Lights Off Policy

Please refer to Mitigation Measure AES-6b under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6c: Implement a Comprehensive Visual Resources Management Plan for the Delta and Study Area

Please refer to Mitigation Measure AES-6c under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 5 would generally have the same potential for incompatibilities with one or more plans and policies related to preserving the visual quality and character of the Delta as described for Alternative 1A, Impact AES-7. The primary differences under Alternative 5 are that only Intake 1 would be constructed and the Byron Tract Forebay would be 200 acres instead of 600 acres. As described under Alternative 1A, there would be potential for the alternative to be incompatible with plans and policies related to preserving the visual quality and character of the Delta (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

CEQA Conclusion: The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6, above, and no additional CEQA conclusion is required related to the compatibility of Alternative 5 with relevant plans and policies.

17.3.3.11 Alternative 6A—Isolated Conveyance with Pipeline/Tunnel and Intakes 1–5 (15,000 cfs; Operational Scenario D)

Table 17D-1 in Appendix 17D, *Permanent Impacts after Construction is Complete*, describes existing visual characteristics and the BDCP-related permanent effects of Alternative 6A on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Effects would be similar for this alternative. Under Alternative 6A, the conveyance alignment from the intakes to the Byron Tract Forebay, along with the associated shaft site, access road, transmission line, pumping plants, barge unloading facility sites, and spoil/borrow and RTM areas would be identical to Alternative 1A. This alternative would not make use of the existing SWP and CVP south Delta export facilities for Clifton Court Forebay and Jones pumping plant; however, this change would not result in different effects on visual resources.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

NEPA Effects: Effects related to visual resources under this alternative would be the same as those described for Alternative 1A. The primary features that would affect the existing visual quality and character under Alternative 6A, once the facility has been constructed, would be the intakes, the intermediate forebay and Byron Tract Forebay, transmission lines, and resulting landscape effects left behind from spoil/borrow and RTM areas, and concrete batch plants and fuel stations. These changes would be most evident in the northern portion of the study area, which would undergo extensive changes from the permanent establishment of large industrial facilities and the supporting infrastructure along and surrounding the segment of the Sacramento River where the intakes would be situated. As with Alternative 1A, the surge tower shadows from Intakes 1 and 2 and the intermediate forebay pumping plant would not stand out from the shadows cast by vegetation along the Southern Pacific Rail Line and would not adversely affect the SLNWR.

Overall, construction would take 9–14 years, and the intensity of the activities in contrast to the current rural/agricultural nature of the area would be substantial. Construction of intakes, and the accompanying pumping plants, surge towers, borrow/spoil areas, and RTM areas would introduce visually dominant and discordant features in the foreground and middleground views, and these elements would be very noticeable to all viewer groups.

After construction, areas surrounding the intakes, spoil/borrow areas, RTM areas, shaft sites, and locations where concrete batch plants and fuel stations were located may be denuded of vegetation for a short period of time until the landscaping plans designed under WREM No. 30a are implemented. Once installed, the landscape would still appear to be denuded of vegetation or to have little vegetative cover because immature landscaping would be similar in appearance to tilled or newly planted agricultural fields. The sites would be in a transitional state, and over a period of a few years, plant species would mature and vegetation would recolonize the sites. These changes would happen in an area known for its open space, agricultural landscapes, and rural characteristics and would segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and eliminate valued visual resources. The effects of permanent access roads on visual resources would not be adverse. The effects of shaft site pads and access hatches on the existing scenic character may be adverse. Operation of the intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines would result in adverse effects on the existing visual character. In addition, construction of all of these features has the potential to negatively affect wildlife viewing and the overall enjoyment of scenic views in the study area. Therefore, because of the long-term nature of construction combined with the proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this overall effect of conveyance facility construction on existing visual quality and character is considered adverse. Mitigation Measures AES-1a through AES-1g are available to address visual effects resulting from construction of Alternative 6A water conveyance facilities.

CEQA Conclusion**:** Construction of Alternative 6A would substantially alter the existing visual quality and character present in the study area. The long-term nature of construction of the intakes, pipeline/tunnel, work areas, spoil/borrow and RTM areas, shaft sites, barge unloading facilities; presence and visibility of heavy construction equipment; proximity to sensitive receptors; relocation of residences and agricultural buildings; removal of riparian vegetation and other mature vegetation or landscape plantings; earthmoving and grading that result in changes to topography in areas that are predominantly flat; addition of large-scale industrial structures (intakes and related facilities); remaining presence of large-scale borrow/spoil and RTM area landscape effects; and introduction of tall, steel transmission lines would all contribute to this impact.

Overall, construction would last 9–14 years and would change the existing visual character in the vicinity of project elements from those of agricultural, rural residential, or riparian and riverine settings to areas involving heavy construction equipment, temporary construction structures, work crews, other support vehicles and other activities that would modify and disrupt short- and long-range views. These activities would be disruptive to viewers. Once construction is complete, the alternative would result in the placement of large, multi-story industrial concrete and steel structures, pumping plants, fencing, and other similar anthropogenic features where none presently exist. Because of the landscape sensitivity and visual dominance of these features, these changes would result in reduced scenic quality throughout the study area (see Section 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Thus, Alternative 6A would result in significant impacts on the existing visual quality and character in the study area.

Mitigation Measures AES-1a through AES-1g would partially reduce impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, Alternative 6A would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

***NEPA Effects*:** Scenic vistas are mapped and included in Appendix 17D, Figure 17D-1. Effects on scenic vistas under this alternative would be similar to those under Alternative 1A, Impact AES-2. During construction the introduction of construction equipment and removal of vegetation would alter the scenic elements that contribute to the viewing experience from scenic vistas. The intakes would introduce visually dominant and discordant features in the foreground and middleground views in vistas that would be very noticeable to all viewer groups in areas of low to high landscape sensitivity levels. The large scale of intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines may result in adverse effects on scenic vistas (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measure AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 6A would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

***NEPA Effects*:** Effects on state scenic highways under this alternative would be similar to those described for Alternative 1A, Impact AES-3. Intakes 1–5, the spoils/borrow and RTM area north of Intake 2, and the intermediate forebay would be immediately and prominently visible in the foreground from SR 160 and would result in an overall noticeable effect on viewers relative to their current experience and enjoyment of the study area's scenic resources along SR 160 and River Road, where the landscape sensitivity level is high. As described for Alternative 1A, visual elements associated with the conveyance facilities would conflict with the existing forms, patterns, colors, and textures along River Road and SR 160; would dominate riverfront available from SR 160; and would alter broad views and general nature of the visual experience presently available from River Road and SR 160. These changes would reduce the visual quality near intake structure locations and result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas. This effect would be adverse (see discussion under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

***CEQA Conclusion*:** Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measures AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with other structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 6A would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

***NEPA Effects*:** Effects resulting from light and glare under this alternative would be similar to those described for Alternative 1A, Impact AES-4. Intakes 1–5 and their associated pumping plants, surge towers, and facilities and the pumping plant at the intermediate forebay would create very noticeable effects relating to light and glare (Figures 17-76 through 17-78). Light building colors over a large surface area would reflect off of those surfaces and increase glare, especially when combined with the removal of vegetation that absorbs light, provides shade, and screens glare. The amount of glare associated with surfaces would be increased if highly glossy paints or surface treatments or highly reflective materials are used, compared to satin or flat paints or surface treatments or materials that are less reflective. Sunlight would reflect off the new water surfaces of the forebay, creating new sources of glare where none presently exist. Nighttime construction could also result in headlights flashing into nearby residents' homes when construction vehicles are turning onto or off of construction access routes. Proposed surge towers and transmission towers would require the use of safety lights that would alert low-flying aircraft to the presence of these structures because of their height. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the surge tower for aircraft safety. Given the height of the towers, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers. In addition, using LED lighting can result in a substantial increase in light and glare if not properly designed. This is because LED lights can negatively affect humans by increasing nuisance light and glare that can negatively affect circadian rhythms and sleep patterns, in addition to increasing light trespass and disruptive glare, if proper shielding is not provided and blue-rich white light lamps (BRWL) are used (International Dark-Sky Association 2010a, 2010b, 2015). Often, BRWL light fixtures do not have a cover so that LED bulbs are exposed and such bright light can be very harsh to the human eye at night, when humans are used to lower light levels. Also, while LED lighting is often recessed and directed downwards, replacing existing street lights with BRWL LED lighting can result in a substantial amount of light trespass because LED lighting is installed at the same height as the existing light. However, BRWL are much brighter than traditional street lighting and can light a much larger area at that same height, resulting in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Overall, because the study area currently experiences low levels of light and because there are a larger number of viewers in and around the waterways, intake structures, and forebay that would be affected by these noticeable changes that contrast with the existing rural character, effects associated with new sources of daytime and nighttime light and glare are considered adverse. Mitigation Measures AES-4a through AES-4d are available to address these effects.

***CEQA Conclusion*:** The impacts associated with light and glare under Alternative 6A are significant because there are a larger number of viewers in and around the waterways, intake structures, and intermediate forebay; BDCP facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels; and the study area currently experiences low levels of light because there are fewer light/glare producers than are typical in urban areas. Mitigation Measures AES-4a through AES-4d would help reduce these impacts by limiting construction to daylight hours within 0.5 mile of residents; minimizing fugitive light from portable sources used for construction; installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences; and avoiding the use of BRWL LED lighting; however, these mitigation measures would not reduce impacts to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the new light and glare sources would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 6A would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

NEPA Effects**:** Effects on the visual environment through operations and maintenance of the water conveyance facilities under this alternative would be similar to those described for Alternative 1A, Impact AES-5. Once the facility is in operation, visible regular and periodic maintenance would be required on all major structures, including the operable barrier at the head of Old River. Activities such as painting, cleaning, vegetation maintenance (removal), repairs, and inspections would be visible from viewpoints on water and land.

The greatest visual effects resulting from operations would be maintenance of the intakes and dredging the forebays. The operable barrier would also require periodic dredging. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete, and effects on the existing visual quality and character during operation would not be adverse because the activities would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features.

CEQA Conclusion**:** Maintenance of the conveyance facilities (i.e., intakes, tunnels, forebays and transmission lines) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at forebays (at approximately 50-year intervals); vegetation removal and care along embankments; tunnel inspection; and vegetation removal within transmission line ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These visible maintenance activities would be temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would be considered less than significant. Maintenance and operation of Alternative

6A once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features. Thus, overall, Alternative 6A would have a less-than-significant impact on existing visual quality and character during maintenance and operation of the facilities in the study area. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of CM2–CM21

NEPA Effects: Under Alternative 6A, these conservation measures would be identical to those under Alternative 1A. Therefore, visual effects related to the existing visual character, scenic vistas, scenic highways, and light and glare resulting from implementation of CM2–CM21 would be the same as those described under Alternative 1A, Impact AES-6. There may be site-specific, localized adverse visual effects. These conservation measures would alter the Delta landscape by incrementally, and substantially, introducing elements into the study area over time. CM2–CM21, when combined with CM1, could substantially alter the visual character of the study area, which is strongly identified by its agricultural and water-based Delta landscapes and communities. These landscapes and communities could be adversely affected by the introduction of discordant visual features, removal of existing buildings and landscape elements of value, and through the potential for indirect impacts associated with other development potentially setting a precedent for other development to occur. All of these effects would alter the visual character of the existing regional landscape.

Because of the unknown location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction, effects associated with implementation of CM2–CM21 are considered adverse. However, the visual characteristics of restored/enhanced landscapes would be similar to other areas of the Delta that are in a natural marsh or wetland state and more limited in extent than the widespread areas of agricultural development. In this sense, the BDCP would have an overall beneficial effect related to the enhancement and creation of scenic vistas in the Delta.

Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-4a through AES-4d are available to address effects from habitat restoration and enhancement actions under CM2–CM21. In addition, Mitigation Measures AES-6a and AES-6b are available to help reduce adverse visual effects. Upon development of site-specific design information and plans, additional mitigation measures may be identified to address action-specific adverse effects. However, each individual project under CM2–CM21 would undergo the environmental compliance process that would be used to determine what additional mitigation measures, would be deemed appropriate to reduce adverse effects and to assess compliance with relevant regulations. Finally, Mitigation Measure AES-6c is available to help inventory, classify, and protect the unique visual landscape of the Delta.

CEQA Conclusion: Implementation of conservation measures under Alternative 6A has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. Impacts on the existing visual quality and character would be significant where use of large numbers of heavy construction equipment, changes in topography, and introduction of new structures or facilities where none presently exist would take place in the vicinity of sensitive receptors. However, because a number of factors that would determine the level of change are unknown—the location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction—impacts associated with implementation of

CM2–CM21 on visual quality and character, scenic vistas, and light and glare sources, are considered significant. Because of the distance of implemented conservation measures from scenic highways, changes associated with these activities would not affect the visual quality along these scenic highway corridors and this impact would be less than significant. Site-specific restoration information and plans need to be developed before the site-specific effects on the existing visual character, scenic vistas, and light and glare can be determined.

Several mitigation measures are available to minimize the impacts on visual quality and character in the study area that could result from implementation of these conservation measures. As summarized below, these measures could be applied to individual restoration projects or actions as appropriate for the site-specific conditions and design considerations. In addition, each restoration project or action would undergo an environmental compliance process that would be used to determine what additional mitigation measures would be deemed appropriate to reduce significant effects. Mitigation Measures AES-1a through AES-1g could be applied to minimize impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. Mitigation Measures AES-4a through AES-4d could be used to reduce the effects of new light and glare sources by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. In addition, Mitigation Measures AES-6a and AES-6b would further minimize impacts on visual resources by undergrounding new or relocated utility lines, where feasible, and through an evaluation of an afterhours low-intensity and lights off policy. Finally, implementation of Mitigation Measure AES-6c would provide a strategy for the protection of the unique visual landscape of the Delta.

While some of the conservation measures could result in beneficial impacts through the restoration of natural habitat and these mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a less-than-significant level because of uncertainties associated with future implementation of CM2–CM21. In addition, the size of the study area and the nature of changes introduced by these conservation measures would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend or be in keeping with the existing visual environment. Thus, implementation of CM2–CM21 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6b: Develop and Implement an Afterhours Low-Intensity and Lights Off Policy

Please refer to Mitigation Measure AES-6b under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6c: Implement a Comprehensive Visual Resources Management Plan for the Delta and Study Area

Please refer to Mitigation Measure AES-6c under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 6A would generally have the same potential for incompatibilities with one or more plans and policies related to preserving the visual quality and character of the Delta as described for Alternative 1A, Impact AES-7. As described under Alternative 1A, there would be potential for the alternative to be incompatible with plans and policies related to preserving the visual quality and character of the Delta (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6, above and no additional CEQA conclusion is required related to the compatibility of Alternative 6A with relevant plans and policies.

17.3.3.12 Alternative 6B—Isolated Conveyance with East Alignment and Intakes 1–5 (15,000 cfs; Operational Scenario D)

Table 17D-2 in Appendix 17D, *Permanent Impacts after Construction is Complete*, describes existing visual characteristics and the BDCP-related permanent effects of Alternative 6B on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Effects would be similar for this alternative. Under Alternative 6B, the conveyance alignment from the intakes to the Byron Tract Forebay, along with the associated shaft sites, access road, transmission line, pumping plants, canals, and spoil/borrow and RTM areas would be identical to Alternative 1B. Conservation measures would be identical to Alternative 1A. This alternative would not make use of the existing SWP and CVP south Delta export facilities for Clifton Court Forebay and Jones pumping plant; however, this change would not result in different effects on visual resources.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

NEPA Effects: Effects related to visual resources under this alternative would be similar to those described for Alternative 1B. The construction period would last for 9–14 years and the intensity of the activities in contrast to the current rural/agricultural nature of the area would be substantial. Construction of intakes and the accompanying pumping plants, surge towers, canals, borrow/spoil areas, RTM areas, forebay, operable barrier, access roads, transmission lines, and concrete batch plants and fuel stations would introduce visually discordant features into foreground and middleground views with low to high landscape sensitivity level. These elements would introduce visually dominant features that would be very noticeable to all viewer groups and would segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and eliminate valued visual resources. Accordingly, because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this effect on existing visual quality and character would be adverse. In San Joaquin County, the canal would be visible in the middleground from I-5; the canal and a bridge would cross West Eight Mile Road; and the canal, a bridge, and borrow/spoil areas would cross and be in foreground views from roads on Roberts Island north of SR 4 and SR 4. While not officially designated state scenic highways, and therefore not discussed under *Impact AES-3: Permanent damage to scenic resources along a state scenic highway from construction of conveyance facilities*, these roads are San Joaquin County Scenic Routes (see *San Joaquin County* in Section 17.2.3.2, *County and City General Plans*). These features would detract from the visual quality of views from these routes. In addition, construction of all features has the potential to adversely affect wildlife viewing and the overall enjoyment of scenic views in the study area. Effects on the existing visual character under Alternative 6B would be greater than under Alternative 6A because of the extent of the canals visible on the landscape surface, landscape effects left behind by spoil/borrow areas, and introduction of bridges.

Overall, effects on the existing visual character associated with construction of Alternative 6B would be adverse because the alternative would result in reductions to the visual quality in some locations and introduce dominant visual elements that would result in very noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes would be viewed by sensitive receptors and from public viewing areas. Mitigation Measures AES-1a through AES-1g are available to address visual effects resulting from construction of Alternative 6B water conveyance facilities.

CEQA Conclusion: Because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, the impacts associated with constructing intakes and the accompanying pumping plants, surge towers, canals, borrow/spoil areas, RTM areas, forebay, operable barrier, access roads, and transmission lines are considered significant. These changes under Alternative 6B would result in reductions to the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes would be viewed by sensitive receptors and from public viewing areas. Impacts on the existing visual quality and character under Alternative 6B would be greater than under Alternative 6A because of the extent of the canals visible on the landscape surface, landscape effects left behind by spoil/borrow areas, and introduction of bridges.

Mitigation Measures AES-1a through AES-1g would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer’s location in the landscape relative to the seen change. Thus, Alternative 6B would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

NEPA Effects: Effects on scenic vistas under this alternative would be similar to those under Alternative 1B, Impact AES-2. During construction the introduction of construction equipment and removal of vegetation would alter the scenic elements that contribute to the viewing experience from scenic vistas. The intakes would introduce visually dominant and discordant features in the foreground and middleground views in vistas that would be very noticeable to all viewer groups in areas of low to high landscape sensitivity levels. The large scale of intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines may result in adverse effects on scenic vistas (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measure AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 6B would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

***NEPA Effects*: **Effects on state scenic highways under this alternative would be similar to those described for Alternative 1B Impact AES-3. Intakes 1–5, the spoils/borrow and RTM area north of Intake 2, and the intermediate forebay would be immediately and prominently visible in the foreground from SR 160 and would result in an overall noticeable effect on viewers relative to their current experience and enjoyment of the study area's scenic resources along SR 160 and River Road, where the landscape sensitivity level is high. The visual elements introduced by the intakes, spoil/borrow and RTM areas north of Intake 2 associated with Alternative 6B would conflict with the existing forms, patterns, colors, and textures along River Road and SR 160; would dominate riverfront views available from SR 160; and would alter broad views and the general nature of the visual experience presently available from River Road and SR 160. These changes would reduce the visual quality near intake structure locations and result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas. This effect would be adverse (see discussion under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

***CEQA Conclusion*: **Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measures AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with other structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 6B would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

***NEPA Effects*:** Effects resulting from light and glare under this alternative would be similar to those described for Alternatives 1A and 1B, Impact AES-4. Intakes 1–5 and their associated pumping plants, surge towers, and facilities and the pumping plant at the intermediate forebay would create very noticeable effects relating to light and glare (Figures 17-76 through 17-78). Light building colors over a large surface area would reflect off of those surfaces and increase glare, especially when combined with the removal of vegetation that absorbs light, provides shade, and screens glare. The amount of glare associated with surfaces would be increased if highly glossy paints or surface treatments or highly reflective materials are used, compared to satin or flat paints or surface treatments or materials that are less reflective. Sunlight would reflect off the new water surfaces of the forebay and canals, creating new sources of glare where none presently exist. Nighttime construction could also result in headlights flashing into nearby residents' homes when construction vehicles are turning onto or off of construction access routes. Proposed surge towers and transmission towers would require the use of safety lights that would alert low-flying aircraft to the presence of these structures because of their height. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the surge tower for aircraft safety. Given the height of the towers, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers. In addition, using LED lighting can result in a substantial increase in light and glare if not properly designed. This is because LED lights can negatively affect humans by increasing nuisance light and glare that can negatively affect circadian rhythms and sleep patterns, in addition to increasing light trespass and disruptive glare, if proper shielding is not provided and blue-rich white light lamps (BRWL) are used (International Dark-Sky Association 2010a, 2010b, 2015). Often, BRWL light fixtures do not have a cover so that LED bulbs are exposed and such bright light can be very harsh to the human eye at night, when humans are used to lower light levels. Also, while LED lighting is often recessed and directed downwards, replacing existing street lights with BRWL LED lighting can result in a substantial amount of light trespass because LED lighting is installed at the same height as the existing light. However, BRWL are much brighter than traditional street lighting and can light a much larger area at that same height, resulting in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Overall, because the study area currently experiences low levels of light and because there are a larger number of viewers in and around the waterways, intake structures, and forebay that would be affected by these noticeable changes that contrast with the existing rural character, effects associated with new sources of daytime and nighttime light and glare are considered adverse. Mitigation Measures AES-4a through AES-4d are available to address these effects.

***CEQA Conclusion*:** The impacts associated with light and glare under Alternative 6B are significant because there are a larger number of viewers in and around the waterways, intake structures, and intermediate forebay; BDCP facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels; and the study area currently experiences low levels of light because there are fewer light/glare producers than are typical in urban areas. Mitigation Measures AES-4a through AES-4d would help reduce these impacts by limiting construction to daylight hours within 0.5 mile of residents; minimizing fugitive light from portable sources used for construction; installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences; and avoiding the use of BRWL LED lighting; however, these mitigation measures would not reduce impacts to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the new light and glare sources would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 6B would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

***NEPA Effects*:** Effects on the visual environment through operations and maintenance of the water conveyance facilities (CM1) under this alternative would be similar to those described for Alternative 1A and 1B, Impact AES-5. Once the facility is in operation, visible regular and periodic maintenance would be required on all major structures. Activities such as painting, cleaning, vegetation maintenance (removal), repairs, and inspections would be visible from viewpoints on water and land. Although under Alternative 6B there would not be an intermediate forebay, the canal and Byron Tract Forebay would require cleaning and periodic dredging. The greatest visual effects resulting from operations would be maintenance on the intakes and cleaning the canals. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; the dredged forebay and canals would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within short periods of time and cease when complete, and effects on the existing visual quality and character during operation would not be adverse because the activities would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features.

***CEQA Conclusion*:** Maintenance of the conveyance facilities (i.e., intakes, canals, forebay, transmission lines, and operable barrier) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at the Byron Tract Forebay and operable barrier, cleaning canals; vegetation removal and care along embankments; canal inspection; and vegetation removal within transmission line ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; the dredged forebay and canals would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These visible maintenance activities would be temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would be considered less than significant. Maintenance and operation of Alternative 6B, once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanent reduce visually important features. Thus, overall, Alternative 6B would have a less-than-significant impact on existing visual quality and character during maintenance and operation of the facilities in the study area. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of CM2–CM21

NEPA Effects: Under Alternative 6B, these conservation measures would be identical to those under Alternative 1A. Therefore, visual effects related to the existing visual character, scenic vistas, scenic highways, and light and glare resulting from implementation of CM2–CM21 would be the same as those described under Alternative 1A, Impact AES-6. There may be site-specific, localized adverse visual effects. These conservation measures would alter the Delta landscape by incrementally, and substantially, introducing elements into the study area over time. CM2–CM21, when combined with CM1, could substantially alter the visual character of the study area, which is strongly identified by its agricultural and water-based Delta landscapes and communities. These landscapes and communities could be adversely affected by the introduction of discordant visual features, removal of existing buildings and landscape elements of value, and through the potential for indirect impacts associated with other development potentially setting a precedent for other development to occur. All of these effects would alter the visual character of the existing regional landscape.

Because of the unknown location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction, effects associated with implementation of CM2–CM21 are considered adverse. However, the visual characteristics of restored/enhanced landscapes would be similar to other areas of the Delta that are in a natural marsh or wetland state and more limited in extent than the widespread areas of agricultural development. In this sense, the BDCP would have an overall beneficial effect related to the enhancement and creation of scenic vistas in the Delta.

Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-4a through AES-4d are available to address effects from habitat restoration and enhancement actions under CM2–CM21. In addition, Mitigation Measures AES-6a and AES-6b are available to help reduce adverse visual effects. Upon development of site-specific design information and plans, additional mitigation measures may be identified to address action-specific adverse effects. However, each individual project under CM2–CM21 would undergo the environmental compliance process that would be used to determine what additional mitigation measures, would be deemed appropriate to reduce adverse effects and to assess compliance with relevant regulations. Finally, Mitigation Measure AES-6c is available to help inventory, classify, and protect the unique visual landscape of the Delta.

CEQA Conclusion: Implementation of conservation measures under Alternative 6B has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. Impacts on the existing visual quality and character would be significant where use of large numbers of heavy construction equipment, changes in topography, and introduction of new structures or facilities where none presently exist would take place in the vicinity of sensitive receptors. However, because a number of factors that would determine the level of change are unknown—the location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction—impacts associated with implementation of CM2–CM21 on visual quality and character, scenic vistas, and light and glare sources, are considered significant. Because of the distance of implemented conservation measures from scenic highways, changes associated with these activities would not affect the visual quality along these scenic highway corridors and this impact would be less than significant. Site-specific restoration information and plans need to be developed before the site-specific effects on the existing visual character, scenic vistas, and light and glare can be determined.

Several mitigation measures are available to minimize the impacts on visual quality and character in the study area that could result from implementation of these conservation measures. As summarized below, these measures could be applied to individual restoration projects or actions as appropriate for the site-specific conditions and design considerations. In addition, each restoration project or action would undergo an environmental compliance process that would be used to determine what additional mitigation measures would be deemed appropriate to reduce significant effects. Mitigation Measures AES-1a through AES-1g could be applied to minimize impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. Mitigation Measures AES-4a through AES-4d could be used to reduce the effects of new light and glare sources by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. In addition, Mitigation Measures AES-6a and AES-6b would further minimize impacts on visual resources by undergrounding new or relocated utility lines, where feasible, and through an evaluation of an afterhours low-intensity and lights off policy. Finally, implementation of Mitigation Measure AES-6c would provide a strategy for the protection of the unique visual landscape of the Delta.

While some of the conservation measures could result in beneficial impacts through the restoration of natural habitat and these mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a less-than-significant level because of uncertainties associated with future implementation of CM2–CM21. In addition, the size of the study area and the nature of changes introduced by these conservation measures would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend or be in keeping with the existing visual environment. Thus, implementation of CM2–CM21 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6b: Develop and Implement a Afterhours Low-Intensity and Lights Off Policy

Please refer to Mitigation Measure AES-6b under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6c: Implement a Comprehensive Visual Resources Management Plan for the Delta and Study Area

Please refer to Mitigation Measure AES-6c under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 6B would generally have the same potential for incompatibilities with one or more plans and policies related to preserving the visual quality and character of the Delta as described for Alternative 1B, Impact AES-7. These features would fall under the same jurisdictions as discussed under Alternative 1B, and so, overall the potential for incompatibility is the same. As described under Alternative 1B, there would be potential for the alternative to be incompatible with plans and policies related to preserving the visual quality and character of the Delta (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and

Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

CEQA Conclusion: The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6, above and no additional CEQA conclusion is required related to the compatibility of Alternative 6B with relevant plans and policies.

17.3.3.13 Alternative 6C—Isolated Conveyance with West Alignment and Intakes W1–W5 (15,000 cfs; Operational Scenario D)

Table 17D-3 in Appendix 17D, *Permanent Impacts after Construction is Complete*, describes existing visual characteristics and the BDCP-related permanent effects of Alternative 6C on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Effects would be similar for Alternative 6C (see Figures 3-6 and 3-7 and Mapbook Figure M3-3 in Chapter 3, *Description of Alternatives*). Under Alternative 6C, the conveyance alignment from the intakes to the Byron Tract Forebay, along with the associated shaft sites, access road, transmission line, pumping plants, canals, and spoil/borrow and RTM areas would be identical to those under Alternative 1C. Conservation measures would be identical to those under Alternative 1A. This alternative would not make use of the existing SWP and CVP south Delta export facilities for Clifton Court Forebay and Jones pumping plant; however, this change would not result in different effects on visual resources.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

NEPA Effects: Effects related to visual resources under this alternative would be similar to those described for Alternative 1C. The construction period would last up to 9–14 years and the intensity of activities in contrast to the current rural/agricultural nature of the area would be substantial. Construction of Intakes W1–W5 and accompanying pumping plants, surge towers, canals, borrow/spoil areas, RTM areas, forebay, operable barrier, access roads, and transmission lines would introduce visually discordant features in the foreground and middleground views of scenic vistas and from scenic roadways, and these elements would be visible to all viewer groups. The existing visual character would be greatly altered by the presence of a large-scale intakes and concrete-lined and water-filled channels traversing the landscape. In addition, construction of all features has the potential to adversely affect wildlife viewing and the overall enjoyment and segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and eliminate valued visual resources within scenic views in the study area.

After construction, areas surrounding Intakes W1–W5, spoil/borrow areas, RTM areas, and shaft sites may be denuded of vegetation for a short period of time until the landscaping plans designed under WREM No. 30a are implemented. Once installed, the landscape would still appear to be denuded of vegetation from a distance because of immature planted vegetation would be similar in appearance to tilled or newly planted agricultural fields.

Because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this effect is considered adverse. Effects on the existing visual quality and character under Alternative 6C would be greater than those under Alternatives 6A and 6B because of the extent of the canals visible on the landscape surface, landscape effects left behind by spoil/borrow areas, introduction of bridges, and closer proximity to a greater number of sensitive viewers. Overall, effects on the existing visual character associated with construction of Alternative 6C would be adverse because the alternative would result in reductions to the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes would be viewed by sensitive receptors and from public viewing areas. Mitigation Measures AES-1a through AES-1g are available to address these effects.

***CEQA Conclusion*:** Because of the long-term nature of construction, proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, the impacts associated with constructing Intakes W1–W5 and accompanying pumping plants, surge towers, canals, borrow/spoil areas, RTM areas, and forebay are considered significant. These changes under Alternative 6C would result in reductions to the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes would be viewed by sensitive receptors and from public viewing areas. Impacts on the existing visual character under Alternative 6C would be greater than those under Alternatives 6A and 6B because of the extent of the canals visible on the landscape, landscape effects left behind by spoil/borrow areas, introduction of bridges, and closer proximity to a greater number of sensitive viewers.

Mitigation Measures AES-1a through AES-1g would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, Alternative 6C would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

NEPA Effects**:** Scenic vistas are mapped and included in Appendix 17D, Figure 17D-1. Effects on scenic vistas under this alternative would be similar to those under Alternative 1C, Impact AES-2. During construction the introduction of construction equipment and removal of vegetation would alter the scenic elements that contribute to the viewing experience from scenic vistas. The intakes would introduce visually dominant and discordant features in the foreground and middleground views in vistas that would be very noticeable to all viewer groups in areas of low to high landscape sensitivity levels. The large scale of intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines may result in adverse effects on scenic vistas (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Effects on scenic vistas under Alternative 6C would be greater than those under Alternatives 6A and 6B (Impact AES-2) because of the extent of the canals visible on the landscape, landscape effects left behind by spoil/borrow areas, introduction of bridges, and closer proximity to a greater number of sensitive viewers. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas. Impacts on scenic vistas under Alternative 6C would be greater than under Alternatives 6A and 6B due to the extent of the canals visible on the landscape surface, landscape effects left behind by spoil/borrow areas, introduction of bridges, and closer proximity to a greater number of sensitive viewers.

Mitigation Measures AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because the changes would remain noticeable and introduce elements that do not blend with the existing visual character of the vista viewsheds. Thus, impacts on scenic vistas associated with Alternative 6C would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

NEPA Effects: Effects on state scenic highways under this alternative would be similar to those described for Alternative 1C, Impact AES-3, and would result in an overall noticeable effect on viewers relative to their current experience and enjoyment of the study area's scenic resources. The intakes would be visible from SR 160. However, bridges, canals, and spoil/borrow areas may or may not be visible from SR 160 because the work areas would be across the river at a lower ground elevation than the raised roadway, and the views could be obscured by intervening vegetation along SR 160 and CH E9. Where visible, views would be greatly altered by the presence of large-scale, concrete-lined and water-filled channels traversing the landscape, large sunken or elevated landforms, and elevated structures between the intakes. In addition, transmission lines following the canals would introduce tall, lattice steel structures that would draw more attention to the linearity of the canal and its industrial nature and would be visible from SR 160. Effects on scenic highways under Alternative 6C may not be as great as those under Alternative 6B, due to the potential for obscured views of the bridges, canals, and spoil/borrow areas from SR 160; however, these effects may be adverse. Mitigation Measures AES-1a, AES-1c, and AES-1e would be available to address these effects.

CEQA Conclusion: Impacts on scenic highways associated with the presence of conveyance facilities under Alternative 6C would be significant because visual elements associated with the alternative would conflict with the existing forms, patterns, colors, and textures visible from SR 160; would dominate riverfront views available from SR 160; and would alter broad views and the general nature of the visual experience presently available from SR 160 (thereby permanently damaging the scenic resources along the scenic highway). Impacts on scenic highways under Alternative 6C may not be as great as those under Alternative 6B due to the potential for obscured views of the bridges, canals, and spoil/borrow areas from SR 160. However, the intakes would be very visible and result in a very noticeable change in the viewshed. Mitigation Measures AES-1a, AES-1c, and AES-1e would help to reduce these impacts through the application of aesthetic design treatments to all structures, to the extent feasible. However, impacts on visual resources resulting from damage to scenic resources that may be viewed from a state scenic highway would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes to the visual character of a scenic highway viewshed that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, overall, this impact would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

***NEPA Effects*:** Light and glare effects related to operation of Intakes W1–W5, canals, spoils/borrow areas, RTM areas, shaft sites, Byron Tract Forebay, permanent access roads, and transmission lines would be the same as those described for Alternative 1C, Impact AES-4. Intakes W1–W5 and the associated pumping plants, surge towers, and facilities would create very noticeable effects relating to light and glare (Figures 17-76 through 17-78). Light building colors over a large surface area would reflect off of those surfaces and increase glare, especially when combined with the removal of vegetation that absorbs light, provides shade, and screens glare. The amount of glare associated with surfaces would be increased if highly glossy paints or surface treatments or highly reflective materials are used, compared to satin or flat paints or surface treatments or materials that are less reflective. Sunlight would reflect off the new water surfaces of the canals, creating new sources of glare where none presently exist. Because of the extent of the canals and introduction of a substantial glare-producing water body, the effect associated with daytime and nighttime glare is considered adverse. Nighttime construction could also result in headlights flashing into nearby residents' homes when construction vehicles are turning onto or off of construction access routes. Proposed surge towers and transmission towers would require the use of safety lights that would alert low-flying aircraft to the presence of these structures because of their height. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the surge tower for aircraft safety. Given the height of the towers, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers. In addition, using LED lighting can result in a substantial increase in light and glare if not properly designed. This is because LED lights can negatively affect humans by increasing nuisance light and glare that can negatively affect circadian rhythms and sleep patterns, in addition to increasing light trespass and disruptive glare, if proper shielding is not provided and blue-rich white light lamps (BRWL) are used (International Dark-Sky Association 2010a, 2010b, 2015). Often, BRWL light fixtures do not have a cover so that LED bulbs are exposed and such bright light can be very harsh to the human eye at night, when humans are used to lower light levels. Also, while LED lighting is often recessed and directed downwards, replacing existing street lights with BRWL LED lighting can result in a substantial amount of light trespass because LED lighting is installed at the same height as the existing light. However, BRWL are much brighter than traditional street lighting and can light a much larger area at that same height, resulting in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Overall, because the study area currently experiences low levels of light and because there are a larger number of viewers in and around the waterways, intake structures, forebay, and canals that would be affected by these noticeable changes that contrast with the existing rural character, effects associated with new sources of daytime and nighttime light and glare are considered adverse. Mitigation Measures AES-4a through 4d are available to address these effects.

***CEQA Conclusion*:** The impacts associated with light and glare under Alternative 6C are significant because there are a larger number of viewers in and around the waterways, intake structures, forebay, and canals; alternative facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels; and the study area currently experiences low levels of light. Mitigation Measures AES-4a through AES-4d would help reduce impacts by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. However, these mitigation measures would not reduce impacts to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the new light and glare sources would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 6C would result in significant and unavoidable impacts on public views in the project vicinity

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

***NEPA Effects*:** Effects on the visual environment through operations and maintenance of the water conveyance facilities (CM1) under this alternative would be similar to those described for Alternatives 1A and 1C, Impact AES-5. Once the facility is in operation, visible regular and periodic maintenance would be required on all major structures. Activities such as painting, cleaning, vegetation maintenance (removal), repairs, and inspections would be visible from viewpoints on water and land Although under Alternative 6C there would not be an intermediate forebay, the canal and Byron Tract Forebay would require cleaning and periodic dredging. The greatest visual effects resulting from operations would be maintenance on the intakes and cleaning the canals. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; the dredged forebay and canals would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within short periods of time and cease when complete, and effects on the existing visual quality and character during operation would not be adverse because the activities would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features.

CEQA Conclusion: Maintenance of the conveyance facilities (i.e., intakes, canals, forebay, transmission lines, and operable barrier) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at the Byron Tract Forebay; cleaning canals; vegetation removal and care along embankments; canal inspection; and vegetation removal within transmission line ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; the dredged forebay and canals would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These visible maintenance activities would be temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would be considered less than significant. Maintenance and operation of Alternative 6C, once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanent reduce visually important features. Thus, overall, Alternative 6C would have a less-than-significant impact on existing visual quality and character during maintenance and operation of the facilities in the study area. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of CM2–CM21

NEPA Effects: Under Alternative 6C, these conservation measures would be identical to those under Alternative 1A. Therefore, visual effects related to the existing visual character, scenic vistas, scenic highways, and light and glare resulting from implementation of CM2–CM21 would be the same as those described under Alternative 1A, Impact AES-6. There may be site-specific, localized adverse visual effects. These conservation measures would alter the Delta landscape by incrementally, and substantially, introducing elements into the study area over time. CM2–CM21, when combined with CM1, could substantially alter the visual character of the study area, which is strongly identified by its agricultural and water-based Delta landscapes and communities. These landscapes and communities could be adversely affected by the introduction of discordant visual features, removal of existing buildings and landscape elements of value, and through the potential for indirect impacts associated with other development potentially setting a precedent for other development to occur. All of these effects would alter the visual character of the existing regional landscape.

Because of the unknown location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction, effects associated with implementation of CM2–CM21 are considered adverse. However, the visual characteristics of restored/enhanced landscapes would be similar to other areas of the Delta that are in a natural marsh or wetland state and more limited in extent than the widespread areas of agricultural development. In this sense, the BDCP would have an overall beneficial effect related to the enhancement and creation of scenic vistas in the Delta.

Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-4a through AES-4d are available to address effects from habitat restoration and enhancement actions under CM2–CM21. In addition, Mitigation Measures AES-6a and AES-6b are available to help reduce adverse visual effects. Upon development of site-specific design information and plans, additional mitigation measures may be identified to address action-specific adverse effects. However, each individual project under CM2–CM21 would undergo the environmental compliance process that would be used to determine what additional mitigation measures, would be deemed appropriate to reduce adverse effects and to assess compliance with relevant regulations. Finally, Mitigation Measure AES-6c is available to help inventory, classify, and protect the unique visual landscape of the Delta.

CEQA Conclusion: Implementation of conservation measures under Alternative 6C has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. Impacts on the existing visual quality and character would be significant where use of large numbers of heavy construction equipment, changes in topography, and introduction of new structures or facilities where none presently exist would take place in the vicinity of sensitive receptors. However, because a number of factors that would determine the level of change are unknown—the location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction—impacts associated with implementation of CM2–CM21 on visual quality and character, scenic vistas, and light and glare sources, are considered significant. Because of the distance of implemented conservation measures from scenic highways, changes associated with these activities would not affect the visual quality along these scenic highway corridors and this impact would be less than significant. Site-specific restoration information and plans need to be developed before the site-specific effects on the existing visual character, scenic vistas, and light and glare can be determined.

Several mitigation measures are available to minimize the construction and operation impacts on visual quality and character in the study area that could result from implementation of these conservation measures. As summarized below, these measures could be applied to individual restoration projects or actions as appropriate for the site-specific conditions and design considerations. In addition, each restoration project or action would undergo an environmental compliance process that would be used to determine what additional mitigation measures would be deemed appropriate to reduce significant effects. Mitigation Measures AES-1a through AES-1g could be applied to minimize impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. Mitigation Measures AES-4a through AES-4d could be used to reduce the effects of new light and glare sources by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. In addition, Mitigation Measures AES-6a and AES-6b would further minimize impacts on visual resources by undergrounding new or relocated utility lines, where feasible, and through an evaluation of an afterhours low-intensity and lights off policy. Finally, implementation of Mitigation Measure AES-6c would provide a strategy for the protection of the unique visual landscape of the Delta.

While some of the conservation measures could result in beneficial impacts through the restoration of natural habitat and these mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a less-than-significant level because of uncertainties associated with future implementation of CM2–CM21. In addition, the size of the study area and the nature of changes introduced by these conservation measures would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend or be in keeping with the existing visual environment. Thus, implementation of CM2–CM21 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6b: Develop and Implement an Afterhours Low-Intensity and Lights Off Policy

Please refer to Mitigation Measure AES-6b under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6c: Implement a Comprehensive Visual Resources Management Plan for the Delta and Study Area

Please refer to Mitigation Measure AES-6c under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

NEPA Effects**:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 6C would generally have the same potential for incompatibilities with one or more plans and policies related to preserving the visual quality and character of the Delta as described for Alternative 1C, Impact AES-7. As described under Alternative 1C, there would be potential for the alternative to be incompatible with plans and policies related to preserving the visual quality and character of the Delta (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan). In addition, with the exception of San Joaquin County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

CEQA Conclusion**:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6, above and no additional CEQA conclusion is required related to the compatibility of Alternative 6C with relevant plans and policies.

17.3.3.14 Alternative 7—Dual Conveyance with Pipeline/Tunnel, Intakes 2, 3, and 5, and Enhanced Aquatic Conservation (9,000 cfs; Operational Scenario E)

Table 17D-1 in Appendix 17D, *Permanent Impacts after Construction is Complete*, describes existing visual characteristics and the BDCP-related permanent effects of Alternative 7 on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Effects would be similar for this alternative. Under Alternative 7, the conveyance alignment from the intakes to the Byron Tract Forebay, along with the associated shaft site, access road, transmission line, pumping plants, barge unloading facility sites, and spoil/borrow and RTM areas would be identical to those under Alternative 1A. Alternative 7 would use the same three intakes as under Alternative 4: Intakes 2, 3, and 5. The effects associated with construction of Intakes 2, 3, and 5 are discussed in detail under Alternative 4, and those effects would be the same under Alternative 7. In addition, implementation of the other conservation measures under Alternative 7 would enhance 40 linear miles rather than 20 linear miles of channel margin habitat, and restore approximately 20,000 acres rather than 10,000 acres of seasonally inundated floodplain.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

***NEPA Effects*:** Effects related to visual resources under this alternative would be similar to those described for Alternatives 1A and 4. Effects associated with the intake structures would be the same as described for Alternative 4 (Intakes 2, 3, and 5) and decreased relative to Alternative 1A (Intakes 1–5). The primary features that would affect the existing visual quality and character under Alternative 7, once the facility has been constructed, would be the intakes, the intermediate forebay and Byron Tract Forebay, transmission lines, and resulting landscape effects left behind from spoil/borrow and RTM areas, and concrete batch plants and fuel stations. These changes would be most evident in the northern portion of the study area, which would undergo extensive changes from the permanent establishment of large industrial facilities and the supporting infrastructure along and surrounding the segment of the Sacramento River where the intakes would be situated. As with Alternative 1A, the surge tower shadows from Intake 2 and the intermediate forebay pumping plant would not stand out from the shadows cast by vegetation along the Southern Pacific Rail Line and would not adversely affect the SLNWR.

Overall, construction would take 9–14 years, and the intensity of the activities in contrast to the current rural/agricultural nature of the area would be substantial. Construction of intakes, and the accompanying pumping plants, surge towers, borrow/spoil areas, and RTM areas would introduce visually dominant and discordant features in the foreground and middleground views, and these elements would be very noticeable to all viewer groups.

After construction, areas surrounding the intakes, spoil/borrow areas, RTM areas, shaft sites, and locations where concrete batch plants and fuel stations were located may be denuded of vegetation for a short period of time until the landscaping plans designed under WREM No. 30a are implemented. Once installed, the landscape would still appear to be denuded of vegetation or to have little vegetative cover because immature landscaping would be similar in appearance to tilled or newly planted agricultural fields. The sites would be in a transitional state, and over a period of a few years, plant species would mature and vegetation would recolonize the sites. These changes would happen in an area known for its open space, agricultural landscapes, and rural characteristics and would segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and eliminate valued visual resources. The effects of permanent access roads on visual resources would not be adverse. The effects of shaft site pads and access hatches on the existing scenic character may be adverse. Operation of the intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines would result in adverse effects on the existing visual character. In addition, construction of all of these features has the potential to negatively affect wildlife viewing and the overall enjoyment of scenic views in the study area. Therefore, because of the long-term nature of construction combined with the proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this overall effect of conveyance facility construction on existing visual quality and character is considered adverse. Mitigation Measures AES-1a through AES-1g are available to address visual effects resulting from construction of Alternative 7 water conveyance facilities.

***CEQA Conclusion*:** Construction of Alternative 7 would substantially alter the existing visual quality and character present in the study area. The long-term nature of construction of the intakes, pipeline/tunnel, work areas, spoil/borrow and RTM areas, shaft sites, barge unloading facilities; presence and visibility of heavy construction equipment; proximity to sensitive receptors; relocation of residences and agricultural buildings; removal of riparian vegetation and other mature vegetation or landscape plantings; earthmoving and grading that result in changes to topography in areas that are predominantly flat; addition of large-scale industrial structures (intakes and related facilities); remaining presence of large-scale borrow/spoil and RTM area landscape effects; and introduction of tall, steel transmission lines would all contribute to this impact.

Overall, construction would last up to 9–14 years and would change the existing visual character in the vicinity of project elements from those of agricultural, rural residential, or riparian and riverine settings to areas involving heavy construction equipment, temporary construction structures, work crews, other support vehicles and other activities that would modify and disrupt short- and long-range views. These activities would be disruptive to viewers. Once construction is complete, the alternative would result in the placement of large, multi-story industrial concrete and steel structures, pumping plants, fencing, and other similar anthropogenic features where none presently exist. Because of the landscape sensitivity and visual dominance of these features, these changes would result in reduced scenic quality throughout the study area (see Section 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Thus, Alternative 7 would result in significant impacts on the existing visual quality and character in the study area.

Mitigation Measures AES-1a through AES-1g would partially reduce impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, Alternative 7 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

NEPA Effects**:** Scenic vistas are mapped and included in Appendix 17D, Figure 17D-1. Effects related to scenic vistas under this alternative would be the same as those described for Alternative 4, Impact AES-2. During construction the introduction of construction equipment and removal of vegetation would alter the scenic elements that contribute to the viewing experience from scenic vistas. The intakes would introduce visually dominant and discordant features in the foreground and middleground views in vistas that would be very noticeable to all viewer groups in areas of low to high landscape sensitivity levels. However, the severity of these effects related to the north Delta intakes along the Sacramento River would be decreased because there would only be three intake structures instead of five. As described for Alternative 4, the effects of permanent access roads effects on scenic vistas would not be adverse. The effects of shaft site pads and access hatches on scenic vistas could be adverse. The large scale of intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines may result in adverse effects on scenic vistas (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Overall, effects on scenic vistas associated with Alternative 7 may be adverse. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion**:** Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measure AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 7 would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

***NEPA Effects*:** Effects on state scenic highways under this alternative would be similar to those described for Alternative 4, Impact AES-3. Intakes 2, 3, and 5, the spoils/borrow and RTM area north of Intake 2, and the intermediate forebay would be immediately and prominently visible in the foreground from SR 160 and would result in an overall noticeable effect on viewers relative to their current experience and enjoyment of the study area's scenic resources along SR 160 and River Road, where the landscape sensitivity level is high. As described for Alternative 4, the visual elements introduced by the intakes, spoil/borrow and RTM areas north of Intake 2, and intermediate forebay associated with Alternative 7 would conflict with the existing forms, patterns, colors, and textures along River Road and SR 160; would dominate riverfront available from SR 160; and would alter broad views and the general nature of the visual experience presently available from River Road and SR 160. These changes would reduce the visual quality near intake structure locations and result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas. This effect would be adverse (see discussion under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measures AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 7 would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

NEPA Effects**:** Effects resulting from light and glare under this alternative would be similar to those described for Alternative 4, Impact AES-4. Intakes 2, 3, and 5 and their associated pumping plants, surge towers, and facilities and the pumping plant at the intermediate forebay would create very noticeable effects relating to light and glare (Figures 17-76 through 17-78). Light building colors over a large surface area would reflect off of those surfaces and increase glare, especially when combined with the removal of vegetation that absorbs light, provides shade, and screens glare. The amount of glare associated with surfaces would be increased if highly glossy paints or surface treatments or highly reflective materials are used, compared to satin or flat paints or surface treatments or materials that are less reflective. Sunlight would reflect off the new water surfaces of the forebay, creating new sources of glare where none presently exist. However, the severity of these effects related to the north Delta intakes on the Sacramento River would be decreased because there would only be three intake structures instead of five. Nighttime construction could also result in headlights flashing into nearby residents' homes when construction vehicles are turning onto or off of construction access routes. Proposed surge towers and transmission towers would require the use of safety lights that would alert low-flying aircraft to the presence of these structures because of their height. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the surge tower for aircraft safety. Given the height of the towers, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers. In addition, using LED lighting can result in a substantial increase in light and glare if not properly designed. This is because LED lights can negatively affect humans by increasing nuisance light and glare that can negatively affect circadian rhythms and sleep patterns, in addition to increasing light trespass and disruptive glare, if proper shielding is not provided and blue-rich white light lamps (BRWL) are used (International Dark-Sky Association 2010a, 2010b, 2015). Often, BRWL light fixtures do not have a cover so that LED bulbs are exposed and such bright light can be very harsh to the human eye at night, when humans are used to lower light levels. Also, while LED lighting is often recessed and directed downwards, replacing existing street lights with BRWL LED lighting can result in a substantial amount of light trespass because LED lighting is installed at the same height as the existing light. However, BRWL are much brighter than traditional street lighting and can light a much larger area at that same height, resulting in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Overall, because the study area currently experiences low levels of light and because there are a larger number of viewers in and around the waterways, intake structures, and forebay that would be affected by these noticeable changes that contrast with the existing rural character, effects associated with new sources of daytime and nighttime light and glare are considered adverse. Mitigation Measures AES-4a through AES-4d are available to address these effects.

CEQA Conclusion: The impacts associated with light and glare under Alternative 7 are significant because there are a larger number of viewers in and around the waterways, intake structures, and intermediate forebay; BDCP facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels; and the study area currently experiences low levels of light because there are fewer light/glare producers than are typical in urban areas. Mitigation Measures AES-4a through AES-4d would help reduce these impacts by limiting construction to daylight hours within 0.5 mile of residents; minimizing fugitive light from portable sources used for construction; installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences; and avoiding the use of BRWL LED lighting; however, these mitigation measures would not reduce impacts to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the new light and glare sources would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 7 would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

NEPA Effects: Effects on the visual environment through operations and maintenance of the water conveyance facilities (CM1) under this alternative would be similar to those described for Alternative 4, Impact AES-5. Once the facility is in operation, visible regular and periodic maintenance would be required on all major structures. Activities such as painting, cleaning, vegetation maintenance (removal), repairs, and inspections would be visible from viewpoints on water and land. The greatest visual effects resulting from operations would be maintenance of the intakes and dredging the forebays. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete, these effects on the existing visual quality and character during operation would not be adverse because the activities would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features.

***CEQA Conclusion*:** Maintenance of the conveyance facilities (i.e., intakes, tunnels, forebays and transmission lines) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at forebays (at approximately 50-year intervals); vegetation removal and care along embankments; tunnel inspection; and vegetation removal within transmission line ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These visible maintenance activities would be temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would be considered less than significant. Maintenance and operation of Alternative 7 once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features. Thus, overall, Alternative 7 would have a less-than-significant impact on existing visual quality and character during maintenance and operation of the facilities in the study area. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of CM2–CM21

***NEPA Effects*:** Under Alternative 7, these conservation measures would be similar to those under Alternative 1A, Impact AES-6, but up to an additional 20 miles of channel margin habitat enhancement and 10,000 acres seasonally inundated floodplain restoration would take place under this alternative compared to Alternative 1A. Effects on the existing visual character, scenic vistas, scenic highways, and light and glare would be similar those under Alternative 1A because restored/enhanced lands would result in incremental and site-specific changes to changes in views. There may be site-specific, localized adverse visual effects. These conservation measures would alter the Delta landscape by incrementally, and substantially, introducing elements into the study area over time. CM2–CM21, when combined with CM1, could substantially alter the visual character of the study area, which is strongly identified by its agricultural and water-based Delta landscapes and communities. These landscapes and communities could be adversely affected by the introduction of discordant visual features, removal of existing buildings and landscape elements of value, and through the potential for indirect impacts associated with other development potentially setting a precedent for other development to occur. All of these effects would alter the visual character of the existing regional landscape.

Because of the unknown location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction, effects associated with implementation of CM2–CM21 could be adverse. However, the visual characteristics of restored/enhanced landscapes would be similar to areas of the Delta that are in a natural marsh or wetland state and more limited in extent than the widespread areas of agricultural development. In this sense, the BDCP would have an overall beneficial effect related to the enhancement and creation of scenic vistas in the Delta.

Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-4a through AES-4d are available to address effects from habitat restoration and enhancement actions under CM2–CM21. In addition, Mitigation Measures AES-6a and AES-6b are available to help reduce adverse visual effects. Upon development of site-specific design information and plans, additional mitigation measures may be identified to address action-specific adverse effects. However, each individual project under CM2–CM21 would undergo the environmental compliance process that would be used to determine what additional mitigation measures, would be deemed appropriate to reduce adverse effects and to assess compliance with relevant regulations. Finally, Mitigation Measure AES-6c is available to help inventory, classify, and protect the unique visual landscape of the Delta.

CEQA Conclusion: Implementation of conservation measures under Alternative 7 has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. Impacts on the existing visual quality and character would be significant where use of large numbers of heavy construction equipment, changes in topography, and introduction of new structures or facilities where none presently exist would take place in the vicinity of sensitive receptors. However, because a number of factors that would determine the level of change are unknown—the location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction—impacts associated with implementation of CM2–CM21 on visual quality and character, scenic vistas, and light and glare sources, are considered significant. Because of the distance of implemented conservation measures from scenic highways, changes associated with these activities would not affect the visual quality along these scenic highway corridors and this impact would be less than significant. Site-specific restoration information and plans need to be developed before the site-specific effects on the existing visual character, scenic vistas, and light and glare can be determined.

Several mitigation measures are available to minimize the impacts on visual quality and character in the study area that could result from implementation of these conservation measures. As summarized below, these measures could be applied to individual restoration projects or actions as appropriate for the site-specific conditions and design considerations. In addition, each restoration project or action would undergo an environmental compliance process that would be used to determine what additional mitigation measures would be deemed appropriate to reduce significant effects. Mitigation Measures AES-1a through AES-1g could be applied to minimize impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. Mitigation Measures AES-4a through AES-4d could be used to reduce the effects of new light and glare sources by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. In addition, Mitigation Measures AES-6a and AES-6b would further minimize impacts on visual resources by undergrounding new or relocated utility lines, where feasible, and through an evaluation of an afterhours low-intensity and lights off policy. Finally, implementation of Mitigation Measure AES-6c would provide a strategy for the protection of the unique visual landscape of the Delta.

While some of the conservation measures could result in beneficial impacts through the restoration of natural habitat and these mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a less-than-significant level because of uncertainties associated with future implementation of CM2–CM21. In addition, the size of the study area and the nature of changes introduced by these conservation measures would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend or be in keeping with the existing visual environment. Thus, implementation of CM2–CM21 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6b: Develop and Implement an Afterhours Low-Intensity and Lights Off Policy

Please refer to Mitigation Measure AES-6b under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6c: Implement a Comprehensive Visual Resources Management Plan for the Delta and Study Area

Please refer to Mitigation Measure AES-6c under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

***NEPA Effects*:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 7 would generally have the same potential for incompatibilities with one or more plans and policies related to preserving the visual quality and character of the Delta as described for Alternative 1A, Impact AES-7. The primary differences under Alternative 7 are that only Intakes 2, 3 and 5 would be constructed and there would be larger areas of enhancement of channel margin habitat (40 linear miles rather than 20 linear miles) and restoration of seasonally inundated floodplain (approximately 20,000 acres rather than 10,000 acres). As described under Alternative 1A, there would be potential for the alternative to be incompatible with plans and policies related to preserving the visual quality and character of the Delta (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6, above and no additional CEQA conclusion is required related to the compatibility of Alternative 7 with relevant plans and policies.

17.3.3.15 Alternative 8—Dual Conveyance with Pipeline/Tunnel, Intakes 2, 3, and 5, and Increased Delta Outflow (9,000 cfs; Operational Scenario F)

Table 17D-1 in Appendix 17D, *Permanent Impacts after Construction is Complete*, describes existing visual characteristics and the BDCP-related permanent effects of Alternative 8 on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Effects would be similar under this alternative. Under Alternative 8, the conveyance alignment from the intakes to the Byron Tract Forebay, along with the associated shaft site, access road, transmission line, pumping plants, barge unloading facility sites, and spoil/borrow and RTM areas would be identical to those under Alternative 1A. Alternative 8 would use the same three intakes as under Alternative 4: Intakes 2, 3, and 5. The effects associated with construction of Intakes 2, 3, and

5 are discussed in detail under Alternative 4, and those effects would be the same under Alternative 8. Other conservation measures (CM2–CM21) under Alternative 8 would be the same as those under Alternative 1A.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

NEPA Effects: Effects related to visual resources under this alternative would be similar to those described for Alternative 4. Effects associated with the intake structures would be the same as described for Alternative 4 (Intakes 2, 3, and 5) and decreased relative to Alternative 1A (Intakes 1–5). The primary features that would affect the existing visual quality and character under Alternative 8, once the facility has been constructed, would be the intakes, the intermediate forebay and Byron Tract Forebay, transmission lines, and resulting landscape effects left behind from spoil/borrow and RTM areas, and concrete batch plants and fuel stations. These changes would be most evident in the northern portion of the study area, which would undergo extensive changes from the permanent establishment of large industrial facilities and the supporting infrastructure along and surrounding the segment of the Sacramento River where the intakes would be situated. As with Alternative 1A, the surge tower shadows from Intake 2 and the intermediate forebay pumping plant would not stand out from the shadows cast by vegetation along the Southern Pacific Rail Line and would not adversely affect the SLNWR.

Overall, construction would take 9–14 years, and the intensity of the activities in contrast to the current rural/agricultural nature of the area would be substantial. Construction of intakes, and the accompanying pumping plants, surge towers, borrow/spoil areas, and RTM areas would introduce visually dominant and discordant features in the foreground and middleground views, and these elements would be very noticeable to all viewer groups.

After construction, areas surrounding the intakes, spoil/borrow areas, RTM areas, shaft sites, and locations where concrete batch plants and fuel stations were located may be denuded of vegetation for a short period of time until the landscaping plans designed under WREM No. 30a are implemented. Once installed, the landscape would still appear to be denuded of vegetation or to have little vegetative cover because immature landscaping would be similar in appearance to tilled or newly planted agricultural fields. The sites would be in a transitional state, and over a period of a few years, plant species would mature and vegetation would recolonize the sites. These changes would happen in an area known for its open space, agricultural landscapes, and rural characteristics and would segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and eliminate valued visual resources. The effects of permanent access roads on visual resources would not be adverse. The effects of shaft site pads and access hatches on the existing scenic character may be adverse. Operation of the intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines would result in adverse effects on the existing visual character. In addition, construction of all of these features has the potential to negatively affect wildlife viewing and the overall enjoyment of scenic views in the study area. Therefore, because of the long-term nature of construction combined with the proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this overall effect of conveyance facility construction on existing visual quality and character is considered adverse. Mitigation Measures AES-1a through AES-1g are available to address visual effects resulting from construction of Alternative 8 water conveyance facilities.

CEQA Conclusion**:** Construction of Alternative 8 would substantially alter the existing visual quality and character present in the study area. The long-term nature of construction of the intakes, pipeline/tunnel, work areas, spoil/borrow and RTM areas, shaft sites, barge unloading facilities; presence and visibility of heavy construction equipment; proximity to sensitive receptors; relocation of residences and agricultural buildings; removal of riparian vegetation and other mature vegetation or landscape plantings; earthmoving and grading that result in changes to topography in areas that are predominantly flat; addition of large-scale industrial structures (intakes and related facilities); remaining presence of large-scale borrow/spoil and RTM area landscape effects; and introduction of tall, steel transmission lines would all contribute to this impact.

Overall, construction would last up to 9–14 years and would change the existing visual character in the vicinity of project elements from those of agricultural, rural residential, or riparian and riverine settings to areas involving heavy construction equipment, temporary construction structures, work crews, other support vehicles and other activities that would modify and disrupt short- and long-range views. These activities would be disruptive to viewers. Once construction is complete, the alternative would result in the placement of large, multi-story industrial concrete and steel structures, pumping plants, fencing, and other similar anthropogenic features where none presently exist. Because of the landscape sensitivity and visual dominance of these features, these changes would result in reduced scenic quality throughout the study area (see Section 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Thus, Alternative 8 would result in significant impacts on the existing visual quality and character in the study area.

Mitigation Measures AES-1a through AES-1g would partially reduce impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, Alternative 8 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

NEPA Effects: Scenic vistas are mapped and included in Appendix 17D, Figure 17D-1. Effects related to scenic vistas under this alternative would be similar to those described for Alternative 4, Impact AES-2. During construction the introduction of construction equipment and removal of vegetation would alter the scenic elements that contribute to the viewing experience from scenic vistas. The intakes would introduce visually dominant and discordant features in the foreground and middleground views in vistas that would be very noticeable to all viewer groups in areas of low to high landscape sensitivity levels. As described for Alternative 4, the effects of permanent access roads effects on scenic vistas would not be adverse. The effects of shaft site pads and access hatches on scenic vistas could be adverse. The large scale of intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines may result in adverse effects on scenic vistas (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Overall, effects on scenic vistas associated with Alternative 8 may be adverse. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measure AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 8 would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

NEPA Effects: Effects on state scenic highways under this alternative would be similar to those described for Alternative 4, Impact AES-3. Intakes 2, 3, and 5, the spoils/borrow and RTM area north of Intake 2, and the intermediate forebay would be immediately and prominently visible in the foreground from SR 160 and would result in an overall noticeable effect on viewers relative to their current experience and enjoyment of the study area's scenic resources along SR 160 and River Road, where the landscape sensitivity level is high. As described for Alternative 4, the visual elements introduced by the intakes, spoil/borrow and RTM areas north of Intake 2, and intermediate forebay associated with Alternative 8 would conflict with the existing forms, patterns, colors, and textures along River Road and SR 160; would dominate riverfront available from SR 160; and would alter broad views and the general nature of the visual experience presently available from River Road and SR 160. These changes would reduce the visual quality near intake structure locations and result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas. This effect would be adverse (see discussion under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Mitigation Measure AES-1e is available to address these effects.

CEQA Conclusion: Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measures AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 8 would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

NEPA Effects: Effects resulting from light and glare under this alternative would be similar to those described for Alternative 4, Impact AES-4. Intakes 2, 3, and 5 and their associated pumping plants, surge towers, and facilities and the pumping plant at the intermediate forebay would create very noticeable effects relating to light and glare (Figures 17-76 through 17-78). Light building colors over a large surface area would reflect off of those surfaces and increase glare, especially when combined with the removal of vegetation that absorbs light, provides shade, and screens glare. The amount of glare associated with surfaces would be increased if highly glossy paints or surface treatments or highly reflective materials are used, compared to satin or flat paints or surface treatments or materials that are less reflective. Sunlight would reflect off the new water surfaces of the forebay, creating new sources of glare where none presently exist. However, the severity of these effects related to the north Delta intakes on the Sacramento River would be decreased because there would only be three intake structures instead of five. Nighttime construction could also result in headlights flashing into nearby residents' homes when construction vehicles are turning onto or off of construction access routes. Proposed surge towers and transmission towers would require the use of safety lights that would alert low-flying aircraft to the presence of these structures because of their height. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the surge tower for aircraft safety. Given the height of the towers, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers. In addition, using LED lighting can result in a substantial increase in light and glare if not properly designed. This is because LED lights can negatively affect humans by increasing nuisance light and glare that can negatively affect circadian rhythms and sleep patterns, in addition to increasing light trespass and disruptive glare, if proper shielding is not provided and blue-rich white light lamps (BRWL) are used (International Dark-Sky Association 2010a, 2010b, 2015). Often, BRWL light fixtures do not have a cover so that LED bulbs are exposed and such bright light can be very harsh to the human eye at night, when humans are used to lower light levels. Also, while LED lighting is often recessed and directed downwards, replacing existing street lights with BRWL LED lighting can result in a substantial amount of light trespass because LED lighting is installed at the same height as the existing light. However, BRWL are much brighter than traditional street lighting and can light a much larger area at that same height, resulting in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Overall, because the study area currently experiences low levels of light and because there are a larger number of viewers in and around the waterways, intake structures, and forebay that would be affected by these noticeable changes that contrast with the existing rural character, effects associated with new sources of daytime and nighttime light and glare are considered adverse. Mitigation Measures AES-4a through AES-4d are available to address these effects.

CEQA Conclusion: The impacts associated with light and glare under Alternative 8 are significant because there are a larger number of viewers in and around the waterways, intake structures, and intermediate forebay; BDCP facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels; and the study area currently experiences low levels of light because there are fewer light/glare producers than are typical in urban areas. Mitigation Measures AES-4a through AES-4d would help reduce these impacts by limiting construction to daylight hours within 0.5 mile of residents; minimizing fugitive light from portable sources used for construction; installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences; and avoiding the use of BRWL LED lighting; however, these mitigation measures would not reduce impacts to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the new light and glare sources would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 8 would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

***NEPA Effects*:** Effects on the visual environment through operations and maintenance of the water conveyance facilities (CM1) under this alternative would be similar to those described for Alternative 4, Impact AES-5. Once the facility is in operation, visible regular and periodic maintenance would be required on all major structures. Activities such as painting, cleaning, vegetation maintenance (removal), repairs, and inspections would be visible from viewpoints on water and land. The greatest visual effects resulting from operations would be maintenance of the intakes and dredging the forebays. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete, these effects n the existing visual quality and character during operation would not be adverse because the activities would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features.

***CEQA Conclusion*:** Maintenance of the conveyance facilities (i.e., intakes, tunnels, forebays and transmission lines) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at forebays (at approximately 50-year intervals); vegetation removal and care along embankments; tunnel inspection; and vegetation removal within transmission line ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These visible maintenance activities would be temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would be considered less than significant. Maintenance and operation of Alternative 8 once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features. Thus, overall, Alternative 8 would have a less-than-significant impact on existing visual quality and character during maintenance and operation of the facilities in the study area. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of CM2–CM21

NEPA Effects: Under Alternative 8, these conservation measures would be the same as those under Alternative 4, Impact AES-6. Effects on the existing visual character, scenic vistas, scenic highways, and light and glare would be similar those under Alternative 4 because restored/enhanced lands would result in incremental and site-specific changes to changes in views. There may be site-specific, localized adverse visual effects. These conservation measures would alter the Delta landscape by incrementally, and substantially, introducing elements into the study area over time. CM2–CM21, when combined with CM1, could substantially alter the visual character of the study area, which is strongly identified by its agricultural and water-based Delta landscapes and communities. These landscapes and communities could be adversely affected by the introduction of discordant visual features, removal of existing buildings and landscape elements of value, and through the potential for indirect impacts associated with other development potentially setting a precedent for other development to occur. All of these effects would alter the visual character of the existing regional landscape.

Because of the unknown location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction, effects associated with implementation of CM2–CM21 could be adverse. However, the visual characteristics of restored/enhanced landscapes would be similar to areas of the Delta that are in a natural marsh or wetland state and more limited in extent than the widespread areas of agricultural development. In this sense, the BDCP would have an overall beneficial effect related to the enhancement and creation of scenic vistas in the Delta.

Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-4a through AES-4d are available to address effects from habitat restoration and enhancement actions under CM2–CM21. In addition, Mitigation Measures AES-6a and AES-6b are available to help reduce adverse visual effects. Upon development of site-specific design information and plans, additional mitigation measures may be identified to address action-specific adverse effects. However, each individual project under CM2–CM21 would undergo the environmental compliance process that would be used to determine what additional mitigation measures, would be deemed appropriate to reduce adverse effects and to assess compliance with relevant regulations. Finally, Mitigation Measure AES-6c is available to help inventory, classify, and protect the unique visual landscape of the Delta.

CEQA Conclusion: Implementation of conservation measures under Alternative 8 has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. Impacts on the existing visual quality and character would be significant where use of large numbers of heavy construction equipment, changes in topography, and introduction of new structures or facilities where none presently exist would take place in the vicinity of sensitive receptors. However, because a number of factors that would determine the level of change are unknown—the location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction—impacts associated with implementation of CM2–CM21 on visual quality and character, scenic vistas, and light and glare sources, are considered significant. Because of the distance of implemented conservation measures from scenic highways, changes associated with these activities would not affect the visual quality along these scenic highway corridors and this impact would be less than significant. Site-specific restoration information and plans need to be developed before the site-specific effects on the existing visual character, scenic vistas, and light and glare can be determined.

Several mitigation measures are available to minimize the impacts on visual quality and character in the study area that could result from implementation of these conservation measures. As summarized below, these measures could be applied to individual restoration projects or actions as appropriate for the site-specific conditions and design considerations. In addition, each restoration project or action would undergo an environmental compliance process that would be used to determine what additional mitigation measures would be deemed appropriate to reduce significant effects. Mitigation Measures AES-1a through AES-1g could be applied to minimize impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. Mitigation Measures AES-4a through AES-4d could be used to reduce the effects of new light and glare sources by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. In addition, Mitigation Measures AES-6a and AES-6b would further minimize impacts on visual resources by undergrounding new or relocated utility lines, where feasible, and through an evaluation of an afterhours low-intensity and lights off policy. Finally, implementation of Mitigation Measure AES-6c would provide a strategy for the protection of the unique visual landscape of the Delta.

While some of the conservation measures could result in beneficial impacts through the restoration of natural habitat and these mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a less-than-significant level because of uncertainties associated with future implementation of CM2–CM21. In addition, the size of the study area and the nature of changes introduced by these conservation measures would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend or be in keeping with the existing visual environment. Thus, implementation of CM2–CM21 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6b: Develop and Implement an Afterhours Low-Intensity and Lights Off Policy

Please refer to Mitigation Measure AES-6b under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6c: Implement a Comprehensive Visual Resources Management Plan for the Delta and Study Area

Please refer to Mitigation Measure AES-6c under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

NEPA Effects**:** Constructing conveyance facilities (CM1) and implementing CM2–CM21 under Alternative 8 would generally have the same potential for incompatibilities with one or more plans and policies related to preserving the visual quality and character of the Delta as described for Alternative 1A, Impact AES-7. The primary differences under Alternative 8 are that only Intakes 2, 3 and 5 would be constructed. As described under Alternative 1A, there would be potential for the alternative to be incompatible with plans and policies related to preserving the visual quality and character of the Delta (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

CEQA Conclusion**:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6, above and no additional CEQA conclusion is required related to the compatibility of Alternative 8 with relevant plans and policies.

17.3.3.16 Alternative 9—Through Delta/Separate Corridors (15,000 cfs; Operational Scenario G)

Table 17D-5 in Appendix 17D, *Permanent Impacts after Construction is Complete*, describes existing visual characteristics and the BDCP-related permanent effects of Alternative 9 on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Construction of all structural components under Alternative 9 could potentially occur over a period of 9–14 years. However, construction of each individual facility would be phased within that period and would occur over a shorter period. The estimated construction times for individual features are included below. The duration and schedule for construction of the water conveyance facilities (CM1) is provided in Appendix 3C, *Construction Assumptions for Water Conveyance Facilities*. In addition, Appendix 22A, *Air Quality Analysis Methodology*, details the construction schedules and defines the length and sequence of each construction phase.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

Fish Screens

Construction of on-bank fish screens near Locke and Walnut Grove on the Delta Cross Channel and Georgiana Slough (KOPs 208, 209, 212, 217, 221, 222, 228, 235, and 236) would introduce considerable heavy equipment—excavators, graders, dozers, dump trucks, and end loaders, in addition to support pickups and water trucks—into the viewshed of all viewer groups in the vicinity. Work areas would be located adjacent to the fish screens and would be used for staging, temporary field offices, worker parking, equipment and materials laydown and storage, and would support other construction-related needs. Scattered rural residences are located along River Road and SR 160 along both banks of the river to the north and south of Locke, Walnut Grove, and Grand Island Estates. Development along River Road is denser in Locke and Walnut Grove, and residents and businesses along these levee roads would be near or directly adjacent to construction activities. Residents and businesses along SR 160 through Grand Island Estates would have direct views of construction activities occurring across the river. Recreationists and roadway users on River Road and SR 160 and recreationists using waterways and marinas in the area would have direct views of fish screen construction. The landscape sensitivity level is high, and impacts on viewers are substantial because the residents, businesses, travelers on SR 160, and recreationists using marinas would be very near to disruptive construction activities and could diminish recreational enjoyment. Construction of the fish screens would displace the Boathouse Marina at Locke and several other smaller boat docks and landings, resulting in the relocation of businesses and structures and razing of buildings on these properties during construction. In addition, vegetation would be removed along the eastern riverbank to construct the fish screen.

As seen in Figure 17-88, *Existing and Simulated Views of the Delta Cross Canal Intake at Walnut Grove*, a substantial amount of riparian vegetation along the east bank would be removed and the boat dock would no longer be present. The removal of vegetation along the river hardens the line of the river's edge and reduces visual variety that vegetation provides and of the water's reflections. The conversion of the riverbank that is grassy with riparian vegetation to the industrial looking on-bank intake with fish screen is a stark visual and color contrast against the more natural colors and textures of a vegetated riverbank that is absent of structures. The intake becomes a focal point and is visually discordant in scale and mass to the surrounding smaller scale structures of Walnut Grove. It also adds monotone solid color mass into a landscape where the colors of buildings do not detract from the viewshed because vegetation screens the buildings, softening their appearance and contributing to a unified view. The large scale of the intake, combined with vegetation removal, precludes unified views with the surrounding landscape. Overall, existing views from KOP 219 on River Road toward the intake and fishscreen would be substantially impaired by vegetation removal and introduction of the industrial looking intake and the Scenic Quality Rating would be reduced from a **C** to an **E**. This effect would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

Construction of fish screens would take up to 3.5 years, and construction activities would take place Monday through Friday for up to 24 hours per day. In addition, because of the relatively high groundwater levels, dewatering would be necessary to provide a dry workspace for the construction of on-bank diversions (and fish screens) on Georgiana Slough and the Delta Cross-Channel. The addition of channel sections would likely require groundwater dewatering. The construction of a pumping plant on the San Joaquin River at the Head of Old River and a pumping plant on Middle River upstream of Victoria Canal would also require potentially substantial dewatering activities. Dewatering would take place 7 days per week and 24 hours per day and would be initiated 1–4 weeks prior to excavation. Dewatering would continue until excavation is completed and the construction site is protected from areas with high groundwater levels (Chapter 3, *Description of Alternatives*). Each fish screen would be 2,800 feet (more than 0.5 mile) long, 50 feet wide, and 15 feet above the water's surface. Once construction is complete, the fish screens would introduce large, industrial concrete and steel structures and other similar anthropogenic features into an area with an existing rural Delta riverfront community and alter the riparian, riverine, and rural riverfront community visual character. The design of the fish screens and associated facilities could play a large part in helping to improve the quality of affected and degraded viewsheds. Because of the long-term nature of construction; proximity to sensitive receptors; razing of the marina, docks, and landings; removal of vegetation; and addition of large-scale industrial structures where none presently exist, resulting in a reduction of the visual quality and noticeable change to the existing visual quality and character, this effect would be adverse.

Operable Barriers

Construction of operable barriers would introduce considerable heavy equipment—excavators, graders, dozers, dump trucks, and end loaders, as well as support pickups and water trucks—into the viewshed of all viewer groups in the vicinity. Work areas adjacent to the operable barrier sites would be used for staging, temporary field offices, worker parking, equipment and materials laydown and storage, and support other construction-related needs. The operable barriers near Walnut Grove have a higher concentration of nearby residential viewers. Isolated or scattered rural or recreational residences are located near the operable barriers at Fisherman's Cut, the head of Old River, Old River connection to Middle River, and Victoria Canal. The Old River connection to Middle River operable barrier would also be visible from Amtrak San Joaquin Oakland to Bakersfield route as it crosses over barrier between Bacon and Woodward Islands. The operable barrier would be seen by passengers sitting in window seats on the north and south sides of the train. While trains would pass by at a high rate of speed, the operable barrier would be a unique and prominent feature that would draw viewers' attentions as they pass by the feature that would be industrial in nature.

As seen in Figure 17-89, *Existing and Simulated Views of Operable Barrier Site on Three Mile Slough at Brannan Island State Recreation Area*, the conversion of Threemile Slough waters and removal of vegetation on its banks to the industrial looking operable barrier with a facility building and parking area is a stark visual and color contrast against the more natural colors and textures of a vegetated riverbank and waterway that is absent of structures. The operable barrier and support facilities becomes a focal point, limits views of water in the slough, and is visually discordant in scale and mass to the surrounding rural and riverine landscape. It also adds a large monotone solid color mass into a landscape where the colors of buildings and concrete and metal structures detract from the mostly earth-tone viewshed. The large scale of the operable barrier, combined with vegetation removal, precludes unified views with the surrounding landscape. Overall, existing views from KOP 252 on Brannan Island State Recreation Area toward the operable barrier would be substantially impaired by introduction of the operable barrier across Threemile Slough and the Scenic Quality Rating would be reduced from a **D** to an **E**. This effect would be adverse (see discussions under

Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

Operable barriers would introduce large structures across the existing channels that would limit physical and visual access to views beyond (KOP 255). The addition of large industrial facilities across waterways and limits to physical and visual access would result in a reduction of the visual quality and a noticeable change from public viewing areas. This would result in adverse visual effects.

Pumping Plants

Pumping plants would be built on the San Joaquin River at the head of Old River and on Middle River upstream of Victoria Canal and would take 2.5 years to construct. Each 16-acre pumping plant facility would be built on a ground plane elevated above the surrounding landscape to avoid flooding. The pumping plants would introduce large concrete multi-level, industrial structures into an agricultural and riverine landscape, resulting in a reduction of the visual quality and a noticeable change from public viewing areas. This would result in adverse visual effects.

Docks and Barge Traffic

New barge unloading facilities would be built in the viewshed of recreationists, businesses, public roadways, and residential properties, and would result in temporary long-term changes in views in the immediate area. These facilities would be constructed in areas where the landscape sensitivity levels range from low to high. New facilities would convert vegetated areas to large, unvegetated swaths of land and piles of sand and gravel with associated loading infrastructure, introducing these features into a viewshed where none presently exist. These features would contrast sharply with the more natural areas that were present prior to construction of the new facility. New facilities would convert agricultural and other open space lands to a land use that is industrial in nature and from one that is vegetated to one that is largely unvegetated, creating new landscape effects.

Alternative 9 includes seven barge unloading facilities; two would be built near the operable barriers at Fisherman's Cut and the head of Old River on the San Joaquin River, two near Old River, one near Woodward Canal, one north of Trapper Slough on the Middle River, and one on Victoria Canal. As described in more detail in Chapter 15, *Recreation*, the facilities at these locations would affect water-based recreation. Water-based recreational viewers would have the most direct views toward barge traffic and loading/offloading activities involving equipment and materials for pipeline construction. Construction of the barge unloading facilities may require partial channel closures and use of equipment within the waterways. All barge unloading facilities would have temporary in-water construction zone speed restrictions where high-speed recreation (e.g., waterskiing, wakeboarding, tubing) would effectively be eliminated. Once built, docks would be in use throughout construction. During this time, loading facilities and barge traffic would constrict boat passage, increase boat traffic congestion during peak use (primarily summer weekends), and extend viewing times of these facilities.

The San Joaquin River is very wide at the barge unloading facility locations, so boats could avoid the facilities entirely. The Middle River facility could constrict boat traffic, which may be high at this location; however, alternative routes are available to avoid this location. The Victoria Canal facility could also constrict traffic because the canal is narrower. Once construction of the operable barriers is complete, docks would be removed and barge traffic would cease.

Construction and use of barges and barge unloading facilities during construction at all locations would introduce dominant visual elements that would result in noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes may result in adverse visual effects because of the elongated viewing times during periods of congestion, temporary partial channel closures that could impede eliminate recreational opportunities and create negative visual perceptions of these facilities, and a reduced recreational experience due to the industrial nature of such facilities. This effect would be adverse.

Dredging Operations

Dredging activities proposed on the Middle River between Empire Cut and Victoria Canal and in Victoria Canal/North Canal would take up to 3.5 years to complete (KOP 254). Dredging in these waterways would require the establishment of safety zones around the dredge while it is in operation. The dredge and any associated barges or pipeline used for sediment disposal would be marked with signage and lights as required by U.S. Coast Guard regulations. All these elements would be visible to recreationists using waterways and to roadway users on local roadways such as Bacon Island Road and SR 4. In addition, dredging would be seen by railway viewers on the Amtrak San Joaquin Oakland to Bakersfield route as it crosses down the middle of the Old River connection to Middle River between Bacon and Woodward Islands. Dredging on narrow reaches of the Middle River channel and on Victoria Canal/North Canal may require temporary closure of the channel in the vicinity of the dredge, which would limit visual access during dredging. A side channel that would not be dredged would be available alongside most portions of the reach of Middle River to be dredged, allowing unimpeded boat passage. Similarly, the parallel channels of Victoria and North Canals, each about 200 feet wide, would allow continued boat passage at most times because the dredger would be used on only one side of the waterway at a time. Dredging, use of barges, dredging pipelines, and other equipment needed to remove and place dredged material would introduce dominant visual elements that would result in noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes may result in adverse visual effects due to the elongated viewing times during periods of congestion, temporary partial channel closures that could affect recreational opportunities and create negative visual perceptions of these facilities, and a reduced recreational experience due to the industrial nature of such facilities. This effect would be adverse.

Canal

A canal extension from the end of Victoria Canal to the Clifton Court Forebay and the Clifton Court Forebay spillway into the new canal to the CVP Canal would alter the area's existing character by introducing large-scale industrial structures that are visually discordant with the area's existing characteristics (KOP 107). These views would be greatly altered by the presence of a large-scale, concrete-lined and water-filled channels traversing the landscape between the intakes, introducing a visually co-dominant conveyance facility that would be very noticeable in available views. The landscape sensitivity level is low in these areas, however, and effects on the limited numbers of viewers would not be substantial because the area is presently flat agricultural lands. However, because of the visual scale of the canal, the long-term nature of construction, removal of vegetation, and changes to topography through grading that would introduce dominant visual elements and result in noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment, this effect would be adverse.

Bridges

Effects related to construction of bridges would occur within a 2-year period and would be similar to those described for Alternative 1B, because the proposed components would be similar but would be constructed on River Road over the new outlet for The Meadows Slough, near Locke. The bridges would likely be at grade with the existing River Road but would introduce a new structure that could disrupt the continuity of views by preventing free-flowing access from lands on either side of the bridges. There would also be two bridges south of the Clifton Court Forebay: one across the spillway into the new canal and one across the canal at Herdlyn Road. These bridges would alter the area's existing character by introducing large-scale industrial structures that are visually discordant with the area's existing characteristics. These would constitute adverse effects.

Spoil and Borrow Areas

Large spoil/borrow areas would be needed under Alternative 9 to store excess spoils from dredged material from the Middle River and Victoria Canal and to build operable barriers and the canals near the Clifton Court Forebay. Dredge storage sites (1,169 acres) would be established on lands opposite dredging locations and would consequently affect the same viewer groups described above for those activities. These would primarily be on Bacon Island (338 acres), Woodward Island (333 acres), Upper Jones Tract (224 acres), and Victoria Island (775 acres). Operable barriers would have spoil/borrow areas that are between 5 and 8 acres at each site. The spoil/borrow areas on Bacon and Woodward Islands would be seen by railway viewers on the Amtrak San Joaquin Oakland to Bakersfield route as it crosses down the middle of the Old River connection to Middle River between Bacon and Woodward Islands. The canals near the Clifton Court Forebay would require 295 acres of spoil/borrow. There would be a total of 375 acres of spoil/borrow, in addition to dredge disposal. The landscape sensitivity level is low in these areas, and impacts on these viewers would not be substantial because the area is presently flat agricultural lands. Disposal of dredge spoils would likely result in raising the elevation of affected lands. Earthmoving activities and associated heavy equipment and vehicles would be readily visible throughout operation of these sites that would attract attention from visual receptors. Spoil/borrow sites would be in use for the duration of dredging operations. Because of the long-term nature of construction and changes to topography through grading, this effect is considered adverse. Under Alternative 9 there would be a total of 2,044 acres of land affected by spoil/borrow areas compared to a total of 1,185 acres under Alternative 1A, 10,667 acres under Alternative 1B, and 6,770 acres under Alternative 1C. Approximately 0.6% (12 acres) of the spoils from operable barrier and canal construction may be disposed of in an unknown offsite landfill, which would be negligible and part of the existing visual environment at a landfill already in operation. In addition to spoils/borrow in the study area, offsite borrow sites may be needed to provide suitable materials for canal embankments and levees for the channel modifications at Hammer Island. It is not known how much import material would be needed and where it would come from. It is assumed that effects at import borrow sites would be similar in scale and have similar adverse visual effects to those within the study area. Once construction of the BDCP facilities is complete, the study area spoils/borrow areas would result in large-scale landscape elevation changes that would also alter the agrarian visual character and result in elevated landforms introduced into a landscape that is currently predominantly flat. These features would be visually discordant with the area's existing forms, patterns, colors, and textures associated with the existing agrarian character in the study area. Accordingly, alteration of the landscape through spoils disposal would result in an adverse effect on visual resources.

On-Channel Levee at Hammer Island

Construction of the on-channel levee at Hammer Island would introduce considerable heavy equipment—excavators, graders, dozers, sheepsfoot rollers, dump trucks, and end loaders, in addition to support pickups and water trucks—into the viewshed of all viewer groups in the vicinity. Work areas would be located adjacent to the fish screens and would be used for staging, temporary field offices, worker parking, equipment and materials laydown and storage, and would support other construction-related needs. These activities would affect views from Hammer Island, Rivers End Marina & Storage, and river-based residences located nearby.

As seen in Figure 17-90, *Existing and Simulated Views of the Channel Modification at Hammer Island*, a substantial amount of riparian vegetation along Old River and Hammer Island would be removed and residences and buildings on Hammer Island would no longer be present. The removal of vegetation along the river serves to alter the visual landscape and reduce visual variety that was provided by the vegetation. Removal of the vegetation serves to increase the visual prominence of utility lines in the area. In addition, vegetation removal acts to open views to the background and increases the amount of visible sky, as seen from this vantage. The realigned channel would not be visible from this location, but the levee would be slightly visible. Overall, existing views from KOP 109 on Lindemann Road toward channel modifications would be substantially altered by vegetation and the Scenic Quality Rating would be reduced from a **D** to an **E**. This effect would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

Island dredging and fill to build the levee would remove buildings, boat slips, and vegetation to create a landform across the CVP Canal and Old River that would obstruct access to West Canal and the Victoria Canal area. Old River would be realigned to allow boat traffic to pass. Because of the long-term nature of construction; proximity to sensitive receptors; razing of the residents, docks, and landings; removal of vegetation; and addition of landform where none presently exist, this effect would be adverse.

Access Roads

Construction of temporary and permanent access roads would take less than 2 years and would follow linear paths; consequently, construction of these features would not be focused on one specific location for an extended period of time. Construction of access roads would occur Monday through Friday for up to 24 hours per day. Access roads would be located in areas in where the landscape sensitivity levels range from low to high. Most of the temporary and permanent access roads follow alignments that have previously been cleared and that serve as agricultural access routes. Construction would include improving the condition of these existing access routes to accommodate construction access. Vegetation removal may occur along the rights-of-way of access roads and would negatively affect views from SR 160, River Road, and other roadways in the study area. After construction is complete, disturbed areas of exposed soil would be seeded for erosion control and would revegetate after a short time. Because of the temporary nature of construction and the regular relocation of activities, this would not constitute an adverse effect.

Transmission Lines

Proposed transmission line corridors are shown in Mapbook Figure M3-5 in Chapter 3, *Description of Alternatives*. Construction of 12 kV and 480 volt transmission lines to operate the fish screens and operable barriers would take less than 2 years and would require vegetation clearing along the linear ROWs. The transmission lines would be located in areas in where the landscape sensitivity levels range from low to high. Because construction operations would move along these linear ROW corridors, construction of these features would not take place in any specific location for an extended period. Most of the transmission lines would follow access roads constructed for the BDCP conveyance facilities or other existing access roads and roadways that are outside the immediate area. After construction is complete, disturbed areas of exposed soil would be seeded for erosion control and would revegetate after a short time. However, tree and shrub removal would likely occur within the ROWs and would negatively affect views from SR 160, River Road, and West Walnut Grove Road.

Smaller segments of transmission lines would tie into nearby existing transmission lines to supply power to the operable barriers. Construction of transmission lines would occur Monday through Friday for up to 24 hours per day. Once the proposed 12 kV and 480 volt electrical power transmission lines are constructed, wood-poled transmission lines would be visible. While these are features commonly seen in the Delta, they would add to the amount of infrastructure that is present in the landscape. While wood-poled transmission lines are part of most existing views, new 12 kV and 480 volt transmission lines and their cleared ROWs would adversely affect the existing visual character by the introduction of more utility lines in the landscape, making changes in views associated with construction of transmission lines adverse.

Summary

NEPA Effects**:** Visual effects of Alternative 9 would be substantial—primarily in the areas surrounding the fish screens, operable barriers, pumping plants, channel modifications, spoil/borrow areas, transmission lines, and the on-channel levee at Hammer Island. Construction of the alternative would result in reductions in the visual quality and introduce dominant visual elements that would result in noticeable changes that do not blend and are not in keeping or are incompatible with the existing visual environment. These changes would be most evident near Locke and Walnut Grove, which would undergo extensive changes from the permanent establishment of large industrial facilities and the supporting infrastructure along and surrounding the 1.2-mile segment of the Sacramento River where the fish screen would be situated, in addition to the operable barriers, bridges, and transmission lines that would be introduced. In San Joaquin County, the operable barrier across Old River on the Middle River and dredging activities would be visible from Bacon Island Road. While not officially designated as a state scenic highway, and therefore not discussed under *Impact AES-3: Permanent damage to scenic resources along a state scenic highway from construction of conveyance facilities*, this road is a San Joaquin County Scenic Route (see *San Joaquin County* in Section 17.2.3.2, *County and City General Plans*). These features would detract from the visual quality of views from this route. Alternative 9 would introduce visually dominant and discordant features in the foreground and middleground views that would be very noticeable to all viewer groups. These changes would occur in an area known for its open space, agricultural landscapes, and rural characteristics. Therefore, because of the long-term nature of construction; proximity to sensitive receptors; razing of the marina, docks, and landings; removal of vegetation; changes to topography through grading; transmission lines; and addition of large-scale industrial structures where none presently exist, this effect would be adverse.

Mitigation Measures AES-1a through AES-1e are available to address visual effects resulting from construction of Alternative 9 water conveyance facilities. No concrete batch plants or fuel stations have been identified for Alternative 9.

***CEQA Conclusion*:** Construction of Alternative 9 would substantially alter the existing visual quality and character present in the study area. The long-term nature of construction of the fish screens, operable barriers, pumping plants, work areas, spoil/borrow areas, barge unloading facilities, and dredging operations; presence and visibility of heavy construction equipment; proximity to sensitive receptors, razing of the marina, docks, and landings; removal of riparian vegetation and other mature vegetation or landscape plantings; earthmoving and grading that result in changes to topography in areas that are predominantly flat; addition of industrial structures (fish screens, operable barriers); remaining presence of large-scale borrow/spoil area effects; and addition of tall, steel transmission lines would all contribute to impacts on the existing visual quality and character.

Overall, construction would last up to 9–14 years and would change the existing visual character in the vicinity of project elements from those of agricultural, rural residential, or riparian and riverine settings to areas involving heavy construction equipment, temporary construction structures, work crews, other support vehicles and other activities that would modify and disrupt short- and long-range views. These activities would be disruptive to viewers. Once construction is complete, the alternative would result in the placement of large industrial concrete and steel structures, pumping plants, fencing, and other similar anthropogenic features where none presently exist. Because of the landscape sensitivity and visual dominance of these features, these changes would result in reduced scenic quality throughout the study area (see Section 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Thus, Alternative 9 would result in significant impacts on the existing visual quality and character in the study area.

Mitigation Measures AES-1a through AES-1e would partially reduce impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, and applying aesthetic design treatments to all structures to the extent feasible. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, Alternative 9 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

***NEPA Effects*:** Many of the permanent visual effects of Alternative 9 would affect scenic vistas because the areas of the greatest change would be near Locke and Walnut Grove, where scenic vistas have been identified along SR 160 and River Road, and from waterways in the vicinity of the operable barriers and pumping plants. Implementation of Alternative 9 would result in a very noticeable effect on viewer experiences from SR 160 and River Road. The operable barriers would introduce large structures across the existing channels that would limit physical and visual access from waterways to vista views beyond. However, where views to the hills in the background exist, such as toward Mount Diablo, the hills would still be visible over the structures.

As seen in Figure 17-89, the conversion of Threemile Slough waters and removal of vegetation on its banks to the industrial looking operable barrier with a facility building and parking area is a stark visual and color contrast against the more natural colors and textures of a vegetated riverbank and waterway that is absent of structures. The operable barrier and support facilities becomes a focal point, limits views of water in the slough, and is visually discordant in scale and mass to the surrounding rural and riverine landscape. Creation of such a focal point detracts from views of the surrounding scenic vista. It also adds a large monotone solid color mass into a landscape where the colors of buildings and concrete and metal structures detract from the mostly earth toned viewshed. The large scale of the operable barrier, combined with vegetation removal, precludes unified views with the surrounding landscape. Overall, existing views from KOP 252 on Brannan Island State Recreation Area toward the operable barrier would be substantially impaired by introduction of the operable barrier across Threemile Slough and the Scenic Quality Rating would be reduced from a **D** to an **E**. This effect would be adverse (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*).

As seen in Figure 17-90, *Existing and Simulated Views of the Channel Modification at Hammer Island*, a substantial amount of riparian vegetation along Old River and Hammer Island would be removed and residences and buildings on Hammer Island would no longer present. The removal of vegetation along the river serves to alter the visual landscape and reduce visual variety that was provided by the vegetation. Removal of the vegetation serves to increase the visual prominence of utility lines in the area. However, scenic vistas are limited along Lindemann Road when looking in this direction due to existing vegetation, and removal of this existing vegetation acts to open vista views to the background. It also increases the amount of visible sky, as seen from KOP 109.

Alternative 9 would result in a very noticeable effect on viewer experiences from SR 160 and River Road near Walnut Grove. The large scale of operable barriers and support facilities, the visual presence of large-scale borrow/spoil landscape effects, removal of substantial areas of riparian vegetation, and the presence of new transmission lines may result in adverse effects on scenic vistas in the study area. Overall, effects on scenic vistas associated with Alternative 9 would be adverse. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

***CEQA Conclusion*:** The presence of the operable barriers and support facilities, pumping plants, large-scale borrow/spoil area landscape effects; and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measures AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow area management plan, and applying aesthetic design treatments to all structures to the extent feasible, but may not reduce them to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 9 would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

NEPA Effects: Alternative 9 would result in an overall noticeable effect on viewers relative to their current experience and enjoyment of the study area's scenic resources. Implementation of this alternative would require removal of visually important features, such as mature trees and shrubs, which are scenic elements that contribute to the viewing experience available to travelers along SR 160 and River Road in the area of this alternative. These features would be replaced by concrete and steel structures, earthen embankments, and paved areas associated with operable barriers and fish screens, fencing and security lights, and new access roads. These visual elements would conflict with the forms, patterns, colors, textures, and general nature of the visual experience presently available from River Road and SR 160 and would obstruct views of Locke and Walnut Grove and riparian habitat alongside rivers and creeks (thereby permanently damaging the scenic resources along a scenic highway). Overall, implementation of Alternative 9 would result in effects on views in the foreground or middleground from River Road near Walnut Grove and Locke and from SR 160 near Walnut Grove, Locke, and Brannan Island State Recreation Area; would lessen the visual quality of those views; and would replace those views with views of operable barriers and fish screens that would dominate the riverfront and could impinge on the downtown area of those communities and may result in adverse effects. Mitigation Measures AES-1a, AES-1c, AES-1e, and AES-3 are available to address these effects.

CEQA Conclusion: Because visual elements associated with this alternative would conflict with the existing forms, patterns, colors, and textures and general nature of the visual experience along River Road and SR 160 and would result in effects on views in the foreground or middleground from River Road near Walnut Grove and Locke and from SR 160 near Walnut Grove, Locke, and Brannan Island State Recreation Area; would lessen the visual quality of those views; and would replace those views with views of operable barriers and fish screens that would dominate the riverfront and could impinge on the downtown area of those communities (thereby permanently damaging the scenic resources along a scenic highway), these impacts are considered significant.

Mitigation Measures AES-1a, AES-1c, AES-1e, and AES-3 would help reduce these impacts through the application of aesthetic design treatments to all structures, to the extent feasible and through the design and implementation of an overlook with interpretative signage at the operable barrier on Threemile Slough near Brannan Island State Recreation Area. However, impacts on visual resources resulting from damage to scenic resources that may be viewed from a state scenic highway would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes to the visual character of a scenic highway viewshed that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, overall this impact would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-3: Design and Implement an Overlook with Interpretative Signage at the Operable Barrier on Threemile Slough Near Brannan Island State Recreation Area

The BDCP proponents will design and implement an overlook with interpretative signage at the operable barrier on Threemile Slough to reduce the effects of Alternative 9 on viewing experiences for visitors of the Brannan Island State Recreation Area. This facility will meet the following minimum performance standards.

- The overlook will provide an Americans with Disabilities Act–compliant trail connecting the south end of the existing campground to an overlook near the operable barrier.
- A kiosk with interpretive signage will be installed at this location to educate visitors; the kiosk will address the Delta ecosystem, endangered species, and the purpose of the barrier.
- The design will make use of existing tree canopy cover for shading the overlook area or trees will be planted to provide shade as they mature.
- All plantings will be native and indigenous to the area, and no invasive plant species will be used under any conditions.
- Plantings installed near the barrier will be designed and installed in a manner that reflects existing vegetative conditions at this location and will not be installed in a manner that would screen or obscure views of Threemile Slough, as this would limit and prevent valued views over the waterway.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

NEPA Effects: The following NEPA effects would result from the introduction of new sources of daytime and nighttime glare and nighttime lighting.

Daytime and Nighttime Glare

Sunlight would reflect off the new water surfaces created by the canal and expanded water surfaces on Middle River and Victoria Canal, adding to the amount of glare at these locations. The structures associated with this alternative would result in new sources of glare if they were made of materials that easily reflect light. The amount of glare associated with surfaces would be increased if highly glossy paints or surface treatments or highly reflective materials are used, compared to satin or flat paints or surface treatments or materials that are less reflective. Reflected glare could constitute an adverse effect. In addition, the use of nighttime lighting, described below, would result in nighttime glare caused by lights reflecting off water surfaces. Because the number of viewers in and around the waterways at night is expected to be low, this impact is not considered adverse.

Nighttime Lighting

In addition to the lighting of the fish screens and pumping plants, Alternative 9 would entail the establishment of safety lighting along the operable barriers and canal as part of normal operations and maintenance and would result in the introduction of new sources of light to parts of the study area that currently experience low levels of light and glare. Because the study area currently experiences low levels of light and because there are a larger number of viewers in and around the facilities, effects associated with nighttime lighting are considered adverse. Mitigation Measures AES-4a through 4d are available to address these effects.

***CEQA Conclusion*:** The impacts associated with light and glare under Alternative 9 are significant because the alternative would introduce new light sources to places in the study area that currently experience low levels of light and glare and have a large number of viewers around the proposed facilities. Fish screens, pumping plants, operable barriers, and the canal would increase the amount of nighttime lighting in the Delta above existing ambient light levels for viewers in and around the waterways in areas that currently experience low levels of light Mitigation Measures AES-4a through AES-4d would help reduce these impacts by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. However, these mitigation measures would not reduce impacts to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the new light and glare sources would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that do not blend or are not in keeping with the existing visual environment based upon the viewer’s location in the landscape relative to the seen change. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 9 would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

NEPA Effects**:** Operations under Alternative 9 would be similar to those under Alternatives 1A through 1C. Therefore, effects related to visual impacts resulting from maintenance activities would be similar to those described under Alternatives 1A through 1C, Impact AES-5. The primary difference would be that there would not be an intermediate forebay needing dredging, but there would be one canal. The greatest visual effects resulting from operations would be maintenance on the fish screen, operable barriers, and cleaning of the canals. These activities would be visible from the water or land by sensitive viewers in proximity to these features. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining and cleaning the facilities and keeping transmission line ROWs cleared of vegetation; dredged canals would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within short periods of time and cease when complete, and effects on the existing visual quality and character during operation would not be adverse because the activities would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features. Additionally, as discussed under Alternative 1A, operation of the intakes would not affect river water levels to an extent that would be visible or result in changes to the existing visual quality or character.

CEQA Conclusion**:** Maintenance of the facilities (i.e., fish screens, operable barriers, pumping plant and transmission lines) would be required periodically and would involve painting, cleaning, and repair of structures; dredging; vegetation removal and care along embankments, and vegetation removal within transmission line ROWs. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining and cleaning the facilities and keeping transmission line ROWs cleared of vegetation; dredged canals would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These visible maintenance activities would be temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would be considered less than significant. Thus, overall, Alternative 9 would have a less-than-significant impact on existing visual quality and character during maintenance and operation of the facilities in the study area. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of CM2–CM21

NEPA Effects: Under Alternative 9, these conservation measures would be similar to those under Alternative 1A, but could result in changes to the south Delta to accommodate modified corridors compared to Alternative 1A. There may be site-specific, localized adverse visual effects. These conservation measures would alter the Delta landscape by incrementally, and substantially, introducing elements into the study area over time. CM2–CM21, when combined with CM1, could substantially alter the visual character of the study area, which is strongly identified by its agricultural and water-based Delta landscapes and communities. These landscapes and communities could be adversely affected by the introduction of discordant visual features, removal of existing buildings and landscape elements of value, and through the potential for indirect impacts associated with other development potentially setting a precedent for other development to occur. All of these effects would alter the visual character of the existing regional landscape.

Because of the unknown location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction, effects associated with implementation of CM2–CM21 are considered adverse. However, the visual characteristics of restored/enhanced landscapes would be similar to other areas of the Delta that are in a natural marsh or wetland state and more limited in extent than the widespread areas of agricultural development. In this sense, the BDCP would have an overall beneficial effect related to the enhancement and creation of scenic vistas in the Delta.

Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-4a through AES-4d are available to address effects from habitat restoration and enhancement actions under CM2–CM21. In addition, Mitigation Measures AES-6a and AES-6b are available to help reduce adverse visual effects. Upon development of site-specific design information and plans, additional mitigation measures may be identified to address action-specific adverse effects. However, each individual project under CM2–CM21 would undergo the environmental compliance process that would be used to determine what additional mitigation measures, would be deemed appropriate to reduce adverse effects and to assess compliance with relevant regulations. Finally, Mitigation Measure AES-6c is available to help inventory, classify, and protect the unique visual landscape of the Delta.

While some of these conservation measures could result in beneficial impacts through the restoration of natural habitat and these mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a not adverse level because of uncertainties associated with future implementation of CM2–CM21. In addition, the size of the study area and the nature of changes introduced by thee conservation measures would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend with or be in keeping with the existing visual environment. Thus, implementation of CM2–CM21 would result in adverse impacts on the existing visual quality and character in the study area.

CEQA Conclusion: Implementation of conservation measures under Alternative 9 has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. Impacts on the existing visual quality and character would be significant where use of large numbers of heavy construction equipment, changes in topography, and introduction of new structures or facilities where none presently exist would take place in the vicinity of sensitive receptors. However, because a number of factors that would determine the level of change are unknown—the location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction—impacts associated with implementation of CM2–CM21 on visual quality and character, scenic vistas, and light and glare sources, are considered significant. Because of the distance of implemented conservation measures from scenic highways, changes associated with these activities would not affect the visual quality along these scenic highway corridors and this impact would be less than significant. Site-specific restoration information and plans need to be developed before the site-specific effects on the existing visual character, scenic vistas, and light and glare can be determined.

Several mitigation measures are available to minimize the impacts on visual quality and character in the study area that could result from implementation of these conservation measures. As summarized below, these measures could be applied to individual restoration projects or actions as appropriate for the site-specific conditions and design considerations. In addition, each restoration project or action would undergo an environmental compliance process that would be used to determine what additional mitigation measures would be deemed appropriate to reduce significant effects. Mitigation Measures AES-1a through AES-1g could be applied to minimize impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. Mitigation Measures AES-4a through AES-4d could be used to reduce the effects of new light and glare sources by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. In addition, Mitigation Measures AES-6a and AES-6b would further minimize impacts on visual resources by undergrounding new or relocated utility lines, where feasible, and through an evaluation and implementation of an afterhours low-intensity and lights off policy. Finally, implementation of Mitigation Measure AES-6c would provide a strategy for the protection of the unique visual landscape of the Delta.

While some of the conservation measures could result in beneficial impacts through the restoration of natural habitat and these mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a less-than-significant level because of uncertainties associated with future implementation of CM2–CM21. In addition, the size of the study area and the nature of changes introduced by these conservation measures would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend or be in keeping with the existing visual environment. Thus, implementation of CM2–CM21 would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6b: Develop and Implement an Afterhours Low-Intensity and Lights Off Policy

Please refer to Mitigation Measure AES-6b under Impact AES-6 in the discussion of Alternative 1A.

Mitigation Measure AES-6c: Implement a Comprehensive Visual Resources Management Plan for the Delta and Study Area

Please refer to Mitigation Measure AES-6c under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

NEPA Effects**:** Constructing conveyance facilities and implementing CM2–CM21 under Alternative 9 could result in the potential for some incompatibilities with plans and policies related to preserving the visual quality and character of the Delta. A number of plans and policies that coincide with the study area boundaries provide guidance for visual resource issues as overviewed in Section 17.2, *Regulatory Setting*. This overview of plan and policy compatibility evaluates whether Alternative 9 is compatible or incompatible with such enactments, rather than whether impacts are adverse or not adverse or significant or less than significant. If the incompatibility relates to an applicable plan, policy, or regulation adopted to avoid or mitigate visual effects, then an incompatibility might be indicative of a related significant or adverse effect under CEQA and NEPA, respectively. These physical effects of Alternative 9 on visual resources are addressed in Impacts AES-1 through AES-6, above. The following is a summary of compatibility evaluations related to visual resources for plans and policies relevant to the BDCP.

Conveyance Facilities

- The Sierra Resource and Cosumnes River Preserve Management Plans protect the Cosumnes River Preserve. Views within the Cosumnes River Preserve would not be affected by Alternative 9 because it is located east of I-5 and public views of the project site available from trails are obscured by riparian vegetation and I-5.
- The Suisun Marsh is protected by the San Francisco Bay Conservation and Development Commission Suisun Marsh Protection Plan. The eastern boundary of the Suisun Marsh extends to Collinsville Road in southern Solano County and falls within the westernmost portion of the study area. Views from Suisun Marsh would not be affected by this alternative because project features would be obscured by distance, the Altamont Hills, and intervening trees, infrastructure, and development.
- EBRPD parks within the study area include Browns Island, Antioch/Oakley, and Big Break Parks (East Bay Regional Park District 2013b). Views from these parks would not be affected by this alternative because project features would be obscured by distance, the Altamont Hills, and intervening trees, infrastructure, and development.
- The cities of Antioch, Brentwood, Oakley, Sacramento, Lathrop, Stockton, Tracy, Rio Vista, Suisun City, and West Sacramento would not be affected by this alternative because there are no project features within or visible from these cities. Therefore, this alternative would be consistent with the protection of visual resources covered under those general plans.
- The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan are all focused on the protection of resources, including visual resources, within the Delta. While constructing and operating conveyance facilities under this alternative are intended to provide ecosystem benefits in the Delta, constructing these conveyance elements could be considered incompatible with measures to protect the unique visual environment of the Delta because agricultural lands and riverbanks would be converted to other uses and the scale of construction would result in changes to the landscape that may be considered disruptive to the current Delta environment and visual quality.
- Contra Costa, Sacramento, San Joaquin, and Solano Counties all have policies to preserve and protect the scenic qualities of the Delta as summarized in Section 17.2, *Regulatory Setting*. In addition, Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties are focused on the protection of visual resources and preserving agricultural lands. The general plans for these counties include policies for the protection of visual resources, trees, waterways, and landscaping and for avoiding impacts such as the alteration of landforms and the introduction of utilities and new sources of light. These policies seek to minimize visual impacts and enhance scenic qualities and also encourage placing utility lines underground. The conversion of agricultural lands and riverbanks to intake facilities, conveyance facility changes and introduction of new lighting and transmission lines where none presently exist would substantially alter the landscape and could be considered incompatible with local policies aimed

at protecting visual resources in these counties. Potential incompatibilities with Sacramento County and San Joaquin County policies would be most likely because most of the project features occur in these counties. Alameda and Contra Costa Counties have much smaller portions of project features that surround the Clifton Court Forebay. Yolo County would be affected by intakes located on the east bank of the Sacramento River that would affect views from South River Road. Alternative 9 would not be incompatible with Yolo County and Solano County policies because conveyance facilities would not be located in these areas.

Other Conservation Measures

- The Yolo Bypass would be altered under CM2. Views of and from South River Road would not be affected. However, new fish screens, ladders, ramps, barriers, realignment of waterways, additional hydrologic monitoring stations, fish rearing pilot project at Knaggs Ranch, operations buildings, parking lots, access facilities such as roads and bridges, and modification, removal, and construction of berms, levees, and water control structures would result in changes to the landscape that may be incompatible with the Yolo County General Plan Policies LU-3.7, CC-1.2, CC-1.3, and CC-1.4 that protect scenic areas, the rural landscape character, and the night sky.
- CM4–CM11 would result in the conversion of primarily agricultural lands to restored or enhanced habitat across all 11 CZs, with specific focus on ROAs (refer to Figure 3-1 in Chapter 3, *Description of Alternatives*). Therefore, associated regulations may apply. Restored areas would largely be natural habitat areas. Alterations such as channel and levee modifications, landform alteration from dredge spoil placement, and floodplain lowering could change the visual landscape. Restoring areas and views to natural, native habitat would likely be beneficial and would increase visual diversity. However, converting agricultural lands may be incompatible with one or more regulation protecting visual resources, although it may facilitate regulations set in place to protect and restore the Delta. If facilities, such as buildings, parking lots, or roads, are built, they would also have the potential to be incompatible with relevant regulations that protect scenic areas, the landscape character, the night sky, and the Delta.
- CM15 and CM21 would occur across all 11 CZs and could result in physical changes to the visual environment at a number of locations and where relevant regulations may apply. This may have beneficial or adverse effects based on the size of proposed projects and pre-and post-project conditions (e.g., if restoration is implemented and improves pre-project conditions or if natural vegetation is removed and replaced with rip rap or a new diversion structure that degrades pre-project conditions). Vegetation removal and replacement with rip rap or a diversion structure could be incompatible with be incompatible with relevant regulations that protect scenic areas, the landscape character, the night sky, and the Delta.
- CM16 could use sound, light, and bubbles at the head of the Delta Cross Channel and Georgiana Slough in Sacramento County and at the Head of Old River and potentially at Turner Cut and Columbia Cut in San Joaquin County (note that Turner and Columbia Cut each have two channels, and thus would require two barriers) to direct fish passage. Small scale changes may be visible on the banks or in the water used for anchoring that could result in adverse visual effects, but it is anticipated that these changes would be compatible with County general plan policies that protect visual resources.
- Building a new hatchery that consists of a facility on the edge of the Sacramento River and a larger supplementation production facility nearby, through CM18, would result in visual changes and conversion of existing land uses along and near the river would be required to

build facilities. These facilities could be located in Sacramento, Yolo, or Solano Counties and also fall within the Delta. Therefore, corresponding regulations may apply. The size and locations of these facilities are unknown, but it is likely that conversion of existing land uses, and potentially undeveloped land would alter the visual character along the Sacramento River and would be incompatible with one or more plans or policies for the protection of visual resources in these regions.

***CEQA Conclusion*:** The incompatibilities identified in the analysis indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6, above and no additional CEQA conclusion is required related to the compatibility of Alternative 9 with relevant plans and policies.

17.3.4 Effects and Mitigation Approaches—Alternatives 4A, 2D, and 5A

This analysis covers the non-HCP alternatives (Alternatives 4A, 2D, and 5A) that do not include a habitat conservation plan. These alternatives are detailed in Chapter 3, *Description of Alternatives*, in Section 3.2.4, *Development of the California WaterFix,* and Section 3.5, *Alternatives*. As described in Chapter 3, the original BDCP conservation measures are instead referred to as "Environmental Commitments" for the non-HCP alternatives and they are numbered to track the parallel BDCP conservation measures: Environmental Commitments 3, 4, 6, 7, 8, 9, 10, 11, 12, 15, and 16.

17.3.4.1 No Action Alternative Early Long-Term

The effects of the No Action Alternative as considered for the purposes of Alternatives 4A, 2D, and 5A (at the ELT timeframe of 15 years up to the year 2025) would be expected to be similar to those effects described for the No Action Alternative (at the Late Long-Term of 50 years, up to the year 2060) in Section 17.3.3.1. This assumes the potential for land subsidence, sea level rise, catastrophic levee failure, or a combination thereof should they occur, would result in flooding and inundation that could significantly damage existing facilities and infrastructure, uproot and damage vegetation to an unknown extent, permanently flood Delta islands, and drastically alter the visual landscape of the Delta.

Projects that are planned or currently under way that involve construction, operation and maintenance activities may result in potential to affect visual resources and viewer groups. The land uses in the Delta would be similar to those of today because only limited types of development are allowed in the Primary Zone of the Delta. However, some changes in the study area could occur as a result of localized population growth, continued land subsidence on Delta islands, levee instability and potential flood risk, sea level rise, and restoration activities. These changes could result in the conversion of additional agricultural land uses and would consequently affect the visual landscape. However, due to the shorter time frame for the No Action Alternative (ELT), the magnitude of visual effects associated with development and habitat restoration activities within the Plan Area would likely be less than that considered in 2060.

Many of the ongoing programs include development of future projects that would require additional project-level environmental review. Future federal actions would be required to comply with NEPA, the federal Endangered Species Act, and other federal laws and regulations. Compliance and permit requirements would be implemented on a case-by-case basis. Overall, implementing on-going programs and projects under the No Action Alternative (ELT), including changes in farmland are not expected to result in adverse changes to the visual environment because development in much of the study area is restricted by the primary zone designation and city and county ordinances.

***CEQA Conclusion*:** In total, the ongoing programs and plans under the No Action Alternative (ELT) would result in the potential for temporary and permanent effects on the study area visual environment that are not expected to substantially change visual resource elements in the Delta because of the current restrictions on development in the primary zone and city and county ordinances to preserve the visual quality of the Delta. Future state and local actions would be required to comply with CEQA, the California Endangered Species Act, and other state and/or local laws and regulations. Therefore, this potential impact is considered less than significant.

17.3.4.2 Alternative 4A—Dual Conveyance with Modified Pipeline/Tunnel and Intakes 2, 3, and 5 (9,000 cfs; Operational Scenario H)

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

NEPA Effects: The potential under Alternative 4A to create substantial alteration in visual quality or character during construction of conveyance facilities would be identical to those impacts described under Alternative 4 and would constitute an adverse effect on existing visual character because of the long-term nature of construction, combined with the proximity to sensitive receptors, effects on residences and agricultural buildings, removal of vegetation, and changes to topography through grading. The primary features that would affect the existing visual quality and character under Alternative 4A, once the facility has been constructed, would be Intakes 2, 3, and 5, the intermediate forebay and expanded Clifton Court Forebay, landscape effects from spoil/borrow and RTM areas, the operable barrier, and transmission lines. These changes would be most evident in the northern portion of the study area, which would undergo extensive changes from the permanent establishment of large industrial facilities and the supporting infrastructure along and surrounding the segment of the Sacramento River from Clarksburg to north of Courtland where the intakes would be situated. Mitigation Measures AES-1a through AES-1g are available to address visual effects resulting from construction of Alternative 4A water conveyance facilities.

CEQA Conclusion: Construction of Alternative 4A would substantially alter the existing visual quality and character present in the study area in an identical manner as described for Alternative 4. The long-term nature of construction of the intakes, pipeline/tunnel, work areas, spoil/borrow and RTM areas, shaft sites, barge unloading facilities, and operable barrier; presence and visibility of heavy construction equipment; proximity to sensitive receptors; relocation of residences and agricultural buildings; removal of riparian vegetation and other mature vegetation or landscape plantings; earthmoving and grading that result in changes to topography in areas that are predominantly flat; addition of large-scale industrial structures (intakes and related facilities); remaining presence of large-scale borrow/spoil and RTM area landscape effects; and introduction of tall, steel transmission lines would all contribute to this impact. This impact would be significant because of the substantial visual changes that would result from conveyance facility construction. Mitigation Measures AES-1a through AES-1g would partially reduce impacts, but not to a less-than-significant level because not all of the visual changes could be eliminated and permanent changes would be made to the regional landscape. Thus, Alternative 4A would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please see Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please see Mitigation MeasureAES-1b under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please see Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please see Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please see Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please see Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please see Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 4.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

NEPA Effects: Effects related to scenic vistas under Alternative 4A would be identical to those described for Alternative 4. During construction the introduction of construction equipment and removal of vegetation would alter the scenic elements that contribute to the viewing experience from scenic vistas. The intakes would introduce visually dominant and discordant features in the foreground and middleground views in vistas that would be very noticeable to all viewer groups in areas of low to high landscape sensitivity levels. As described for Alternative 4, the effects of permanent access road effects on scenic vistas would not be adverse. The effects of shaft site pads and access hatches on scenic vistas could be adverse. The large scale of intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines may result in adverse effects on scenic vistas (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Overall, effects on scenic vistas associated with Alternative 4A would be adverse because some elements of the conveyance facilities would permanently change views to scenic vistas. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Construction of conveyance facilities under Alternative 4A would have identical effects on scenic vistas as described for Alternative 4. Because proposed permanent access roads generally follow existing rights-of-way, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and CCF pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vistas in the study area. Mitigation Measure AES-1a, AES-1c, and AES-1e would partially reduce these impacts but not to a less-than-significant level. Thus, impacts on scenic vistas associated with Alternative 4A would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 4.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

NEPA Effects: Effects on state scenic highways under Alternative 4A would be identical to those described for Alternative 4. Intakes 2, 3, and 5, the RTM area north of Intake 2, and the intermediate forebay would be immediately and prominently visible in the foreground from SR 160 and would result in an overall noticeable effect on viewers relative to their current experience of the study area's scenic resources along SR 160 and River Road, where the landscape sensitivity level is high. As described for Alternative 4, the visual elements introduced by the intakes, RTM area north of Intake 2, and intermediate forebay associated with Alternative 4A would conflict with the existing forms, patterns, colors, and textures along River Road and SR 160; would dominate riverfront visible from SR 160; and would alter broad views and the general nature of the visual experience presently available from River Road and SR 160. These changes would reduce the visual quality near intake structure locations and result in noticeable changes in the visual character of scenic vista viewsheds in the study area. This effect would be adverse for the same reasons discussed for Alternative 4. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Construction of conveyance facilities under Alternative 4A would have identical effects on scenic highways as described for Alternative 4. Because proposed permanent access roads generally follow existing rights-of-way, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and CCF pumping plants, RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. Mitigation Measures AES-1a, AES-1c, and AES-1e would partially reduce these impacts but not to a less-than-significant level for the same reasons identified for Alternative 4. Thus, impacts on scenic vistas associated with Alternative 4A would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 4.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

NEPA Effects: Effects resulting from light and glare under Alternative 4A would be identical to those described for Alternative 4. Intakes 2, 3, and 5 and the associated CCF pumping plants, and facilities at the intermediate forebay would create noticeable effects relating to light and glare (Figures 17-76 through 17-78). Proposed transmission towers would require the use of safety lights that would alert low-flying aircraft to the presence of these structures because of their height. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the transmission tower for aircraft safety. Given the height of the towers, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers. In addition, using LED lighting can result in a substantial increase in light and glare if proper shielding is not provided and BRWL lamps are used (International Dark-Sky Association 2010a, 2010b, 2015). BRWL LED lighting can result in a substantial amount of light trespass because BRWL lamps are much brighter than traditional street lighting, can light a much larger area at that same height, and result in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Overall, because the study area currently experiences low levels of light and because there are a larger number of viewers in and around the waterways, intake structures, and forebay that would be affected by these noticeable changes contrasting with the existing rural character, effects associated with new sources of daytime and nighttime light and glare are considered adverse. Mitigation Measures AES-4a through AES-4d are available to address these effects.

CEQA Conclusion: Construction of conveyance facilities under Alternative 4A would have identical effects, related to light and glare, as described for Alternative 4. The impacts associated with light and glare under Alternative 4A are significant because there are a larger number of viewers in and around the waterways, intake structures, and intermediate forebay; project facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels; BRWL LED lighting could exasperate project lighting impacts; and the study area currently experiences low levels of light because there are fewer light/glare producers than are typical in urban areas. Mitigation Measures AES-4a through AES-4d would partially reduce these impacts but not to a less-than-significant level because all instances of light and glare impacts would not be reduced by the available mitigation measures. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 4A would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 4.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

NEPA Effects: Effects on the visual environment through operations and maintenance of the water conveyance facilities under Alternative 4A would be identical to those described for Alternative 4. The greatest visual effects resulting from operations would be maintenance of the intakes and dredging the forebays. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. These effects on the existing visual quality and character during operation would not be adverse because the activities would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features.

CEQA Conclusion: Operation of Alternative 4A would have identical visual quality effects as those described for Alternative 4. Maintenance of the conveyance facilities (i.e., intakes, tunnels, forebays and transmission lines) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at forebays (at approximately 50-year intervals); vegetation removal and care along embankments; tunnel inspection; and vegetation removal within transmission line rights-of-way. These activities could be visible from the water or land by sensitive viewers in proximity to these features. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. Maintenance and operation of Alternative 4A once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features. Thus, overall, operation and maintenance of Alternative 4A would have a less-than-significant impact on existing visual quality and character in the study area because operations would not change the visual quality of the environment and maintenance activities would be minor and intermittent. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of Environmental Commitments 3, 4, 6–12, 15, and 16

Effects of Alternative 4A related to the potential for alteration of existing visual quality or character from implementing these Environmental Commitments would be similar to those described for Alternative 4. However, as described in Chapter 3, *Description of Alternatives*, Alternative 4A would restore up to 15,548 acres of habitat under Environmental Commitments 3, 4, 6, 7, 8 and 9–11 as compared with 83,800 acres under Alternative 4. Similarly, Environmental Commitments 11, 12, 15, and 16 would be implemented only at limited locations. Conservation Measures 2, 5, 13, 14, and 17–21 would not be implemented as part of this alternative. Therefore, the magnitude of effects under Alternative 4A would likely be smaller than those associated with Alternative 4 and as a result, would not require that all the same mitigation measures implemented for the BDCP alternatives be implemented to mitigate the impacts. Additionally, Mitigation Measures AES-6a, AES-6b and AES-6c which were envisioned to mitigate the visual impacts of implementation of CMs 2-21 are no longer applicable.

NEPA Effects: Effects on the existing visual character, scenic vistas, scenic highways, and light and glare would be similar to those under Alternative 4 because restored/enhanced lands would result in incremental and site-specific changes to the landscape in a similar manner. Because only portions of the restoration Environmental Commitments and fewer of the other stressor reduction measures would be implemented under Alternative 4A, it is likely that the visual and aesthetic effects would be less than those presented for Alternative 4. However, these visual and aesthetic impacts are considered to be adverse because site-specific, localized adverse visual effects could occur at the sites of projects implemented under the Alternative 4A Environmental Commitments. Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-4a through AES-4d are available to address effects from habitat restoration and enhancement actions.

CEQA Conclusion: Implementation of Environmental Commitments under Alternative 4A would have similar but less impacts than identified for Alternative 4. Alternative 4A has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. These potential impacts are considered to be significant because construction of Environmental Commitments could potentially change views from public areas, negatively affect sensitive receptors and require multiple year construction at specific locations that are currently unknown.

Implementing mitigation measures AES-1a through AES-1g would partially reduce the impacts of Alternative 4A on aesthetic and visual resources but not to a less-than-significant level because restoration and other actions implemented under this alternative could create considerable changes to the visual character of sensitive receptors that may not be fully mitigated by these mitigation measures. Thus, implementation of Environmental Commitments under Alternative 4A would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 4.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Environmental Commitments with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

NEPA Effects: Constructing water conveyance facilities and implementing Environmental Commitments under Alternative 4A would generally have the same potential for incompatibilities with one or more plans and policies related to preserving the visual quality and character of the Delta as described for Alternative 4. As described for Alternative 4, potential incompatibility with plans and policies could exist related to preserving the visual quality and character of the Delta (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

CEQA Conclusion: The potential incompatibilities with plans and policies listed above indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6, above, and no additional CEQA conclusion is required related to the compatibility of Alternative 4A with relevant plans and policies.

17.3.4.3 Alternative 2D—Dual Conveyance with Modified Pipeline/Tunnel and Intakes 1, 2, 3, 4, and 5 (15,000 cfs; Operational Scenario B)

Table 17D-6 in Appendix 17D, *Permanent Impacts after Construction is Complete*, describes existing visual characteristics and the permanent effects of Alternative 2D on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Those effects would be similar for this alternative. Alternative 2D would include the same physical/structural components as Alternative 4 but also includes the construction of two additional intakes, Intakes 1 and 4, compared to only constructing Intakes 2, 3, and 5 under Alternative 4.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

NEPA Effects: Alternative 2D would include the same physical/structural components as Alternative 4, except that it would include two additional intakes compared to Alternative 4. The potential under Alternative 2D to create substantial alteration in visual quality or character during construction of conveyance facilities would be greater than those impacts described under

Alternative 4 and would constitute an adverse effect on existing visual character because of the long-term nature of construction, combined with the proximity to sensitive receptors, effects on residences and agricultural buildings, removal of vegetation, and changes to topography through grading. The primary features that would affect the existing visual quality and character under Alternative 2D, once the facility has been constructed, would be Intakes 1, 2, 3, 4, and 5, the intermediate forebay and expanded Clifton Court Forebay, resulting landscape effects left behind from spoil/borrow and RTM areas, the operable barrier and transmission lines. These changes would be most evident in the northern portion of the study area, which would undergo extensive changes from the permanent establishment of large industrial facilities and the supporting infrastructure along and surrounding the segment of the Sacramento River from Clarksburg to north of Courtland where the intakes would be situated.

Overall, construction would take 9-14 years, and the intensity of the activities in contrast to the current rural/agricultural nature of the area would be substantial. Construction of Intakes 1–5 and the accompanying borrow/spoil areas and RTM areas would introduce visually dominant and discordant features in the foreground and middleground views, and these elements would be very noticeable to all viewer groups. A construction shaft, tunnel work area, RTM area, and transmission lines would be visible from SR 4. While not officially designated state scenic highways, and therefore not discussed under *Impact AES-3: Permanent damage to scenic resources along a state scenic highway from construction of conveyance facilities*, this road is a San Joaquin County Scenic Route (see *San Joaquin County* in Section 17.2.3.2, *County and City General Plans*). These features would detract from the visual quality of views from these routes.

After construction, areas surrounding Intakes 1–5, spoil/borrow areas, RTM areas, shaft sites, and locations where concrete batch plants and fuel stations were located may be denuded of vegetation for a short period of time until the landscaping plans designed under WREM No. 30a are implemented. Once installed, the landscape would still appear to be denuded of vegetation or to have little vegetative cover because immature landscaping would be similar in appearance to tilled or newly planted agricultural fields. The sites would be in a transitional state, and over a period of a few years, plant species would mature and vegetation would recolonize the sites. These changes would happen in an area known for its open space, agricultural landscapes, and rural characteristics and would segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and eliminate valued visual resources. The effects of permanent access roads on visual resources would not be adverse. The effects of shaft site access hatches on the existing scenic character may be adverse. Operation of the intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines would result in adverse effects on the existing visual character. In addition, construction of all of these features has the potential to negatively affect wildlife viewing and the overall enjoyment of scenic views in the study area. Therefore, because of the long-term nature of construction combined with the proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this overall effect of conveyance facility construction on existing visual quality and character is considered adverse. Mitigation Measures AES-1a through AES-1g are available to address visual effects resulting from construction of Alternative 2D water conveyance facilities.

CEQA Conclusion: Construction of Alternative 2D would substantially alter the existing visual quality and character present in the study area in a similar manner as described for Alternative 4 in Section 17.3.3.9. The long-term nature of construction of the five intakes, operable barrier, pipeline/tunnel, work areas, spoil/borrow and RTM areas, shaft sites, barge unloading facilities, and operable barrier; presence and visibility of heavy construction equipment; proximity to sensitive receptors; relocation of residences and agricultural buildings; removal of riparian vegetation and other mature vegetation or landscape plantings; earthmoving and grading that result in changes to topography in areas that are predominantly flat; addition of large-scale industrial structures (intakes and related facilities); remaining presence of large-scale borrow/spoil and RTM area landscape effects; and introduction of tall, steel transmission lines would all contribute to this impact.

Overall, construction would last up to 9-14 years and would change the existing visual character in the vicinity of project elements from those of agricultural, rural residential, or riparian and riverine settings to areas involving heavy construction equipment, temporary construction structures, work crews, other support vehicles and other activities that would modify and disrupt short- and long-range views. These activities would be disruptive to viewers. Once construction is complete, the alternative would result in the placement of large, industrial concrete and steel structures, fencing, and other similar anthropogenic features where none presently exist. Because of the landscape sensitivity and visual dominance of these features, these changes would result in reduced scenic quality throughout the study area (see 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Thus, Alternative 2D would result in significant impacts on the existing visual quality and character in the study area.

Mitigation Measures AES-1a through AES-1g would partially reduce impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, Alternative 2D would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please see Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please see Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please see Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please see Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please see Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please see Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please see Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 4.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

NEPA Effects: Scenic vistas are mapped and included in Appendix 17D, Figure 17D-1. Effects related to scenic vistas under Alternative 2D would be similar to but greater than those described for Alternative 4 in Section 17.3.3.9. During construction, the introduction of construction equipment and removal of vegetation would alter the scenic elements that contribute to the viewing experience from scenic vistas. The five intakes would introduce visually dominant and discordant features in the foreground and middleground views in vistas that would be very noticeable to all viewer groups in areas of low to high landscape sensitivity levels. As described for Alternative 4, the effects of permanent access roads effects on scenic vistas would not be adverse. The effects of shaft site pads and access hatches on scenic vistas could be adverse. The large scale of intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines may result in adverse effects on scenic vistas (see discussions under Sections 17.3.1.2, *Preparation of Visual Simulations*, and 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Overall, effects on scenic vistas associated with Alternative 2D would be adverse because some elements of the conveyance facilities would permanently change views to scenic vistas. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Construction of conveyance facilities under Alternative 2D would have effects on scenic vistas similar to and greater than those described for Alternative 4 in Section 17.3.3.9. Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and CCF pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vistas in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measure AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with other structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 2D would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 4.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

NEPA Effects: Effects on state scenic highways under Alternative 2D would be similar to but greater than those described for Alternative 4 in Section 17.3.3.9. Intakes 1.2, 3, 4, and 5, the RTM area north of Intake 2, and the intermediate forebay would be immediately and prominently visible in the foreground from SR 160 and would result in an overall noticeable effect on viewers relative to their current experience of the study area's scenic resources along SR 160 and River Road, where the landscape sensitivity level is high. As described for Alternative 4, the visual elements introduced by the intakes, RTM area north of Intake 2, and intermediate forebay associated with Alternative 2D would conflict with the existing forms, patterns, colors, and textures along River Road and SR 160; would dominate riverfront available from SR 160; and would alter broad views and the general nature of the visual experience presently available from River Road and SR 160. These changes would reduce the visual quality near intake structure locations and result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas. This effect would be adverse for the same reasons discussed for Alternative 4. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Construction of conveyance facilities under Alternative 2D would have effects on scenic highways similar to but greater than those described for Alternative 4 in Section 17.3.3.9. Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structures and CCF pumping plants, RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measures AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with other structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 2D would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 4.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

NEPA Effects: Effects resulting from light and glare under Alternative 2D would be similar to but greater than those described for Alternative 4 in Section 17.3.3.9. Intakes 1, 2, 3, 4, and 5 and their associated facilities would create noticeable effects relating to light and glare (Figures 17-85 through 17-86b). Light building colors over a large surface area would reflect off of those surfaces and increase glare, especially when combined with the removal of vegetation that absorbs light, provides shade, and screens glare. The amount of glare associated with surfaces would be increased if highly glossy paints or surface treatments or highly reflective materials are used, compared to satin or flat paints or surface treatments or materials that are less reflective. Sunlight would reflect off the new water surfaces of the forebay, creating new sources of glare where none presently exist. Nighttime construction could also result in headlights flashing into nearby residents' homes when construction vehicles are turning onto or off of construction access routes. Proposed transmission towers would require the use of safety lights that would alert low-flying aircraft to the presence of these structures because of their height. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the tower for aircraft safety. Given the height of the towers, this low-level lighting would not be bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers. In addition, using LED lighting can result in a substantial increase in light and glare if proper shielding is not provided and BRWL lamps are used (International Dark-Sky Association 2010a, 2010b, 2015). BRWL LED lighting can result in a substantial amount of light trespass because BRWL lamps are much brighter than traditional street lighting, can light a much larger area at that same height, and result in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Overall, because the study area currently experiences low levels of light and because there are a larger number of viewers in and around the waterways, intake structures, and forebay that would be affected by these noticeable changes that contrast with the existing rural character, effects associated with new sources of daytime and nighttime light and glare are considered adverse. Mitigation Measures AES-4a through AES-4d are available to address these effects.

CEQA Conclusion: Construction of conveyance facilities under Alternative 2D would have effects, related to light and glare similar to but greater, than those described for Alternative 4 in Section 17.3.3.9. The impacts associated with light and glare under Alternative 2D are significant because there are a larger number of viewers in and around the waterways, intake structures, and intermediate forebay; project facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels; BRWL LED lighting could exasperate project lighting impacts; and the study area currently experiences low levels of light because there are fewer light/glare producers than are typical in urban areas. Mitigation Measures AES-4a through AES-4d would partially reduce these impacts but not to a less than significant level because all instances of light and glare impacts would not be reduced by the available mitigation measures. In addition, the size of the study area and the nature of changes introduced by the new light and glare sources would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 2D would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 4.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Conveyance Facility Operation

NEPA Effects: Effects on the visual environment through operations and maintenance of the water conveyance facilities under Alternative 2D would be similar to and greater than those described for Alternative 4 in Section 17.3.3.9. Once the facility is in operation, visible regular and periodic maintenance would be required on all major structures. Activities such as painting, cleaning, vegetation maintenance (removal), repairs, and inspections would be visible from viewpoints on water and land. The greatest visual effects resulting from operations would be maintenance of the intakes and dredging the forebays. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes and cleaning the facilities and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These effects on the existing visual quality and character during operation would not be adverse because the activities would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features.

CEQA Conclusion: Operation of Alternative 2D would have visual quality effects similar to but greater than those described for Alternative 4 in Section 17.3.3.9. Maintenance of the conveyance facilities (i.e., intakes, tunnels, forebays and transmission lines) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at forebays; vegetation removal and care along embankments; tunnel inspection; and vegetation removal within transmission line ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the intakes, cleaning the facilities, and keeping forebay embankments and transmission line ROWs cleared of vegetation; dredged forebays would appear the same after the activity is complete. Therefore, the physical act of maintenancing the facilities would be the primary visible element during operation. These activities would require little to heavier equipment to maintenance facilities. However, heavy equipment associated with agricultural production and levee maintenance are common in the area and maintenance activities would not differ greatly in the types of equipment and movements seen in the agricultural/leveed landscape. In addition, maintenance activities are anticipated to occur within a short period of time and cease when complete. These visible maintenance activities would be temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would be considered less than significant. Maintenance and operation of Alternative 2D once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features. Thus, overall, operation and maintenance of Alternative 2D would have a less-than-significant impact on existing visual quality and character in the study area because operations would not change the visual quality of the environment and maintenance activities would be minor and intermittent. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of Environmental Commitments 3, 4, 6–12, 15, and 16

Effects of Alternative 2D related to the potential for alteration of existing visual quality or character from implementing these Environmental Commitments would be similar to those described for Alternative 4 in Section 17.3.3.9. However, as described in Chapter 3, *Description of Alternatives*, Alternative 2D would restore up to 17,766 acres of habitat under Environmental Commitments 3, 4, and 6-11 as compared with 83,800 acres under Alternative 4. Similarly, Environmental Commitments 15 and 16 would be implemented only at limited locations. Conservation Measures 2, 5, 13, 14, and 17–21 would not be implemented as part of this alternative. Therefore, the magnitude of effects under Alternative 2D would likely be smaller than those associated with Alternative 4 and as a result, would not require that all the same mitigation measures implemented for the BDCP alternatives be implemented to mitigate the impacts. Additionally, Mitigation Measures AES-6a, AES-6b and AES-6c which were envisioned to mitigate the visual impacts of implementation of CMs 2-21 are no longer applicable.

NEPA Effects: Effects on the existing visual character, scenic vistas, scenic highways, and light and glare would be similar to those under Alternative 4 because restored/enhanced lands would result in incremental and site-specific changes to the landscape in a similar manner. Because only portions of the restoration Environmental Commitments and fewer of the other stressor reduction measures would be implemented under Alternative 2D, it is likely that the visual and aesthetic effects would be less than those presented for Alternative 4. However, these visual and aesthetic impacts are considered to be adverse because site-specific, localized adverse visual effects could occur at the sites of projects implemented under the Alternative 2D Environmental Commitments. Mitigation Measures AES-1a through AES-1g, and Mitigation Measures AES-4a through AES-4d are available to address effects from implementation of the Environmental Commitments.

CEQA Conclusion: Implementation of Environmental Commitments under Alternative 2D would have similar but less impacts than identified for Alternative 4 in Section 17.3.3.9. Alternative 2D has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. These potential impacts are considered to be significant because construction of Environmental Commitments could potentially change views from public areas, negatively affect sensitive receptors and require multiple year construction at specific locations that are currently unknown. However, because a number of factors that would determine the level of change are unknown—the location of site-specific restoration activities, potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction—impacts associated with implementation of Environmental Commitments 3, 4, and 6-11 on visual quality and character, scenic vistas, and light and glare sources, are considered significant. Because of the distance of implemented Environmental Committmentsfrom scenic highways, changes associated with these activities would not affect the visual quality along these scenic highway corridors and this impact would be less than significant. Site-specific restoration information and plans need to be developed before the site-specific effects on the existing visual character, scenic vistas, and light and glare can be determined

Several mitigation measures are available to minimize the impacts on visual quality and character in the study area that could result from implementation of these Environmental Commitments. As summarized below, these measures could be applied to individual restoration projects or actions as appropriate for the site-specific conditions and design considerations. In addition, each restoration project or action would undergo an environmental compliance process that would be used to determine what additional mitigation measures would be deemed appropriate to reduce significant effects. Mitigation Measures AES-1a through AES-1g could be applied to minimize impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. Mitigation Measures AES-4a through AES-4d could be used to reduce the effects of new light and glare sources by limiting construction to daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences.

Although some of the Environmental Commitments could result in beneficial impacts through the restoration of natural habitat and these mitigation measures would reduce the severity of impacts, it is unknown whether they would be reduced to a less-than-significant level because of uncertainties associated with future implementation of the environmental commitments. In addition, the size of the study area and the nature of changes introduced by these Environmental Commitments would result in permanent changes to the regional landscape such that there would be noticeable changes to the visual character that may or may not blend or be in keeping with the existing visual environment. Implementing the mentioned mitigation measures would partially reduce the impacts of Alternative 2D on aesthetic and visual resources but not to a less-than-significant level because restoration and other actions implemented under this alternative could create considerable changes to the visual character of sensitive receptors that may not be fully mitigated by these mitigation measures. Thus, implementation of Environmental Commitments under Alternative 2D would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 4.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Environmental Commitments with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

NEPA Effects: Constructing water conveyance facilities and implementing Environmental Commitments under Alternative 2D would generally have the same potential for incompatibilities with one or more plans and policies related to preserving the visual quality and character of the Delta as described for Alternative 4 in Section 17.3.3.9. As described for Alternative 4, potential incompatibility with plans and policies could exist related to preserving the visual quality and character of the Delta (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

CEQA Conclusion: The potential incompatibilities with plans and policies listed above indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6, above and no additional CEQA conclusion is required related to the compatibility of Alternative 2D with relevant plans and policies.

17.3.4.4 Alternative 5A—Dual Conveyance with Modified Pipeline/Tunnel and Intake 2 (3,000 cfs; Operational Scenario C)

Table 17D-7 in Appendix 17D, *Permanent Impacts after Construction is Complete*, describes existing visual characteristics and the BDCP-related permanent effects of Alternative 5A on visual quality and character, scenic vistas, scenic roadways, and from light and glare sources after construction is complete and identifies the overall effect on viewers. Appendix 17E, *Permanent Features*, identifies the viewer groups and viewing locations that would be affected by permanent alternative features. Effects would be similar for this alternative. Alternative 5A would include the same physical/structural components as Alternative 4 but only includes the construction of Intake 2, compared to constructing Intakes 2, 3, and 5 under Alternative 4.

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character during Construction of Conveyance Facilities

NEPA Effects: Alternative 5A would include the same physical/structural components as Alternative 4 in Section 17.3.3.9, except that it would include one intake compared to three intakes under Alternative 4. The potential under Alternative 5A to create substantial alteration in visual quality or character during construction of conveyance facilities would be less than those impacts described under Alternative 4 and would constitute an adverse effect on existing visual character because of the long-term nature of construction, combined with the proximity to sensitive receptors, effects on residences and agricultural buildings, removal of vegetation, and changes to topography through grading. The primary features that would affect the existing visual quality and character under Alternative 5A, once the facility has been constructed, would be Intake 2 the intermediate forebay and expanded Clifton Court Forebay, resulting landscape effects left behind from spoil/borrow and RTM areas, the operable barrier, transmission lines, and concrete batch plants and fuel stations.

Overall, construction would take 9-14 years, and the intensity of the activities in contrast to the current rural/agricultural nature of the area would be substantial. Construction of intakes, and the accompanying CCF pumping plants, borrow/spoil areas, and RTM areas would introduce visually dominant and discordant features in the foreground and middleground views, and these elements would be very noticeable to all viewer groups.

After construction, areas surrounding the intake, spoil/borrow areas, RTM areas, shaft sites, and locations where concrete batch plants and fuel stations were located may be denuded of vegetation for a short period of time until the landscaping plans designed under WREM No. 30a are implemented. Once installed, the landscape would still appear to be denuded of vegetation or to have little vegetative cover because immature landscaping would be similar in appearance to tilled or newly planted agricultural fields. The sites would be in a transitional state, and over a period of a few years, plant species would mature and vegetation would recolonize the sites. These changes would happen in an area known for its open space, agricultural landscapes, and rural characteristics and would segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and eliminate valued visual resources. The effects of permanent access roads on visual resources would not be adverse. The effects of shaft site pads and access hatches on the existing scenic character may be adverse. Operation of the intakes, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines would result in adverse effects on the existing visual character. In addition, construction of all of these features has the potential to negatively affect wildlife viewing and the overall enjoyment of scenic views in the study area. Therefore, because of the long-term nature of construction combined with the proximity to sensitive receptors, razing of residences and agricultural buildings, removal of vegetation, and changes to topography through grading, this overall effect of conveyance facility construction on existing visual quality and character is considered adverse. These changes would be most evident in the northern portion of the study area, which would undergo extensive changes from the permanent establishment of large industrial facilities and the supporting infrastructure along and surrounding Intake 2 on the Sacramento River. Mitigation Measures AES-1a through AES-1g are available to address visual effects resulting from construction of Alternative 4A water conveyance facilities.

CEQA Conclusion: Construction of Alternative 5A would substantially alter the existing visual quality and character present in the study area in a similar manner as described for Alternative 4 in Section 17.3.3.9. The long-term nature of construction of an intake, operable barrier, pipeline/tunnel, work areas, spoil/borrow and RTM areas, shaft sites, and barge unloading facilities; presence and visibility of heavy construction equipment; proximity to sensitive receptors; relocation of residences and agricultural buildings; removal of riparian vegetation and other mature vegetation or landscape plantings; earthmoving and grading that result in changes to topography in areas that are predominantly flat; addition of large-scale industrial structures (intakes and related facilities); remaining presence of large-scale borrow/spoil and RTM area landscape effects; and introduction of tall, steel transmission lines would all contribute to this impact.

Overall, construction would last up to 9-14 years and would change the existing visual character in the vicinity of project elements from those of agricultural, rural residential, or riparian and riverine settings to areas involving heavy construction equipment, temporary construction structures, work crews, other support vehicles and other activities that would modify and disrupt short- and long-range views. These activities would be disruptive to viewers. Once construction is complete, the alternative would result in the placement of large, multi-story industrial concrete and steel structures, CCF pumping plants, fencing, and other similar anthropogenic features where none presently exist. Because of the landscape sensitivity and visual dominance of these features, these changes would result in reduced scenic quality throughout the study area. Thus, Alternative 5A would result in significant impacts on the existing visual quality and character in the study area.

Mitigation Measures AES-1a through AES-1g would partially reduce impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, and using best management practices to implement a project landscaping plan. However, impacts may not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact on visual quality and character, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, Alternative 5A would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please see Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please see Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please see Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please see Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please see Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please see Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please see Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 4.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

NEPA Effects: Scenic vistas are mapped and included in Appendix 17D, Figure 17D-1. Effects related to scenic vistas under Alternative 5A would be similar to but less than those described for Alternative 4 in Section 17.3.3.9. During construction, the introduction of construction equipment and removal of vegetation would alter the scenic elements that contribute to the viewing experience from scenic vistas. Intake 2 would introduce visually dominant and discordant features in the foreground and middleground views in vistas that would be very noticeable to all viewer groups in areas of low to high landscape sensitivity levels. As described for Alternative 4, the effects of permanent access roads effects on scenic vistas would not be adverse. The effects of shaft site pads and access hatches on scenic vistas could be adverse. The large scale of intake, the visual presence of large-scale borrow/spoil and RTM area landscape effects, and transmission lines may result in adverse effects on scenic vistas (see discussions under Section 17.3.1.2, *Preparation of Visual Simulations*, and Section 17.3.1.3, *Analysis of the Alternatives' Impact on Visual Resources*). Overall, effects on scenic vistas associated with Alternative 5A would be adverse because some elements of the conveyance facilities would permanently change views to scenic vistas. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Construction of conveyance facilities under Alternative 5A would have similar but less effect on scenic vistas as described for Alternative 4 in Section 17.3.3.9. Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structure and facilities, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vistas in the study area. Mitigation Measure AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less-than-significant in all instances. Thus, impacts on scenic vistas associated with Alternative 5A would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 4.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction of Conveyance Facilities

NEPA Effects: Effects on state scenic highways under Alternative 5A would be similar to but less than those described for Alternative 4 in Section 17.3.3.9. Intake 2, the RTM area north of Intake 2, and the intermediate forebay would be immediately and prominently visible in the foreground from SR 160 and would result in an overall noticeable effect on viewers relative to their current experience of the study area's scenic resources along SR 160 and River Road, where the landscape sensitivity level is high. However, the severity of these effects related to the north Delta intakes along the Sacramento River would be decreased because there would only be one intake structure instead of five. As described for Alternative 4, the visual elements introduced by the Intake 2, RTM area north of Intake 2, and intermediate forebay associated with Alternative 5A would conflict with the existing forms, patterns, colors, and textures along River Road and SR 160; would dominate riverfront available from SR 160; and would alter broad views and the general nature of the visual experience presently available from River Road and SR 160. These changes would reduce the visual quality near intake structure locations and result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas. This effect would be adverse for the same reasons discussed for Alternative 4. Mitigation Measures AES-1a, AES-1c, and AES-1e are available to address these effects.

CEQA Conclusion: Construction of conveyance facilities under Alternative 5A would have similar but less effects on scenic highways as described for Alternative 4 in Section 17.3.3.9. Because proposed permanent access roads generally follow existing ROWs, they would have less-than-significant impacts on scenic vistas. The presence of the intake structure and facilities, RTM area landscape effects, shaft site pads and access hatches, and transmission lines would result in significant impacts on scenic vistas because construction and operation would result in a reduction in the visual quality in some locations and introduce dominant visual elements that would result in noticeable changes in the visual character of scenic vista viewsheds in the study area. These changes would not blend, would not be in keeping or would be incompatible with the existing visual environment, and could be viewed by sensitive receptors or from public viewing areas.

Mitigation Measures AES-1a, AES-1c, and AES-1e would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with conveyance facility structures would not be reduced to a less-than-significant level because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, impacts on scenic vistas associated with Alternative 5A would be significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 4.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction and Operation of Conveyance Facilities

NEPA Effects: Effects resulting from light and glare under Alternative 5A would be similar to but less than those described for Alternative 4 in Section 17.3.3.9. Intake 2 and associated facilities would create noticeable effects relating to light and glare (Figures 17-85). Light building colors over a large surface area would reflect off of those surfaces and increase glare, especially when combined with the removal of vegetation that absorbs light, provides shade, and screens glare. The amount of glare associated with surfaces would be increased if highly glossy paints or surface treatments or highly reflective materials are used, compared to satin or flat paints or surface treatments or materials that are less reflective. Sunlight would reflect off the new water surfaces of the forebay, creating new sources of glare where none presently exist. Nighttime construction could also result in headlights flashing into nearby residents' homes when construction vehicles are turning onto or off of construction access routes. Proposed transmission towers would require the use of safety lights that would alert low-flying aircraft to the presence of these structures because of their height. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the tower for aircraft safety. Given the height of the towers, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers. In addition, using LED lighting can result in a substantial increase in light and glare if proper shielding is not provided and BRWL lamps are used (International Dark-Sky Association 2010a, 2010b, 2015). BRWL LED lighting can result in a substantial amount of light trespass because BRWL lamps are much brighter than traditional street lighting, can light a much larger area at that same height, and result in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Overall, because the study area currently experiences low levels of light and because there are a larger number of viewers in and around the waterways, the intake structure, and forebay that would be affected by these noticeable changes that contrast with the existing rural character, effects associated with new sources of daytime and nighttime light and glare are considered adverse. Mitigation Measures AES-4a through AES-4d are available to address these effects.

CEQA Conclusion: Construction of conveyance facilities under Alternative 5A would have effects, related to light and glare similar to, but less than those described for Alternative 4 in Section 17.3.3.9. The impacts associated with light and glare under Alternative 5A are significant because there are a larger number of viewers in and around the waterways, intake structure, and intermediate forebay; project facilities would increase the amount of nighttime lighting in the Delta above existing ambient light levels; BRWL LED lighting could exasperate project lighting impacts; and the study area currently experiences low levels of light because there are fewer light/glare producers than are typical in urban areas. Mitigation Measures AES-4a through AES-4d would partially reduce these impacts but not to a less than significant level because all instances of light and glare impacts would not be reduced by the available mitigation measures. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 5A would result in significant and unavoidable impacts on public views in the project vicinity.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 4.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Conveyance Facility Operation

NEPA Effects: Effects on the visual environment through operations and maintenance of the water conveyance facilities under Alternative 5A would be similar to but less than those described for Alternative 4 in Section 17.3.3.9. The greatest visual effects resulting from operations would be maintenance of the intake and dredging the forebays. However, all activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. These effects on the existing visual quality and character during operation would not be adverse because the activities would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features.

CEQA Conclusion: Operation of Alternative 5A would have visual quality effects similar to but less than those described for Alternative 4 in Section 17.3.3.9. Maintenance of the conveyance facilities (i.e., Intake 2, tunnels, forebays and transmission lines) would be required periodically and would involve painting, cleaning, and repair of structures; dredging at forebays; vegetation removal and care along embankments; tunnel inspection; and vegetation removal within transmission line ROWs. These activities could be visible from the water or land by sensitive viewers in proximity to these features. All activities would maintain the visual character of the facilities, once built, and would not act to further change the visual quality or character of the facilities or surrounding visual landscape during operation. Maintenance and operation of Alternative 5A once constructed, would not result in further substantial changes to the existing natural viewshed or terrain, alter existing visual quality of the region or eliminate visual resources, or obstruct or permanently reduce visually important features. Thus, overall, operation and maintenance of Alternative 5A would have a less-than-significant impact on existing visual quality and character in the study area because operations would not change the visual quality of the environment and maintenance activities would be minor and intermittent. No mitigation is required.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of Environmental Commitments 3, 4, 6, 7, 8–12, 15, and 16

Effects of Alternative 5A related to the potential for alteration of existing visual quality or character from implementing these Environmental Commitments would be similar to those described for Alternative 4 in Section 17.3.3.9. However, as in Chapter 3, *Description of Alternatives*, Alternative 5A would restore up to 14,908 acres of habitat under Environmental Commitments 3, 4, 6, 7, and 8–11 as compared with 83,800 acres under Alternative 4. Similarly, Environmental Commitments 15 and 16 would be implemented only at limited locations. Conservation Measures 2, 5, 13, 14, and 17–21 would not be implemented as part of this alternative. Therefore, the magnitude of effects under Alternative 5A would likely be smaller than those associated with Alternative 4 and as a result, would not require that all the same mitigation measures implemented for the BDCP alternatives be implemented to mitigate the impacts. Additionally, Mitigation Measures AES-6a, AES-6b and AES-6c which were envisioned to mitigate the visual impacts of implementation of CMs 2-21 are no longer applicable.

NEPA Effects: Effects on the existing visual character, scenic vistas, scenic highways, and light and glare would be similar to those under Alternative 4 because restored/enhanced lands would result in incremental and site-specific changes to the landscape in a similar manner. Because only portions of the restoration Environmental Commitments and fewer of the other stressor reduction measures would be implemented under Alternative 5A, it is likely that the visual and aesthetic effects would be less than those presented for Alternative 4. However, these visual and aesthetic impacts are considered to be adverse because site-specific, localized adverse visual effects could occur at the sites of projects implemented under the Alternative 5A Environmental Commitments. Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-4a through AES-4d are available to address effects from implementation of the Environmental Commitments.

CEQA Conclusion: Implementation of Environmental Commitments under Alternative 5A would have similar but less impacts than identified for Alternative 4 in Section 17.3.3.9. Alternative 5A has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. These potential impacts are considered to be significant because construction of Environmental Commitments could potentially change views from public areas, negatively affect sensitive receptors and require multiple year construction at specific locations that are currently unknown.

Implementing mitigation measures AES 1a–1g would partially reduce the significant impacts of Alternative 5A on aesthetic and visual resources but not to a less-than-significant level because restoration and other actions implemented under this alternative could create considerable changes to the visual character of sensitive receptors that may not be fully mitigated by these mitigation measures. Thus, implementation of Environmental Commitments under Alternative 5A would result in significant and unavoidable impacts on the existing visual quality and character in the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 4.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.5 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 4.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 4.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Environmental Commitments with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

NEPA Effects: Constructing water conveyance facilities and implementing Environmental Commitments under Alternative 5A would generally have the same potential for incompatibilities with one or more plans and policies related to preserving the visual quality and character of the Delta as described for Alternative 4 in Section 17.3.3.9. As described for Alternative 4, potential incompatibility with plans and policies could exist related to preserving the visual quality and character of the Delta (i.e., The Johnston-Baker-Andal-Boatwright Delta Protection Act of 1992, Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta, Delta Plan, Brannan Island and Franks Tract State Recreation Areas General Plan). In addition, with the exception of Solano County, the alternative may be incompatible with county general plan policies that protect visual resources in the study area.

CEQA Conclusion: The potential incompatibilities with plans and policies listed above indicate the potential for a physical consequence to the environment. The physical effects they suggest are discussed in impacts AES-1 through AES-6, above and no additional CEQA conclusion is required related to the compatibility of Alternative 5A with relevant plans and policies.

17.3.5 Cumulative Analysis

This cumulative impact analysis considers projects that could affect the same resources and, where relevant, in the same time frame as the project alternatives, resulting in a cumulative impact. The visual environment is expected to change as a result of past, present, and reasonably foreseeable future projects related to changes in land use (see Chapter 13, *Land Use*). It is expected that changes to the existing visual environment will take place, even though it is assumed that reasonably foreseeable future projects would include typical design and construction practices to avoid or minimize potential impacts.

Proposed projects and plans that have the potential to contribute to cumulative visual impacts in the vicinity of the project alternatives are listed in Table 17-2. This table lists projects, as described in Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*, which have been identified as cumulative projects.

Cumulative projects include those within and in proximity to the study area (e.g., within the Lower Sacramento Valley, Delta, Bay Area, and Upper San Joaquin Basin); and projects that lie well outside of the study area (e.g., projects occurring in the Upper Sacramento Valley, Lower San Joaquin Basin, and further south) are not included. Only projects that would result in visible changes to the landscape are included in the cumulative analysis below. Projects that would not result in visible changes to the landscape include such plans or programs that monitor or implement existing regulations and programs (e.g., implementing stormwater regulations, Fish Screen and Passage Program), plans or programs that are currently in operation and are a part of the existing visual environment (e.g., invasive species control programs), and programs that would manage water flows for identified species because variable flows are already a naturally occurring climatic condition. For descriptions of cumulative projects, refer to Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*.

Since the time of the Draft EIR/EIS notice of preparation (NOP) in 2009, additional projects that could combine with the action alternatives to contribute to cumulative aesthetic and visual resources impacts are known to be reasonably foreseeable or probable. The complete list of cumulative projects is detailed in Appendix 3D, Attachment 3D-A, *Descriptions of Programs, Projects, and Policies considered for Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Analysis for the BDCP EIR/EIS*. Table 17-2 below has been updated to include the additional cumulative projects that would affect aesthetic and visual resources because they would result in visible changes to the landscape, delete cumulative projects that are not located within or in proximity to the study area, and to describe the effects on aesthetic and visual resources. Some of the cumulative effects described include localized effects that would occur in direct combination with the action alternative in the vicinity of alternative conveyance facilities and restoration actions. Other cumulative effects described consider more indirect additive effects on aesthetics and visual resources in the region, including outside of the Delta study area.

1 **Table 17-2. Effects on Aesthetics and Visual Resources from Plans, Policies, and Programs Considered**
2 **for Cumulative Analysis[a]**

Agency	Program/Project	Status	Description of Program/Project	Effects on Aesthetic and Visual Resources
Alameda County	East Alameda County Conservation Strategy (EACCS)		The EACCS is a long-term, regional plan for habitat protection and permitting. The EACCS will identify land suitable for voluntary mitigation or conservation, mitigation ratios, standards for habitat restoration, best management and maintenance practices for conservation sites, monitoring standards, and guidelines for adaptive management.	Plan actions would give rise to actual projects that would affect the visual landscape. Beneficial visual effects could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.
California Department of Fish and Wildlife	Private Lands Incentive Programs	Ongoing	DFG administers the Landowner Incentive Program funded by USFWS to annual incentive payments to landowners to enhance and manage their lands to protect wetlands, native grasslands, and riparian habitat.	Small scale, site-specific management enhancements may occur on private properties that could be seen by nearby viewers.
California Department of Fish and Wildlife	Ecosystem Restoration Program (ERP) Conservation Strategy		A multi-agency effort aimed at improving and increasing aquatic and terrestrial habitats and ecological function in the Delta and its tributaries. The ERP provides grant and implements restoration projects through grants administered that focus on fish passage issues, species assessment, ecological processes, environmental water quality, or habitat restoration.	The projects would result in the conversion of existing land uses to restored habitat and the enhancement of marginal habitats to increase habitat value. These projects would result in beneficial effects through the reintroduction of habitats that had been lost through the original conversion of natural lands to agriculture and could increase biodiversity that would result in benefits to wildlife and scenery viewing.

Agency	Program/Project	Status	Description of Program/Project	Effects on Aesthetic and Visual Resources
California Department of Fish and Wildlife	Fremont Landing Conservation Bank		The project would preserve and enhance 40 acres of existing riparian and wetland habitat, and restore/create 60 acres of riparian woodland and wetland sloughs within the floodplain of the Sacramento River at Fremont Landing Conservation Bank site for the federally and state listed fish species. Three borrow pits would be connected to the Sacramento River in order to reduce or eliminate fish stranding.	The project would result in the conversion of existing land uses to restored habitat and the enhancement of marginal habitats to increase habitat value. This project would result in beneficial effects through the reintroduction of habitats that had been lost through the original conversion of natural lands to agriculture and could increase biodiversity that would result in benefits to wildlife and scenery viewing.
California Department of Fish and Wildlife and California Department of Water Resources	Fish Screen Project at Sherman and Twitchell Islands		The project would install fish screens on up to 10 currently unscreened agricultural intakes used to irrigate state-owned lands on Sherman and Twitchell Islands in the Delta.	This project would result in incremental additions to the amount of infrastructure seen on water bodies and waterways in the study area. This could result in adverse effects on nearby viewer groups through construction and operation.
California Department of Fish and Wildlife	Lower Sherman Island Wildlife Area (LSIWA) Land Management Plan (LMP)		The LWIWA occupies roughly 3,100 acres. The purpose of the LMP is to: 1) guide management of habitats, species, and programs to protect and enhance wildlife values; 2) serve as a guide for appropriate public uses of the LSIWA; 3) serve as descriptive inventory of fish, wildlife, and native plant habitats that occur on or use the LSIWA; 4) provide an overview of the property's operation and maintenance; and 5) present the environmental documentation necessary for compliance with state and federal statutes and regulations, provide a description of environmental impacts that may occur during plan management, and identify mitigation measures.	LMP actions could give rise to management activities that would affect the visual landscape. Beneficial visual effects could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.

Agency	Program/Project	Status	Description of Program/Project	Effects on Aesthetic and Visual Resources
California Department of Fish and Wildlife	Yolo Bypass Wildlife Area LMP		This ogoing program provides for multiple use management of 16,000 acres of mixed agricultural, grassland, and managed wetland habitats. This wildlife area is managed to support wintering waterfowl populations, shorebird migration, waterfowl hunting, and active wildlife observation, especially bird watching. This is accomplished by actively managing wetland habitats and providing for wildlife-friendly farming.	LMP actions could give rise to management activities that would affect the visual landscape. Beneficial visual effects could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.
California Department of Fish and Wildlife	Restoring Ecosystem Integrity in the Northwest Delta		This project proposes to acquire conservation easements and manage and restore up to 1,300 acres of perennial grassland/vernal pool complex in Solano County, CA, and develop a management plan for the Pembco property or other acquisition within the Jepson Prairie Preserve Island Corridor.	Plan actions may give rise to restoration and management activities that would affect the visual landscape. Beneficial visual effects could result through the preservation of natural landscapes and where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.
California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, Bureau of Reclamation, and Suisun Marsh Charter Group	Suisun Marsh Habitat Management, Preservation, and Restoration Plan		The plan balances implementation of the CALFED Program, the Suisun Marsh Preservation Agreement, and other management and restoration programs within the Suisun Marsh in a manner that is based upon voluntary participation by private landowners. The plan is intended to preserve and enhance	Plan actions may give rise to restoration and management activities that would affect the visual landscape. Beneficial visual effects could result through the preservation of natural landscapes and where restoration and enhancement activities

Agency	Program/Project	Status	Description of Program/Project	Effects on Aesthetic and Visual Resources
			managed seasonal wetlands, restore tidal marsh habitat, establish a comprehensive levee protection and improvement program, and protect ecosystem and drinking water quality. The Suisun Marsh Plan also would provide for simultaneous protections and enhancement of existing wildlife values in managed wetlands, endangered species, tidal marshes and other ecosystems, and water quality.	improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.
California State Parks	Central Valley Vision		The Central Valley Vision is a strategic plan for State Parks expansion in the Central Valley. The plan provides a 20-year road map for State Park actions that increase service to valley residents and visitors. The plan outlines options to develop new and improved recreation opportunities, acquire new park lands, and build economic and volunteer partnerships.	Site-specific visual changes may occur on properties that could be seen by nearby viewers to accommodate expanded recreation enhancements. Could provide greater visual access to Delta and Central Valley scenic resources.
California Department of Water Resources	California Water Action Plan	Initiated in January 2014	This plan lays out a roadmap for the next 5 years for actions that would fulfill 10 key themes. In addition, the plan describes certain specific actions and projects that call for improved water management throughout the state.	Projects occurring under the program could result in visual impacts from the construction of water facilities and associated infrastructure.
California Department of Water Resources	Central Valley Flood Protection Plan (CVFPP)		The CVFPP will be a sustainable, integrated flood management plan describing the existing flood risk in the Central Valley and recommending actions to reduce the probability and consequences of flooding. Produced in partnership with federal, tribal, local, and regional partners and other interested parties, the CVFPP will also identify the mutual goals, objectives, and constraints important in the planning process; distinguish plan elements that address mutual flood risks; and, finally, recommend improvements to the state-federal flood protection system.	The CVFPP would result in site-specific repairs or levee upgrades over areas of varying sizes. Some projects would repair levees in a way that would appear visually similar to adjacent levees. However, there would be larger levee rehabilitation projects that would raise levees to protect public and private lands that would result in adverse visual effects through vegetation removal and increased levee heights.

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California Department of Water Resources	Clifton Court Forebay Fishing Facility	Initial Study/Mitigate dNegative Declaration was circulated for public review starting June 18, 2013.	The project consists of installing a fishing pier into Clifton Court Forebay, building other recreation and access improvements, and providing lighting and signage.	This would result in a site-specific increase in the amount of infrastructure seen near the forebay. However, this would provide increased visual access by providing additional recreational facilities, which may be perceived beneficially.
California Department of Water Resources	Delta Levees Flood Protection Program		This grants program works with more than 60 reclamation districts in the Delta and Suisun Marsh to maintain and improve the flood control system and provide protection to public and private investments in the Delta by maintaining, planning, and completing levee rehabilitation projects. The program presently focuses on flood control projects and related habitat projects for eight western Delta Islands (Bethel, Bradford, Holland, Hotchkiss, Jersey, Sherman, Twitchell and Webb Islands) and for the towns of Thornton and Walnut Grove.	This program would result in site-specific repairs or levee upgrades over areas of varying sizes. Some projects would repair levees in a way that would appear visually similar to adjacent levees. However, there would be larger levee rehabilitation projects that would raise levees to protect public and private lands that would result in adverse visual effects through vegetation removal and increased levee heights.
California Department of Water Resources	Delta Risk Management Strategy (DRMS)		The first phase of DRMS analyzes the risks and consequences of levee failure in the Delta region. The analysis considers current and future risks of levee failures from earthquakes, high water conditions, climate change, subsidence, and dry-weather events. The analysis also estimates the consequences of levee failures to the local and state economy, public health and safety and the environment. The DRMS Phase 1 report findings will be used to develop a set of strategies to manage levee failure risks in the Delta and to improve the management of state funding for levee maintenance and improvement.	Projects that would evolve from DRMS findings would result in site-specific repairs or levee upgrades over areas of varying sizes. Some projects would repair levees in a way that would appear visually similar to adjacent levees. However, there would be larger levee rehabilitation projects that would raise levees to protect public and private lands that would result in adverse visual effects through vegetation removal and increased levee heights.

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California Department of Water Resources	FloodSAFE California		FloodSAFE promotes public safety through integrated flood management while protecting environmental resources and emphasizes action in the Delta. This program is very broad, but is designed to improve flood safety throughout the state while encouraging sound conservation actions that benefit California's native fish and wildlife and promote wildlife-friendly agricultural practices.	Projects that would evolve from FloodSAFE findings would result in site-specific repairs or levee upgrades over areas of varying sizes. Some projects would repair levees in a way that would appear visually similar to adjacent levees. However, there would be larger levee rehabilitation projects that would raise levees to protect public and private lands that would result in adverse visual effects through vegetation removal and increased levee heights. Beneficial indirect effects would come from reducing the potential for catastrophic flooding.
California Department of Water Resources	Levee Repair-Levee Evaluation Program		This is a program to repair state and federal project levees. To date, nearly 300 levee repair sites have been identified, with more than 100 of the most critical sites having already been improved. Repairs to others are either in progress or scheduled to be completed in the near future, and still more repair sites are in the process of being identified, planned, and prioritized.	This program would result in site-specific repairs or levee upgrades over areas of varying sizes. Some projects would repair levees in a way that would appear visually similar to adjacent levees. However, there would be larger levee rehabilitation projects that would raise levees to protect public and private lands that would result in adverse visual effects through vegetation removal and increased levee heights.
State and Federal Contractors Water Agency, California Department of Water Resources and MOA Partners	Lower Yolo Restoration Project		The project, located in the lower Yolo Bypass, is a tidal and seasonal salmon habitat project restoring tidal flux to about 1,100 acres of existing pasture land. The goal of this project is to provide important new sources of food and shelter for a variety of native fish species in strategic locations in addition to ensuring continued or enhanced flood protection. The	The project would result in the conversion of existing land uses to restored habitat and the enhancement of marginal habitats to increase habitat value. This project would result in beneficial effects through the reintroduction of

Agency	Program/Project	Status	Description of Program/Project	Effects on Aesthetic and Visual Resources
			project is part of an adaptive management approach in the Delta to learn the relative benefits of different fish habitats, quantify the production and transport of food, and understand how fish species take advantage of new habitat	habitats that had been lost through the original conversion of natural lands to agriculture and could increase biodiversity that would result in benefits to wildlife and scenery viewing.
California Department of Water Resources, Suisun Marsh	Meins Landing Restoration	Ongoing	Meins Landing is a mosaic of managed wetlands and upland habitats, of which a portion will be restored to tidal marsh to meet wetlands restoration goals of other projects.	Small scale, site-specific management enhancements may occur on private properties that could be seen by nearby viewers.
California Department of Water Resources	Mayberry Farms Subsidence Reversal and Carbon Sequestration Project		The project would restore approximately 192 acres of emergent wetlands and enhance approximately 115 acres of seasonally flooded wetlands. The Mayberry Farms project was conceived as a demonstration project that would provide subsidence reversal benefits and develop knowledge that could be used by operators of private wetlands (including duck clubs) that manage lands for waterfowl-based recreation.	The project would result in the conversion of existing land uses to restored habitat and the enhancement of marginal habitats to increase habitat value while also providing subsidence reversal. This project would result in beneficial effects through the reintroduction of habitats that had been lost through the original conversion of natural lands to agriculture and could increase biodiversity that would result in benefits to wildlife and scenery viewing.
California Department of Water Resources	North Delta Flood Control and Ecosystem Restoration Project		The project is intended to improve flood management and provide ecosystem benefits in the North Delta area through actions such as construction of setback levees and configuration of flood bypass areas to create quality habitat for species of concern. The purpose of the Project is to implement flood control improvements in a manner that benefits aquatic and terrestrial habitats, species, and ecological processes. Flood control improvements are needed to reduce damage to land uses, infrastructure, and the Bay-Delta ecosystem resulting from	The project would result in the conversion of existing land uses to restored habitat and the enhancement of marginal habitats to increase habitat value. This project would result in beneficial effects through the reintroduction of habitats that had been lost through the original conversion of natural lands to agriculture and could increase biodiversity that would result in benefits to

Agency	Program/Project	Status	Description of Program/Project	Effects on Aesthetic and Visual Resources
			overflows caused by insufficient channel capacities and catastrophic levee failures in the Project study area.	wildlife and scenery viewing. Flood control improvements may result in adverse visual effects where new or taller levees are introduced or rock slope protection replaces vegetation on levee slopes.
California Department of Water Resources and California Department of Fish and Wildlife	Cache Slough Area Restoration		Restoration efforts would support native fish species by creating or enhancing natural habitats and improving the food web fish require. Surrounding lands that are at elevations that would function as floodplain or marsh if not separated by levees could also be included in the Cache Slough Area. This broader area includes roughly 45,000 acres of existing and potential open water, marsh, floodplain and riparian habitat.	Project would give rise to projects that would affect the visual landscape. Beneficial visual effects could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.
California Department of Water Resources and California Department of Fish and Wildlife	Delta Fish Agreement (Four Pumps Project)		The agreement provides a mechanism for offsetting adverse fishery impacts caused by the diversion of water at the Harvey O. Banks Pumping Plant. Direct losses of Chinook salmon, steelhead, and striped bass are offset or mitigated through the funding and implementation of fish mitigation projects. DWR and DFW work closely with the Fish Advisory Committee to implement the agreement and projects funded under the agreement.	The agreement would give rise to projects that would affect the visual landscape. Beneficial visual effects could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.

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California Department of Water Resources and Solano County Water Agency	North Bay Aqueduct Alternative Intake Project		The California Department of Water Resources issued a Notice of Preparation on December 2, 2009 to construct and operate an alternative intake on the Sacramento River, generally upstream of the Sacramento Regional Wastewater Treatment Plant, and connect it to the existing North Bay Aqueduct system by a new segment of pipe. The proposed alternative intake would be operated in conjunction with the existing North Bay Aqueduct intake at Barker Slough.	This would introduce considerable industrial facilities on the river where none presently exists and would expand existing water conveyance facilities. This would alter the existing visual character at this location and could result in adverse effects on nearby viewer groups through construction and operation.
California Department of Water Resources and California State Coastal Conservancy	Dutch Slough Tidal Marsh Restoration Project		The project would restore wetland and uplands, and provide public access to the 1,166-acre Dutch Slough property. The project would provide ecosystem benefits, including habitat for sensitive aquatic species. Two neighboring projects proposed by other agencies that are related to the Dutch Slough Restoration Project collectively contribute to meeting project objectives: the City of Oakley's proposed Community Park and Public Access Conceptual Master Plan for 55 acres adjacent to the wetland restoration project and four miles of levee trails, and the Ironhouse Sanitary District's West Marsh Creek Delta Restoration Project, a restoration of a portion of the Marsh Creek delta on an adjacent 100-acre parcel.	The project would result in the conversion of existing land uses to restored habitat and the enhancement of marginal habitats to increase habitat value. This project would result in beneficial effects through the reintroduction of habitats that had been lost through the original conversion of natural lands to agriculture and could increase biodiversity that would result in benefits to wildlife and scenery viewing.
California Department of Water Resources and Bureau of Reclamation	Franks Tract Project	Delayed	Under the project, state and federal agencies would evaluate and implement a strategy to significantly reduce salinity levels in the south Delta and at the water export facilities, and improve water supply reliability by reconfiguring levees and/or Delta circulation patterns around Franks Tract while accommodating recreational interests	This would introduce considerable industrial-looking structures on waterways where none presently exists. This would alter the existing visual character at this location and result in adverse effects on nearby viewer groups through construction and operation.

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California High Speed Rail Authority and Federal Railroad Administration	Altamont Corridor Rail Project		The project would incrementally upgrade the Altamont Commuter Express System as part of the statewide High Speed Rail Initiative on a separate, dedicated passenger track and may ultimately be fully grade-separated, electrified, and compatible with the high speed train equipment.	Would result in adverse visual effects from the introduction of long, linear transportation corridors across the landscape that would require grading, the removal of vegetation, and the introduction of bridges and culverts into the viewshed of sensitive viewer groups.
California Partners In Flight	Riparian Habitat Joint Venture (RHJV) Project		The RHJV protects and enhances habitats for native landbirds throughout California. The RHJV has the following goals: 1) Identify and develop technical information based on sound science for a strategic approach to conserving and restoring riparian areas in California; 2) Promote and support riparian conservation on the ground by providing guidance, technical assistance and a forum for collaboration; and 3) Develop and influence riparian policies through outreach and education. The Riparian Bird Conservation Plan outlines a strategy for conserving riparian birds, including birds using the Delta.	RHJV planning documents and programs would give rise to actual projects that would affect the visual landscape. These visual changes would result in a combination of both beneficial and adverse visual effects. Beneficial visual effects could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from the visual landscape.
Central Valley Joint Venture	Central Valley Joint Venture (CVJV) Program		The CVJV protects and enhances habitats for migrating and resident birds in the Central Valley and focuses on the conservation of waterfowl, wetlands and habitats for birds. The CVJV provides guidance and facilitates grant funding to accomplish its habitat goals and objectives. Integrated bird conservation objectives for wetland habitats in the Central Valley identified in the 2006 Implementation Plan include restoration of 19,170 acres of seasonal wetland, enhancement of 2,118 acres of seasonal wetland annually, restoration of 1,208 acres of semi-permanent	CVJV planning documents and programs would give rise to actual projects that would affect the visual landscape. These visual changes would result in a combination of both beneficial and adverse visual effects. Beneficial visual effects could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration,

Agency	Program/Project	Status	Description of Program/Project	Effects on Aesthetic and Visual Resources
			wetland, and restoration of 1,500 acres of riparian habitat.	enhancement, and management measures require built elements that detract from the visual landscape.
Central Valley Regional Water Quality Control Board	Cache Creek, Bear Creek, Sulfur Creek, Harley Gulch Mercury TMDL		To reduce mercury loads in these streams, which ultimately connect to the northern Delta, the Central Valley Regional Water Quality Control Board is implementing mercury TMDLs for Cache Creek and its tributaries, as well as Sulfur Creek. The implementation plans require a reduction in mercury loads through a combination of actions to clean up mines, sediments, and wetlands; identify engineering options; control erosion reduction actions, and perform studies and monitoring.	These projects would result in measures to improve water quality that could result in visual changes to the landscape such as from erosion and sediment control features or mine reclamations that alter the existing visual character. These measures could result in adverse visual impacts if they introduce discordant visual features into the landscape or they could result in beneficial effects if they act to restore the visual environment by re-contouring the topography and revegetating the landscape, thereby reducing the amount of scarring upon the landscape and restoring natural plant communities to soften the visual appearance of such landscapes and improving aesthetics.
Central Valley Regional Water Quality Control Board	Sacramento-San Joaquin Delta Estuary TMDL for Methylmercury		The Central Valley Regional Water Quality Control Board's draft Basin Plan amendment would require proponents of new wetland and wetland restoration projects scheduled for construction after 2011 to either participate in a comprehensive study plan or implement a site-specific study plan, evaluate practices to minimize methylmercury discharges, and implement newly developed management practices as feasible. Projects would be required to include monitoring to	These projects would result in measures to improve water quality that could result in visual changes to the landscape such as from erosion and sediment control features or mine reclamations that alter the existing visual character. These measures could result in adverse visual impacts if they introduce discordant visual features into the landscape or they could

Agency	Program/Project	Status	Description of Program/Project	Effects on Aesthetic and Visual Resources
			demonstrate effectiveness of management practices. Activities, including changes to water management and storage in and upstream of the Delta, changes to salinity objectives, dredging and dredge materials disposal and reuse, and changes to flood conveyance flows, would be subject to the open water methylmercury allocations.	result in beneficial effects if they act to restore the visual environment by re-contouring the topography and revegetating the landscape, thereby reducing the amount of scarring upon the landscape and restoring natural plant communities to soften the visual appearance of such landscapes and improving aesthetics.
Contra Costa County and East Contra Costa County Habitat Conservancy	East Contra Costa County Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP)	Ongoing implementation	The East Contra Costa County HCP/NCCP provides regional conservation and development guidelines to protect natural resources while improving and streamlining the permit process for endangered species and wetland regulations. The plan provides permits for between 8,670 and 11,853 acres of development and will permit impacts on an additional 1,126 acres from rural infrastructure projects. The plan will result in the acquisition of a preserve system of 23,800 to 30,300 acres of land that will be managed for the benefit of 28 species and the natural communities that they depend upon.	HCP/NCCP actions would give rise to restoration and management activities that would affect the visual landscape. Beneficial visual effects could result through the preservation of natural landscapes and where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from or destroy natural elements of, instead of compliment or improve, the visual landscape.
Contra Costa Water District	Contra Costa Canal Fish Screen Project		The project would install fish screens at the Rock Slough diversion to minimize the entrainment losses of sensitive fish species. It includes flow control and transition structures necessary to reduce tidal influences and maintain flow rates. Construction is estimated to be complete in 2011.	This introduced considerable industrial facilities on the slough where none presently exists. This altered the existing visual character at this location and resulted in adverse effects on nearby viewer groups through construction and operation.

Agency	Program/Project	Status	Description of Program/Project	Effects on Aesthetic and Visual Resources
Contra Costa Water District	Contra Costa Canal Replacement Project		The project will replace the canal with a pipeline along a portion of the 48-mile Contra Costa Canal near Oakley. The first phase was initiated in 2009. The project would encase a 1,900-foot portion of the Contra Costa Canal to reduce salinity and water quality impacts of groundwater seepage from adjacent agricultural areas, as well as to increase public safety and flood protection. Contra Costa Water District will be initiating plans for the remaining sections.	This would replace visible canals with a buried pipeline and remove embankments. This could be beneficial in removing visible embankments.
Contra Costa Water District and Bureau of Reclamation	Los Vaqueros Reservoir Expansion Project	Final EIR certified by Contra Costa Water Districtin March 2010	Los Vaqueros Reservoir would be expanded by 275,000 acre-feet and add a new water supply connection would be constructed. The project also includes construction of a new diversion on Old River. The new and expanded facilities would shift Delta pumping for the three South Bay water agencies from the CVP and SWP Delta export pumps to the expanded Los Vaqueros Reservoir system.	The expansion could result in inundation of lands surrounding the reservoir and conversion of those open space lands to water. Project would also introduce built features into the landscape. These changes could be seen as beneficial or adverse.
Contra Costa Water District, U.S. Bureau of Reclamation, and California Department of Water Resources	Alternative Intake Project		The Alternative Intake Project was completed in 2010. The project located a new drinking water intake at Victoria Canal, about 2.5 miles east of Contra Costa Water District's (CCWD) existing intake on the Old River. The new screened intake includes a 2.5-mile pipeline extension and a new pumping plant that ties into CCWD's existing conveyance system.	This introduced considerable industrial facilities on the canal where none presently exists and expanded existing water conveyance facilities in the area. This altered the existing visual character at this location and resulted in adverse effects on nearby viewer groups through construction and operation.
Davis, Woodland, and University of California, Davis	Davis-Woodland Water Supply Project		Project activities would include construction and operation of a water intake/diversion, conveyance, and water treatment facilities. The new water diversion facility would be constructed on the Sacramento River near the Interstate 5 crossing at the location of the existing Reclamation District 2035 diversion.	This would introduce considerable industrial facilities on the river where none presently exists and would expand existing water conveyance facilities. This would alter the existing visual character at this location and could result in adverse effects on nearby viewer groups

Agency	Program/Project	Status	Description of Program/Project	Effects on Aesthetic and Visual Resources
				through construction and operation.
Delta Protection Commission	Delta Protection Commission Land Use and Resource Management Plan Update		The Commission is currently updating its Land Use and Resource Management Plan (Management Plan), which was originally adopted in 1995. The Management Plan outlines the long-term land use requirements for the Sacramento-San Joaquin Delta and sets out findings, policies, and recommendations in the areas of environment, utilities and infrastructure, land use, agriculture, water, recreation and access, levees, and marine patrol/boater education/safety programs. The updated Management Plan will place increased emphasis on the requirement for local government general plans to provide for consistency with the provisions of the Management Plan. The Commission develops priorities and timelines for tasks to be implemented each year, and provides annual progress reports to the Legislature.	Plan actions may give rise to restoration and management activities that would affect the visual landscape. Beneficial visual effects could result through the preservation of natural landscapes and where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.
Delta Stewardship Council	Delta Plan		The Delta Reform Act requires the Council to adopt a Delta Plan that achieves the State's coequal goals. The Delta Reform Act also specifies the following: (i) eight objectives that are "inherent" in the coequal goals (see Water Code Section 85020), (ii) a related statewide policy to reduce reliance on the Delta in meeting the State's future water supply needs through improved regional water self-reliance (Water Code Section 85021); and (iii) certain specific subjects and strategies that must be included in the Delta Plan (see generally Water Code Sections 85301–85309). The Delta Plan must include BDCP if the BDCP is completed and approved by DFW as a Natural Communities Conservation Plan and by federal agencies as a Habitat Conservation Plan.	Plan actions may give rise to restoration and management activities that would affect the visual landscape. Beneficial visual effects could result through the preservation of natural landscapes and where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.

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Department of Parks and Recreation	Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh	Proposal released in 2011	The proposal recommends the expansion of the State Park system in the Delta, agency collaboration to expand wildlife viewing, angling, and hunting opportunities in the Delta and Suisun Marsh, and that communities on the edge of the Delta or Suisun Marsh near major transportation routes be developed as “gateways” to provide supplies and recreational information to visitors.	Small scale, site-specific visual changes may occur on properties that could be seen by nearby viewers to accommodate expanded recreation enhancements. Could provide greater visual access to Delta and Suisun Marsh scenic resources.
East Bay Municipal Utility District	Lower Mokelumne River Spawning Habitat Improvement Project		The proposed project would initially place 4,000 to 5,000 cubic yards of suitably sized salmonid spawning gravel annually for a 3-year period at two specific sites, and then provide annual supplementation of 600 to 1,000 cubic yards thereafter.	Gravels placement operations require short term construction activities to perform the actions, but are short-term in nature. Gravels would not be readily visible under the water’s surface and would not result in adverse impacts.
East Bay Municipal Utility District, Contra Costa Water District, Santa Clara Valley Water District, and San Francisco Public Utility Commission	Bay Area Regional Desalination Project		The Bay Area Regional Desalination Project could consist of one or more desalination facilities to provide an additional source of water during emergencies, such as earthquakes or levee failures, increase supply reliability, and provide water during droughts or maintenance of other facilities.	This would introduce considerable industrial facilities in the Bay Area where none presently exists and would expand existing water supply facilities. This would alter the existing visual character at this location and could result in adverse effects on nearby viewer groups through construction and operation.
El Dorado Irrigation District and Bureau of Reclamation	Folsom Lake Temperature Control Device (TCD)		The project would construct facilities on the bank of Folsom Lake to withdraw water from the warm upper reaches of the lake while preserving the cold water pool at the bottom of the lake to protect downstream aquatic species. The facilities will include a TCD – a large diameter concrete lined vertical shaft and five lined horizontal adits extending from the shaft that will replace the District’s five existing raw pump casings that currently extract water from Folsom Lake.	This would introduce considerable industrial facilities on the river where none exist and would expand existing water conveyance facilities. This would alter the existing visual character at this location and resulted in some adverse effects on nearby viewer groups through construction and operation.

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Freeport Regional Water Authority and U.S. Bureau of Reclamation	Freeport Regional Water Project		Freeport Regional Water Project constructed a new water intake facility/pumping plant on the Sacramento River at the Freeport Bend, just upstream of Freeport and 10 miles south of Sacramento, and 17-mile underground water pipeline within Sacramento County. Components of the facility include an in-river intake fish screen, sheet-piled in-river transition structure, electrical substation, surge control facility, compressed air system, sediment collection and settling basin system, and utilities.	This introduced considerable industrial facilities on the river where none existed and would expanded existing water conveyance facilities. This altered the existing visual character at this location and resulted in some adverse effects on nearby viewer groups through construction and operation.
National Marine Fisheries Service	Public Draft Recovery Plan for Sacramento River Winter-run Chinook Salmon, Central Valley Spring- run Chinook Salmon and Central Valley Steelhead	Released July 2014	The Draft Recovery Plan provides a roadmap that describes the steps, strategy, and actions that should be taken to return winter-run Chinook salmon, spring-run Chinook salmon, and steelhead to viable status in the Central Valley, California thereby ensuring their long-term persistence and evolutionary potential.	Recovery plan actions would give rise to actual projects that would affect the visual landscape. Beneficial visual effects could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.
Placer County Water Agency and U.S. Bureau of Reclamation	Sacramento River Water Reliability Study (SRWRS)		The RWRS plan will be consistent with the Water Forum Agreement in pursuing a Sacramento River diversion. To meet the water supply needs of the cost-sharing partners, the SRWRS is identifying a package of water supply infrastructure components, including new or expanded diversions from the Sacramento, Feather, or American rivers, and new or expanded water treatment and pumping facilities, storage tanks, and major transmission and distribution pipelines.	This would introduce considerable industrial facilities on the river where none exist and would expand existing water conveyance facilities. This would alter the existing visual character at this location and resulted in some adverse effects on nearby viewer groups through construction and operation.

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Reclamation District 2093	Liberty Island Conservation Bank		This project would create a conservation bank on the northern tip of Liberty Island that would preserve, create, restore, and enhance habitat for native Delta fish species. The project consists of creating tidal channels, perennial marsh, riparian habitat, and occasionally flooded uplands on the site. The project also includes the breaching of the northernmost east-west levee, and preservation and restoration of shaded riverine aquatic habitat along the levee shorelines of the tidal sloughs.	The project would result in the conversion of existing land uses to restored habitat and the enhancement of marginal habitats to increase habitat value. This project would result in beneficial effects through the reintroduction of habitats that had been lost through the original conversion of natural lands to agriculture and could increase biodiversity that would result in benefits to wildlife and scenery viewing.
Sacramento Area Flood Control Agency (SAFCA), Central Valley Flood Protection Board, and U.S. Army Corps of Engineers	Flood Management Program	Ongoing	The program provides flood control improvements. Projects include the South Sacramento Streams Project and the Sacramento River Bank Protection Project. The South Sacramento Streams Project consists of levee, floodwall, and channel improvements along the Sacramento River to protect the City of Sacramento from flooding. The Sacramento River Bank Protection Project addresses long-term erosion protection along the Sacramento River and its tributaries. Bank protection measures typically consist of large angular rock placed to protect the bank, with a layer of soil/rock material to allow bank re-vegetation.	This program would result in site-specific repairs or levee upgrades over areas of varying sizes. Some projects would repair levees in a way that would appear visually similar to adjacent levees. However, there would be larger levee rehabilitation projects that would raise levees to protect public and private lands that would result in adverse visual effects through vegetation removal and increased levee heights.
Sacramento County	Sacramento County General Plan Update		The comprehensive general plan update will guide the growth and development of the County through the year 2030. The plan was adopted on November 9, 2011. The general plan update covers the entire unincorporated portion of Sacramento County, including portions of the Delta within Sacramento County. The update also includes a Delta Protection Element that identifies goals and objectives within the primary zone of the Delta.	Could result in both adverse and beneficial visual effects by altering the existing visual character through the expansion of development into unincorporated agricultural landscapes or the conversion of existing land uses to support adaptive re-use. Visual resources would be conserved through

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				the protection of sensitive habitats, preservation of open space, and protection of county scenic roadways.
Sacramento County	Sacramento International Airport Master Plan		The Master Plan for Sacramento International Airport was completed in 2004 and establishes a program for the improvement of existing facilities and the development of facilities at the Airport over the next 20 years. The plan identifies the type and extent of facilities that are required to meet projections of aviation demand and the airport functions, including the airfield, terminal and related passenger services, cargo, general aviation, airport support, and access. The Final Environmental Impact Report was completed in 2007. The Terminal Modernization is expected to be completed by 2011.	The project resulted in a site-specific increase in the amount of infrastructure seen while driving by the airport, while at the airport, and within close range in the air. This altered the existing visual landscape by converting lands that appear to be rural in nature and resulted in some adverse visual effects. However, beneficial effects resulted from smart expansion and building clusterings to reduce site-specific sprawl and by creating a gateway entry into Sacramento through effective design measures.
Sacramento County and U.S. Fish and Wildlife Service	South Sacramento HCP		The proposed South Sacramento HCP is a regional plan to address issues related to species conservation, agricultural protection, and urban development in south Sacramento County. The proposed HCP would allow land owners to engage in the "incidental take" of listed species (i.e., to destroy or degrade habitat) in return for conservation commitments from local jurisdictions. The conservation measures outlined in the HCP would minimize and mitigate the impact of incidental take and provide for the conservation of covered species that may occur in the plan area.	HCP actions would give rise to restoration and management activities that would affect the visual landscape. Beneficial visual effects could result through the preservation of natural landscapes and where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from or destroy natural elements of, instead of compliment or improve, the visual landscape.

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Sacramento Regional County Sanitation District	SRWTP Facility Upgrade Project (EchoWater)		This project would upgrade existing secondary treatment facilities to advanced unit processes including improved nitrification/denitrification and filtration at the Sacramento Regional Wastewater Plant.	This would upgrade facilities that likely result in minor visual changes to pre-existing treatment facilities.
San Francisco Bay Conservation and Development Commission (BCDC)	San Francisco Bay Plan Amendment and Special Programs		The BCDC has jurisdiction over the open water, marshes and mudflats of greater San Francisco Bay. It regulates all filling and dredging in San Francisco Bay, protects Suisun Marsh, regulates new development within the first 100 feet inland from the bay, and engages in the region-wide state and federal program to prepare a Long Term Management Strategy for dredging and dredge material disposal in San Francisco Bay.	Program actions may give rise to restoration and management activities that would affect the visual landscape. Beneficial visual effects could result through the preservation of natural landscapes and where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.
San Francisco Bay Region Water Quality Control Board	San Francisco Bay Mercury TMDL		The implementation plan establishes requirements for dischargers to reduce or control mercury loads and identifies actions necessary to better understand and control methylmercury production. In addition, it addresses potential mercury sources and describes actions necessary to manage risks to Bay fish consumers. Load reductions are expected via implementation of the Delta Methylmercury TMDL (river source), plus urban runoff management, Guadalupe River mine remediation, municipal and industrial wastewater source controls and pretreatment, and sediment remediation.	These projects would result in measures to improve water quality that could result in visual changes to the landscape such as from erosion and sediment control features or mine reclamations that alter the existing visual character. These measures could result in adverse visual impacts if they introduce discordant visual features into the landscape or they could result in beneficial effects if they act to restore the visual environment by re-contouring the topography and revegetating the

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				landscape, thereby reducing the amount of scarring upon the landscape and restoring natural plant communities to soften the visual appearance of such landscapes and improving aesthetics.
San Francisco Public Utilities Commission, U.S. Fish and Wildlife Service, and National Marine Fisheries Service	Alameda Watershed HCP		Activities covered by the HCP include those in the Alameda Watershed Management Plan adopted in 2000 to maintain and improve source water quality and supply while preserving and enhancing the watershed's ecological resources. The SFPUC-owned Alameda Watershed consists of 36,000 acres of rolling grasslands, native woodlands, scrub and freshwater marshes within the Southern Alameda Creek Watershed. The conservation measures are expected to consist of a combination of avoidance and minimization measures, water and land management, river and stream restoration, barrier modification, and threat abatement.	HCP actions would give rise to restoration and management activities that would affect the visual landscape. Beneficial visual effects could result through the preservation of natural landscapes and where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from or destroy natural elements of, instead of compliment or improve, the visual landscape.
San Joaquin Council of Governments	San Joaquin County Multi-Species Habitat Conservation and Open Space Plan	Ongoing program approved in 2011	The program covers most of San Joaquin County. It assumes 100,000 acres of open land conversion and provides about 100,000 acres of preserves. About 35% of this plan overlaps with BDCP Plan Area. The Plan is likely to result in conversion of agricultural land to native vegetation, including riparian and grassland areas in the south and east Delta areas.	Actions would give rise to restoration and management activities that would affect the visual landscape. Beneficial visual effects could result through the preservation of natural landscapes and where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from or destroy natural elements of, instead of

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				compliment or improve, the visual landscape.
San Joaquin County	San Joaquin County General Plan Update		The San Joaquin County General Plan 2010 was adopted on July 29, 1992. The general plan provides guidance for future growth in a manner that preserves the county's natural and rural assets. Most of the urban growth is directed to existing urban communities. In June 2008, San Joaquin County began the process to update the 1992 general plan. The general plan update will provide the blueprint for growth in the county unincorporated areas through 2030.	Could result in both adverse and beneficial visual effects by altering the existing visual character through the expansion of development into unincorporated agricultural landscapes or the conversion of existing land uses to support adaptive re-use. Visual resources would be conserved through the protection of sensitive habitats, preservation of open space, and protection of county scenic roadways.
Semitropic Water Storage District	Delta Wetlands Project		This flood storage and habitat conservation project could convert four large Delta islands into 11,000 acres of freshwater storage and 9,000 acres of managed agricultural lands, wetlands, riparian areas and other types of wildlife habitat. A significant amount of agricultural land would be removed from production.	The project would result in the conversion of existing land uses to water storage, restored habitat, and the enhanced habitats. This project would result in beneficial effects through the reintroduction of habitats that had been lost through the original conversion of natural lands to agriculture and could increase biodiversity that would result in benefits to wildlife and scenery viewing.
Solano County Water Agency	Solano Multispecies HCP		The HCP is intended to support the issuance of a 30-year incidental take permit under the federal Endangered Species Act. The plan area covers 580,000 acres, which includes 12,000 acres of proposed development and 30,000 acres that will be preserved to provide habitat for a range for a range of species.	The HCP give rise to restoration and management activities that would affect the visual landscape. Beneficial visual effects could result through the preservation of natural landscapes and where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could

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				result where restoration, enhancement, and management measures require built elements that detract from or destroy natural elements of, instead of compliment or improve, the visual landscape.
State Water Resources Control Board	Bay-Delta Water Quality Control Plan (WQCP) Update (initiated through the California Water Boards' Strategic Plan Update 2008–2012)	Ongoing development	The State Water Board is updating the 2006 Bay-Delta WQCP in four phases - Phase I: Modifying water quality objectives (i.e., establishing minimum flows) on the Lower San Joaquin River and Stanislaus, Tuolumne, and Merced Rivers to protect the beneficial use of fish and wildlife and (2) modifying the water quality objectives in the southern Delta to protect the beneficial use of agriculture; Phase II: Evaluating and potentially amending existing water quality objectives that protect beneficial uses and the program of implementation to achieve those objectives. Water quality objectives that could be amended include Delta outflow criteria; Phase III: Requires changes to water rights and other measures to implement changes to the WQCP from Phases I and II; Phase IV: Evaluating and potentially establishing water quality criteria and flow objectives that protect beneficial uses on tributaries to the Sacramento River.	Plan actions would give rise to actual projects that would affect the visual landscape. Beneficial visual effects could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape or affect visual access.
Stockton	Delta Water Supply Project (Phase 1)		The project would develop a new supplemental water supply for the Stockton metropolitan area by diverting water from the Delta and conveying it through a pipeline to a surface water treatment plant. Initially, the project would have the capacity to meet approximately one-third of Stockton's water needs.	This would introduce industrial facilities on the river where none presently exists and would expand existing water conveyance facilities. This would alter the existing visual character at this location and could result in adverse effects on nearby viewer groups through construction and operation.

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U.S. Army Corps of Engineers	Delta Dredged Sediment Long-Term Management Strategy		The strategy is a cooperative planning effort to coordinate, plan, and implement beneficial reuse of sediments in the Delta. The strategy development process will examine and coordinate dredging needs and sediment management in the Delta to assist in maintaining and improving channel function, levee rehabilitation, and ecosystem restoration. Agencies and stakeholders will work cooperatively to develop a sediment management plan that is based on sound science and protective of the ecosystem, water supply, and water quality functions of the Delta.	Dredging placement operations require short term construction activities to perform the actions, but are short-term in nature. Dredging may alter the visual landscape by removing areas of sediment accumulation where vegetation has established, and removal of such features could result in adverse visual effects. Dredge material placement also poses the potential to adversely affect the visual landscape if measures are not taken to blend such elements into the landscape or to use design measures to improve the landscape within which they are disposed. Dredge material placement could result in beneficial effects is used for restoration purposes.
U.S. Army Corps of Engineers	Lower San Joaquin Feasibility Study		The Lower San Joaquin Feasibility Study is intended to determine if there is a federal interest in providing flood risk management and ecosystem restoration improvements along the Lower (northern) San Joaquin River. The Lower San Joaquin River study area includes the San Joaquin River from the Mariposa Bypass downstream to, and including, the city of Stockton. The study area also includes the channels of the San Joaquin River in the southernmost reaches of the Delta: Paradise Cut and Old River as far north as Tracy Boulevard and Middle River as far north as Victoria Canal. The floodplains of the lower San Joaquin River and its tributaries are also included in the study area.	Projects that would evolve from study would result in site-specific repairs or levee upgrades over areas of varying sizes. Some projects would repair levees in a way that would appear visually similar to adjacent levees. However, there would be larger levee rehabilitation projects that would raise levees to protect public and private lands that would result in adverse visual effects through vegetation removal and increased levee heights. Restoration and enhancement elements that could produce beneficial visual effects where such activities

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				improve existing visual conditions and increase visual diversity.
U.S. Army Corps of Engineers	Sacramento River Bank Protection Project		ThePpoject is a long-term flood risk management project designed to enhance public safety and help protect property along the Sacramento River and its tributaries. While the original authorization approved the rehabilitation of 430,000 linear feet of levee, the 1974 Water Resources Development Act added 405,000 linear feet to the authorization and a 2007 bill authorized another 80,000 linear feet for a total of 915,000 linear feet of project.	The project would result in site-specific repairs or levee upgrades over areas of varying sizes. Some projects would repair levees in a way that would appear visually similar to adjacent levees. However, there would be larger levee rehabilitation projects that would raise levees to protect public and private lands that would result in adverse visual effects through vegetation removal and increased levee heights.
U.S. Army Corps of Engineers	Suisun Bay Channel Operations and Maintenance		The project is located 30 miles northeast of San Francisco and is part of the San Francisco Bay to Stockton Ship Channel. The project provides for annual maintenance dredging of the main channel, 300 feet wide and -35 feet deep at Mean Lower Low Water, from the Carquinez Strait at Martinez to Pittsburg (called Suisun Bay Channel), and maintenance dredging of New York Slough Channel farther upstream to Antioch (a distance of 17 miles). The project also provides annual maintenance dredging for a channel 250 feet wide and -20 feet deep south of Seal Islands, from the main channel at Point Edith to the main channel again at Port Chicago at mile 6.	Dredging operations require construction activities to perform the actions, but they are short-term in nature. Dredging may alter the visual landscape by removing areas of sediment accumulation where vegetation has established, and removal of such features could result in adverse visual effects. Dredge material placement also poses the potential to adversely affect the visual landscape if measures are not taken to blend such elements into the landscape or to use design measures to improve the landscape within which they are disposed. Dredge material placement could result in beneficial effects is used for restoration purposes.

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U.S. Army Corps of Engineers	Suisun Channel (Slough) Operation and Maintenance		The Suisun Channel connects the City of Suisun near Fairfield, California to Grizzly Bay and thus to Suisun Bay 30 miles northeast of San Francisco. Project operations and maintenance provides for maintenance dredging of an entrance channel in Suisun Bay 200 feet wide and -8 feet deep, and thence a channel 100 to 125 feet wide and -8 feet deep for 13 miles to the head of navigation at City of Suisun, with a turning basin. This shallow draft channel is maintained on an infrequent basis.	Dredging operations require construction activities to perform the actions, but they are short-term in nature. Dredging may alter the visual landscape by removing areas of sediment accumulation where vegetation has established, and removal of such features could result in adverse visual effects. Dredge material placement also poses the potential to adversely affect the visual landscape if measures are not taken to blend such elements into the landscape or to use design measures to improve the landscape within which they are disposed. Dredge material placement could result in beneficial effects is used for restoration purposes.
U.S. Army Corps of Engineers and California Department of Water Resources	Delta Islands and Levees Feasibility Study		The feasibility study will address flood risk management, ecosystem restoration, water quality, water supply, and a variety of other issues. The California Department of Water Resources' (DWR) Delta Risk Management Strategy studies will be used to define problems, opportunities, and specific planning objectives.	Projects that would evolve from the study would result in site-specific repairs or levee upgrades over areas of varying sizes. Some projects would repair levees in a way that would appear visually similar to adjacent levees. However, there would be larger levee rehabilitation projects that would raise levees to protect public and private lands that would result in adverse visual effects through vegetation removal and increased levee heights.

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U.S. Army Corps of Engineers, Port of Stockton, and Contra Costa County Water Agency	San Francisco Bay to Stockton Deep Water Ship Channel Project		The project being implemented by the U.S. Army Corps of Engineers), the Port of Stockton, and Contra Costa County Water Agency. A joint EIS/EIR will evaluate the action of navigational improvements to the Stockton Deep Water Ship Channel. A General Reevaluation Report is being prepared to determine the feasibility of modifying the current dimensions of the West Richmond, Pinole Shoal, Suisun Bay, and Stockton Ship Channels, which are currently maintained to 35 feet and provide access to oil terminals, industry in Pittsburg, and the Port of Stockton. The proposed action consists of altering the depth of the deep draft navigation route.	Dredging operations require construction activities to perform the actions, but they are short-term in nature. Dredging may alter the visual landscape by removing areas of sediment accumulation where vegetation has established, and removal of such features could result in adverse visual effects. Dredge material placement also poses the potential to adversely affect the visual landscape if measures are not taken to blend such elements into the landscape or to use design measures to improve the landscape within which they are disposed. Dredge material placement could result in beneficial effects is used for restoration purposes.
U.S. Army of Corps of Engineers and Port of Sacramento	Sacramento Deep Water Ship Channel Project		The proposed project would complete the deepening and widening of the navigation channel to its authorized depth of 35 feet. Deepening of the existing ship channel is anticipated to allow for movement of cargo via larger, deeper draft vessels. Widening portions of the channel would increase navigational safety by increasing maneuverability. The 46.5-mile-long ship channel lies within Contra Costa, Solano, Sacramento, and Yolo counties and serves the marine terminal facilities at the Port of Sacramento. The Sacramento Deep Water Ship Channel joins the existing 35-feet-deep channel at New York Slough, thereby affording the Port of Sacramento access to San Francisco Bay Area harbors and the Pacific Ocean.	Dredging operations require construction activities to perform the actions, but they are short-term in nature. Dredging may alter the visual landscape by removing areas of sediment accumulation where vegetation has established, and removal of such features could result in adverse visual effects. Dredge material placement also poses the potential to adversely affect the visual landscape if measures are not taken to blend such elements into the landscape or to use design measures to improve the landscape within which they are disposed. Dredge material placement

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				could result in beneficial effects is used for restoration purposes.
U.S. Bureau of Reclamation	Delta-Mendota Canal (DMC)/ California Aqueduct Intertie		The project consists of constructing and operating a pumping plant and pipeline connection between the DMC and the California Aqueduct.	This would introduce considerable industrial facilities along the canal and aqueduct where none exist and would expand existing water conveyance facilities. This would alter the existing visual character at this location and result in adverse effects on nearby viewer groups through construction and operation.
U.S. Bureau of Reclamation	San Luis Reservoir Expansion	Draft Appraisal Report published in December 2013	The plan is to increase the storage capacity of San Luis Reservoir to improve the reliability of CVP and SWP water supplies.	Implemented actions from the Program could result in visual impacts, depending on if the dam is raised or additional structural modifications are made at the existing dam facility.
U.S. Bureau of Reclamation and San Luis-Delta Mendota Water Authority	2-Gates Project		The project would install and operate removable gates at two key Delta locations to test the ability of the structures to manage turbidity plume dispersion towards the south Delta intakes. The proposed central Delta locations are on Old River between Bacon Island and Holland Tract, and Connection Slough between Mandeville and Bacon Islands.	This would introduce considerable industrial-looking structures on the river where none presently exists. This would alter the existing visual character at this location and result in adverse effects on nearby viewer groups through construction and operation.
U.S. Bureau of Reclamation and U.S. Fish and Wildlife Service	Anadromous Fish Screen Program (AFSP)		The AFSP will help prevent entrainment of fish at priority diversions throughout the Central Valley.	This project would result in incremental additions to the amount of infrastructure seen on water bodies and waterways in the study area. This could result in adverse effects on nearby viewer groups through construction and operation.

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U.S. Bureau of Reclamation, California Department of Fish and Wildlife, and Natomas Central Mutual Water Company	American Basin Fish Screen and Habitat Improvement Project		Natomas Central Mutual Water Company would construct and operate the American Basin Fish Screen and Habitat Improvement Project. The project would result in modifications of Natomas Mutual's water diversion and distribution system adjacent to the Sacramento River and Natomas Cross Canal in Sacramento and Sutter counties, California. The modifications include the construction and operation of one or two positive-barrier fish screen diversion facilities; decommissioning and removing the Verona Diversion Dam and lift pumps; removing five pumping plants and one small private diversion; and modifying the distribution system.	This project would result in additions to the amount of industrial-looking infrastructure seen on waterways in the study area. This could result in adverse effects on nearby viewer groups through construction and operation. Beneficial impacts could result from the removal of the dam, lift pumps, and a private diversion.
U.S. Bureau of Reclamation, U.S. Army Corps of Engineers, Sacramento Area Flood Control Agency, and Central Valley Flood Protection Board	Folsom Dam Safety and Flood Damage Reduction Project		The project includes the Joint Federal Project Auxiliary Spillway seismic improvements to the Main Concrete Dam and Mormon Island Auxiliary Dam (MIAD), static improvements to earthen structures, security upgrades, replacement of the Main Concrete Dam spillway gates, and a 3.5-foot (ft) raise to all Folsom Facility structures. Construction on the auxiliary spillway began in 2008 and is expected to be completed in 2015.	This would alter the existing visual character at this location and result in adverse effects on nearby viewer groups through construction and operation of the project by increasing the visual presence of flood control facilities in proximity to the existing dam and would increase the visual prominence of such features.
U.S. Department of Commerce, National Marine Fisheries Service, Bureau of Reclamation, and California Department of Water Resources	Biological Opinion and Conference Opinion on the Long-term Operations of the Central Valley Project and State Water Project		Under the biological opinion, the Bureau of Reclamation and the California Department of Water Resources would implement a number of facility and operational improvements upstream of the Delta and in the delta to protect listed fish species.	Biological Opinion actions may give rise to restoration and management activities that would affect the visual landscape. Beneficial visual effects could result through the preservation of natural landscapes and where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures

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				require built elements that detract from, instead of compliment or improve, the visual landscape.
U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, and California Department of Water Resources,	Biological Opinion on the Long-Term Operations of the Central Valley Project and State Water Project (Delta smelt)		USFWS identified a Reasonable and Prudent Alternative (RPA) intended to protect each life-stage and the critical habitat of this federally protected species. The RPA addresses the following objectives: 1) prevent/reduce entrainment of delta smelt at Jones and Banks; 2) provide adequate habitat conditions that will allow the adult delta smelt to successfully migrate and spawn in the Bay-Delta; 3) provide adequate habitat conditions that will allow larvae and juvenile delta smelt to rear; and 4) provide suitable habitat conditions that will allow successful recruitment of juvenile delta smelt to adulthood.	Biological Opinion actions may give rise to restoration and management activities that would affect the visual landscape. Beneficial visual effects could result through the preservation of natural landscapes and where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.
U.S. Fish and Wildlife Service	North American Waterfowl Management Plan		A collaborative plan between Canada, the United States, and Mexico to achieve landscape conditions that could sustain and enhance waterfowl populations. The plan has been modified twice since the 1986 Plan to account for biological, sociological, and economic changes that influence the status of waterfowl and the conduct of cooperative habitat conservation. The 2004 Plan is intended to define the needs, priorities, and strategies for the next 15 years, increase stakeholder confidence in the direction of Plan actions, and guide partners in strengthening the biological foundation of North American waterfowl conservation.	Plan actions may give rise to restoration and management activities that would affect the visual landscape. Beneficial visual effects could result through the preservation of natural landscapes and where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.

Agency	Program/Project	Status	Description of Program/Project	Effects on Aesthetic and Visual Resources
U.S. Fish and Wildlife Service	Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan (CCP)		This is a 15-year management plan. Management programs for migratory birds and other Central Valley wildlife will be expanded and improved and public use opportunities will also be expanded. The number of refuge units open to the public will increase from one to five. In addition, environmental education, interpretation, wildlife observation, wildlife photography, hunting, and fishing programs will be expanded.	Plan actions may give rise to restoration and management activities that would affect the visual landscape. Beneficial visual effects could result through the preservation of natural landscapes and where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.
U.S. Fish and Wildlife Service	Recovery Plan for the Sacramento-San Joaquin Delta Native Fishes	Ongoing	The recovery plan addresses the recovery needs for several fishes that occupy the Sacramento-San Joaquin Delta. Recovery actions include increasing freshwater flows; reducing entrainment losses to water diversions; reducing the effects of dredging, contaminants, and harvest; developing additional shallow-water habitat, riparian vegetation zones, and tidal marsh; reducing effects of toxic substances from urban non-point sources; and reducing the effects of introduced species.	Recovery plan actions would give rise to actual projects that would affect the visual landscape. Beneficial visual effects could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.
U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, and California Department of Fish and Wildlife	San Joaquin Basin Action Plan		The San Joaquin Basin Action Plan is a cooperative agreement between the U.S. Bureau of Reclamation, the U.S. Fish and Wildlife Service, and the California Fish and Wildlife to jointly develop a habitat acquisition and wetland enhancement project on approximately 23,500 acres of lands within the Northern San	Plan actions would give rise to actual projects that would affect the visual landscape. Beneficial visual effects could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse

Agency	Program/Project	Status	Description of Program/Project	Effects on Aesthetic and Visual Resources
			Joaquin River Basin. The plan was created in 1989 to meet Kesterson Reservoir mitigation needs.	visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.
U.S. Fish and Wildlife Service, Anadromous Fish Restoration Program; U.S. Bureau of Reclamation; Sacramento Water Forum	Lower American River Temperature Reduction Modeling Project (Formerly the Lake Natoma Temperature Curtains Pilot Project)		The actions identified to improve transport of cold water through Lake Natoma and reduce the temperature of the lower American River included: a Nimbus Dam curtain, a Lake Natoma plunge zone curtain, Nimbus powerplant debris wall removal, dredging Lake Natoma, and modifying Folsom Powerplant peak loading operation.	This project would result the addition of a small amount of floating infrastructure seen on the water surface of the lakes. This could result in adverse effects on nearby viewer groups through construction and operation. Beneficial impacts could result from the removal of the debris wall.
U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, California Department of Water Resources, and California Department of Fish and Wildlife	Upgrade of Facilities to Restore Delta Smelt and Other Native Aquatic Species	Rio Vista facility plans being developed	The Interim Federal Action Plan includes the development of a permanent fish restoration facility in Rio Vista. In addition, upgrades to the existing Delta Smelt Research and Culture Facility at Banks Pumping Plant would be made.	Project would repurpose the Rio Vista Army base and improve the existing visual character at the project location, which is currently blighted. Changes at Banks Pumping Plant would not likely be visible.
University of California, Davis, California Department of Water Resources, Department of Fish and Wildlife, U.S. Fish and Wildlife Service, and U.S. Bureau of Reclamation	Delta Smelt Permanent Refuge		Program under development to develop a permanent facility, possibly at the proposed FWS Science Center at Rio Vista.	This project could potentially introduce a new building into the landscape at the USFWS Science Center in Rio Vista. If a new building is proposed, this would increase the amount of infrastructure at this location, and could result in adverse visual effects if not designed properly.
West Sacramento Area Flood Control Agency (WSAFCA) and U.S. Army Corps of Engineers	West Sacramento Levee Improvements Program		The program would construct improvements to the levees protecting West Sacramento to meet local and federal flood protection criteria. The program area includes the entire WSAFCA boundaries which encompasses portions of the Sacramento River,	This program would result in site-specific repairs or levee upgrades over areas of varying sizes. Some projects would repair levees in a way that would appear visually

Agency	Program/Project	Status	Description of Program/Project	Effects on Aesthetic and Visual Resources
			the Yolo Bypass, the Sacramento Bypass, and the Sacramento Deep Water Ship Channel. The system associated with these waterways includes over 50 miles of levees.	similar to adjacent levees. However, there would be larger levee rehabilitation projects that would raise levees to protect public and private lands that would result in adverse visual effects through vegetation removal and increased levee heights.
Yolo County	Yolo County General Plan Update		The Yolo County General Plan was adopted on July 17, 1983, and provides for growth and development in the unincorporated area through 2010. In May 2003, Yolo County began a comprehensive update to the county's general plan. In January 2009, the county conducted a series of public workshops to receive comments on the Revised Draft 2030 Countywide General Plan, and the Draft EIR was released in April 2009.	Could result in both adverse and beneficial visual effects by altering the existing visual character through the expansion of development into unincorporated agricultural landscapes or the conversion of existing land uses to support adaptive re-use. Visual resources would be conserved through the protection of sensitive habitats, preservation of open space, and protection of county scenic roadways.
Yolo County Habitat/ Natural Community Conservation Plan Joint Powers Authority	Yolo Natural Heritage Program	First administrative draft plan released in June 2013.	The plan will describe measures that local agencies will implement to conserve biological resources, obtain permits for urban growth and public infrastructure projects, and continue to maintain agricultural heritage and productivity. The nearly 653,820-acre planning area provides habitat for covered species occurring within five dominant habitats/natural communities. Interim conservation activities include acquiring permanent conservation easements for sensitive species habitat in the plan area.	HCP/NCCP actions would give rise to restoration and management activities that would affect the visual landscape. Beneficial visual effects could result through the preservation of natural landscapes and where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from or destroy natural elements of, instead of compliment or improve, the visual landscape.

Agency	Program/Project	Status	Description of Program/Project	Effects on Aesthetic and Visual Resources
Zone 7 Water Agency and Department of Water Resources	South Bay Aqueduct Improvement and Enlargement Project		The project will improve and expand the capacity of the existing South Bay Aqueduct.	This would expand existing water conveyance facilities. This would alter the existing visual character of adjacent lands at this location and could result in adverse effects on nearby viewer groups through construction and operation.
Sacramento Municipal Utility District	Franklin Bulk Substation		This project will construct a new distribution substation, the Rancho Seco-Pocket 230 kV No. 1 Line will be looped into the substation, and 2-16.2 MVAr of capacitor banks will be installed.	This project would introduce project facilities on open space lands where none presently exist and would increase the presence of utility infrastructure in the area. This would alter the existing visual character in the affected area and could result in adverse effects on nearby viewer groups through construction and operation.
California Local Agencies	Various Water Conservation Programs	Ongoing	Local agency water conservation programs, such as converting lawns to drought tolerant landscapes.	Small-scale localized visual shifts from lawn to draught tolerant landscaping.
San Joaquin River Restoration Program	San Joaquin River Restoration Program	Final Environmental Impact Statement published in July 2012. Implementation ongoing.	A comprehensive long-term effort to restore flows to the San Joaquin River from Friant Dam to the confluence of Merced River and restore a self-sustaining Chinook salmon fishery in the river while reducing or avoiding adverse water supply impacts from restoration flows. There will be many physical improvements within and near the San Joaquin River to fully achieve the river restoration goal. The improvements will occur in two separate phases that will focus on a combination of water releases from Friant Dam, as well as structural and channel improvements.	Program actions would give rise to actual projects that would affect the visual landscape. Beneficial visual effects could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.

Agency	Program/Project	Status	Description of Program/Project	Effects on Aesthetic and Visual Resources
California State Administration	Sites Reservoir/ North of the Delta Offstream Storage	Ongoing	The administration will work with the Legislature to make funding available to share in the cost of storage projects if funding partners step forward. The state will facilitate among willing local partners and stakeholders the development of financeable, multi-benefit storage projects, including working with local partners to complete feasibility studies.	Program would fund projects that would introduce offstream storage facilities where none presently exist. This would alter the existing visual character at the project locations and could result in adverse effects on nearby viewer groups.
Delta Conservancy	California EcoRestore	Initiated in 2015	This program will accelerate and implement a suite of Delta restoration actions for up to 30,000 acres of fish and wildlife habitat by 2020.	Project would give rise to projects that would affect the visual landscape. Beneficial visual effects could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape.
U.S. Army Corps of Engineers, Sacramento District	River Islands at Lathrop Section 408 Permission		Construction of a large-scale, mixed-use project consisting of residential development	Alterion of the existing visual character from the expansion of development onto undeveloped agricultural landscapes.
San Joaquin County	Mountain House Community		Trimark Communities started development of a new community in the western portion of San Joaquin County. At full buildout, 16,105 residential units on 4,784 acres would be developed, along with commercial and industrial development.	Alterion of the existing visual character from the expansion of development onto undeveloped agricultural landscapes.

17.3.5.1 Cumulative Effects of the No Action Alternative

The cumulative effect of the No Action Alternative (including climate change that would occur with or without the project alternatives) would result in an array of effects on existing visual quality and character in the Delta. Changes to land use have the greatest potential to affect visual resources and viewer groups under continuation of existing policies and programs in the absence of the project alternatives. The severity of site-specific adverse effects through temporary construction activities and the alteration of the existing visual character from conversion of agricultural land to rural and suburban development would depend on the density and appearance of new development. Land subsidence, sea level rise, catastrophic levee failure, or a combination thereof should they occur, would result in flooding and inundation that could significantly damage existing facilities and infrastructure, uproot and damage vegetation to an unknown extent, permanently flood Delta islands, and drastically alter the visual landscape of the Delta. While similar risks would occur under implementation of the action alternatives, these risks may be reduced by project-related levee improvements along with those projects identified for the purposes of flood protection in Table 17-2. Recently completed, ongoing, or planned restoration and enhancement projects within the Delta may benefit visual resources within it. Overall, implementing on-going programs and projects under the No Action Alternative combined with cumulative projects, including changes in farmland are not expected to result in adverse changes to the visual environment because development in much of the study area is restricted by the primary zone designation and city and county ordinances.

17.3.5.2 Concurrent Project Effects

Construction, operation and maintenance of the water conveyance facilities and conservation measures under Alternatives 1A–2C, 3, 4, 5, and 6–9 would result in effects on visual quality and character, scenic vistas, views from scenic highways and light and glare conditions in the study area. Visual resources changes would result from the introduction of new facility, restoration or other structures into the landscape that could change the quality of views from public areas, roads or sensitive visual receptors (e.g., residences). Visual resource effects created by concurrent construction of the water conveyance facilities and implementation of CM2–CM11 could create compounding visual changes that could increase the visual resource effects in the vicinity of conveyance facility construction if additional construction were to occur in the same viewshed during the same time period. For example, restoration actions proposed on McCormack-Williamson Tract could potentially combine with and increase construction related impacts on aesthetic visual resources associated with construction of the intermediate forebay on Glanville Tract, location of reusable tunnel material (RTM) storage sites, or tunnel-related construction on Staten Island under Alternative 4. Similarly, construction of restoration actions in the Cache Slough complex or on Prospect Island could result in concurrent visual resource effects with conveyance facility construction under Alternatives 1C, 2C, and 6C (western alignment). Although these interim implementation actions could result in beneficial long term effects on visual resources from restored habitat areas, concurrent visual resources effects could, nevertheless occur during their construction. These combined effects would be greater than those identified for individual project components because concurrent implementation of project features in close proximity to each could other further exasperate visual resource effects in the vicinity of project construction.

Mitigation Measures AES 1a through 1g, AES 6a and 6b, and AES 4a through 4d would partially reduce these potentially concurrent aesthetic and visual resource effects in a similar manner as described for the action alternatives. Proposed mitigation measures would reduce effects by avoiding trees and other visual features near construction areas, providing barriers between construction sites and sensitive receptors, and restoring construction sites or locating visually disruptive construction features away from public views or sensitive receptors, to the extent feasible.

Concurrent visual resource effects of Alternatives 4A, 2D, and 5A would likely be less than under other alternatives because restoration actions under these alternatives would be reduced compared to other action alternatives.

17.3.5.3 Cumulative Effects of the Project Alternatives

Impact AES-1: Substantial Alteration in Existing Visual Quality or Character During Construction of Conveyance Facilities

***NEPA Effects*:** A number of proposed projects and plans have the potential to contribute to cumulative visual impacts in the vicinity of the project alternatives project areas and on concurrent time frames. Proposed projects and plans that have the potential to contribute to cumulative visual impacts in the vicinity of the alternatives' project areas are listed in Table 17-2.

Construction of conveyance facilities and restoration actions under all action alternatives except Alternative 9 would alter the existing visual quality and character of the area surrounding construction sites extending from intake sites in the north portion of the study area to Clifton Court Forebay in the south. Restoration changes would occur throughout study area. Changes in visual resources would also occur at shaft sites, and other features associated with construction of conveyance tunnels (e.g., Alternatives 1A, 2A, 2D, 3, 4, 4A, 5, 5A, 6A, 7, and 8) and related to canals (e.g., Alternatives 2B, 2C, 6B, and 6C). Changes in visual quality and character associated with Alternative 9 would be more isolated at site-specific locations throughout the Delta, such as the large-scale fish screens near Locke and Walnut Grove on the Delta Cross Channel and Georgiana Slough; operable barriers near Walnut Grove, Fisherman's Cut, the head of Old River, Old River connection to Middle River, and Victoria Canal, Three Mile Slough at Brannan Island State Recreation Area; pumping plants on the San Joaquin and Middle Rivers; dredge disposal areas on Bacon Island, Woodward Island, Upper Jones Tract, and Victoria Island; and canals and levees near Clifton Court Forebay. Visual resource changes associated with these conveyance facility features would include interruption or modification of views from public areas, roads of other sensitive receptors in the vicinity of proposed facilities. Other projects, including projects that could be implemented under the Californai Water Action Plan (CWAP) that could potentially affect existing visual quality and character are listed in Table 17-2. These cumulative projects include development and transportation projects, transmission line extensions, projects considered under existing planning and habitat restoration management plans, habitat restoration projects in the Delta, water supply infrastructure and reservoir storage projects, levee improvements and other channel and spawning habitat improvement projects proposed in various area within and adjacent to the Delta. Implementing these cumulative projects in combination with any action alternative would likely result in positive and negative effects on visual quality and character depending on the type of project proposed and its location with respect to a project alternative facility. Cumulative projects located in the near vicinity of proposed conveyance facilities include habitat restoration actions on McCormack – Williamson Tract, levee improvements on Staten Island and habitat improvements on Bouldin Island. These projects could potentially contribute to changes in existing visual quality and character when combined with the effects of project alternatives because of their proximity to conveyance facility construction. Other cumulative projects listed in Table 17-2 could also contribute to changes in the regional visual quality and character of the study area by introducing new visual elements with both beneficial and adverse effects depending on the project type and proximity to sensitive visual receptors.

The Altamont Corridor Rail Project would introduce a linear transportation corridor across the landscape that would require grading, the removal of vegetation, and the introduction of bridges and culverts into the viewshed of sensitive viewer groups.

The Los Vaqueros Reservoir Expansion Project would increase storage capacity from 100,000 to 250,000 acre-feet; this expansion could result in inundation of lands surrounding the reservoir and conversion of those open space lands to water. Implemented actions from the San Luis Reservoir Expansion Program could result in visual impacts, depending on if the dam is raised or if additional structural modifications are made at the existing dam facility. This could introduce project facilities where none presently exist and could create or expand existing water conveyance facilities. This would alter the existing visual character in the affected area and could result in adverse effects on nearby viewer groups through construction and operation.

Sacramento County, San Joaquin County, and Yolo County general plan updates would result in the expansion of development into unincorporated agricultural landscapes or the conversion of existing land uses to support adaptive re-use, altering the existing visual character. This includes the Mountain House Community in San Joaquin County and the River Islands at Lathrop that would result in site specific changes in the county. In addition, visual resources would be conserved through the protection of sensitive habitats, preservation of open space, and protection of county scenic roadways.

Lower Sherman Island Wildlife Area LMP; East Contra Costa County HCP/NCCP; Delta Protection Commission Land Use and Resource Management Plan Update; Delta Plan; San Francisco Bay Plan Amendment and Special Programs; Biological Opinion and Conference Opinion on the Long-term Operations of the Central Valley Project and State Water Project; North American Waterfowl Management Plan; Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan; Suisun Marsh Habitat Management, Preservation, and Restoration Plan; and other similar projects included in Table 17-2 are all planning documents that, while they do not include site-specific projects, do contain land use programming and management measures that would result in changes to the visual environment. These planning documents would give rise to actual projects that would affect the visual landscape. These visual changes would result in a combination of both beneficial and adverse visual effects. Beneficial visual effects could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Adverse visual effects could result where restoration, enhancement, and management measures require built elements that detract from the visual landscape.

Liberty Island Conservation Bank, Delta Wetlands Project, North Delta Flood Control and Ecosystem Restoration Project, Dutch Slough Tidal Marsh Restoration Project, Mayberry Farms Subsidence Reversal and Carbon Sequestration Project, Ecosystem Restoration Program Conservation Strategy, Riparian Habitat Joint Venture Project, East Alameda County Conservation Strategy, California EcoRestore and associated projects listed in Table 17-2, Private Lands Incentive Programs, and other similar projects included in Table 17-2 all include measures to restore, enhance, and/or preserve habitats for sensitive species and open space uses. These projects would result in the conversion of existing land uses, predominantly agriculture, to restored habitat and the enhancement of marginal habitats to increase habitat value. These projects could result in beneficial effects through the reintroduction of habitats that had been lost through the original conversion of natural lands to agriculture and could increase biodiversity that would result in benefits to wildlife and scenery viewing. The Mayberry Farms project has the dual purpose of not only creating habitat but also providing subsidence reversal and benefitting the climate by sequestering atmospheric carbon dioxide. The Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh would result in small scale, site-specific visual changes that may occur on properties that could be seen by nearby viewers to accommodate expanded recreation enhancements. These enhancements could provide greater visual access to Delta and Suisun Marsh scenic resources.

The North Bay Aqueduct Alternative Intake Project, Alternative Intake Project, Davis-Woodland Water Supply Project, Bay Area Regional Desalination Project, Freeport Regional Water Project, Delta Water Supply Project (Phase 1), Delta-Mendota Canal/California Aqueduct Intertie, and South Bay Aqueduct Improvement and Enlargement Project would construct and operate additional water intakes on the Sacramento River and Victoria Canal, a large desalination plant on the San Joaquin River near Antioch, alter water conveyance facilities, and introduce project facilities where none previously existed. This would introduce considerable industrial facilities on the waterways where none presently exist and would create or expand existing water conveyance facilities. This would alter the existing visual character at this location and could result in adverse effects on nearby viewer groups through construction and operation. Similarly, the SRWTP Facility Upgrade Project (EchoWater) would upgrade facilities that likely result in minor visual changes to pre-existing treatment facilities. These changes would not substantially alter the existing visual character because the location of the plant is industrial and the pipeline is underground.

Fish Screen Project at Sherman and Twitchell Islands, Delta Fish Agreement (Four Pumps Project), Franks Tract Project, Contra Costa Canal Fish Screen Project, Contra Costa Canal Replacement Project, 2-Gates Project, American Basin Fish Screen and Habitat Improvement Project, Folsom Dam Safety and Flood Damage Reduction Project, Lower American River Temperature Reduction Modeling Project (Formerly the Lake Natoma Temperature Curtains Pilot Project), and other similar projects included in Table 17-2 would construct and operate fish screens, operable barriers, outlets, bypass channels, and dam raises to benefit fish species. These projects would range from incremental additions that would add to the cumulative whole of the amount of infrastructure seen on water bodies and waterways in the study area, such as individual fish screens and operable barriers. Other projects would increase the visual prominence of existing elements, such as dam height increases. Other projects would introduce industrial looking facilities on the water bodies and waterways where none presently exist. This would alter the existing visual character at the project locations and could result in adverse effects on nearby viewer groups through construction and operation. Some of these projects also contain habitat restoration and enhancement elements that could produce beneficial visual effects where such activities improve existing visual conditions and increase visual diversity.

Central Valley Vision is a long-term vision for California State Parks to develop a strategic plan for State Parks' 20-year expansion in the Central Valley that would increase service to valley residents and visitors. Under this plan, new and improved recreation opportunities would be developed through the acquisition of new parklands. This increase in the amount of public visual access available in the Central Valley would be a beneficial effect.

The Delta Levees Flood Protection Program, Levee Repair–Levee Evaluation Programs, Central Valley Flood Protection Plan, Delta Risk Management Strategy, FloodSAFE California, Flood Management Program, Delta Islands and Levees Feasibility Study, West Sacramento Levee Improvements Program, and Sacramento River Bank Protection Project would maintain and improve the flood control system in the Delta and Central Valley. These programs would result in site-specific repairs or levee upgrades over areas of varying sizes. Some projects would repair levees in a way that would appear visually similar to adjacent levees. However, there would be larger levee rehabilitation projects that would raise levees to protect public and private lands that would result in adverse visual effects through vegetation removal and increased levee heights. Some of these projects also contain habitat restoration and enhancement elements that could produce beneficial visual effects where such activities improve existing visual conditions and increase visual diversity.

Cache Creek, Bear Creek, Sulfur Creek, Harley Gulch Mercury TMDL, Sacramento-San Joaquin Delta Estuary TMDL for Methylmercury, and San Francisco Bay Mercury TMDL would result in measures to improve water quality that could result in visual changes to the landscape. These measures could include erosion and sediment control features or mine reclamations that alter the existing visual character. These measures could result in adverse visual impacts if they introduce discordant visual features into the landscape or they could result in beneficial effects if they act to restore the visual environment by re-contouring the topography and revegetating the landscape, thereby reducing the amount of scarring upon the landscape and restoring natural plant communities to soften the visual appearance of such landscapes and improving aesthetics.

Lower Mokelumne River Spawning Habitat Improvement Project, Delta Dredged Sediment Long-Term Management Strategy, Suisun Bay Channel Operations and Maintenance, Suisun Channel (Slough) Operation and Maintenance, San Francisco Bay to Stockton Deep Water Ship Channel Project, and Sacramento Deep Water Ship Channel Project are projects that involve the movement and placement of gravels or dredged material for spawning habitat improvement and boat passage. While these to management measures have vastly different goals, they both result in streambed alteration from the placement or removal of materials. Dredging and gravels placement operations require short term construction activities to perform the actions, but are short-term in nature. Dredging may alter the visual landscape by removing areas of sediment accumulation where vegetation has established, and removal of such features could result in adverse visual effects. Dredge material placement also poses the potential to adversely affect the visual landscape if measures are not taken to blend such elements into the landscape or to use design measures to improve the landscape within which they are disposed. Excavations to expand ship channels would require more intensive and longer-term construction operations that would result in more direct visual changes to existing facilities that would in adverse visual effects.

Sacramento International Airport Master Plan would result in a site-specific increase in the amount of infrastructure seen while driving by the airport, while at the airport, and within close range in the air. This would alter the existing visual landscape by converting lands that appear to be rural in nature and could result in adverse visual effects. However, beneficial effects could result from smart expansion and building clusterings to reduce site-specific sprawl and by creating a gateway entry into Sacramento through effective design measures. The Delta Smelt Permanent Refuge could potentially introduce a new building into the landscape at the USFWS Science Center in Rio Vista. If a new building is proposed, this would increase the amount of infrastructure at this location, resulting in adverse visual effects.

The Clifton Court Forebay Fishing Facility would result in a site-specific increase in the amount of infrastructure seen near the forebay by installing a fishing pier into Clifton Court Forebay, a staging area, concrete pad and retaining wall, security fencing, and gates, ADA compliant public restroom, bicycle rack, equipment shed, ADA compliant boat dock and road section on West Canal, two ADA compliant parking spaces next to the public entrance gate, and lighting and signage. However, this would provide increased visual access by providing additional recreational facilities, which may be perceived beneficially.

The Franklin Bulk Substation would result in a site-specific increase in the amount of infrastructure seen east of Franklin Boulevard and south of Bilby Road. This would introduce project facilities on open space lands where none presently exist and would increase the presence of utility infrastructure in the area. This would alter the existing visual character in the affected area and could result in adverse effects on nearby viewer groups through construction and operation.

Various water conservation programs implemented by local California agencies, such as in cities and counties, would result in small-scale localized visual shifts from lawn to draught tolerant landscaping. This may be viewed as beneficial for increasing visual diversity by removing monotypic lawns and creating more gardenlike yards and by increasing the presence of pollinators. However, some viewers may prefer a more manicured, monotypic landscape and view such conversions as negative visual changed. The Upgrade of Facilities to Restore Delta Smelt and Other Native Aquatic Species Project would repurpose the Rio Vista Army base and improve the existing visual character at the project location, which is currently blighted. Changes at Banks Pumping Plant would not likely be visible.

While beneficial changes are likely to result from the aforementioned projects, the amount of development that would cumulatively result in adverse visual effects in the study area outweighs the amount of beneficial effects. Cumulative changes to the visual environment would result from conversion of existing land uses; introduction of discordant visual elements into the landscape; substantial degradation of existing form, line, color, and texture of the visual landscape that would substantially decrease the visual quality of the landscape including vividness, intactness, and unity; and would ultimately altering our cultural and regional landscapes.

Cumulative changes to the study area's visual environment would involve temporary and permanent conversion of agricultural land and open space land uses to nonagricultural uses. Agricultural and open space land conversions could occur through linear rail transportation, urban development expansion, restoration and enhancement projects, aqueduct expansion, new parks, levee improvements, water supply, water quality, and flood control projects and linear transportation, utility, and transmission projects to support this development. Large-scale utility, intake, development, and water conveyance projects and their associated infrastructure such as roads and bridges could segment the visual landscape of the study area, reduce the amount of open space lands available to viewers, and effect valued visual resources. Proposed levee improvements have the potential to denude miles of levees for compliance with non-vegetative levee prism policies, which could substantially alter water based recreational viewing experiences in the Delta. These types of cumulative projects would incrementally change the visual quality and character of portions of the study area from a natural and agricultural visual quality to a more built environment quality. In addition, new water storage projects could alter free-flowing waterways and transform them into impounded waterbodies, hiding previously seen creek valleys under water, or could further expand existing reservoirs to further cover adjacent lands. Quarrying for water could also remove visual features from view by mining down to the subsurface to retrieve water, leaving behind large, excavated pits, and landscape scars.

However, a substantial number of the cumulative projects proposed in the study area could have beneficial visual quality and character effects, such as repurposing of blighted facilities and proposed habitat improvement projects proposed under the CWAP. Other projects, in combination with the project alternatives, could result in a cumulative reduction in the visual quality and character of the study area environment. This cumulative impact is considered adverse because of the potential for a large number of cumulative projects to be implemented that could contribute to localized and regional changes in visual quality and character when viewed from sensitive public locations in and adjacent to the study area. Mitigation Measures AES-1a through AES-1g and Mitigation Measure AES-6a are available to address these adverse effects.

***CEQA Conclusion*:** Cumulative projects in shown Table 17-2, in combination with construction of conveyance facilities and restoration actions proposed under the project alternatives, would result in cumulative changes to the visual environment that would involve temporary and permanent conversion of agricultural land to nonagricultural uses. Agricultural and open space land conversions could occur, urban development expansion, restoration and enhancement projects, aqueduct expansion, new parks and recreational access, levee improvements, water supply, water quality, and flood control projects and linear transportation, utility, and transmission projects to support this development. The actual amount of agricultural and open space lands that may be converted by all cumulative projects is not known, but this cumulative conversion of the existing visual landscape is considered a significant impact because of the landscape sensitivity and visual dominance of project features that would result in reduced scenic quality in portions of the region.

The project alternatives' incremental contributions to substantial cumulative effects are cumulatively considerable and significant because all of the alternatives would introduce a substantial number and type of changes to the visual quality and character of the study area that could result in reduced visual quality, introduce dominant visual elements that would result in noticeable changes, are incompatible with the existing visual environment, and could be viewed by sensitive receptors and from public viewing areas.

Mitigation Measures AES-1a through AES-1g and AES-6a would partially reduce impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, installing visual barriers between construction work areas and sensitive receptors, developing and implementing a spoil/borrow and RTM area management plan, restoring barge unloading facility sites once decommissioned, applying aesthetic design treatments to all structures to the extent feasible, locating concrete batch plants and fuel stations away from sensitive visual resources and receptors and restoring the sites upon removal of facilities, using best management practices to implement a project landscaping plan, and placing new or relocated utility lines underground where feasible. However, cumulative impacts are not expected to be reduced to a less-than-significant level because some aspects of the cumulative projects could permanently change the visual quality and character landscape in relatively large portions of the study area in ways that could not be fully reduced with the recommended mitigation measures because of the size of some of the proposed facilities and their potential effect on sensitive viewers. Therefore, this cumulative impact is considered significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-2: Permanent Effects on a Scenic Vista from Presence of Conveyance Facilities

***NEPA Effects*:** Conveyance facilities (e.g., intakes, tunnel shafts, forebays, canals, permanent transmission lines and RTM sites) and restoration sites under all action alternatives would permanently change scenic vistas at facility locations by introducing new and discordant facilities that would interrupt and modify vistas currently viewed from public roads and waterways. Other projects, including projects that could be implemented under the CWAP that could potentially affect existing scenic vistas are listed in Table 17-2. Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*, includes detailed descriptions of cumulative projects. Cumulative changes to the scenic vistas would involve temporary and permanent conversion of agricultural land to nonagricultural uses. Agricultural and open space land conversions could occur through urban development expansion, restoration and enhancement projects, aqueduct expansions, new parks and recreational access, levee improvements, water supply, water quality, and flood control projects and linear rail, transportation and, transmission projects support this development. Implementing these projects in combination with any action alternative could have effects on established scenic vistas in the study area at multiple locations by introducing built features into the landscape, visually converting the landscape, and degrading the quality of views. Some of the cumulative projects may combine with the project alternatives to create adverse effects on the same scenic vistas and most of the cumulative projects could create additional interruptions or modification of scenic views because of their effects on agricultural areas and Delta waterways. Although some of the cumulative projects could create beneficial changes in vistas in the study area, overall cumulative impacts on scenic vistas are considered adverse because cumulative projects could result in a permanent reduction in the Scenic Quality Rating for multiple scenic vistas and would introduce dominant visual elements that would result in noticeable changes in the visual character of a vista viewshed. Mitigation Measures AES-1a, AES-1c, AES-1d, AES-1e, AES-1g, and Mitigation Measure AES-6a are available to address these adverse effects.

***CEQA Conclusion*:** Cumulative projects shown in Table 17-2, in combination with construction of conveyance facilities and restoration actions proposed under the project alternatives, would result in cumulative changes to the scenic vistas that would involve temporary and permanent conversion of agricultural land to nonagricultural uses. Agricultural and open space land conversions could occur through urban development expansion, restoration and enhancement projects, aqueduct expansion, new parks and recreational access, levee improvements, water supply, water quality, and flood control projects and linear rail, transportation and, transmission projects support this development. Overall, cumulative visual effects on scenic vistas associated with past, present, and reasonably foreseeable future projects within the study area are anticipated. The actual amount of agricultural and open space lands that may be converted by all cumulative projects is not known, but this cumulative conversion of the existing visual landscape of scenic vistas is considered a significant impact because implementation of these projects could substantially reduce the Scenic Quality Rating for multiple scenic vistas and would introduce dominant visual elements that would result in noticeable changes in the visual character of a vista viewshed.

The project alternatives' incremental contribution to cumulative impacts would be cumulatively considerable and significant because of the number and type of effects on scenic vistas that could result from the construction of conveyance facilities and the amount of farmland that would be converted in the Delta by these actions.

Mitigation Measures AES-1a, AES-1c, AES-1d, AES-1e, AES-1g, and Mitigation Measure AES-6a would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible as well as undergrounding new or relocated utility lines where feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with cumulative projects would not be reduced to a less-than-significant level because of the permanent nature of changes to scenic vistas and the dominant nature of some of the cumulative project features. Therefore, this cumulative impact is considered significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-3: Permanent Damage to Scenic Resources along a State Scenic Highway from Construction, Operation, and Maintenance of Conveyance Facilities

NEPA Effects: Cumulative projects that have the potential to contribute to cumulative visual impacts in the vicinity of the project alternatives areas are listed in Table 17-2. Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*, includes detailed descriptions of cumulative projects. Conveyance facilities (e.g., intakes, permanent transmission lines and RTM sites) and potential restoration sites under the action alternatives would change views to and from SR 160 and River Road in the vicinity of facilities. Other projects, including projects that could be implemented under the CWAP, have the potential to contribute to cumulative visual impacts in the vicinity of the SR 160 and River Road. Cumulative changes to scenic highways would involve temporary and permanent conversion of agricultural land to nonagricultural uses. Agricultural and open space land conversions could occur through urban development expansion, restoration and enhancement projects, aqueduct expansion, new parks and recreational access, levee improvements, water supply, water quality, and flood control projects and linear rail, transportation and, transmission projects support this development. The actual amount of agricultural and open space lands that may be converted by all cumulative projects is not known, but this cumulative conversion of the existing visual landscape seen from scenic highways is considered an adverse effect because cumulative projects could result in a reduction in the Scenic Quality Rating or introduce dominant visual elements that, based on the landscape sensitivity level, could result in noticeable changes in the visual character of a state scenic highway's viewshed. Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-6a are available to address these adverse effects.

CEQA Conclusion**:** Cumulative projects in Table 17-2, in combination with construction of conveyance facilities and restoration actions proposed under the project alternatives, would result in cumulative changes to scenic highways related to temporary and permanent conversion of agricultural land to nonagricultural uses and introduction of new facilities to the visual landscape. Agricultural and open space land conversions could occur through urban development expansion, restoration and enhancement projects, aqueduct expansion, new parks and recreational access, levee improvements, water supply, water quality, and flood control projects and linear rail, transportation and, transmission projects support this development. This cumulative conversion of the existing visual landscape seen from scenic highways is considered a significant impact because cumulative projects could result in a reduction in the Scenic Quality Rating or introduce dominant visual elements that, based on the landscape sensitivity level, could result in noticeable changes in the visual character of a state scenic highway's viewshed.

The project alternatives' incremental contribution to cumulative impacts on scenic highways would be cumulatively considerable and significant because of the location of new intake facilities along SR 160 that would substantially change views from this scenic highway.

Mitigation Measures AES-1a, AES-1c, AES-1d, AES-1e, AES-1g, and Mitigation Measure AES-6a would partially reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible as well as undergrounding new or relocated utility lines where feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures. However, the impacts on scenic resources along SR 160 associated with conveyance facility structures would not be reduced to a less-than-significant level because of the nature of changes to SR 160 views and the dominant nature of some of the cumulative project features. Therefore, this cumulative impact is considered significant and unavoidable.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-4: Creation of a New Source of Light or Glare That Would Adversely Affect Views in the Area as a Result of Construction, Operation, and Maintenance of Conveyance Facilities

NEPA Effects**:** Cumulative projects that have the potential to contribute to cumulative visual impacts in the vicinity of the project alternatives areas are listed in Table 17-2. Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*, includes detailed descriptions of cumulative projects. Conveyance facilities (e.g., intakes, permanent transmission lines and RTM sites) and potential restoration sites under the action alternatives would potentially create new sources of light and glare associated with facility lighting, building surfaces and new reservoir water surface areas. Other projects, including projects that could be implemented under the CWAP have the potential to contribute to light and glare effects due to increased rural and suburban development, lighting of facilities and buildings, removal of vegetation, and increased water surfaces. Tall structures could require the use of safety lights that would alert low-flying aircraft to the presence of these structures because of their height. This safety lighting is likely to be a low-level non-flashing or flashing red beacon placed at the top of the transmission tower for aircraft safety. Given the height of such structures, this low-level lighting would not bright enough to spill onto adjacent residential properties and is most likely to be seen by passing roadway travelers. This lighting would not be bright enough or low enough to substantially increase nighttime lighting or result in nuisance glare that would affect sensitive viewers. In addition, the use of LED lighting can result in a substantial increase in light and glare if proper shielding is not provided and BRWL lamps are used (International Dark-Sky Association 2010a, 2010b, 2015). BRWL LED lighting can result in a substantial amount of light trespass because BRWL lamps are much brighter than traditional street lighting, can light a much larger area at that same height, and result in lighting a larger area than intended. This can be particularly troublesome in residential areas where LED lighting can spill into living rooms and bedrooms at night. Restoration and enhancement projects have the potential to reduce glare by introducing trees and shrubs into a landscape that was in agricultural production, lacking mature vegetative cover that would absorb light and reduce the potential for glare. Although beneficial effects could occur, overall the introduction of new artificial sources of light and glare through development and anthropogenic features is considered adverse because of the substantial number and type of cumulative projects that could introduce new sources of light and glare to the study area and the potential for effects on sensitive receptors. Mitigation Measures AES-4a through AES-4d and Mitigation Measure AES-6b are available to address these adverse effects.

CEQA Conclusion: Cumulative projects shown in Table 17-2, in combination with construction of conveyance facilities and restoration actions proposed under the project alternatives, would result in cumulative changes to light and glare in the study area due to increased rural and suburban development, lighting of facilities and buildings, removal of vegetation, and increased water surfaces. Restoration and enhancement projects have the potential to reduce glare by introducing trees and shrubs into a landscape that was in agricultural production, lacking mature vegetative cover that would absorb light and reduce the potential for glare. While this would be beneficial, the amount of new artificial sources of light and glare through development and introduction of anthropogenic features is considered significant because of the substantial number and type of cumulative projects that could introduce new sources of light and glare to the study area and the potential for effects on sensitive receptors. The project alternatives' incremental contribution to cumulative impacts on light and glare conditions in the study area would be cumulatively considerable and significant because of the considerable new facility and water surface elements that could increase light and glare effects on sensitive receptors. Mitigation Measures AES-4a through 4d and Mitigation Measure 6b would partially reduce impacts by limiting construction daylight hours within 0.5 mile of residents, minimizing fugitive light from portable sources used for construction, installing visual barriers to prevent light spill from truck headlights toward residences, avoiding the use of BRWL LED lighting; and evaluating implementation of an after-hours low-intensity and lights off policy. However, these mitigation measures would not reduce this impact to a less-than-significant level because of the substantial amount of new artificial sources of light and glare introduced in the study area from development and anthropogenic features. Therefore, this cumulative impact is significant and unavoidable.

Mitigation Measure AES-4a: Limit Construction to Daylight Hours Within 0.25 Mile of Residents

Please refer to Mitigation Measure AES-4a under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4b: Minimize Fugitive Light from Portable Sources Used for Construction

Please refer to Mitigation Measure AES-4b under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4c: Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences

Please refer to Mitigation Measure AES-4c under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-4d: Avoid the Use of Blue Rich White Light LED Lighting

Please refer to Mitigation Measure AES-4d under Impact AES-4 in the discussion of Alternative 1A.

Mitigation Measure AES-6b: Develop and Implement an Afterhours Low-Intensity and Lights Off Policy

Please refer to Mitigation Measure AES-6b under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-5: Substantial Alteration in Existing Visual Quality or Character during Operation

***NEPA Effects*:** Proposed projects and plans that have the potential to contribute to cumulative visual impacts in the vicinity of the project alternatives project areas are listed in Table 17-2. Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*, includes detailed descriptions of cumulative projects. All of the cumulative projects also have the potential to contribute to a cumulative decline in the existing visual character during operation in the study area due to increased rural and suburban development, infrastructure, and restoration projects that would require maintenance over time where no maintenance or operations presently exist. The project alternatives' incremental contributions to substantial cumulative effects are cumulatively considerable and unavoidable because they contribute to the substantial alteration of the existing visual quality and character of the study area during operation and would result in cumulative adverse effects. Mitigation Measures AES-1a, AES-1c, AES-1d, AES-1e, AES-1g, and Mitigation Measures AES-6a are available to address these adverse effects.

***CEQA Conclusion*:** The projects in Table 17-2 and this project have the potential to contribute to a cumulative decline in the existing visual character during operation in the study area due to increased rural and suburban development, infrastructure, and restoration projects that would require maintenance over time where no maintenance or operations presently exist. The cumulative decline in the existing visual character is considered a significant impact.

Mitigation Measures AES-1a, AES-1c, AES-1d, AES-1e, AES-1g, and Mitigation Measure AES-6a would reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible as well as undergrounding new or relocated utility lines where feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with other structures would not be reduced to a less-than-significant level under the project alternatives because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. The project alternatives' incremental contributions to significant cumulative effects are cumulatively considerable and unavoidable because they contribute to the substantial alteration of the existing visual quality and character of the study area during operation.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-6: Substantial Alteration in Existing Visual Quality or Character during Implementation of CM2–CM21 and Environmental Commitments 3, 4, 6, 7, 8, 9, 10, 11, 12, 15, and 16

NEPA Effects: Proposed projects and plans that have the potential to contribute to cumulative visual impacts in the vicinity of the project alternatives project areas are listed in Table 17-2. Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*, includes detailed descriptions of cumulative projects. The location of site-specific restoration activities are unknown but sites have the potential presence of sensitive viewers, potential for construction periods to last longer than 2 years, and varying intensity of construction. In addition, these measures contain features such as fish management facilities (e.g., screens, ladders, ramps, barriers); realignments of waterways; hydrologic monitoring stations; support facilities (operations buildings, parking lots, access facilities such as roads and bridges) necessary to provide safe access for maintenance and monitoring; and modification, removal, and construction of berms, levees, and water control structures. Although visual resource effects would likely be less under Alternatives 4A, 2D, and 5A than under the BDCP alternatives, due to reduced amounts of restoration, the cumulative visual effects of the non-HCP alternatives would be much the same as under the BDCP alternatives. Cumulative changes to the visual environment would involve temporary and permanent conversion of agricultural land to nonagricultural uses. Agricultural and open space land conversions could occur through urban development expansion, restoration and enhancement projects, aqueduct expansion, new parks and recreational access, levee improvements, water supply, water quality, and flood control projects and linear rail, transportation and, transmission projects support this development. The actual amount of agricultural and open space lands that may be converted by all cumulative projects is not known, but this cumulative conversion of the existing visual landscape is considered an adverse effect. Overall, cumulative visual effects associated with past, present, and reasonably foreseeable future projects within the study area are anticipated. The project alternatives' incremental contributions to substantial cumulative effects are cumulatively considerable and unavoidable because they would contribute to the substantial alteration of the existing visual quality and character of the study area and result in cumulative adverse effects. Mitigation Measures AES-1a through AES-1g and Mitigation Measures AES-6a are available to address these adverse effects.

CEQA Conclusion: The type of cumulative effects for Impact AES-6 would be the same as those described under *Impact AES-1: Substantial alteration in existing visual quality or character during construction of conveyance facilities.* Cumulative changes to the visual environment would involve temporary and permanent conversion of agricultural land to nonagricultural uses. Agricultural and open space land conversions could occur through urban development expansion, restoration and enhancement projects, aqueduct expansion, new parks and recreational access, levee improvements, water supply, water quality, and flood control projects and linear rail, transportation and, transmission projects support this development. The actual amount of agricultural and open space lands that may be converted by all cumulative projects is not known, but this cumulative conversion of the existing visual landscape is considered a significant impact. Overall, cumulative visual effects associated with past, present, and reasonably foreseeable future projects within the study area are anticipated.

Mitigation Measures AES-1a, AES-1c, AES-1d, AES-1e, AES-1g, and Mitigation Measure AES-6a would reduce these impacts by locating new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed where feasible, developing and implementing a spoil/borrow and RTM area management plan, and applying aesthetic design treatments to all structures to the extent feasible as well as undergrounding new or relocated utility lines where feasible. Mitigation Measure AES-1e requires the use of aesthetic design treatments to all structures; however, the impacts on scenic vistas associated with other structures would not be reduced to a less-than-significant level under the project alternatives because even though mitigation measures would reduce some aspects of the impact, mitigation would not reduce the level of the impact to less than significant in all instances. In addition, the size of the study area and the nature of changes introduced by the alternative would result in permanent changes to the regional landscape such that there would be noticeable to very noticeable changes that do not blend or are not in keeping with the existing visual environment based upon the viewer's location in the landscape relative to the seen change. Thus, the project alternatives' incremental contributions to significant cumulative effects are cumulatively considerable and unavoidable because they contribute to the substantial alteration of the existing visual quality and character of the study area.

Mitigation Measure AES-1a: Locate New Transmission Lines and Access Routes to Minimize the Removal of Trees and Shrubs and Pruning Needed to Accommodate New Transmission Lines and Underground Transmission Lines Where Feasible

Please refer to Mitigation Measure AES-1a under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1b: Install Visual Barriers between Construction Work Areas and Sensitive Receptors

Please refer to Mitigation Measure AES-1b under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1c: Develop and Implement a Spoil/Borrow and Reusable Tunnel Material Area Management Plan

Please refer to Mitigation Measure AES-1c under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1d: Restore Barge Unloading Facility Sites Once Decommissioned

Please refer to Mitigation Measure AES-1d under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1e: Apply Aesthetic Design Treatments to All Structures to the Extent Feasible

Please refer to Mitigation Measure AES-1e under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1f: Locate Concrete Batch Plants and Fuel Stations Away from Sensitive Visual Resources and Receptors and Restore Sites upon Removal of Facilities

Please refer to Mitigation Measure AES-1f under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-1g: Implement Best Management Practices to Implement Project Landscaping Plan

Please refer to Mitigation Measure AES-1g under Impact AES-1 in the discussion of Alternative 1A.

Mitigation Measure AES-6a: Underground New or Relocated Utility Lines Where Feasible

Please refer to Mitigation Measure AES-6a under Impact AES-6 in the discussion of Alternative 1A.

Impact AES-7: Compatibility of the Proposed Water Conveyance Facilities and Other Conservation Measures with Federal, State, or Local Plans, Policies, or Regulations Addressing Aesthetics and Visual Resources

NEPA Effects: Proposed projects and plans that have the potential to contribute to cumulative visual impacts in the vicinity of the alternatives project areas are listed in Table 17-2. Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and Cumulative Impact Conditions*, includes descriptions of cumulative projects. All of the cumulative projects also have the potential for incompatibilities with one or more plans and policies related to preserving the visual quality and character of the Delta.

CEQA Conclusion**:** The potential for cumulative incompatibilities with plans and policies indicates potential for a physical consequence to the environment. Such physical effects are discussed in the individual project alternative analyses under impacts AES-1 through AES-6, and for cumulative projects above. No additional CEQA conclusion is required related to the compatibility of cumulative conditions relevant plans and policies.

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17.4.2 Personal Communications

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