Chapter 18
Aesthetics and Visual Resources

This chapter describes the environmental setting and study area for aesthetics and visual resources; analyzes impacts that could result from construction, operation, and maintenance of the Delta Conveyance Project (project); and provides mitigation measures to reduce the effects of potentially significant impacts. This chapter also analyzes the impacts that could result from implementation of compensatory mitigation required for the project and describes any additional mitigation necessary to reduce those impacts, and analyzes the impacts that could result from other mitigation measures associated with other resource chapters in this Draft Environmental Impact Report (Draft EIR).

18.0 Summary Comparison of Alternatives

Table 18-0 provides a summary comparison of important impacts on aesthetics and visual resources by alternative. The table presents the CEQA findings after all mitigation is applied. If applicable, the table also presents quantitative results after all mitigation is applied. This table provides information on the magnitude of the most pertinent and quantifiable impacts on aesthetics and visual resources that are expected to result from the project alternatives. An important impact to consider is the permanent impact on visual resources after the completion of construction of water conveyance features.

As shown in Table 18-0, construction of the water conveyance features would result in impacts on visual resources as a result of degrading existing vistas, visual character of the study area, and introduce light and glare. All alternatives would result in significant impacts on the visual character of the Delta.

Table ES-2 in the Executive Summary provides a summary of all impacts disclosed in this chapter.

Table 18-0. Comparison of Impacts on Aesthetics and Visual Resources by Alternative

	Alternative								
Chapter 18 – Aesthetics and Visual Resources	1	2a	2b	2c	3	4a	4b	4c	5
Impact AES-1: Substantially Degrade the Existing Visual Character or Quality of Public Views (from Publicly Accessible Vantage Points) of the Construction Sites and Visible Permanent Facilities and Their Surroundings in Nonurbanized Areas	SU	SU	SU	SU	SU	SU	SU	SU	SU
Impact AES-2: Substantially Damage Scenic Resources including, but Not Limited to, Trees, Rock Outcroppings, and Historic Buildings Visible from a State Scenic Highway	SU	SU	SU	SU	SU	SU	SU	SU	SU
Impact AES-3: Have Substantial Significant Impacts on Scenic Vistas	SU	SU	SU	SU	SU	SU	SU	SU	SU
Impact AES-4: Create New Sources of Substantial Light or Glare That Would Adversely Affect Daytime or Nighttime Views of the Construction Areas or Permanent Facilities	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS

LTS = less than significant; SU = significant and unavoidable.

18.1 Environmental Setting

This section describes the environmental setting and environmental setting for aesthetics and visual resources in the study area.

18.1.1 Study Area

The visual resources study area is defined by the area in which impacts on visual or aesthetic resources may occur. The overall study area for the project, as described in Chapter 1, *Introduction*, consists of the statutory borders of the Delta, south-of-Delta/State Water Project (SWP) and Central Valley Project (CVP) service area, and the project area itself. The visual resources study area (referred to simply as study area for the rest of this chapter) is confined by the footprint of aboveground (and therefore visible) project facilities. Therefore, the study area for this resource hosts a variety of land cover and vegetative communities such as open water, riparian forest, wetlands and aquatic vegetation, agriculture, grasslands, and rural development.

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

1. Objective identification of the visual features (i.e., 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 components of the project that are aboveground and visible are dispersed throughout the larger study area. As the study area is quite broad, to evaluate the visual impacts of each project facility, smaller areas of visual effect (AVE) were defined for each facility. For the Delta Conveyance Project, each AVE consists of the immediate area surrounding the footprint of aboveground (and therefore visible) project facilities. Therefore, the larger visual resources study area (i.e., the Delta) is a set of smaller AVEs associated with aboveground project facilities throughout the landscape. Listed below are the four geographic segments of the project along which aboveground, visible changes would occur.

- At the north Delta intakes and Twin Cities Complex
- At the five maintenance and reception/launch shaft locations along the central tunnel alignment, six such locations along the eastern tunnel alignment, or at seven such locations along the Bethany Reservoir alignment, depending on the alternative
- At the Southern Complex
- At the Bethany Complex

These AVEs are composed of viewsheds or view points from which views would be affected by the project. The project study area is not one continuous landscape but is composed of smaller AVEs

where aboveground changes would occur due to the project. The AVEs and their respective viewsheds are defined by the physical constraints of the environment and the physiological limits of human sight.

For the purpose of this Draft EIR, the AVE for a project feature is considered to be a 0.5-mile radius from the project features in rural areas and a 0.25-mile radius from the project features in urbanized areas, only along sections of the four geographic segments where visible changes would occur. AVEs may be smaller than 0.25 or 0.5 mile where development or topography limits available views of the project features. The AVE may also be larger than 0.25 or 0.5 mile where elevated or more expansive views are present. Therefore, the analysis also considers the middleground views that are up to 3 miles from the project features. Background views (i.e., views beyond 3 miles from the project features) are not considered in detail because details become diminished beyond the middleground. Typically, project features do not stand out in background views. However, features that are present within background views may be discussed as contributing visual elements to the AVE (e.g., mountain ranges, water features) because project features may affect the availability of views of notable features in the background, which may be of local or regional importance.

In general, the major SWP and CVP water storage facilities provide year-round water-based recreation areas. No new structures are proposed upstream of the Delta or in the SWP and CVP export service areas under any of the project alternatives; therefore, construction of the project would not result in visual changes to the landscape upstream of the Delta or in the SWP and CVP export service areas.

The project does not propose any changes to operations upstream of the Delta; however, due to potential, indirect upstream reservoir changes from project operations, there is a low potential for aesthetic impacts. As discussed in Chapter 5, *Surface Water*, the project would have very minimal effects on Shasta Lake, Lake Oroville, and Folsom Lake end-of-month storage, relative to existing conditions. SWP and CVP export service areas around Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, New Melones Lake, and San Luis Reservoir could experience slight changes, but these variations would be within the existing fluctuations in storage and elevation patterns. Because there is no potential to cause a significant impact on the visual character of areas upstream of the Delta, these effects are not discussed further in this chapter.[1]

18.1.2 Concepts and Terminology

Below are descriptions and definitions of key terms used throughout the visual resources evaluation.

- ***Aesthetic (or visual) resources*** are all objects (natural and built, moving and stationary) and features (e.g., landforms and waterbodies) visible on a landscape that contribute to the public's experience and appreciation of the environment. Aesthetic and visual resources impacts are assessed by evaluating the visual character and visual quality of the resources that comprise the

[1] CalSim 3 modeling results show average end-of-month storage for the full simulation period would differ little, if at all, for Trinity Lake, Shasta Lake, Lake Oroville, and Folsom Lake, relative to existing conditions. Modeled monthly average end-of-month storage for the full simulation period is either the same as existing conditions or up to 1% higher in these reservoirs for the full simulation period (Appendix 5A, *Modeling Technical Appendix*). The greatest decrease in modeled end-of-month storage, relative to existing conditions, occurred for Folsom Lake, where end-of-month storage decreased up to 2%, on average, in above normal years in November and December under Alternatives 1, 2b, 3, 4b, and 5 (Appendix 5A).

project environment before and after construction of a proposed project and how these changes affect the surrounding natural and cultural environments. Depending on the extent to which a project's presence would alter the perceived visual quality of the environment within the visual resources study area, a visual or aesthetic impact may occur.

- ***Visual character*** includes attributes such as form, line, color, and texture and is used to describe, not evaluate, the visual environment; that is, these attributes are neither considered good nor bad. The visual character of a project study area can be defined by the natural, cultural, and project environments that constitute the AVE. For the purpose of defining aesthetic and visual resources, the ***natural environment*** is determined by the visual character of the land, water, vegetation, animals, and atmospheric conditions. The ***cultural environment***, or built environment, is determined by the visual character of buildings, infrastructure, structures, and other artifacts and art. The ***project site environment*** focuses down from the larger context of the natural and cultural environments and concentrates directly on the project feature.
- ***Visual quality*** is used to describe what viewers like and dislike about the visual resources that compose a particular scene and is expressed in terms of *natural harmony*, *cultural order*, and *project site coherence*. The value placed on visual resources correlates to whether those resources meet the viewer's preferred concepts of natural harmony and cultural order. The more visual preferences and expectations are met by the landscape composition, the more that landscape is revered for its views and the more memorable, or vivid, it becomes. Visual features do not intrude but belong to a landscape of a harmonious nature in an orderly society.
- ***Natural harmony*** is based on the idea that the natural environment creates a sense of natural harmony in people. The visual character of the natural environment's visual resources and viewer preferences affect the perception of natural harmony, and the viewers inherently evaluate and determine if the composition is harmonious or inharmonious.
- ***Cultural order*** is based on the idea that the cultural environment creates a sense of cultural order in people. The visual character of the cultural environment's visual resources and viewer preferences affect the perception of order, and the viewers inherently evaluate and determine if the composition is orderly or disorderly.
- ***Project site coherence*** is created by the visual character of the project environment in combination with viewer preferences. Viewers consciously or unconsciously evaluate the composition of the landscape and determine if it is coherent or incoherent. For existing conditions, this establishes how well the project features fit in with, or how consistent the project features are with, the general area surrounding the project features (i.e., how compatible the project features are with the surrounding natural and cultural environments).
- A ***viewshed*** is defined by what people can see in the landscape (e.g., an area of land, water, or other urban or environmental element) from a fixed vantage point. As mentioned in Section 18.1.1, *Study Area*, viewsheds are confined by the physical constraints of the environment and the physiological limits of human sight.

  Physical constraints of the environment include landform, land cover, and atmospheric conditions. Landform can limit views or provide an elevated perspective for viewers. Similarly, land cover, such as trees and buildings, can limit views, while low-growing vegetation and the absence of structures can allow unobscured views. Atmospheric conditions, such as smoke, dust, fog, or precipitation, can temporarily reduce visibility or be a more regular component of the visual landscape.

The physiological limits of human sight are affected by location, proximity, and light. Location refers to the topographic position of the viewer, such as being level with, above, or below what is being observed. Proximity is categorized into three ***distance zones*** based off of the position of the viewer and are measured from one static point: ***foreground*** (up to 0.5 mile from the viewer), ***middleground*** (0.5 mile to 3 miles from the viewer), and ***background*** (beyond 3 miles from the viewer). Generally, the closer a resource is to the viewer, the more dominant it is and the greater its importance to the viewer, whereas importance and dominance are reduced the farther away the feature is from the viewer. In the background, the scale and color of existing landscape elements and project features blend so that only broad forms, large-scale patterns, and muted colors are evident. Light also plays a large role in affecting views. For example, during the daytime, views are more readily available than at night, when darkness conceals details and color in the landscape in the absence of bright moonlight or artificial light sources. Furthermore, light level and direction change throughout the day, affecting color and individual forms.

These limitations combine to establish viewsheds that range from restrictive to expansive (Federal Highway Administration 2015:4-5–4-9, 6-3–6-4; Litton 1968:3–5).

- ***Light*** is a function of natural and artificial illumination that is present during the day and night within the natural, cultural, and project environments. Sources of natural light include the sun, moon, stars, fire, and lightening, and sources of artificial light include streetlights, vehicle headlights, landscape lighting, external security lighting, internal building lighting, and stadium/playing field lighting. Levels of light are influenced by the time of day, atmospheric conditions, the presence or absence of both natural and artificial lighting, and natural and built features that may filter or screen light. The visual landscape can range from very brightly lit to very dimly lit to dark and not lit at all. In addition, lighting is influenced by the color temperature of the light source that can give the appearance of warmer, more orange lighting or brighter, more blueish or whitish lighting. The height and angle of lighting and presence or absence of shielding affects whether or not lighting spills beyond a specific boundary, creating light trespass, or radiates upward into the night sky, creating ambient light glow, which brightens the night sky.
- ***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% to 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 reflects than do smaller surfaces (Smardon et al. 1986:126–128).
- ***Viewer response*** is a measure or prediction of the viewer's reaction to the visual environment and has two dimensions, *viewer exposure* and *viewer sensitivity*.
- ***Viewer exposure*** is a measure of the viewer's ability to see a particular object. Viewer exposure has three attributes: *location*, *quantity*, and *duration*. ***Location*** relates to the position of the viewer in relationship to the object being viewed. The closer the viewer is to the object, the

more exposure. ***Quantity*** refers to how many people see the object. The more people who can see an object or the greater frequency an object is seen, the more exposure the object has to viewers. However, the number of viewers is relative to the total number of viewers viewing the project feature at any AVE relative to the general concentration of affected viewers in the study area. ***Duration*** refers to how long a viewer is able to keep an object in view. The longer an object can be kept in view, the more exposure.

- ***Viewer sensitivity*** is a measure of the viewer's recognition of a particular object. It has three attributes: *activity*, *awareness*, and *local values*. ***Activity*** relates to the preoccupation of viewers—are they preoccupied, thinking of something else, or are they truly engaged in observing their surroundings. The more they are actually observing their surroundings, the more sensitivity viewers will have of changes to visual resources. ***Awareness*** relates to the focus of view—the focus is wide and the view general or the focus is narrow and the view specific. The more specific the awareness, the more sensitive a viewer is to change. ***Local values*** and attitudes also affect viewer sensitivity. If the viewer group values aesthetics in general or if a specific visual resource has been protected by local, state, or national designation, it is likely that viewers will be more sensitive to visible changes. High viewer sensitivity helps predict that viewers will have a high concern for any visual change.

  Movement also affects viewer sensitivity by creating dynamic viewsheds that change as the viewer moves through the landscape. Speed affects how long or short a view is based on the mode of travel, and the availability of views is affected by the surrounding terrain and vegetation and the presence or absence of built features.

  Viewer sensitivity is also modified by the type of viewer, viewer activity, and visual expectations. For example, people driving for pleasure; people engaging in recreational activities such as hiking, biking, or camping; and homeowners generally have higher visual sensitivity to views. Viewers using recreational trails and areas, scenic highways, and scenic overlooks usually pay more attention to their surroundings, seek views, and have higher regard for the landscape composition. Residential viewers typically have extended viewing periods and are more concerned about and aware of changes in the views from their homes. Sensitivity tends to be lower for people driving to and from work or as part of their work because commuters and non-recreational travelers typically have fleeting views and tend to focus on commute traffic, not on surrounding scenery (Federal Highway Administration 2015:6-2–6-4; U.S. Forest Service 1995:3-3–3-13; U.S. Soil Conservation Service 1978:3, 9, 12).

- ***Visual dominance*** is based on viewer proximity as discussed in the definition of *viewshed*. Visual dominance is determined by the distance between the position of the viewer and a feature in the landscape. A feature in the landscape is more dominant and has a greater importance the closer the feature is to the viewer, whereas dominance and importance are reduced the farther away the feature is from the viewer.

- ***Scenic vistas*** generally encompass a wide area with long-range views to surrounding elements in the landscape. Such vistas are often available to viewers due to open, flat agricultural lands with few obstructions and from elevated vantages with views over the landscape. In addition, vistas have a directional range. Some areas have scenic vistas with a 360-degree 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, resulting in a narrower vista view.

18.1.3 Visual Character of the Study Area

Identifying a study area's aesthetic resources and conditions involves understanding the area's visual features and the regulatory context. Once those parameters are understood, a study area's aesthetic resources are further defined by documenting its *visual character*, including the natural and cultural environments. For the purposes of this analysis, the *study area* is made up of the smaller AVEs associated with aboveground project features. The *affected population*, or viewers, are defined by their relationship to the study area, their visual preferences, and their sensitivity to changes associated with the improvements. Visual preferences, or what viewers like and dislike about each AVE's visual character, define that AVE's *visual quality*. Visual quality serves as the baseline for determining the degree of visual impact (i.e., the creation of an intrusion or perceptible change to the environment that affects the scenic quality of a landscape) and whether a project's visual impacts would be adverse, beneficial, or neutral, depending on a variety of factors (e.g., personal experience, time of day, weather, seasonal conditions).

The visual character of the Delta region, within which the study area is located, is defined by a variety of landscape types, both built and natural. A thorough discussion of defining visual character and each landscape type is included in Appendix 18A, *Expanded Methodology and Setting*, and is summarized in Table 18-1.

Table 18-1. Summary of Delta Landscapes and Defining Visual Features

Landscape Type	Summary/Defining Visual Features
Natural Landscapes	
Agricultural Lands	Agricultural lands, including orchards, row crops, and pasturelands, account for the primary land use in the Delta and shape its visual character. Pastoral landscapes are comprised of a variety of colors, textures, and views that vary with distance and time (i.e., seasonality). Orchards and row crops share certain visual attributes, such as repeating patterns, uniform height forms, horizontal linear features, and seasonal variation in colors and textures; however, while row crops are generally low to the ground and allow open views to the surrounding landscape year-round, the dense foliage of orchards limits the field of vision during the spring, summer, and fall. In both cases color changes seasonally, with winter views dominated by gray-brown hues, brown to black soil, and skeletal trees. Spring and summer views are dominated by bright green grasses, wildflowers, pale-colored flowers on fruit or nut trees, the yellow of mustard plants, and lush green vegetation, depending on the season. By summer, certain row crops may obstruct views as high as 10–12 feet, and agricultural practices provide movement that is in contrast to the otherwise static landscape. Pasturelands are characterized primarily by broad expanses of open space, sometimes with rolling hills and sparsely scattered oak trees, and generally afford broad vistas. During the rainy season, these pastures are verdant green, contrasted with dark-colored oak tree trunks and twisting branches. In the summer and fall, the grasses turn golden brown and the foliage of the oaks creates dome forms with uniform texture and gray-green color. 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.

Landscape Type	Summary/Defining Visual Features
Waterway Landscapes	Approximately 1,100 miles of levees and associated waterways traverse the Delta, making them a defining and dominant feature of the landscape. Waterway features include open rivers, channels and sloughs, and marsh. The open river landscape is dominated by a singular, expansive waterway. Delta rivers are long and meandering, with extensive surface water visible in many locations. Because of the length of the rivers and their meandering forms, 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. Open water exhibits strongly horizontal features in form, especially as distance increases from a view point. Visually dominant features associated with open river views include steel drawbridges constructed over the numerous river and waterway crossings, earthen levees covered with riparian vegetation, water access in the form of docks or marinas, and the ever-changing movement of the water itself, and the colors, textures, and patterns that result. 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. Channels tend to appear less natural that waterways in the open river landscape type, with riprap or banks of earthen or hard materials. Channels and sloughs may be vegetated with trees and shrubs down to the waterline, which varies in color, texture, and pattern by season, just as riparian vegetation does. Water levels fluctuate seasonally and daily, which is most visually dominant at low tide when more of the adjacent shoreline is exposed. Activity and movement are also important components of the visual landscapes of channels and sloughs and, depending on the amount of recreational boating, commercial shipping, and waterfowl activity, there is a constantly changing level of activity on the rivers. On a smaller scale, interchannel/slough islands of varying sizes occur in Delta waterways. Some of these islands are developed with docks (e.g., associated with water ski clubs or other recreational clubs and private residences) and with informal structures (e.g., lean-tos and low-tide beach access). The islands are scattered throughout the Delta, and very few islands are not developed or used in some way. A number of interchannel/slough islands, as well as the larger Delta islands, have informal fishing areas that have an unkempt appearance and detract from the natural riverine nature of several reaches along Delta sloughs, channels, and riverbanks. Similarly, a number of abandoned vessels are located randomly in the rivers, channels, and sloughs in the Delta, which also distract from the visual nature of the area. In addition, encampments of people without housing are scattered randomly along these channels and throughout the Delta islands. Similar to the informal fishing areas, these encampments have an unkempt appearance, and could include tents, cardboard structures, and refuse. The marsh landscape type consists of intermixed open water and wetland vegetation. It is characterized by fluctuating water levels and seasonal flooding from tidal action, rain, and management actions. The predominant visual characteristic of Delta marshes is the large, flat, open expanse without 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. In these landscapes, views may change by season, and activity and movement of waterfowl contribute strongly to the character of the visual landscape. 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

Landscape Type	Summary/Defining Visual Features
	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. In marshes, due to a lack of passing boats or nearby residences, lighting and artificial glare are absent and natural glare is provided only by the waters' reflective quality.
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 to the west of the AVEs. Many of these lands are naturally recolonizing after agricultural production and various stages of the successional process are visible, adding variety and visual interest, and also making these lands suitable for wildlife and habitat. Colors of vegetation vary by season, and rolling hills, when present, contrast against the other low-lying lands in the Delta and provide a unique visual focal point. Lighting is generally absent; these are dark landscapes at night, except for occasional views of residences and structures dispersed in the distance and traffic headlights on roadways. Similarly, sources of natural and artificial glare are generally absent.
Cultural Landscapes	
Rural Centers	Rural centers are characterized by the small, sometimes historical towns scattered throughout the Delta. These towns are typically clustered alongside a major waterway, such as Clarksburg, Hood, Isleton, Walnut Grove, Locke, and Courtland, which flank the Sacramento River. Rural centers are compact with well-defined edges providing a clear sense of entry and departure. Vertical features are present, but buildings are generally no taller than one or two stories. Ornamental landscaping created varied forms, colors, and textures, and 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. Building forms and textural elements are highly varied by type of structure and use. 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, such as Discovery Day and the western portions of Stockton. 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; 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. 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. Urban centers are sprawling and have weakly defined edges, providing little visual sense of entry and departure, and visual connection with the surrounding natural environment of the Delta is largely absent. Building materials are highly varied and façades have wide ranges of color and texture, but seasonal variation in forms, patterns, colors, and textures is generally absent in urbanized development landscapes. The 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.

Landscape Type	Summary/Defining Visual Features
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. 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. 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. Only certain industrial uses generate much activity and movement (e.g., warehouses and industrial uses), 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.

The Delta is traversed by a number of roadways that offer views that are emblematic of its agricultural and natural landscapes. For the evaluation of the project's impacts on the Delta's scenic character and quality (i.e., Impact AES-1: *Substantially Degrade the Existing Visual Character or Quality of Public Views (from Publicly Accessible Vantage Points) of the Construction Sites and Visible Permanent Facilities and Their Surroundings in Nonurbanized Areas*), county-designated scenic routes are used as view points, which represent the Delta's agricultural and natural landscapes. These roadways are discussed further in Appendix 18A and summarized in Table 18-2.

Table 18-2. Delta Scenic Routes near Project Sites

Route	Designation	Visible Features	Alternatives
Alameda County			
Byron Highway	County	Southern Complex, Southern Complex control structures west of Byron Highway	1, 2a, 2b, 2c, 3, 4a, 4b, 4c
Byron Highway	County	Bethany Complex	5
Byron Highway	County	Transmission lines	All
Mountain House Road	County	Bethany Complex, expanded substation	All
Contra Costa County			
SR 4	County	Southern Complex	1, 2a, 2b, 2c, 3, 4a, 4b, 4c
SR 4 Bypass	E State/County	None	None
SR 160	E State/County	None	None
Byron Highway	County	Southern Complex, Southern Complex control structures west of Byron Highway	1, 2a, 2b, 2c, 3, 4a, 4b, 4c
Byron Highway	County	Bethany Complex	5
Byron Highway	County	Transmission lines	All
Brentwood Boulevard	County	SCADA communications lines	1, 2a, 2b, 2c, 3, 4a, 4b, 4c
Sacramento County			
I-5	County	Twin Cities Complex	All

Route	Designation	Visible Features	Alternatives
SR 160	OD State	Intakes A–C	All
River Road	CD County/ County	Intakes A–C, SCADA communications lines north of Intake A	All
Twin Cities Road [a]	County	Twin Cities Complex	All
Sacramento River	County	Intakes A–C	All
Levee Roads along Delta Sloughs	County	Bouldin Island improvements and compensatory mitigation	All
San Joaquin County			
I-5	County	New Hope Tract maintenance shaft locations under all alternatives, I-5 ponds habitat compensatory mitigation	All
I-5	County	Canal Ranch Tract maintenance shaft, Terminous Tract reception shaft	3, 4a, 4b, 4c, 5
Eight Mile Road	County	King Island maintenance shaft	3, 4a, 4b, 4c, 5
SR 4	County	South Holt Road overpass, transmission lines	1, 2a, 2b, 2c
SR 4	County	Lower Roberts Island reception and launch shaft, RTM area and levee improvements on Lower Roberts Island, Upper Jones Tract maintenance shaft, transmission lines	3, 4a, 4b, 4c
SR 4	County	Lower Roberts Island double launch shaft, RTM area and levee improvements on Lower Roberts Island, Upper Jones Tract maintenance shaft	5
Bacon Island Road	County	Bacon Island reception shaft, Upper Jones Tract maintenance shaft (either location)	1, 2a, 2b, 2c
South Inland Drive	County	Lower Roberts Island reception and launch shaft, RTM area and levee improvements	3, 4a, 4b, 4c, 5
West McDonald Road	County	Lower Roberts Island reception and launch shaft, RTM area and levee improvements	3, 4a, 4b, 4c, 5
Neugebauer Road	County	Lower Roberts Island reception and launch shaft, RTM area and levee improvements	3, 4a, 4b, 4c, 5
North Holt Road	County	Lower Roberts Island reception and launch shaft, RTM area and levee improvements	3, 4a, 4b, 4c, 5

E=Eligible, OD=Officially Designated, CD=California Department of Transportation Designated; I- = Interstate; RTM = reusable tunnel material; SR = State Route.

[a] Proposed for scenic corridor protections.

18.1.4 Characterization of Viewers

The study area consists of both developed and undeveloped areas, and viewer groups within the study area include recreational, residential, and business (i.e., retail, commercial, institutional, civic, industrial, and agricultural) viewers and travelers on local roadways and passenger rail lines. The primary viewer groups within the study area are categorized as people living or conducting business in developed areas; travelers using the freeways, arterial roads, and smaller local roads; and recreationists (boaters, swimmers, and anglers using local waterways; trail users; equestrians; bicyclists; joggers; and others). The characterization of viewers and their preferences was

established using a public involvement approach. Public scoping comments on aesthetic and visual resources and field survey results were reviewed to gauge public concerns pertaining to aesthetic and visual resources associated with the project and to understand how viewers work, live, recreate, and experience the Delta. This analysis evaluates the sensitivity of each viewer group and describes it using five ratings: low, moderately low, moderate, moderately high, high, and very high. Affected viewer groups and their associated sensitivities are identified in Table 18-3.

Two overarching groups of viewers are affected by a project: neighbors and users. *Neighbors* are those people who have views *of* a project feature because they are adjacent to it. *Users* are those people who are within project boundaries and have views *from* a project feature. Following are the types of neighbors and users that can be affected by a project (Federal Highway Administration 2015:5-6–5-10).

Table 18-3. Affected Viewer Groups and Associated Sensitivities for the Project

Viewer Group	Sensitivity	Reasoning
Recreational Viewers	High	Recreational viewers provide or participate in active and passive recreational uses, such as organized sporting events, indoor and outdoor leisure activities, and cultural events. Recreational viewers using parks/recreational facilities, waterways, roadways, trails, and levees are likely to seek out natural areas and scenic views that could be affected by project features for both shorter and longer durations. Recreationists are more likely to value the natural environment, appreciate the visual experience, and have a strong sense of ownership over the waterways and corridors they use for recreation and that are highly valued throughout the greater Sacramento and Delta region. Recreational viewers encompass a diverse group, including those that live in or frequent the Delta and are therefore familiar with their surroundings, as well as tourists who visit less frequently and would be less attuned to changes in the environment. Tourists travel individually or in groups through an area for enjoyment on trips that are generally more adventurous and cover longer distances; therefore, their focus is typically on the Delta scenery as a whole, rather than on expected visual details at specific locations. Recreational viewers are often focused on their recreational activity, and although they tend to be unsupportive of visual changes that would negatively affect the recreational setting, they tend to be supportive of visual improvements that enhance their recreational experience. Recreational services provided for visitors can be permanent, while the visitors are more transitory.
Roadway Travelers	Moderately low to Moderately high	Travelers can include pedestrians, cyclists, motorists, and rail users that use various modes of transportation for commuting, touring, and shipping. Pedestrians use their feet, a wheelchair, or other mobility devices, most often on a sidewalk or trail. Cyclists use bicycles at greater speeds than pedestrian travel, and may use trails, traffic lanes, and sidewalks. Motorists use vehicles with engines (e.g., cars, trucks, buses, motorcycles, mopeds, or any other technology that is not self-propelled, regardless of fuel source). Motorists move at higher speeds than other groups. By necessity, the driver of a motor vehicle focuses less on the view outside the vehicle. The driver's primary interest is in project coherence, although natural harmony and cultural order also provide resources used for wayfinding. Good natural harmony and cultural order can increase driver attentiveness. Passengers within vehicles and rail cars move at high rates of speed and may be focused

Viewer Group	Sensitivity	Reasoning
		on views outside the vehicle or rail car or on activities within the vehicle or rail car such as talking, reading, working, eating, people watching, or napping. Passengers prefer evidence of good natural harmony and cultural order. Commuters travel the same route regularly, have a repeated routine, and are often single drivers, but they may also be passengers; and trips can include commuting to work or to a favorite or frequent destination (e.g., campground, cabin, sports arena, relative's home). Tourists travel individually or in groups through an area for enjoyment, often with a set destination, on trips that are generally more adventurous, cover longer distances, and take more time than commuting trips. Shippers are generally single drivers moving goods on routine routes of varying distances. Travelers on local roadways pass areas that would be affected by project features. Travelers use roadways in the study area at varying speeds; normal highway and roadway speeds differ based on the traveler's familiarity with the route and roadway conditions (e.g., rain, curvature, and slope of the road). Single views are typically of short duration, except on straighter stretches where views last slightly longer. The passing landscape becomes familiar to viewers who travel routes frequently, and their attention typically is not focused on the passing views but on the roadway, roadway signs, and surrounding traffic. Viewers who travel local routes for their scenic quality generally possess a higher visual sensitivity to their surroundings because they are likely to respond to the natural environment with high regard and as a holistic visual experience.
Rail Travelers	Moderate	Rail travel occurs in the study area on Amtrak's San Joaquin Oakland to Bakersfield route. Amtrak's San Joaquin Oakland to Bakersfield route passes through and passengers would have views of the study area between Antioch and Stockton. Most rail passengers are commuters that are likely to enjoy the scenic qualities of the views from the train; however, their views are fleeting and temporary because they pass at high speed.
Residential Viewers	High to very high	Residential viewers can be owners or renters that live within viewing distance of a proposed project or within project boundaries. Suburban and rural residents in the study area have potential longer-term exposure to views that would be affected by project features. Residential viewers tend to have an invested interest and sense of ownership over nearby visual resources and generally desire to maintain the existing landscape as-is because how their neighborhood looks is a contributing factor for residents choosing to live there. Therefore, residential viewers tend to be uninterested in change unless they have been able to participate in defining the change.
Business/ Institutional Viewers	Moderate	Viewers from businesses, including industrial, retail, commercial, civic, agricultural, and institutional facilities situated throughout the study area, have semi-permanent views of areas that would be affected by project features. Business workers are present as viewers for longer durations, while patrons tend to be more transitory. Workers and patrons are often focused on tasks at hand (i.e., working or shopping), but some may be focused on wayfinding signage, landscaping, and public image as well. Of business viewers, those associated with agricultural work or land ownership are most exposed to, and therefore have the highest expectations for, cultural order and natural harmony in the landscape. **Industrial viewers**. Industrial viewers mine or harvest raw materials; manufacture goods and services; or transport goods, services, and people, and often require large amounts of land that has limited exposure to the

Viewer Group	Sensitivity	Reasoning
		public. Industrial viewers' visual preference is generally utilitarian unless they want to enhance the public presentation and views of their facility. Industrial viewers tend to be primarily workers with few transitory visitors. **Retail viewers**. Retail viewers include merchants that sell goods and services and the shoppers that buy them. Merchants generally want heightened visibility, free of competing visual intrusions, while shoppers need to be able to easily find their destination and, once there, concentrate on the shopping experience. Merchants tend to be more permanent than shoppers, although shoppers often frequent the same stores repeatedly, giving them a sense of permanence. **Commercial viewers**. Commercial viewers are those occupying or using office buildings, warehouses, and other commercial structures. Commercial viewers' visual preferences vary depending on the business and may be more aligned with retail, institutional, or industrial viewers' visual preferences than those of residential viewers. Workers are often permanent, while visitors and customers are transitory. **Civic viewers**. Civic viewers provide or receive services from a government organization, such as a military reservation or a federal, state, or local agency. Views of government facilities may or may not be desired, depending on the particular organization and work being performed. Workers and employees of the government facilities are present for longer durations, while visitors are more transitory. **Agricultural viewers**. Agricultural viewers are agricultural landowners and workers in fields and pastures maintaining crops or herd animals. Cultural order and natural harmony are critical components of the landscape. Some agricultural viewers are permanent, but many are transient, although they may return to the same area seasonally. **Institutional viewers**. Institutional viewers provide or receive services from such places as schools or hospitals that serve the community. Consequently, institutions often promote a public image to adjacent viewers, and the presentation of their buildings and grounds are important and tend to be well maintained. Signage or orientation and wayfinding are commonly associated with institutional facilities. Workers and employees of the institution are present for longer durations, while visitors are more transitory.

18.2 Applicable Laws, Regulations, and Programs

The applicable laws, regulations, and programs considered in the assessment of project impacts on aesthetics and visual resources are indicated in this section, in Section 18.3.1, *Methods for Analysis*, or the impact analysis, as appropriate. Applicable laws, regulations and programs associated with state and federal agencies that have a review or potential approval responsibility have also been considered in the development of CEQA impact thresholds or are otherwise considered in the assessment of environmental impacts. A listing of some of the agencies and their respective potential review and approval responsibilities, in addition to those under CEQA, is provided in Chapter 1, *Introduction*, Table 1-1. A listing of some of the federal agencies and their respective potential review, approval, and other responsibilities, in addition to those under NEPA, is provided in Chapter 1, Table 1-2.

The scenic highway analysis under Impact AES-2: *Substantially Damage Scenic Resources including, but Not Limited to, Trees, Rock Outcropping, and Historic Buildings Visible from a State Scenic Highway*, is based on the state regulations and guidelines governing the Scenic Highway Program, which are found in Sections 260 to 263 et seq. of the Streets and Highways Code. As described in the Scenic Highway Guidelines, highways can be nominated to be an eligible State Scenic Highway under Streets and Highways Code Section 263 when they are believed to have outstanding scenic values and becoming an eligible State Scenic Highway does not require any legislative action.

18.3 Environmental Impacts

This section describes the direct and cumulative environmental impacts associated with aesthetics and visual resources that would result from project construction, operation, and maintenance of the project. It describes the methods used to determine the impacts of the project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided. Indirect impacts are discussed in Chapter 31, *Growth Inducement*.

18.3.1 Methods for Analysis

The research and analysis methods used to determine the effects are described in detail herein, and are based on the Federal Highway Administration's (FHWA's) *Guidelines for the Visual Impact Assessment of Highway Projects* (FHWA Guidelines) (Federal Highway Administration 2015: 4-5–6-8). The FHWA Guidelines' approach addresses analysis of the natural environments and cultural environments (i.e., human-altered/built environments). These guidelines include a phased approach to analyzing existing visual resources and the future condition with the project alternative using changes in visual quality and the sensitivity of viewers (i.e., receptors) to determine aesthetics and visual impacts. The analysis determines potential impacts of the alternatives during both the construction and operational phases.

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. The impact assessment methodology for aesthetic and visual resources includes the following components:

- Establish the study area and AVEs for aesthetics resources.
- Inventory and describe the environmental setting, affected viewers, and existing visual quality.
- Identify candidate key observation points (cKOPs), key observation points (KOPs) for use in the visual assessment in this chapter, and KOPs for rendering or rendered KOPs (RKOPs). As described herein, cKOPs were selected and designated as KOPs to be used as the basis to describe the effects of the various features of the Delta Conveyance Project alternatives within this analysis; cKOPs are shown in Appendix 18A, Figures 18A-2 through 18A-5. The KOPs used in this chapter are identified by their previous cKOP designations; 10 KOPs were selected for representative photographs. Then, 10 RKOPs were selected for their ability to illustrate project impacts. All KOPs and RKOPs are shown in Figure 18-1. Photographs taken from these representative KOPs are presented in Figure 18-2 through 18-6.

- Assess visual compatibility and viewer sensitivity and analyze visual impacts with the aid of RKOPs. RKOPs are presented in Figures 18-10 through 18-19.
- Consider the regional visual context and the effect construction and facilities would have on the study area visual landscape.
- Provide methods to mitigate significant visual impacts.

The methods for evaluating aesthetic impacts include using existing data collection methods and sources provided for the project, an inventory of regional and local conditions, evaluation of the Delta analytical context, and qualitative analysis techniques to determine how project activities and physical changes associated with the study area could cause impacts. The context and intensity of the impacts are also considered. This process, as well as a definition of impact severity, is discussed in detail below.

18.3.2 Inventory Baseline Conditions/Environmental Setting

This analysis determines visual impacts by evaluating changes to the existing visual quality and predicting viewer sensitivity to those changes. As such, visual impacts are measured by the compatibility or incompatibility of the physical changes to the environment that are caused by a project's scale, form, and materials, which are seen by viewers, and the extent to which viewers care about—or how sensitive viewers are to—how a project changes the environment. Visual impacts can result in beneficial, adverse, or neutral changes to the visual environment and visual quality. Viewers have an inherent understanding of what constitutes project cohesion, which aids in determining the type of impact. The degree to which a project meets the preferred concept of project feature coherence determines the level of impact.

Neutral impacts reflect little change to the visual environment and visual quality, retaining the existing landscape composition and vividness. Beneficial impacts can result where visual quality is improved through the enhancement of visual resources or where visual experiences are improved through the creation of new or improved views of resources. The level of beneficial impact is determined by how much a project improves the existing landscape composition and vividness and can range from small to substantial improvements. Adverse impacts can result when visual quality is degraded through visual resource modification or by blocking or altering views in a negative manner. The level of adverse impact is determined by how much a project degrades the visual landscape and ranges from general negative changes to severe declines in the existing landscape composition and vividness (Federal Highway Administration 2015:6-1–6-8).

The type and level of impacts are evaluated in accordance with Appendix G of the CEQA Guidelines (Section 4.1.5.1, *Thresholds of Significance*, in Section 4.1, *Aesthetics*).

18.3.2.1 Define the Visual Character of the Area of Visual Effects

The environmental setting is comprised of the natural, cultural, and project environments that constitute the study area for a visual resource impact analysis; in the case of the Delta Conveyance Project, the AVEs. The terms *natural environment*, *cultural environment*, and *project site environment* are defined in Section 18.1.2, *Concepts and Terminology*. As described, there is overlap between the natural and cultural environments and the project environment; however, the project environment for any given project is composed of visible elements immediately within that project's boundaries and includes the existing development footprint, the transportation corridor geometrics within the existing right-of-way (for transportation-related projects), terrain and grading, constructed

elements, vegetative cover, and other ancillary visual elements found within the project boundaries. The features that make up each environment specific to the project, as well as the elements and visual attributes typically associated with them, are described in more detail in Table 18-4.

Often a proposed project is to be located on a site that is already developed. Therefore, the existing project feature coherence can be evaluated to establish existing, baseline conditions. For situations in which there is no existing development, as would be the case for most of the Delta Conveyance Project facilities, the project would introduce a new development or create a new built element where none presently exists. In such cases, in lieu of describing the project environment, only the natural and cultural environment are described for existing conditions.

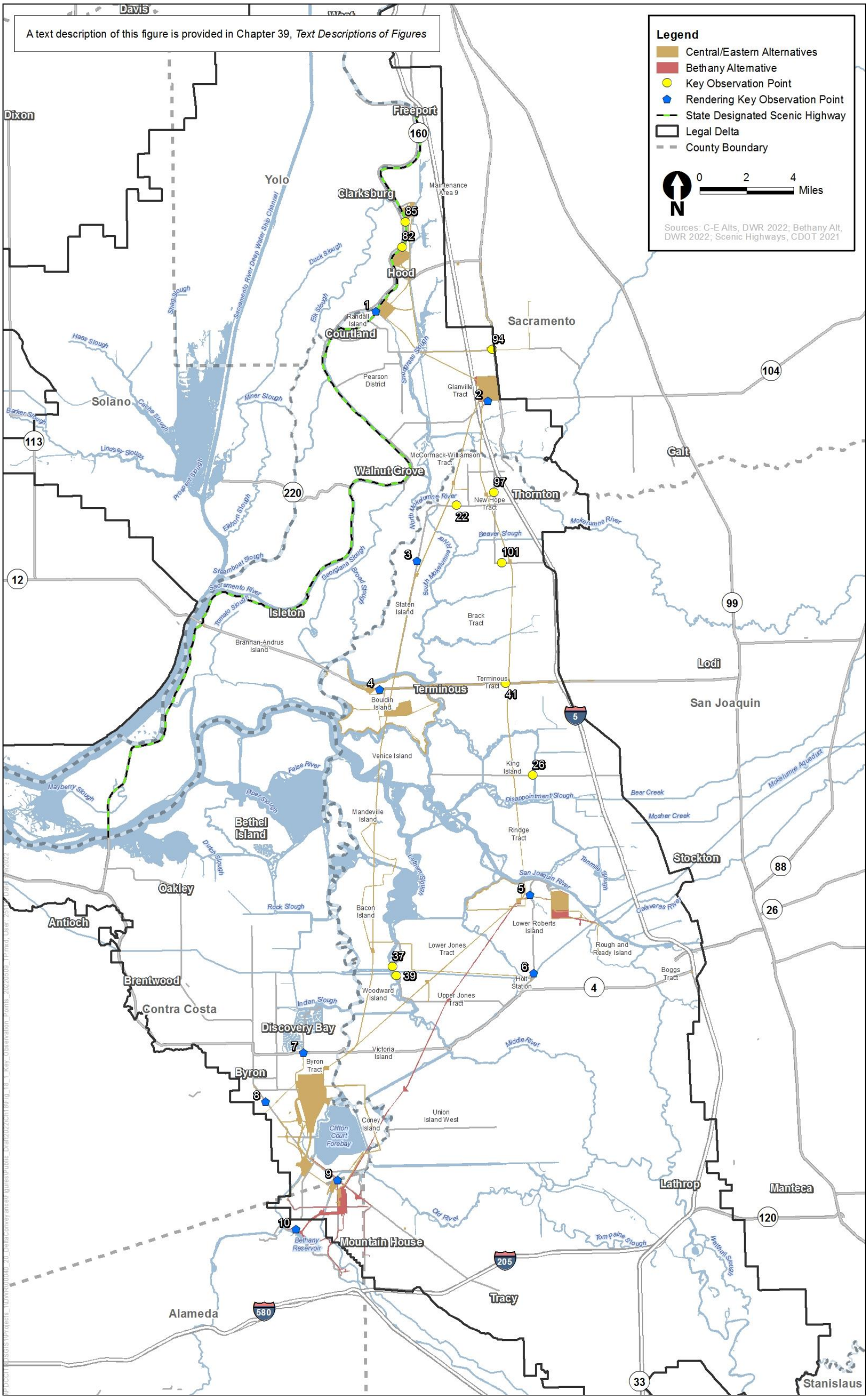

Figure 18-1. Key Observation Points and Proposed Rendering Locations

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A text description of this figure is provided in Chapter 39, *Text Descriptions of Figures*

KOP 22. View from West Walnut Grove Road looking north toward the New Hope Tract maintenance shaft (Alternatives 1, 2a, 2b, 2c)

KOP 26. View from Eight Mile Road looking west toward the King Island maintenance shaft (Alternatives 3, 4a, 4b, 4c, 5)

Figure 18-2. Key Observation Points 22 and 26

A text description of this figure is provided in Chapter 39, *Text Descriptions of Figures*

KOP 37. View from Bacon Island Road looking northwest toward the Bacon Island reception shaft (Alternatives 1, 2a, 2b, 2c)

KOP 39. View from Bacon Island Road looking east-southeast toward the Upper Jones Tract maintenance shafts (Alternatives 3, 4a, 4b, 4c, 5)

Figure 18-3. Key Observation Points 37 and 39

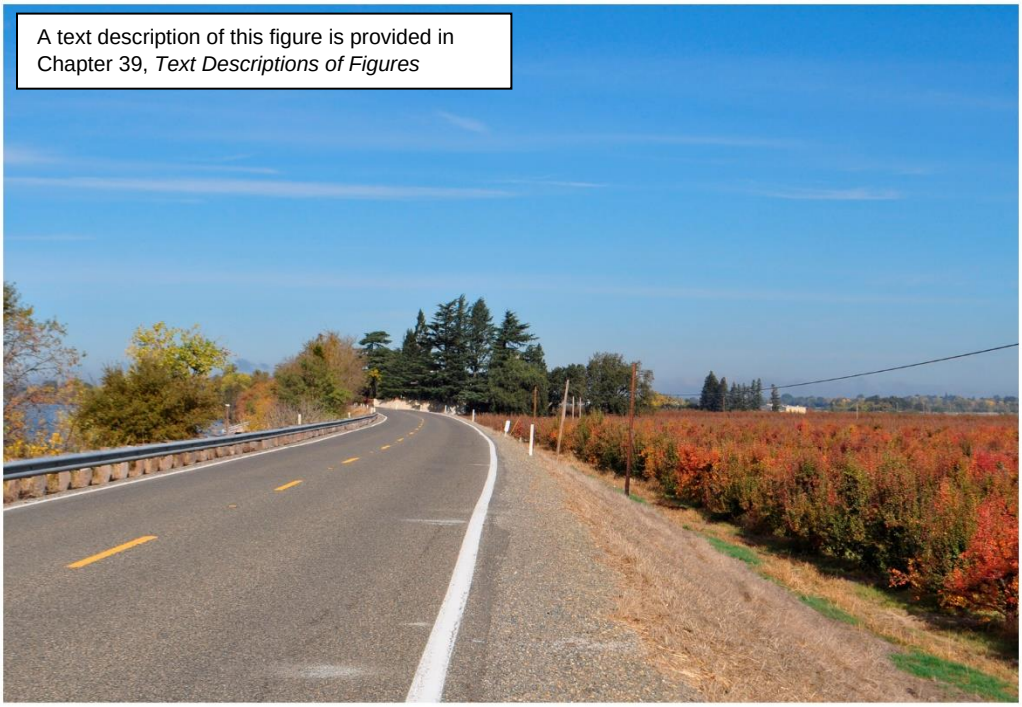
A text description of this figure is provided in Chapter 39, *Text Descriptions of Figures*

KOP 41. View from SR 12 looking northeast toward the Terminous Tract reception shaft (Alternatives 3, 4a, 4b, 4c, 5)

KOP 82. View from SR 160 looking southwest toward Intake B (Alternatives 1, 2a, 2c, 3, 4a, 4c, 5)

Figure 18-4. Key Observation Points 41 and 82

A text description of this figure is provided in Chapter 39, *Text Descriptions of Figures*



KOP 85. View from SR 160 looking north toward Intake A (Alternatives 2a, 4a)

KOP 94. View from Lambert Road looking west-northwest toward the Lambert Road batch plant (Alternatives 1, 2a, 2b, 2c, 3, 4a, 4b, 4c, 5)

Figure 18-5. Key Observation Points 85 and 94

A text description of this figure is provided in Chapter 39, *Text Descriptions of Figures*

KOP 97. View from Blossom Road looking west toward the New Hope Tract maintenance shaft (Alternatives 3, 4a, 4b, 4c, 5)

KOP 101. View from Peltier Road looking east-northeast toward the Canal Ranch Tract maintenance shaft (Alternatives 3, 4a, 4b, 4c, 5)

Figure 18-6. Key Observation Points 97 and 101

Table 18-4. Visual Character Elements of Environmental Setting

Feature	Description of Element	Visual Attributes
Natural Environment		
Land	Landform and natural materials (besides water and vegetation) on the land (e.g., rocks, sand, boulders).	Landscape's form, its spatial qualities, and the nature of its materials.
Water	Flowing or impounded; natural or artificial.	Size of the waterbody, shape and spatial qualities of its perimeter, turbidity, the nature of its littoral or intertidal zones, and any other distinguishing visual attributes.
Vegetation	Presence or absence of vegetation; native, naturalized, or cultivated.	Height and density, artistic description (form, shading, color, and texture), and any other distinguishing visual attributes; seasonal changes (flowers, fruit, and seasonal color).
Animals	Wild or domesticated.	Domesticated farm animals in rural agricultural landscapes, wildlife as a visual indicator of a landscape's vitality and identity (e.g., whale or bird migrations, herds of large mammals, seasonal flocks of waterfowl).
Atmospheric Conditions	Temporal changes; presence or absence of humidity, fog, and dust that reduce or alter visibility.	Predictable amounts of precipitation, either as rain or snow, can change the visibility of the landscape. Rain, with its darkened sky, and snow covering the ground may change a landscape's *luminosity* (i.e., level of brightness) and key views and distance zones. Noting the frequency, even periodicity, of such obscuring or altering phenomena adds to the description of a landscape's visual character. For instance, the visual quality of the enclosing fogginess of the San Francisco Bay Area and Sacramento River Delta is quite different from the open starkness of the very bright area of the Mojave Desert in Southern California.
Cultural Environment		
Buildings	Enclosed structures that are or have been used or occupied by people.	Buildings are often the dominant human-constructed objects in a landscape. A building's visual character is determined by its form, scale, massing, materials, and architectural style and detailing. Building orientation; patterns of light and shadow; artistic attributes like color, pattern, and texture; and site-specific setting, particularly if it obstructs views, all affect visual character. The building's historic status, current and past occupants, the architect who designed the building, the client for whom it was built, or the contractor who constructed it may also be critical to the perception of the building's visual quality. Views of a proposed project from a building are also important.

Feature	Description of Element	Visual Attributes
Infrastructure	Railroads, airports, harbors, roads, canals, dams, electrical and telecommunication utilities, pipelines, sewer and water systems, solar arrays, wind turbines, and other infrastructure.	A major visual attribute of infrastructure is linearity because infrastructure systems can stretch for miles, even across whole states. Extended lines can affect the character of the natural and cultural landscapes. Infrastructure also provides a special set of buildings, structures, and associated artifacts that are part of an intermodal system (for moving people, goods, and services) that can affect the visual character of an AVE.
Structures	Engineered elements that provide a social function but are not buildings or part of a larger infrastructure system.	Structures may be walls, towers, and other constructed items erected to serve a single utilitarian function. Some structures have architectural treatments, but most do not, and form and materials are dictated by functional requirements. A structure's visual character is determined by its form, scale, massing, materials, construction method, and engineering detailing. Structure orientation; patterns of light and shadow; artistic attributes like color, pattern, and texture; and site-specific setting, particularly if it obstructs views, all affect visual character. The structure's historic status, the architect who designed the structure, the client for whom it was built, or the contractor who constructed it may also be critical to the perception of the structure's visual quality.
Artifacts and Art	Artifacts are those items that do not fit neatly into any other category, such as cultural visual resources that are not buildings, infrastructure, or structures. Public art can also contribute to defining the visual landscape.	Artifacts and art are described in a manner similar to that recommended for buildings and structures.
Project Site Environment		
Grading	Existing grades associated with the project or the grading that will be necessary to accommodate a proposed project.	Grading creates physical forms that affect the visual character and quality of the landscape by altering existing landforms. This may include the presence of existing terrain and need to create or modify slopes, areas of cuts and fills, rock cuts, and retaining wall or gabion structures. The project environment is also affected by the surface appearance of rock cuts, retaining walls, and gabions.
Constructed Elements	Pavement and structures are often the most typical constructed elements associated with built features. Pavement that could affect visual character and quality include different types of paving used for road, railbed, shoulder, parking lots, sidewalks, and trails. Structures are major, necessary built components of	Constructed elements are described in a manner similar to that recommended for the visual resources associated with cultural environment. The descriptions for constructed elements can define the setting and orientation of the structures; their form, scale, massing, and material; aesthetic treatments like color, pattern, and texture; and may also describe the interplay between light and shadow. Description of a constructed element can also establish the site-specific setting if it obstructs or generates views, especially for buildings or elevated structures like bridges. The historic status and designer

Feature	Description of Element	Visual Attributes
	the project such as buildings; bridges, viaducts, and culverts; retaining walls; noise barriers; and other large-scale visual elements.	of a structure may also be critical in establishing its contribution to the visual character of the project area.
Vegetative Cover	Occurs within and outside of the footprint of constructed elements. Vegetation can occur along the outer edges of travel ways or within medians, interchange loops, or roundabouts. It can even be established to grow and cover constructed elements, such as noise barriers and retaining walls. The vegetation may be native, introduced, or feral.	Vegetative cover is often established for erosion control and can be also established to improve corridor aesthetics or to buffer undesirable views. Vegetative cover is described by identifying the density, distribution, and species composition. Aesthetic attributes of the plants such as seasonal color are also described. Vegetated rights-of-way are not present in all regions of the country, and vegetation may be minimal or even absent. However, the presence or absence of vegetation should still be described.
Ancillary Visual Elements	Generally, includes lighting, fencing, signage, and traffic control devices, such as traffic lights and rail crossing signals that enhance safety and direct circulation.	Existing and proposed lighting, fencing, signage, and traffic control elements are described to establish the existing and proposed visual character of the project.

Source: Federal Highway Administration 2015:5-1–5-5.

18.3.2.2 Select Key Observation Points in the Area of Visual Effects

To identify the potential impacts of alternatives on existing conditions of the visual environment, KOPs where features could have visual effects were selected. The KOPs selected were determined to be most representative of the potential for the project alternatives to change views available to sensitive receptors and from sensitive viewing areas.

KOPs are derived and selected from cKOPs. To determine cKOPs, a 3-mile radius around aboveground project features was evaluated, which is the area that is considered to encompass discernible elements from the project alternatives that would be visible in the landscape. The mass and visibility of project features would be reduced to a less substantial portion of the total landscape at distances beyond 3 miles (i.e., background views, as described in Section 18.1.2, *Concepts and Terminology*).

Within this 3-mile radius, locations were then evaluated for their potential to have views of project features using engineering layers for each alternative overlain in ArcGIS and Google Street View and Google Maps. These locations were evaluated for their landform, vegetation, water, and artificial features. The cKOPs were then chosen for the purposes of surveying the project features and surrounding areas. The following criteria were used to select the cKOPs.

- Include at least one of a representative range of visible project features, including, for example, intakes, shaft sites, 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 (i.e., designated by county planning documents, California Department of Transportation [Caltrans]), 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.

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 photo documented 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 180-degree (°) to 360° view to gain an understanding of available views from the perspective of both motorists and residents, where present, and to understand the visual setting.

Images from the cKOPs were photographed using a greater than 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 eye. The camera positioning was determined with a sub-meter differentially corrected global positioning system.

Within the AVE, 102 cKOPs were photographed during an initial site visit on November 14 through 16 and November 18, 2020. A list of the cKOPs and their latitudinal and longitudinal locations are included in Appendix 18B, *Candidate Key Observation Point Sensitivity Matrix Ratings*. The cKOP point locations were brought into ArcGIS, and a Google KML file was also created for import into Google Earth. Once in ArcGIS and Google Earth, the cKOPs and associated photos were used as a tool, in correlation with the engineering data overlay for each alternative in ArcGIS, to evaluate project effects based on the spatial relationship/proximity of each cKOP to the project features.

Each cKOP was evaluated for its proximity/distance to the project, visual quality, viewer concern levels, duration of the view, intactness, and number of viewers. This evaluation was completed using a matrix, also included in Appendix 18B, 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 cKOP sensitivity matrix ratings in Appendix 18B. The highest possible sensitivity would be a score of 30, and the lowest possible sensitivity would be a score of 0. Sensitivity in the AVE ranges from 26 as the highest sensitivity and 13 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 project alternatives within this analysis because they were determined to be the most representative sampling of the project's potential effects on the viewshed across all of the spectrum of sensitivity ranges. The KOPs are identified by their previous cKOP designations; 10 KOPs were selected for representative photographs. Figures 18A-2 through 18A-5 in Appendix 18A, *Expanded Methodology and Setting*, show all cKOPs in relation to the selected KOPs and RKOPs. All KOPs are shown in Figure 18-1; photographs taken from these representative KOPs are presented in Figures 18-2 through 18-6.

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). However, views from individual private properties are also considered in evaluating overall change to the visual character of an area. For example, when a KOP on the roadway is next to a residence or place of business, such as marinas and schools, that KOP is evaluated as a residential or business viewer to ensure that those viewer groups were represented and assessed.

Another consideration in KOP selection 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).

KOPs capture views from important, but discrete, locations; this makes them useful tools in evaluating potential impacts on key visual resources in the impacts analysis. However, as they do cover only discrete locations, the impact analysis also factors in the larger regional context.

18.3.2.3 Determine the Visual Quality of the Area of Visual Effects

Evaluation Methodology

Visual quality is affected by *aesthetics*—the study of pleasing perceptual experiences as seen by humans. These perceptions are remarkably consistent within a society and across cultures, even though an individual's experience of visual quality is unique because of previous life experiences. Visual quality is a function of what the viewer wants or expects to see and what is actually seen. If people see what they want or expect to see, then the visual quality is good or high because the viewer is pleased. However, if what is seen is lacking or not what is expected, then visual quality is poor or low because the viewer is disappointed. Expectations can be predictable for things like roadways and commercial development within a certain area. However, self-interest factors into visual preferences based on whether the viewer is a neighbor or user of a project feature and how they may be personally benefited or affected. Different viewers and viewer groups value visual resources in different ways; therefore, there are different appraisals of visual quality. Regardless, there is a range of viewer responses inherent in all humans that aids in evaluating the overall landscape composition and vividness of both natural and cultural environments, which include: natural harmony, cultural order, project site coherence, and visual quality, as defined in Section 18.1.2.

As visual quality is evaluated based on human perception, expectation, and preference, viewer preferences must be determined. Viewer preferences are established using a professional observational or public involvement approach. Professional observation is used on projects with average complexity and minimal controversy by identifying standard visual preferences associated with affected viewer groups that are adjusted to reflect state and local regulations protecting visual resources. More complex and controversial projects often engage affected interested parties (i.e., neighbors and users) through public outreach and involvement to help define visual preferences.

The analysis in this Draft EIR uses the professional observational and public involvement approaches (Federal Highway Administration 2015:5-13–5-14). Public scoping comments on aesthetic and visual resources were reviewed to gauge public concerns pertaining to aesthetic and visual resources associated with the Delta Conveyance Project. In addition, information gained from

public comments on the aesthetic and visual resources chapters of the Bay Delta Conservation and California WaterFix projects provided valuable information and insights as to concerns, sensitivities, and preferences of interested parties regarding the Delta and the alternatives that affected the landscape in a similar manner to the changes proposed under the Delta Conveyance Project. Further, the results of the *Your Delta, Your Voice: Environmental Justice Community Survey* (Appendix 29A, *Environmental Justice Community Survey Report*) were reviewed in which respondents provided feedback on how they work, live, recreate and experience the Delta and how the community values and uses the Delta's natural, economic, and social resources.

Evaluation Rating

This analysis uses a descriptive means for rating and assessing impacts that is based on a numeric rating system. However, the numeric rating system was used to evaluate and rate RKOPs. Numeric values are initially assigned to these descriptors that then determine the descriptive ratings. The numeric values range from 1 to 7 and correlate to descriptive ratings that range from very low to very high. While detailed, this rating system allows for a better means of determining the level of impact compared to a broader rating system of, for example, five rating levels. The numeric values and associated descriptive ratings are described in more detail in subsequent sections of this appendix. The rating forms used for the analysis are found at the end of this appendix.

Visual Resource Ratings

Aesthetic and visual resources are assessed by evaluating the visual character and visual quality of the resources that comprise the project environment before and after construction of a proposed project and how these changes affect the surrounding natural and cultural environments.

As described in Section 18.1.2, natural harmony, cultural order, and project feature coherence are independent elements that contribute to the overall visual quality of a project's AVE. The overall visual quality is evaluated to determine if the composition meets or does not meet visual preferences and expectations. To determine the overall visual quality, natural harmony, cultural order, and project feature coherence are first assigned a numeric value that translates to a descriptive rating as shown in Figure 18-7.

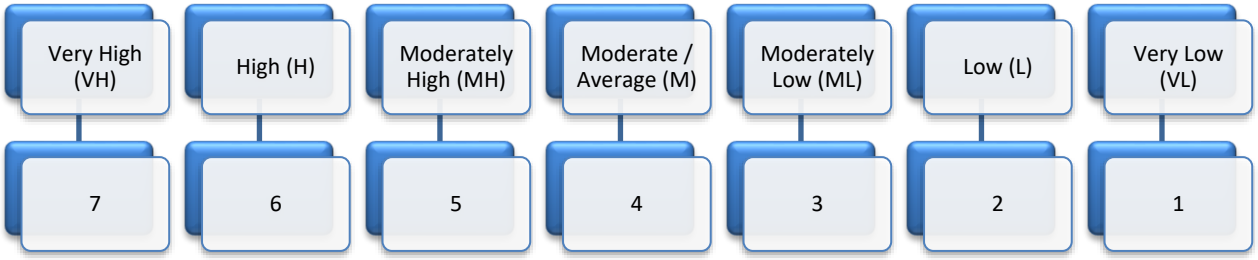


Figure 18-7. Natural Harmony, Cultural Order, and Project Site Coherence Ratings

Table 18-5 provides guidance on how to rate the natural harmony, cultural order, and project feature coherence. The overall visual quality is then calculated for existing and proposed conditions by averaging the natural harmony, cultural order, and project feature coherence ratings as follows.

$$Visual\ Quality = \frac{Natural\ Harmony\ Rating + Cultural\ Order\ Rating + Project\ Site\ Coherence\ Rating}{3}$$

The overall visual quality is then assigned a descriptive rating, called a *visual quality rating*, based on the numeric values as shown in Figure 18-8.

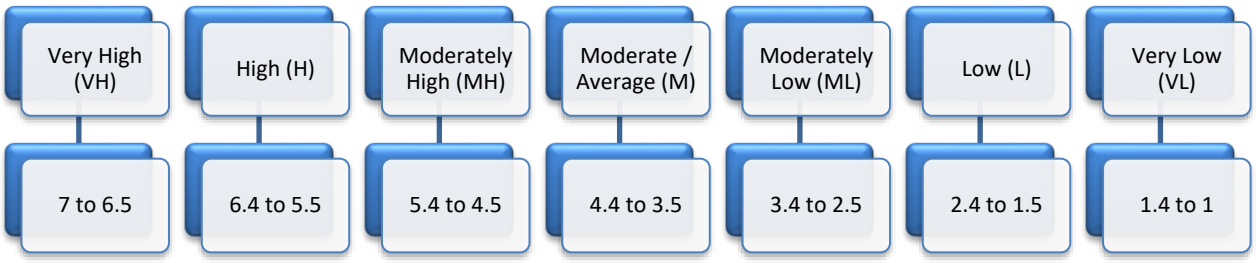


Figure 18-8. Visual Quality Ratings

A very high rating corresponds to more pristine natural environments that are untouched by humans or cultural and project environments that are extremely well designed. As such, higher visual ratings represent landscape compositions that are vivid and that may evoke feelings of awe and wonderment. A very low rating corresponds to highly disjunct landscapes that have been haphazardly altered by humans. As such, lower visual quality ratings correspond to landscape compositions that may evoke negative emotional responses in viewers. In general, the more a composition meets visual preferences and expectations, the more positive the viewer response. In general, the more positive the viewer response is, the more memorable, or vivid, the composition becomes. For example, a more positive viewer response occurs when a development or roadway is not perceived as an intrusion but is seen as an integrated element belonging to a harmonious and orderly landscape.

Table 18-5. Visual Resource Rating for Determining Visual Quality

Visual Resource	Visual Quality						
	Very High (7)	High (6)	Moderately High (5)	Moderate (4)	Moderately Low (3)	Low (2)	Very Low (1)
Natural Harmony	Landscape is pristine and untouched by human influences. Natural state is exemplary at a global level. Natural state may be very harmonious but may also be visually distinct in that the natural landscape inspires awe.	Landscape is largely untouched by natural and human influences. Natural state is exemplary to region and vicinity. Perceived as very harmonious.	Landscape has few visible modifications, but they do not greatly detract from available views. Natural state is of higher quality than natural environments that are more common to region and vicinity. Perceived as harmonious.	Natural landscape has visible natural and human modifications. Natural state is common to region and vicinity. Perceived as fairly harmonious with some slight distractions.	Landscape has notable visible modifications that detract from available views. Natural state is of lesser quality than natural environments that are more common to region and vicinity. Perceived as disharmonious.	Very disrupted natural landscape. Natural state may be perceived as an eyesore. Perceived as very discordant.	Natural landscape is in disarray and severely degraded.
Cultural Order	Cultural landscape is exceptional and can be perceived as having exceptional design cohesion recognized at a global level. Land uses may blend seamlessly but may also be visually distinct in that the cultural landscape inspires awe.	Cultural landscape is exemplary and can be perceived as having exemplary design cohesion compared to region and vicinity. Land uses blend seamlessly. Perceived as very orderly.	Cultural landscape is typical of the region and vicinity. Land uses blend well. Can be perceived as having superior design cohesion to ordinary or familiar cultural environment.	Cultural landscape contains orderly and familiar design elements typical of the region and vicinity. Land uses may be slightly disjointed. Can be perceived as an ordinary or familiar cultural environment.	Cultural landscape contains some unifying elements but generally lacks design cohesion. Perceived as containing highly disjointed land uses.	Cultural landscape lacks design cohesion and sense of place. May be perceived as blight.	Cultural landscape is in disarray and severely degraded.
Project Site Coherence	Project site blends with natural and cultural landscape to the degree that it cannot be noticed or can be perceived as providing an exceptional contribution to surrounding visual environments.	Project site is a part of the natural and cultural landscape and can be perceived as a beneficial, contributing visual element to surrounding environments.	Project site responds well to the natural and cultural landscape and can be perceived as being very compatible with surrounding environments.	Project site responds to the natural and cultural landscape in an adequate manner. Would require minor to moderate improvements for better compatibility with surrounding environments. Perceived as being common to the setting with some slight distractions.	Project site does not respond to the natural or cultural landscape and can be perceived as disjunctive. Would require moderate to substantial redesign to rectify compatibility with surrounding environments. Perceived as incoherent.	Project site substantially degrades the natural or cultural landscape. Would require substantial to major redesign or relocation to rectify compatibility with surrounding environments. Perceived as very incoherent.	Project site is in disarray and severely degrades the natural or cultural landscape. Would require major redesign or relocation to rectify compatibility with surrounding environments.
Visual Quality [a]	*Natural Harmony Rating + Cultural Order Rating + Project Site Coherence Rating* 3						

[a] The combined evaluation of visual quality and memorability of natural harmony, cultural order, and project coherence. Translate the numeric calculation to the descriptive rating.

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Light and Glare Ratings

Natural and artificial light, atmospheric conditions, regional weather patterns, vegetation, terrain, water features, built structures, materials, and surface texture and color within the natural, cultural, and project environments all contribute to light and glare. While light and glare are a part of the natural, cultural, and project environments, changes in light and glare are often assessed independently and in a qualitative manner that compares existing to proposed changes in *levels* of light and glare. These assessments also include evaluating changes to shade and shadowing that can, in turn, affect levels of light and glare.

Within the AVE, light and glare levels are assessed by evaluating existing and resultant light and glare levels associated with a project feature and the surrounding project vicinity. This helps to determine the changes in light and glare levels, specifically, at a project site. This also helps to determine if, for example, vegetation removal or light fixture installation at a project feature would result in an increase in light and glare levels on adjacent properties in the project vicinity, or, perhaps, if built structures or landscaping would introduce shade or filter project lighting and result in a decrease in light and glare levels on adjacent properties in the project vicinity. Rating light and glare levels in this manner helps to frame the impact discussion in this Draft EIR and aids in determining how the overall light and glare levels are changed within the AVE and the source and location of such changes. The levels of daytime and nighttime light and glare are rated as shown in Figure 18-9.

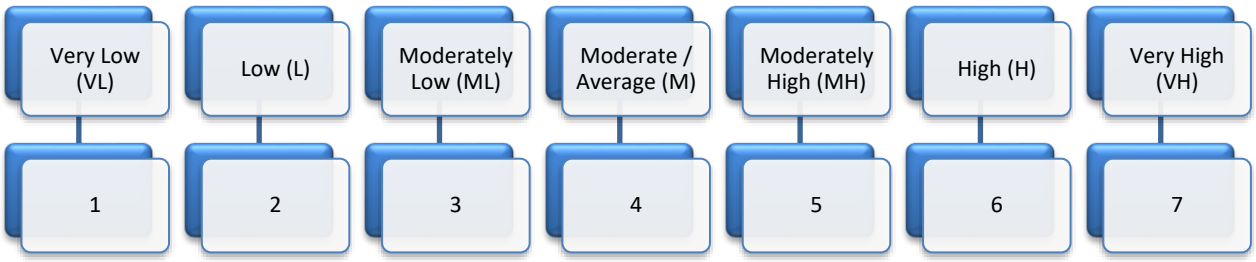


Figure 18-9. Daytime and Nighttime Light and Glare Level Ratings

While the visual resource rating is a measurement of *quality*, the light and glare ratings are a measurement of *intensity* to assess degree of change and are not intended to imply judgment of good vs. bad.

In general, a project's analysis would rate existing light and glare levels for both daytime and nighttime conditions. However, proposed light and glare levels may not need to be rated when no changes are proposed that would affect either daytime or nighttime conditions. This would occur, for example, when existing nighttime lighting would not be modified, and no new lighting would be introduced as a result of a proposed project. Therefore, there would be no change between the existing and proposed conditions. In addition, the level of light and the level of glare can be rated together or independently of one another, depending on project circumstances. Independent ratings for light and glare levels may benefit more complex projects because using independent ratings would make the impact discussion and assessment easier to frame and evaluate.

Unlike the visual resource ratings described under *Visual Resource Ratings*, the ratings for light and glare levels are not averaged together because doing so could skew light and glare impacts, as

illustrated in Table 18-6. For Table 18-6, the existing condition of the project site is undeveloped, evergreen, forested lands and the project vicinity is forested in the same manner. Therefore, the existing conditions for both the project site and project vicinity would result in a very low light and glare rating. In this example, the project is a multi-lane freeway that would be well-lit and have a moderately high light and glare rating. Light from the project would increase the amount of light and glare at the project site and would result in light spill onto the adjacent forest in the project vicinity. However, the tall evergreen trees would limit the amount of spill. As shown in the *Average Level of Increase* row in Table 18-6, averaging the ratings of the project site and project vicinity provides a generalized level of increase for the whole AVE but does not account for the higher levels of increase that would be experienced at the project site and elevates the level of increase affecting the project vicinity. In this example, the analysis would reasonably conclude that light and glare would be increased at the project site, but the tall evergreen trees limit light spill to a small area outside of the right-of-way.

Table 18-6. Changes to Nighttime Light and Glare—Evergreen Forest

Light and Glare Rating	Proposed	Existing	Additive Level of Increase	Notes
Project site	5 (moderately high)	1 (very low)	5-1 = 4 levels of increase at the project site	Recommended Calculation Method
Project vicinity	2 (low)	1 (very low)	2-1 = 1 levels of increase within the project vicinity	Recommended Calculation Method
Averaged level of increase	(5+2)/2 = 3.5	(1+1)/2 = 1	3-1 = 2 levels of increase within the AVE	Discouraged Calculation Method

Table 18-7 provides a general guide to assessing and rating *daytime* light and glare levels. Table 18-8 provides a general guide to assessing and rating *nighttime* light and glare levels. As shown in these tables, project site and project vicinity light and glare levels are evaluated using the same parameters. Table 18-8 focuses primarily on artificial lighting levels.

Table 18-7. Daytime Light and Glare Levels [a]

	Daytime Light and Glare						
Location	Very Low (1)	Low (2)	Moderately Low (3)	Moderate (4)	Moderately High (5)	High (6)	Very High (7)
Project Vicinity and Project Site [b]	**Natural Environment:** Very densely vegetated and heavy shading or shadowing that may result from vegetation, landforms, or natural materials that create an enclosed effect. May be typically overcast, dull, or rainy weather conditions. May be perceived as dark and muted. Details may be hard to see due to heavy shade and shadowing combined with low lighting levels and darker colored natural features. Smaller waterbodies may be present. **Cultural Environment:** Landscape has barely perceptible or no cultural elements that contribute to daytime light and glare. This may be typical of natural areas that have very limited human influence.	**Natural Environment:** Densely vegetated and moderate to heavy shading or shadowing that may result from vegetation, landforms, or natural materials that create a canopy effect. Understories and ground planes may be dappled with sunlight in sunny conditions or understories can be seen as grayish, foggy, or muted in overcast and rainy conditions. Details may be slightly hard to see due to heavy shade and shadowing combined with low lighting levels and darker colored natural features. Smaller waterbodies may be present. **Cultural Environment:** Landscape has very few cultural elements that contribute to daytime light and glare. This may be typical of natural areas or very low density forested or rural areas.	**Natural Environment:** Moderate to dense vegetative cover with typically bright, sunny weather conditions so that vegetation's shade and shadowing helps filter sunlight, offsetting the effects of light and glare. Smaller to medium-sized waterbodies may be present. Or, little vegetation in a typically overcast, dull, or rainy environment where lack of sunshine offsets effects of little vegetative cover. Smaller to large sized waterbodies may be present. **Cultural Environment:** Landscape has few cultural elements that contribute to daytime light and glare. This may be typical of areas with low density development, such as in rural areas.	**Natural Environment:** Moderate mix of vegetation and open spaces that provides a balance between light and glare in a range from dull to bright environments. Smaller to medium-sized waterbodies may be present. **Cultural Environment:** Landscape is moderately developed with cultural elements that contribute to daytime light and glare. This may be typical of areas with higher density rural development or lower to medium density suburban development.	**Natural Environment:** More open mix of vegetation and open spaces that does not quite offset or balance the effects of light and glare in a range from dull to bright environments. Medium to larger waterbodies may be present. **Cultural Environment:** Landscape is quite developed with suburban or urban development that contribute to daytime light and glare. This may be typical of highly suburbanized areas; lower density urban areas; or business, commercial, and industrial areas that have a higher ratio of impervious paving and build structures.	**Natural Environment:** Little vegetative or landform cover with typically bright, sunny weather conditions and large bodies of water or lightly colored expanses of natural surfaces (e.g., snow cover, desert sands) other naturally reflective surfaces tend to be present. May be perceived as glaringly bright and cause visual discomfort. Details may be hard to see without protective eyewear. **Cultural Environment:** Landscape tends to be highly developed with urban uses with many reflective surfaces such as high-rise buildings with many windows.	**Natural Environment:** No vegetative or landform cover with typically bright, sunny weather conditions and large bodies of water or lightly colored expanses of natural surfaces (e.g., snow cover, desert sands) other naturally reflective surfaces tend to be present. May be perceived as glaringly bright and cause visual discomfort. Details may be hard to see without protective eyewear. **Cultural Environment:** Landscape tends to be very highly developed urban environments with a substantial number of reflective surfaces such as glass-faced high-rise buildings. In such instances, levels of daytime light and glare may be highly dependent on time of day (i.e., sun angle) and viewer position in the landscape (i.e., ground-level views in a city may be shaded where views from different building levels are not).
Light and Glare (L&G) Level Increase	Proposed Project Vicinity L&G Levels – Existing Project Vicinity L&G Levels = Change in L&G Levels [c]	AND	Proposed Project Site L&G Levels – Existing Project Site L&G Levels = Change in L&G Levels [c]				

[a] The level of light and the level of glare can be rated together or independently of one another, depending on the project's needs (refer to *Light and Glare Ratings*).

[b] Project site and project vicinity light and glare levels are evaluated using the same parameters.

[c] A positive number means an increase in light and glare levels. A negative number means a decrease in light and glare levels. Translate the numeric calculation to the descriptive light and glare rating.

Table 18-8. Nighttime Light and Glare Levels [a]

Visual Resource	Nighttime Light and Glare						
	Very Low (1)	Low (2)	Moderately Low (3)	Moderate (4)	Moderately High (5)	High (6)	Very High (7)
Project Vicinity and Project Site [b]	**Natural Environment:** High cloud cover or haze caused by natural conditions or atmospheric pollution. Tends to have extensive overhead cover present. Conditions allow for very low levels of nighttime lighting from the stars and moon. Colors and details cannot be seen at night. **Cultural Environment:** Landscape has barely perceptible or no cultural elements that contribute to nighttime light and glare because of very limited human influence. No traditional interior or exterior lighting is present. Colors and details cannot be seen at night without artificial lighting (e.g., from vehicle headlights).	**Natural Environment:** Moderate cloud cover or haze caused by natural conditions or atmospheric pollution. Tends to have overhead cover present. Conditions allow for low levels of nighttime lighting from the stars and moon. Colors and details are very hard to see at night. **Cultural Environment:** Landscape has very few cultural elements that contribute to nighttime light and glare. This may be typical of natural areas or very low density forested or rural areas. Very low levels of interior and exterior lighting are present. Colors and details are very hard to see at night without artificial lighting (e.g., from vehicle headlights).	**Natural Environment:** Slight cloud cover and haze, natural or otherwise, occurs on a regular basis. Moderate to little overhead cover. Conditions allow for some nighttime lighting from the stars and moon. Colors and details begin to become more visible at night. **Cultural Environment:** Very low levels of exterior lighting in developed areas or landscape has low density development, such as in rural areas, with limited amounts of interior and exterior nighttime lighting from buildings, vehicles, streets, etc. that provide low levels of lighting to the area and reflects off of the built environment to a small degree. Colors and details begin to become more visible at night with artificial lighting (e.g., from vehicle headlights).	**Natural Environment:** Cloud cover and haze, natural or otherwise, varies. Moderate to little overhead cover. Conditions allow for moderate levels of nighttime lighting from the stars and moon. Colors and details can be seen night to varying degrees of clarity based on level of detail and brightness of colors. **Cultural Environment:** Moderate amounts of interior and exterior nighttime lighting, such as in higher density rural development or lower to medium density development suburban areas, from buildings vehicles, streets, etc. that provide fairly well-lit conditions that reflects off of the built environment to a small degree. Traditional outdoor lighting may be intermixed independent sources of higher intensity lighting that causes small patches of "daytime" lighting conditions at night. Visual discomfort in close proximity to pockets of highly lit areas. Colors and details can be seen at night to varying degrees of clarity based on level of detail and brightness of colors. Colors and details are enhanced with the addition of artificial lighting (e.g., from vehicle headlights). Higher intensity lighting may be present at some locations.	**Natural Environment:** Cloud cover and haze, natural or otherwise, is rare. Sparse overhead cover. Conditions allow for nighttime lighting from the stars and moon. Colors and details are fairly visible at night. **Cultural Environment:** Substantial amount interior and exterior nighttime lighting, such as in suburban or urban development, from buildings, vehicles, streets, etc. to brighten the area and reflects off of the built environment. Higher intensity lighting begins to outweigh traditional outdoor lighting and causes small islands "daytime" lighting conditions at night. Nighttime lighting may cause visual discomfort across portions of the area. Lighting may lack proper shielding. Colors and details are fairly visible at night.	**Natural Environment:** Typically, no cloud cover or haze caused by natural conditions or atmospheric pollution. Sparse overhead cover. Tends to have large waterbodies or extensive snow cover present. Conditions allow for high levels of nighttime lighting from the stars and moon. Colors and details are easy to see at night. **Cultural Environment:** Landscape tends to be highly developed with urban uses with a substantial amount interior and exterior nighttime lighting from buildings, vehicles, streets, billboard, stadiums, etc. to illuminate the area and reflect off of the built environment. Lighting of greater intensity is highly used and causes larger islands of "daytime" lighting conditions at night. Nighttime lighting causes visual discomfort across much of the area. Lighting may lack proper shielding. Colors and details are very easy to see at night.	**Natural Environment:** Typically, no cloud cover or haze caused by natural conditions or atmospheric pollution. No overhead cover. Tends to have large waterbodies or extensive snow cover present. Conditions allow for high levels of nighttime lighting from the stars and moon. Colors and details are very easy to see at night. **Cultural Environment:** Landscape tends to be very highly developed urban environments with a great deal of interior and exterior nighttime lighting from buildings, vehicles, streets, billboard, stadiums, etc. to illuminate the area and reflect off of the built environment. Higher intensity lighting is prominent and causes expanses of "daytime" lighting conditions at night. Nighttime lighting causes visual discomfort across a large area. Lighting may lack proper shielding. Colors and details are very similar to daytime conditions.
Light and Glare (L&G) Level Increase	Proposed Project Vicinity L&G Levels – Existing Project Vicinity L&G Levels = Change in L&G Levels [c]			AND	Proposed Project Site L&G Levels – Existing Project Site L&G Levels = Change in L&G Levels [c]		

[a] The level of light and the level of glare can be rated together or independently of one another, depending on the project's needs (refer to *Light and Glare Ratings*). Refer to Table 18-7 for descriptions to help determine the presence of features that may affect nighttime glare.

[b] Project site and project vicinity light and glare levels are evaluated using the same parameters.

[c] A positive number means an increase in light and glare levels. A negative number means a decrease in light and glare levels. Translate the numeric calculation to the descriptive light and glare rating.

In Table 18-9, the existing conditions of the project site and project vicinity are both undeveloped, oak woodlands that result in a low light and glare rating. The Table 18-9 project is the same as the Table 18-6 project, and light from the project site would spill onto the adjacent oak woodlands in the project vicinity. Like Table 18-6, averaging the ratings of the project site and project vicinity in Table 18-9 also provides a generalized level of increase for the whole AVE but does not account for the higher levels of increase that would be experienced at the project site, and it elevates the level of increase affecting the project vicinity. In this example, the visual resource specialist would explain how the more open oak woodlands are naturally brighter at night but how sparser vegetation densities in the project vicinity would not block as much proposed light that would trespass from the project site. This would allow project lighting to spill a greater distance away from the project site boundaries and farther into the project vicinity.

Table 18-9. Changes to Nighttime Light and Glare—Oak Woodlands

Light and Glare Rating	Proposed	Existing	Additive Level of Increase	Notes
Project site	5 (moderately high)	2 (low)	5-2 = 3 levels of increase at the project site	Recommended Calculation Method
Project vicinity	4 (moderate)	2 (low)	4-2 = 2 level of increase within the project vicinity	Recommended Calculation Method
Averaged level of increase	(5+4)/2 = 4.5	(2+2)/2 = 2	4.5-2 = 2.5 levels of increase within the AVE	Discouraged Calculation Method

In these examples, the level of increase provides information on describing the change in light and glare levels. However, light and glare impacts must be factored with viewer response and the type of change that would result from the project. For example, a roadway project that would cut through evergreen forests or oak woodlands, as proposed in Tables 18-6 and 18-9, may not have many viewers that would be directly affected. However, these natural areas could be of local or regional importance and introducing sources of nighttime lighting would not be viewed as favorable. Conversely, an increase in light and glare may not be considered to be negative, depending on the project. For example, light and glare could increase within an evergreen forest or oak woodland if invasive vegetation would be removed, allowing natural recruitment of native plant species, which is likely to be viewed as favorable. Therefore, the analysis must determine the change in light and glare levels; evaluate affected viewers, viewer sensitivity, and viewer preferences; assess the proposed project actions; and determine if changes in light and glare are negligible, positive, or negative and if any mitigation is needed to reduce impacts.

In addition, when evaluating light and glare levels, atypical conditions may exist that require deviation from the guidance provided in Tables 18-7 and 18-8. For example, a suburban area with neutral-colored buildings that is moderately developed, with tree cover present, may be considered to have moderate levels of light and glare. However, if that same area was to be developed with all white buildings (e.g., due to historical preservation or local design standards) then the level of glare might be considered to be moderately high because the white building surfaces are more reflective and create a higher degree of perceived glare.

18.3.3 Analyzing Visual Impacts

18.3.3.1 Assess Visual Compatibility

A project environment can be affected by the visual character of grading, constructed elements, vegetative cover, infrastructure, and other ancillary visual elements associated with a project that interact to form a composition. These elements are described in more detail in Table 18-10. These changes affect the natural and cultural environments in the AVE, and viewers evaluate project features to determine if the composition of the landscape during and after project construction is compatible or incompatible with the existing visual landscape. This viewer response determines how the existing landscape composition and vividness would be affected by a proposed project.

Table 18-10. Visual Character Element of a Project Environment

Feature	Description of Element	Visual Attributes
Grading	Alteration of the existing landform, or the grading, required to accommodate the project.	The visual character of the physical forms generated by grading, such as grading of slopes, the need for cuts and fills, and the presence of rock cuts and retaining walls, all affect visual quality. The surface appearance of rock cuts and retaining walls also affects the visual character of the project area.
Constructed Elements	Buildings, infrastructure, and structures resulting from project implementation. Buildings can include homes, businesses, institutions, and so on. Infrastructure can include new roads, parking lots, sidewalks, trails, utility lines, and telecommunication towers. Structures can include bridges, viaducts, culverts, retaining walls, noise walls, and other large-scale visual elements.	The visual character of constructed elements is described in terms of their form, scale, massing, and material compared to the existing built and natural environment. The setting and orientation of the structures, interplay between light and shadow, and artistic attributes like color, pattern, and texture also affect visual character. Whether a feature obstructs or generates views is also important.
Vegetative Cover	Vegetation associated with the project, such as hydroseeding for erosion control, plantings for habitat enhancement or restoration, and landscaping for aesthetics and shade. Also, vegetative cover may be removed by project activities.	The visual character of the project's vegetative cover; its density, distribution, and species composition compared to the existing natural environment. Attributes of the plants (such as seasonal color) and the ecological setting are also important.
Ancillary Visual Elements	May include signage, mailboxes, benches, fencing and gates, bollards, plant containers, or other features.	Such features contribute to the project's appearance as components of the project's visual character, and existing and proposed elements are described in relation to each other.

Source: Federal Highway Administration 2015:5-1–5-4.

18.3.3.2 Evaluate Viewer Response

Viewers make up the population affected by a project; they are the people whose views of the landscape may be altered by a proposed project, either because the landscape itself has changed or their perception of the landscape has changed. Viewers experience the visual landscape and respond to the natural and cultural environment and the design of built features in those environments.

As described in Section 18.1.2, *Concepts and Terminology*, there are two major types of viewer groups for projects*: site neighbors* and *site users*. Each viewer group has their own particular level of *viewer exposure* and *viewer sensitivity*, as defined in Section 18.1.2, resulting in distinct and predictable visual concerns for each group that help to predict their responses to visual changes.

Table 18-11 describes the five levels used for determining viewer response, which is in part affected by distance zones. Evaluating visual quality and viewer response must also be based on a regional frame of reference (U.S. Soil Conservation Service 1978:3). The same visual resource appearing in different geographic areas could have a different degree of visual quality and associated viewer sensitivity in each setting. For example, a small hill may be a significant visual element on a flat landscape but have little significance in mountainous terrain.

Table 18-11. Viewer Response Ratings

Response Ratings	Response Descriptions
Very low (VL)	A very small fraction of total viewers [a] with instantaneous (e.g., highway speeds) views toward project feature. Views of the project feature tend to be in the middleground or background or are highly obscured in the foreground. Negligible interest in the visual landscape.
Low (L)	Very few of total viewers [a] with instantaneous (e.g., highway speeds) views toward project feature. Views of the project feature tend to be in the middleground or background. Little interest in the visual landscape.
Moderately low (ML)	Few of total viewers [a] with short (e.g., local roadway speeds) views toward project feature in the middleground or background. May include fewer viewers with instantaneous views of the project in the foreground. Limited interest in the visual landscape.
Moderate (M)	A number of the total viewers [a] with intermittent (e.g., visitors at parks) views toward project feature in the foreground. May include fewer viewers with shorter viewing times of the project in the foreground. May also include viewers with extended (e.g., places of businesses) or permanent (e.g., residents) viewing times of the project in the distant middleground to closer background toward areas with high community interest. General interest in the visual landscape.
Moderately high (MH)	Many of total viewers [a] with extended viewing times (e.g., places of businesses) toward project feature in the foreground or middleground. May include fewer viewers with shorter viewing times toward areas with high community interest in the foreground or middleground. May also include fewer viewers with shorter viewing times toward sensitive visual resource(s) in the distant middleground to closer background. Invested interest in the visual landscape.
High (H)	Most or all of total viewers [a] with permanent (e.g., residents) views toward project feature in the foreground or middleground. May include fewer viewers with shorter viewing times toward sensitive visual resource(s) in the foreground or middleground. Highly invested interest in the visual landscape.
Very high (VH)	May include a variety of viewers with permanent (e.g., residents) or intermittent (e.g., recreationists/tourists) views toward sensitive visual resource(s) of local, national, or global interest. Extremely high invested interest in the visual landscape, due to public awareness of the resource.

[a] Relative to total number of viewers of the project in the AVE.

18.3.3.3 Determine Visual Impact Values

Ratings are used to help determine the level of impact for changes to the existing visual character and quality (Impact AES-1) and to scenic highways (Impact AES-2) within the AVE. This rating system has been developed independently of, but using the methods and protocol contained in, FHWA's *Guidelines for the Visual Impact Assessment of Highway Projects* (Federal Highway Administration 2015). The rating system uses the following steps.

1. Determine the existing and proposed *visual quality* for visual resources using Table 18-5.
2. Assess the visual resource impact.
    a. Determine the compatibility of the project's changes.
    b. Determine *viewer response rating* for near-term improvements using Table 18-11.
    c. Determine the *degree of impact* using Table 18-12.

In addition, ratings are used to help determine the level of impact resulting from changes to light and glare (Impact AES-3) using the following steps.

1. Determine the light and glare levels for existing conditions.
    a. Determine the *daytime light and glare level* for existing conditions using Table 18-7.
    b. Determine the *nighttime light and glare level* for existing conditions using Table 18-8.
2. Determine the light and glare levels for project conditions.
    a. Determine the *daytime light and glare level* for project conditions using Table 18-7.
    b. Determine the *nighttime light and glare level* for project conditions using Table 18-8.
3. Determine if there is a change in the daytime light and glare rating and nighttime light and glare rating.
4. Evaluate the *viewer response rating* for near-term improvements using Table 18-11, as determined for Impacts AES-1 and AES-2, and factor if the change in light and glare levels from project actions are positive or negative.
5. Determine the *level of light and glare impact* using Table 18-13.

Visual Resource Impacts

Viewers have an inherent understanding of visual quality and what constitutes natural harmony, cultural order, and project cohesion. The degree to which a project meets these preferred concepts determines the level of change in visual quality. To assess the degree and level of impacts on visual resources, a visual quality rating is applied to both existing and proposed project conditions. The degree of change from the existing (without project) visual quality to the visual quality with the project is used to determine the level, or intensity, of visual impacts. Impacts are described in this Draft EIR as *no impact*, *less than significant*, and *significant.* These impact intensities are defined as follows and are summarized in Table 18-12.

- *No impact* on aesthetic and visual resources would result when the project features do not modify the existing visual quality. There would be no construction- or operation-related changes upon a location. In addition, there would be *no impact* when visual quality is improved through the enhancement of visual resources or when visual experiences are improved through the

creation of new or improved views of resources. Beneficial impacts increase the visual quality and viewers are not affected by or see the benefits of the change (i.e., proposed visual quality > existing visual quality).

- *Less-than-significant* impacts related to aesthetic and visual resources are direct or indirect impacts that would reflect little change to the visual environment and visual quality, largely retaining the existing landscape composition and vividness or modifications are in keeping with the existing landscape composition and vividness and the visual quality stays essentially the same or the visual quality is not affected to the degree that the visual quality is substantially degraded and viewers groups are not negatively affected by the changes (i.e., proposed visual quality = existing visual quality).
- *Significant* impacts would result when visual quality is degraded through general negative changes to visual resources or by blocking or altering views in a negative manner, decreasing the visual quality and negatively affecting viewer groups (i.e., proposed visual quality < existing visual quality). Decreasing visual quality by one value rating is an impact of moderate intensity, whereas decreasing visual quality by more than one value constitutes a more severe impact.

Table 18-12. Level of Visual Resource Impact—CEQA

Impact Intensity Visual Quality Effect	Visual Quality Rating Change
No Impact	
No project features	Not applicable
Proposed Visual Quality > Existing Visual Quality	Visual quality is increased by one or more value ratings (i.e., a beneficial change)
Less than Significant	
Proposed Visual Quality = Existing Visual Quality	Visual quality remains the same
Significant (Moderate)	
Proposed Visual Quality < Existing Visual Quality	Visual quality is decreased by one value rating
Significant (More Severe)	
Proposed Visual Quality < Existing Visual Quality	Visual quality is decreased by more than one value rating

Light and Glare Impacts

Light and glare impacts are determined by assessing the change in light and glare levels; evaluating affected viewers, viewer sensitivity, and viewer preferences; factoring in the proposed project changes; and determining if changes in light and glare are negligible, positive, or negative and if any mitigation is needed to reduce impacts. Light and glare impacts are described in this Draft EIR as *no impact*, *less than significant*, and *significant.* These impact intensities are defined as follows and are summarized in Table 18-13.

- *No impact* on light and glare would result when the project features do not modify the existing levels of light and glare because there would be no construction- or operation-related changes upon a location. In addition, there would be *no impact* when changes in light and glare levels result in improved light and glare conditions and result in a positive viewer response by either decreasing light and glare in areas with too much light and glare (proposed light and glare rating

< existing light and glare rating) or increasing light and glare to restore natural areas or brighten unnaturally dark conditions (proposed light and glare rating > existing light and glare rating).

- *Less-than-significant* impacts would result when there is little change, and light and glare levels remain essentially the same or would not change enough to result in a notable change in light and glare levels, resulting in a neutral viewer response (proposed light and glare rating = existing light and glare rating).
- *Significant* impacts would result when changes in light and glare levels result in degraded light and glare conditions and result in a negative viewer response by either decreasing light and glare in areas that are perceived as already having too little or sufficient lighting (proposed light and glare rating < existing light and glare rating) or increasing light and glare in areas that are perceived as already having sufficient or too much light or glare (proposed light and glare rating > existing light and glare rating). Substantially increasing or decreasing light and glare levels would heighten viewer response and result in more severe impacts.

Table 18-13. Level of Light and Glare Impact—CEQA

Impact Intensity Light and Glare Rating (LGR)—Effect	Light and Glare Rating (LGR)—Rating Change
No Impact	
No project features	Not applicable
Proposed LGR < Existing LGR	LGR is decreased in areas with too much light and glare (i.e., a beneficial change)
Proposed LGR > Existing LGR	LGR is increased, but project is restoring natural areas or unnaturally dark conditions (i.e., a beneficial change)
Less than Significant	
Proposed LGR = Existing LGR	LGR remains the same
Significant (Moderate)	
Proposed LGR < Existing LGR	LGR is decreased in areas that are perceived as already having too little or enough light or glare
Proposed LGR > Existing LGR	LGR is increased in areas that are perceived as already having enough or too much light or glare
Significant (More Severe)	
Proposed LGR < Existing LGR	LGR is substantially decreased in areas that are perceived as already having too little or enough light or glare
Proposed LGR > Existing LGR	LGR is substantially increased in areas that are perceived as already having enough or too much light or glare

18.3.4 Thresholds of Significance

The proposed project and alternatives would be considered to result in a significant impact on aesthetics and visual quality if it would result in any of the conditions in the following list. The significance thresholds have been reorganized to facilitate a discussion that is more streamlined and avoids redundancies in the analysis.

- Substantially degrade the existing visual character or quality of public views of the site and its surroundings in a nonurbanized area.

- Conflict with applicable zoning and other regulations governing scenic quality in an urbanized area.
- Substantially damage scenic resources including, but not limited to, trees, rock outcropping, and historic buildings visible from a State Scenic Highway.
- Have substantial adverse impacts on scenic vistas.
- Create new sources of substantial light or glare that would adversely affect daytime or nighttime views in the study area and AVEs.

It is important to distinguish that impacts to state scenic highways, as defined by the State Streets and Highways Code Section 263 and the California Scenic Highway Program, and scenic vistas result when there are changes to the existing visual character and quality of views associated with these resources. The impact analysis in Section 18.3.3, *Analyzing Visual Impacts*, discloses impacts on state scenic highways (Impact AES-2: *Substantially Damage Scenic Resources including, but Not Limited to, Trees, Rock Outcropping, and Historic Buildings Visible from a State Scenic Highway*) and scenic vistas (Impact AES-3: *Have Substantial Significant Impacts on Scenic Vistas*), separate from visual character and quality impacts (Impact AES-1: *Substantially Degrade the Existing Visual Character or Quality of Public Views [from Publicly Accessible Vantage Points] of the Construction Sites and Visible Permanent Facilities and Their Surroundings in Nonurbanized Areas*) to clearly identify how these resources would be affected and to address CEQA Guidelines Appendix G topics. See Section 18.1.2, *Concepts and Terminology*, for the definition of terms used in this analysis.

18.3.4.1 Evaluation of Mitigation Impacts

CEQA also requires an evaluation of potential impacts caused by the implementation of mitigation measures. Following the CEQA conclusion for each impact, the chapter analyzes potential impacts associated with implementing both the Compensatory Mitigation Plan (CMP) and the other mitigation measures required to address with potential impacts caused by the project. Mitigation impacts are considered in combination with project impacts in determining the overall significance of the project. Additional information regarding the analysis of mitigation measure impacts is provided in Chapter 4, *Framework for the Environmental Analysis*.

18.3.5 Impacts 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. No new structures are proposed upstream of the Delta or north of the north Delta diversion in the SWP and CVP export service areas under any of the alternatives; therefore, these areas are not a part of this analysis.

Impacts for aesthetic and visual resources include impacts associated with constructing project features for a specified construction period and permanent visual effects of facilities once they are built. As described in Section 18.3.1, *Methods for Analysis*, the evaluation of visual effects considers areas where proposed Delta Conveyance facilities would be visually dominant features. (The concept of visual dominance is described in Section 18.1.2, *Concepts and Terminology*.) Acreages and areas of the proposed features and facilities described in the impact analysis are detailed in Chapter 3, *Description of the Proposed Project and Alternatives*, and Chapter 14, *Land Use*. Delta Conveyance Project features that would not result in direct or indirect physical changes to the visual environment such as underground portions of pipelines and conveyance tunnels and underground

portions of supervisory control and data acquisition (SCADA) lines and transmission lines are not addressed as permanent visual impacts but are evaluated if constructing these facilities would involve a temporary surface disturbance (i.e., from a construction trench) in areas outside of the major conveyance facility construction footprints. The range of project features addressed for the project alternatives that would result in aboveground physical changes to the visual environment are listed below.

- Intake structures (all alternatives).
- Southern Complex on Byron Tract, including South Delta Pumping Plant and Southern Forebay (Alternatives 1, 2a, 2b, 2c, 3, 4a, 4b, and 4c).
- Southern Complex west of Byron Highway (Alternatives 1, 2a, 2b, 2c, 3, 4a, 4b, and 4c).
- Bethany Complex, including Bethany Reservoir Aqueduct with access roads, Bethany Reservoir Pumping Plant and Surge Basin (Alternative 5).
- Bethany Reservoir Discharge Structure (Alternative 5).
- RTM areas (all alternatives).
- Park-and-ride lot sites (all alternatives).
- Shaft sites (all alternatives).
- Temporary and permanent access road modifications, interchanges, road overpasses, bridges, and rail lines (all alternatives).
- Aboveground transmission and SCADA lines (all alternatives).
- Concrete batch plants and fuel stations (all alternatives).

Impacts that would result in physical changes to the visual environment because of temporary alternative features that would be visible in the landscape for extended periods of time and permanent alternative features are discussed below in Impacts AES-1 through AES-4. When certain features listed above would not create a notable visual impact at a project site, those features are not discussed in the analysis of that site. For instance, improvements for access roads at a number of project sites would not be considered to figure prominently in the overall visual change or impact at a given site, except for overpasses or bridges. Therefore, the effects of access road improvements are not discussed.

Operational impacts for aesthetic and visual resources include impacts associated with daily operations and maintenance of facilities that would be visible to the general public and occur after the project is built and operating. Operations and maintenance impacts would include, but are not limited to, painting facilities, nighttime lighting glare, maintaining vegetation, water surface reflection and glare and fluctuating water levels in rivers and reservoirs.

Operating project alternatives would result in minimal variations in surface water flows and reservoir storage upstream of the Delta and north Delta diversion, as well as south of the Delta in SWP and CVP export service areas, that have the potential to result in some changes to the visual setting in these areas. As described under Section 18.1.1, *Study Area*, Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, New Melones Lake, and San Luis Reservoir would experience minimal variations in the storage and elevation patterns under project alternative conditions (refer to Chapter 3, Chapter 6, *Water Supply*, and Chapter 5, *Surface Water,* for detail on operations and surface water changes expected for the project alternatives). The project alternatives' best

management practices and environmental commitments described in Appendix 3B, *Environmental Commitments and Best Management Practices*, are incorporated into the analysis of potential construction impacts on visual resources. As noted in Chapter 6, the project would have minimal effects on end-of-month storage at these reservoirs. Water storage modeling indicated that the amount of storage, which would drive fluctuations in water levels, would remain unchanged or vary up to 2.0% in critical water years. This would translate to minimal visual impact when compared to the current operational fluctuations. Therefore, given the minimal variations attributable to the project in typical water level fluctuations experienced at these reservoirs, project effects on these facilities are not discussed in the following impact analyses.

The project alternatives would be located primarily within the boundaries of nonurbanized areas, with the exception of the Charter Way Park-and-Ride lot. Therefore, the proposed project and its alternatives would not conflict with applicable zoning and other regulations governing scenic quality in an urbanized area and there would be no impact. Discussion of this topic is, therefore, excluded from further discussion in the analysis below.

18.3.5.1 No Project Alternative

As described in Chapter 3, *Description of the Proposed Project and Alternatives*, CEQA Guidelines Section 15126.6 directs that an EIR evaluate a specific alternative of "no project" along with its impact. The No Project Alternative in this Draft EIR represents the circumstances under which the project (or project alternative) does not proceed and considers predictable actions, such as projects, plans, and programs, that would be predicted to occur in the foreseeable future if the Delta Conveyance Project is not constructed and operated. This description of the environmental conditions under the No Project Alternative first considers how aesthetics and visual resources could change over time and then discusses how other predictable actions could affect aesthetics and visual resources.

Future Aesthetics and Visual Resource Conditions

For aesthetics and visual resources, future conditions are not anticipated to substantially change compared to existing conditions because policies addressing aesthetics and visual resources and conditions resulting from those policies are not expected to change if the project (or project alternative) does not proceed. However, indirect impacts on aesthetics and visual resources within the Delta may occur under the No Project Alternative as the result of changes in upstream hydrologic conditions, sea level rise, and continue seismic risk to Delta levees. In addition, immediate, and potentially long-term, changes in the area's visual quality and character could occur under the No Project Alternative because of seismic events, levee failure, and the inundation of Delta lands. Depending on the location, area, and value of the lands inundated, landowners may opt to not restore inundated lands, resulting in a permanent change in visual quality and character. Other contributors to the area's visual character, such as recreation facilities (e.g., marinas, boat launches, parks), rural residential, and agricultural support facilities could also be subject to disruption in the event of a levee failure and similar to agricultural lands may not be economically viable to be placed back in use if a severe inundation event were to occur.

Aesthetic and visual resource changes in the service area would be expected to continue at the current rate. While there is uncertainty regarding the extent of changes visual quality and character that might occur in any given region, there is a broad range of impacts that could potentially occur as a result of the availability and cost of water. The availability of water as a result of changes in

hydrology caused by climate change, either alone or in combination with of factors, could influence land uses and, in turn, the visual character within the SWP service area. As an example, reductions in the availability or increases in the cost of water supplies could result in temporary or permanent fallowing of cultivated agricultural land. Similarly, a change in the availability of water supplies in combination with other factors (e.g., cost of living, environmental conditions such as air quality, capacity of transportation infrastructure to meet demand) could result in a change in the demand for previously planned commercial and residential developments or redirecting growth within the region could affect the visual landscape of the Delta.

Predictable Actions by Others

Water agencies participating in the Delta Conveyance Project have been broken out into four regions: northern coastal, northern inland, southern coastal, and southern inland. Each region would likely pursue a specific suite of water supply projects. Water conservation programs aimed at water reduction would not result in changes to the visual landscape. In addition, water efficiency projects would include a wide variety of project types, such as flow measurement or automation in a local water delivery system, lining of canals, use of buried perforated pipes to water fields, and additional detection and repair of commercial and residential leaking pipes. These activities would occur within already developed areas, where there would be minimal and temporary visual resource impacts. Changes to land use from constructing and operating water supply projects have the greatest potential to affect visual resources and viewer groups. These projects are likely to include water recycling projects, groundwater recovery, seawater desalination, and groundwater management projects. Regardless of the region or the type of project, all of these projects have the potential to convert existing land uses to industrial-looking water supply facilities by locating the facilities on undeveloped sites or by redeveloping sites currently occupied by non-industrial development. Water recycling projects, groundwater recovery, seawater desalination, and groundwater management projects would all require grading and excavation at the project sites to construct foundations and buildings, trenching would occur for the installation of water delivery pipelines and utilities, aboveground utilities would be installed to power the facilities, roadways would be needed to provide site access, fencing would be needed for security purposes, and lighting would be needed for operations and security purposes. In addition to these features, groundwater management projects would also construct recharge basins, siphons, conveyance canals, and pump stations.

If new facilities are built in an industrial or developed area, the project would have less potential to result in significant visual impacts because there is a higher likelihood the facility would blend with the surrounding visual landscape and not negatively affect views or viewers. However, it is anticipated that many of these facilities would be located on sites or in areas that are undeveloped, such as along the coast or on agricultural lands. These changes could alter the existing visual character in the affected areas and could result in substantial effects on views and nearby viewer groups through the removal of vegetation, terrain changes, the introduction of large-scale, industrial-looking facilities and supporting infrastructure (i.e., roadways and utilities), and increases in light and glare. Projects constructed in coastal areas would have the potential to result in more substantial impacts because coastal areas have protections in place due to the scenic nature of views associated with coastal areas. In addition, federal, state, and local scenic byways are more likely to occur in coastal areas. However, projects in inland regions also have the potential to affect scenic state and local roadways. Scenic vistas could also be impacted by the projects, regardless of the

region. Further, all projects have the potential to result in increases in light and glare that could be significant.

Desalination projects would most likely be pursued in the northern and southern coastal regions. The southern coastal regions would likely require larger and more desalination projects than the northern coastal region to replace the water yield that otherwise would have been supplied by the project alternatives. Groundwater recovery (i.e., brackish water desalination) could occur across the northern inland, southern coastal, southern inland regions and in both coastal and inland areas, such as the San Joaquin Valley. The northern and southern coastal regions are also most likely to explore constructing groundwater management projects. Water recycling projects could be pursued in all four regions. The southern inland region would require the greatest number of water recycling projects that would result in substantial visual changes across a large urban and undeveloped landscape.

All project types across all regions would involve relatively typical construction techniques and would be required to conform with the requirements of CEQA and state and local regulations protecting aesthetic and visual resources. In addition, mitigation measures would be developed to protect these resources, such as requiring landscaping to screen facilities or replace removed vegetation, the use of aesthetic treatments to make buildings and structures blend with the landscape, or applying minimum lighting standards to reduce the impacts associated with nighttime lighting. Therefore, under No Project Alternative conditions, scattered effects on visual resources and changes in views would create more temporary and permanent aesthetic effects from public viewing areas. The overall visual character and quality in the vicinity of water supply facilities would change from public viewing areas and the overall regional visual landscapes could potentially be retained if more projects would be dispersed over a larger area.

18.3.5.2 Impacts of the Project Alternatives on Aesthetics and Visual Resources

Impact AES-1: Substantially Degrade the Existing Visual Character or Quality of Public Views (from Publicly Accessible Vantage Points) of the Construction Sites and Visible Permanent Facilities and Their Surroundings in Nonurbanized Areas

The tables in Appendix 18D, *Permanent Impacts after Construction Is Complete*, describe existing visual characteristics and related permanent impacts of the project on visual quality and character, and scenic roadways, as well as impacts from light and glare sources after construction is complete. It also identifies the overall viewer sensitivity level, the visual dominance of the features, and the project's overall impact from the standpoint of noticeability in the landscape from affected viewing locations (represented by cKOPs and KOPs) that would be affected by permanent features under all alternatives. Table 18-14, at the end of Impact AES-1, summarizes the project's overall impacts presented in this analysis and supported in greater detail by Appendix 18D.

The following is an evaluation of the project impacts on the existing visual character and quality during the construction phase, as well as permanent impacts once construction is completed and the project is operating. It is based on the construction process and schedule, as well as the description of operations and maintenance activities presented in Chapter 3, which are not repeated here. The evaluation centers on each of the project facilities and AVEs from north to south within the study area.

To provide a visual sense of how Mitigation Measure AES-1c: *Implement Best Management Practices to Implement Project Landscaping Plan* could affect post-construction views at the RKOPs, conceptual landscaping has been included in the post-construction views. This conceptual landscaping would comprise plant species native to the Delta and is shown at assumed maturity. The trees shown in the post-construction renderings are visually generic and not intended to represent a specific native species.

Intakes

All Alternatives

The Sacramento River channel, bank, and corridor would be affected by construction of up to three north Delta intake facilities (Intakes A, B, and C) between River Mile (RM) 42 (south of Freeport) and RM 37 (north of the town of Courtland) (Figure 3-2 and Engineering Concept Drawing Sheet STX-C-0005IT). All three intakes would be constructed under Alternatives 2a and 4a, while the remaining alternatives would involve Intakes B and C or Intake C alone. As a conservative approach to this evaluation, this impact analysis assumes all three intakes would be constructed. These intakes would be visible from portions of SR 160/River Road that is a Caltrans-designated Scenic Highway and a Sacramento County scenic route (see Impact AES-2: *Substantially Damage Scenic Resources including, but Not Limited to, Trees, Rock Outcropping, and Historic Buildings Visible from a State Scenic Highway*). The Sacramento River is also considered a scenic waterway corridor by Sacramento County in the vicinity of the proposed intake construction sites. Given the agrarian nature in this AVE, as well as the historic character of the surrounding Sacramento River communities, the visual quality is very high.

Affected viewer groups include residential viewers living in the AVE and roadway and recreational viewers traveling along SR 160 and the Sacramento River, as well as roadway travelers on County Highway (CH) E9 on the west bank of the Sacramento River. Views to the intake construction sites would be available from scattered rural residences located along CH E9 and SR 160 along both banks of the river and throughout the corridor between Intakes A, B, and C (KOPs 82, 85); some of these would be near or directly adjacent to construction activities. The towns of Clarksburg and Hood are near the intakes and have a higher concentration of residential viewers. Residents living in these areas would travel on CH E9 and SR 160 on a regular basis and have views of construction activities near their communities and completed intakes facilities. Recreation travelers (e.g., bicyclists, boaters) on local roadways and waterways and roadway travelers on local roadways would have direct views of intake construction and the finished facilities.

Construction of each of three intake structures and associated facilities would introduce work areas housing construction buildings and staging areas and considerable heavy equipment that would be moving and operating—excavators, graders, dozers, sheepsfoot rollers, dump trucks, and other construction and support vehicles—into rural, agricultural, and riverine viewsheds. No construction traffic would be allowed on SR 160 between SR 12 and Cosumnes River Boulevard, except in the vicinity of construction sites (including realignment of SR 160), which would greatly limit the amount of construction traffic seen from SR 160.

Intake construction at all intake sites would require that properties first be acquired and buildings on the properties would be removed prior or during construction. In addition, existing landscaping, fencing, or other landscape features would be removed. The intakes would introduce large, elevated landforms into the landscape that would have levee-like slopes and flat tops. These landforms would

disrupt the visual continuity of rural land, create a visual barrier, and prevent free-flowing visual access from the river corridor to lands beyond the intakes. The overall viewer sensitivity level is very high and roadway and recreational travelers using local roadways and the river would experience degradation of the visual character and quality due to construction activities.

Once each intake 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 visible to roadway travelers on local roadways, primarily SR 160, and recreational viewers on the Sacramento River throughout construction. There would also be the potential to create dust clouds that could attract attention from visual receptors and temporarily reduce the availability of views in the area. Dust clouds are also common part of the agricultural landscape because many of the vineyards and pear and cherry orchards are interspersed with annual row crops that require plowing. Fugitive dust control and entrained dust control measures are incorporated into the project alternatives (Appendix 3B), which would control and reduce the effect of dust on the visual quality and character of the area (Environmental Commitment EC-11: *Fugitive Dust Control*). Also, revegetation of disturbed areas would be a part of the project to aid in erosion and sediment control and site reclamation. Revegetation and site reclamation measures would include grading and recontouring disturbed areas outside of the post-construction boundary, but within the construction boundary, to pre-project contours and site conditions/uses. Areas to be restored to natural habitat would be seeded with a native grass mix; whereas areas to be restored to agricultural use could be seeded with an erosion-control seed mix. Because revegetation of disturbed areas is included as part of all project alternatives, visual impacts would be reduced following completion of construction.

Intake features located on the water side of the levee would be constructed from the land, with a minor amount of water-based construction to place riprap for bank protection at the end of construction of the intakes. Water-based recreational viewers would have the most direct views toward this water-ward construction, with large-scale industrial-looking facilities being built over an extended period of time. There would be partial channel restrictions for the installation of the cofferdam used for intake construction and riprap placement. Water-based recreation would still be permitted near construction zones, although speed restrictions in construction zones would slow boat traffic and extend viewing times of these facilities. This would create longer viewing duration, although still brief.

As gleaned from public input, many recreational viewers have a vested interest in the Delta waterways and an inherent sense of protection over the landscape they recreate in, placing high value upon the Delta landscape and sense of place. Public comments also indicate that recreational viewers have a negative perception associated with the project alternatives. Recreational viewers' response to changes in views would be heightened because temporary partial channel restrictions could elongate viewing times toward the construction sites in highly valued visual areas.

These construction-period changes in visual character and quality and the resulting permanent visual impacts attributed to the intake facilities would result in a substantial change in the visual quality and character of views for recreational viewers. These project activities and facilities would introduce an adverse visual change that differs greatly from the normal range of visual character and quality along the Sacramento River in this area because views along affected segments of the river tend to be static and visual changes typically result only from fluctuating water levels (e.g., high flows introducing a temporary siltation water mark along levee banks) or small-scale changes in vegetation (e.g., a tree dies or new ones grows). Project-related changes in the visual landscape

would affect what viewers see in the landscape by introducing a utility or industrial-type facility that contrasts with the Delta landscape that would be viewed from the Sacramento River.

Once construction of the conveyance facilities is complete, Intakes A, B, and C would introduce large, utility or industrial-type concrete and steel intake structures, approximately 21 to 28 feet from top of the river's water surface to the top of the structure's deck with a total structure length of 904 to 1,466 feet along river. Intakes would also include training walls, large sediment basins, sediment drying lagoons, gate structures, access roads, security fencing, an office and vehicle storage building, drop-gate storage enclosure, fueling station, electrical and control building, substation, and other similar anthropogenic features all or in part visible by recreational users from the Sacramento River and roadway and recreational travelers on SR 160 into an area with an existing rural, riparian, and riverine visual character. Because of the long-term nature of construction, proximity to sensitive visual receptors, removal of residences and agricultural buildings, removal of vegetation, changes to topography through grading, and addition of large-scale industrial-looking structures where none presently exist, this effect on the visual quality and character of views in this area is considered substantial. In this reach of the Sacramento River corridor, the visual quality would be reduced from very high to moderate.

The intake facilities would reduce the visual quality of the landscape, affecting views from Sacramento County-designated scenic routes (River Road/SR 160) and the Sacramento River, a scenic waterway corridor. For an example of an intake structure's impact on the AVE's visual character and quality, Figure 18-10 uses Intake C as RKOP 1, which would be built under all alternatives.

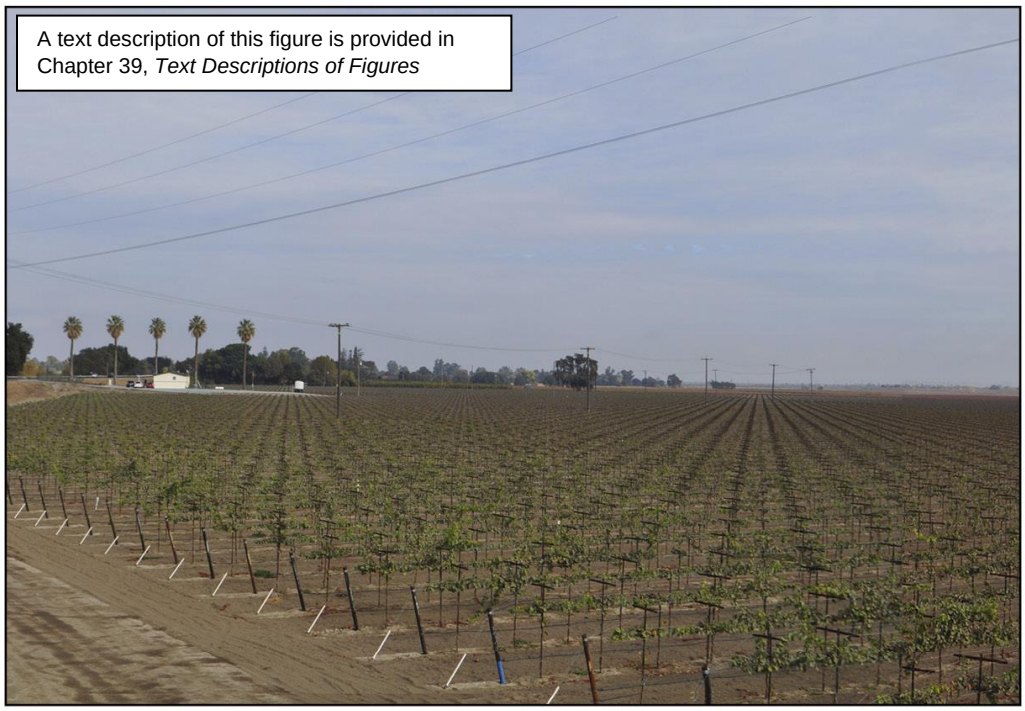
As seen in the rendered post-construction view, four or five existing rural residences would be removed, along with associated agricultural and storage structures and residential landscaping. Vineyards, cherry orchards, and wheat fields would also be removed east of SR 160, on the landside of the levee, reducing the visual expanse of the vineyard in the view. Along the riverside of the levee (not shown on Figure 18-10), the removal of a substantial amount of riparian vegetation along the east bank would open up views, but also increase the visual prominence of the intake structure on the landscape. From this vantage point, the intake pad introduces a large-scale, grassy landform in to views that looks like a large levee and limits views to the immediate foreground. As seen in the rendered post-construction view in Figure 18-10, the levee-like landform creates a focal point and is visually discordant in scale and mass to existing levees. Views to the background, and views of the winding tree line along SR 160, would no longer be visible. Structures are not visible on the intake pad in this view angle. However, gray chain link fencing would be readily visible along the base of the intake pad. The chain link fencing creates a long linear line in the landscape and gives the sense of exclusion. Representative landscaping has been added to the post-construction rendered view to provide a conceptual view of how Mitigation Measure AES-1c: *Implement Best Management Practices to Implement Project Landscaping Plan* could affect post-construction views from this view point. While the landscape plantings would be species native to the Delta, the visual spacing and pattern would be somewhat uniform, as opposed to the varied placement found in natural settings. The resulting view would be more monotonous compared to existing conditions, lacking variation and visual interest.

Although not seen in this view angle, structures associated with the intake also add monotone, solid-color masses into a landscape where the natural colors are earth tones and more muted. Overall, the project reduces the visual quality of the existing landscape and visual character by creating a visual barrier and segmenting views. The intake would introduce a large-scale, utility or industrial-looking

facility into the landscape that would dominate the view and produce a high visual contrast in scale and mass to the surrounding rural character in the views experienced by recreational and roadway travelers on SR 160 and nearby residents.

The rendering rating for RKOP 1 indicates that there would be a degradation in visual character and quality associated with Intake C, even with the installation of landscaping. As noted above, Intake C is representative of the impacts that would occur to views associated with all intake facilities through the removal of existing vegetation, structures, and landscaping, obscuring and limiting views beyond the foreground, and introducing large utility of industrial-looking features, as well as associated operations and maintenance activities, into a rural and riverine landscape. As shown in Figure 18-10, the existing views from RKOP 1 on SR 160 toward Intake C would be substantially impaired by vegetation removal and introduction of the intake and the visual quality would be reduced from very high to moderate.

A text description of this figure is provided in Chapter 39, *Text Descriptions of Figures*



Existing View: looking northeast from RKOP 1 on SR 160

Rendered View

Figure 18-10. Existing and Rendered (Post-Construction) Views of Intake C (Alternatives 1, 2a, 2b, 2c, 3, 4a, 4b, 4c, 5)

Hood-Franklin Park-and-Ride

All Alternatives

The Hood-Franklin Park-and-Ride lot would be located along the south side of Hood-Franklin Road immediately east of Interstate (I-) 5 on agricultural lands. This 3.3-acre park-and-ride lot would be paved with striped parking spaces and include lights and electric vehicle charging stations. This feature would be visible in the landscape for approximately 12 years under Alternatives 1 and 2c; 13 years under Alternatives 2a, 2b, 3, 4b, 4c, and 5; and 14 years under Alternative 4a. This site has been used previously as a construction staging and materials laydown yard. Given this previous use and proximately to the I-5 corridor and its adjacent interchange with Hood-Franklin Road, the visual quality at this site is rated as moderately low.

The park-and-ride lot, and its construction, would be visible to roadway travelers in this AVE on the roadways bordering the site. However, the visual character of the lot would not produce a strong visual contrast with that of the I-5 corridor and its adjacent interchange with Hood-Franklin Road, or its previous uses as a staging site. It would be dismantled after completion of project construction. Therefore, the Hood-Franklin Park-and Ride lot would not have a substantial effect on the visual character and quality in this AVE; the visual quality would remain moderately low.

Lambert Road Concrete Batch Plant

All Alternatives

Two concrete batch plants would be located on 15 acres of land on the north side of Lambert Road and west of Franklin Boulevard (CR J8, KOP 94), approximately 1.0 mile east of I-5, and adjacent to an existing Sacramento Municipal Utility District (SMUD) Lambert Substation.[2] Construction and operation of batch plants would be visible to roadway travelers on the roadways bordering the site and nearby residents surrounding the site. Given the agriculture-related structures on the landscape, the visual quality of this AVE is moderate.

Construction and operation of the concrete batch plants would introduce heavy equipment and vehicles that would be readily visible from Lambert Road, and Franklin Boulevard throughout construction of the facilities. Given the distance from I-5, fleeting views from I-5, and intervening vegetation, the batch plant site would not be visible from I-5. Site construction would have the potential to create dust clouds that would attract attention from visual receptors and temporarily degrade views, even from I-5 if the dust clouds would be high enough or dense enough. The effect of dust clouds on the visual quality and character of the area would be controlled by environmental commitments for basic and enhanced fugitive dust control measures and measures for entrained road dust (Appendix 3B), which would reduce and control dust emissions such that they do not appear to exceed levels that are common in the agricultural landscape through plowing and crop conversion (Environmental Commitment EC-11: *Fugitive Dust Control*).

The concrete batch plants would have visible features including 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 constructed of concrete and painted steel.

[2] While Alternatives 2b and 4b would have only one concrete batch plant, this analysis assumes that the affect to visual quality at this site would not be appreciably altered between one or two batch plants at this location.

The batch plants would be adjacent to one another and would convert agricultural lands to industrial-looking facilities, thereby providing a moderate visual contrast to the existing agrarian landscape. The batch plants would take approximately 6 months to construct and would be in operation until the last year of intake construction. Once construction of the concrete batch plants is complete, these structures would be immediately and prominently visible in the foreground from surrounding vantage points and viewers (i.e., roadway travelers) on the roadways bordering the site and nearby residents surrounding the site. The industrial-looking structures and facilities would visually conflict with the existing forms, patterns, colors, and textures associated with agricultural lands. Although adjacent to an electrical substation, construction and operation of the batch plants would have an effect on the visual character and quality of the agricultural surroundings. The visual quality would be reduced from moderate to moderately low. Once the project is complete, concrete batch plant structures and facilities would be removed and the site revegetated for erosion control. The visual quality would be restored to moderate.

Twin Cities Complex

All Alternatives

All alternatives would include construction at the Twin Cities Complex on pasturelands north of Twin Cities Road, between I-5 and Franklin Boulevard (CR J8). The Sacramento County Sheriff's Rio Cosumnes Correctional Center and ancillary facilities and Franklin Field Airport is located immediately to the east across Franklin Boulevard. Viewers associated with the Twin Cities Complex include roadway travelers on local roadways and I-5, and adjacent residents. The complex would be visible from portions of I-5 designated as a Sacramento County scenic route and Twin Cities Road that is being proposed for inclusion as a Sacramento County scenic route. Therefore, for the purposes of this analysis, this roadway corridor is considered to have heightened sensitivities due to the scenic qualities that warrant such consideration. The overall viewer sensitivity level is moderately high.

Construction at this site would convert pasturelands and remove two rural residences/farms and agricultural structures. The complex would consist of the double launch shaft, tunnel segment storage, a grout plant, shops and offices, parking, material laydown and erection areas, access roads, RTM conveyor and handling facilities, a water treatment plant, emergency response facilities, and a helipad. A ring levee up to 11.5 feet in height would be built around the complex, and the shaft site would be built on a raised, 21-foot-high earthen pad to elevate it above the flood level. The shaft would be flush with the pad during construction but would rise approximately another 14 feet above the grade of the raised pad once construction is complete. In addition, there would be construction office and storage buildings at the base of the raised pad that would be removed once construction is complete. The shaft site would be surrounded by fencing. The Twin Cities Complex would take just over 4 years to construct once the access roads were completed. The shaft site would then be in operation for close to 6.5 years, Monday through Saturday for up to 20 hours per day for RTM removal, during the tunnel excavation process. 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 roadway travelers and residents. The complex would have associated work areas where materials would be stockpiled and pieces needed to construct the finished tunnel structure would be stored.

The permanent 15-foot-high RTM area would be located within the complex boundaries, would cover 15 to 291 acres, and would be seen in unison with the raised shaft pad and elevated shaft once construction is complete. Temporary RTM areas would be higher than the permanent RTM area, but they would be blocked from view by the levee that would surround much of the site during construction. Earthmoving activities would result in topographical changes to areas that are presently flat and would have the potential to create dust clouds that would attract attention from visual receptors and temporarily reduce the availability of views as dust clouds dissipate. However, because fugitive dust control and entrained dust control measures are incorporated into the project alternatives (Appendix 3B), the effect of dust on the visual quality and character of the area would be controlled (Environmental Commitment EC-11: *Fugitive Dust Control*). Dust clouds are also a common part of the agricultural landscape because many of the vineyards and pear and cherry orchards are interspersed with annual row crops that require plowing. Revegetation of disturbed areas would occur as a part of the project to aid in erosion and sediment control and site reclamation, and all RTM areas would be seeded with native grasses. Revegetation and site reclamation measures would include grading and recontouring of disturbed areas outside of the temporary disturbance limits, but within the construction boundary, to pre-project contours and conditions. Areas to be restored to natural habitat would be seeded with a native grass mix, whereas areas to be restored to agricultural use could be seeded with an erosion-control seed mix. Alterations at these locations would result in elevated landforms introduced into a landscape that is currently predominantly flat. Although levees are common in the Delta, the Twin Cities Complex is located away from waterways in an area where levees are less obvious. Therefore, these features would be visually discordant with the area's existing forms, patterns, colors, and textures associated with the existing agrarian character in the AVE for the Twin Cities Complex.

Rail access would be needed to transport construction materials and equipment to the Twin Cities Complex double launch shaft site.[3] Rail access at the Twin Cities Complex would be provided via spurs from the Union Pacific Railroad (UPRR) Sacramento-Lathrop rail line that parallels Franklin Boulevard. The new spurs would parallel Franklin Boulevard and wrap around the northern and southern sides of the complex, terminating on the western side of the complex near the shaft site. Rail access would affect views from Twin Cities Road, proposed for designation as a Sacramento County scenic route and Franklin Boulevard. Construction of the rail depot at the Twin Cities Complex would require realignment of Franklin Boulevard under all alternatives, except Alternative 5, to provide site access. In addition, some residences on Dierssen Road would be removed along this roadway, although the roadway would not be restricted to public access. The realignment of Franklin Boulevard and the new rail spurs would be seen in conjunction with the remainder of the facilities under construction at the Twin Cities Complex and would be visible to roadway travelers and rural residences located east of the site. The additional rail facilities and tracks would contribute to the industrial visual nature of the shaft sites.

Construction activities associated with the complex would reduce visual quality due to the strong visual contrast compared to existing conditions and the duration of time they would be visible in the landscape. Once construction is completed, the tunnel construction buildings and ring levee would be removed and disturbed areas would be restored, as noted above. The permanent RTM area, shaft pad, elevated shaft, and a parking lot near the shaft pad would remain and be visible once construction is complete.

[3] Rail access is not included in Alternative 5.

As seen in the construction and post-construction renderings in Figure 18-11, showing the view from RKOP 2, construction of the complex would convert pasturelands and would introduce a tall, grassy ring levee and fencing into views during construction, as illustrated in "Rendered View during Construction." As shown in "Rendered View after Construction," the ring levee would be removed and the permanent RTM area would also be vegetated, though taller than the ring levee. Both the ring levee and RTM area would limit views in the foreground and obscure views beyond. The ring levee and RTM area would introduce a new elevated landform into a flat agricultural landscape in an area where there are no levees in the immediate vicinity. The new landform would create a visual focal point and visually contrasts in scale and mass to the flat agricultural fields. Beyond the ring levee, the tops of the batch plant silos and gantry crane would be visible. Views to the tree line on the horizon would no longer be visible, making the view more monotonous compared to existing conditions, lacking variation and visual interest. In addition, the chain link fencing creates a long linear line in the landscape and gives the sense of exclusion. Overall, existing views from RKOP 2 on Twin Cities Road toward the complex would be affected by the introduction of new constructed landforms in the landscape that block views, as well as by operation and maintenance activities.

In the rendered post-construction view of RKOP 2, representative landscaping has been added around the perimeter of the complex and in the foreground to provide a conceptual view of how Mitigation Measure AES-1c: *Implement Best Management Practices to Implement Project Landscaping Plan* could affect post-construction views from this view point. While the landscape plantings would be species native to the Delta, the visual spacing and pattern would be somewhat uniform, as opposed to the varied placement found in natural settings. Additionally, there are currently no trees at this location in an agricultural field. As can be seen in the rendered view, the landscaping would only provide additional massing at the complex, as opposed to visually blending into the visual landscape.

While there is no stationary vantage point along Twin Cities Road to provide sustained views, these views would be present to nearby residences. Views from I-5 are not likely to be greatly affected because travelers pass by the site at high rates of speed and views would be fleeting. The visual quality would be reduced from moderately high to moderate.

Existing View: looking north-northwest from RKOP 2 on Twin Cities Road

Rendered View During Construction

Rendered View After Construction

Figure 18-11. Existing and Rendered (Construction and Post-Construction) Views of Twin Cities Complex (Alternatives 1, 2a, 2b, 2c, 3, 4a, 4b, 4c, 5)

New Hope Tract Maintenance Shaft

All Alternatives

Alternatives 1, 2a, 2b, and 2c would have the New Hope Tract maintenance shaft on an agricultural parcel along Lauffer Road north of West Walnut Grove Road (KOP 22). This maintenance shaft under Alternatives 3, 4a, 4b, 4c, and 5 would also be on an agricultural parcel north of West Walnut Grove Road and west of Blossom Road (KOP 97) nearer I-5. Both shaft locations would be visible in the middleground from portions of I-5, a San Joaquin County scenic route in this location.

The shaft site would introduce new elevated landforms into flat agricultural landscapes that would be visible from nearby residences and roadway travelers on local roadways and I-5, as well as bringing a different visual element into the landscape. With the agrarian landscape in this AVE providing high visual quality, existing views from these vantage points would be altered by the conversion of flat agricultural lands to a raised shaft pad. Views from I-5 would be fleeting at highway speeds and not likely to stand out in middleground views seen from I-5. Impacts on I-5 would not be substantial. However, for residences and local roadway travelers in this AVE, the visual contrast introduced by the construction, operation, and maintenance activities at the maintenance shaft site in either location on the New Hope Tract would reduce the visual quality and visual character. The visual quality would be reduced from high to moderate.

Canal Ranch Tract Maintenance Shaft

Alternatives 3, 4a, 4b, 4c, and 5

The Canal Ranch Tract maintenance shaft would be approximately 1.5 miles west of I-5 on West Peltier Road (KOP 101), putting the site in the middleground view. I-5 is a San Joaquin County-designated scenic road in this AVE. The area around the site is in agricultural production, with a single farm residence to the west near Blossom Road. Given the relatively remote location of the site (i.e., few viewers or viewing opportunities) and the distance from I-5, the visual quality of the Canal Ranch Tract Maintenance Shaft site is rated moderately low.

This shaft site would introduce a new elevated landform into flat agricultural landscape that would be visible to nearby residences and roadway travelers using local roadways. This would constitute a high visual contrast in the agrarian landscape and the existing visual character and quality would be affected by this visual change. From I-5, views would be fleeting at highway speeds and would not stand out in middleground views seen from I-5. Given this and the site's moderately low visual quality, the construction, operation, and maintenance of the Canal Ranch Tract maintenance shaft site in this location would not affect the visual quality in this AVE. Therefore, the visual quality would remain moderately low.

Staten Island Maintenance Shaft

Alternatives 1, 2a, 2b, and 2c

The Staten Island maintenance shaft would be approximately 2.5 miles south of West Walnut Grove Road on Staten Island Road (KOP 101), putting the site in the middleground viewshed in this AVE. With the flat terrain and distance, this maintenance shaft site would not be visible from West Walnut Grove Road. There are no existing structures within approximately 1.0 mile of this shaft site. The area around the site is in agricultural production, although Staten Island is managed by The Nature

Conservancy as a wintering destination for sandhill cranes and other bird species along the Pacific Flyway. While there is a bird viewing point approximately 1.1 miles north on Staten Island Road, the area is not open for public access. Given the relatively remote location of the site (i.e., few viewers or viewing opportunities) and the distance from West Walnut Grove Road, the visual quality of the Staten Island Tract Maintenance Shaft site is rated moderate.

As seen in the construction and post-construction renderings in Figure 18-12, construction of the shaft site would convert agricultural fields and introduce the raised pad, raised shaft, and fencing into the viewshed, as illustrated in "Rendered View during Construction," although the fencing is not visually apparent in this view. As shown in "Rendered View after Construction," the 14-foot-high raised pad would be left in place and the shaft would be seen rising 22.5 feet above the pad. The construction buildings would be removed, although the fencing would remain. As a result, the shaft and shaft pad would create a mounded landform with an industrial-looking concrete column that is visually discordant in scale and mass to the flat agricultural fields. The shaft pad would be visible from Staten Island Road and introduce a new elevated landform into a flat agricultural landscape that would be visible from The Nature Conservancy sandhill crane viewing point to the north.

In the rendered post-construction view of RKOP 3, representative landscaping has been added around the perimeter of the maintenance shaft to provide a conceptual view of how Mitigation Measure AES-1c: *Implement Best Management Practices to Implement Project Landscaping Plan* could affect post-construction views from this view point. While the landscape plantings would be species native to the Delta, the visual spacing and pattern would be somewhat uniform, as opposed to the varied placement found in natural settings. Additionally, while there are a few trees shown along the roadside in the existing view, the addition of the landscaping would substantially increase the visual presence of trees in an agricultural field. As can be seen in the rendered view, the landscaping would only provide additional massing at the maintenance shaft, as opposed to visually blending into the visual landscape.

The project operation and maintenance activities at this site would affect the visual character of the agricultural landscape and introduce a facility with a strong visual contrast to the existing landscape. Overall, existing views from RKOP 3 on Staten Island Road toward the complex would be altered and views from the sandhill crane viewing point would be influenced by the conversion of flat agricultural lands to a raised shaft pad. However, as noted above, given the relatively remote location of the site (i.e., few viewers or viewing opportunities) and the fleeting views and distance from West Walnut Grove Road, the visual quality of the Staten Island Tract maintenance shaft site is rated moderate.

A text description of this figure is provided in Chapter 39, *Text Descriptions of Figures*

Existing View: looking south from RKOP 3 on Staten Island Road

Rendered View During Construction

Rendered View After Construction
(Note: Assumes removal of construction-related buildings in work area.)

Figure 18-12. Existing and Rendered (Construction and Post-Construction) Views of Staten Island Maintenance Shaft (Alternatives 1, 2a, 2b, 2c)

Terminous Tract Reception Shaft

Alternatives 3, 4a, 4b, 4c, and 5

The Terminous Tract reception shaft site would be located approximately 1.8 miles west of I-5 on SR 12, putting the site in the middleground view. I-5 is a San Joaquin County-designated scenic road in this AVE. The area around the site is in agricultural production, with farm facilities sparsely scattered in each direction from the site. Given its location along SR 12 and the site's exposure to roadway travelers along this major east–west highway route, as well as its agrarian nature, the visual quality of the Terminous Tract reception shaft site is rated moderately high.

This shaft site would introduce a new elevated landform into flat agricultural landscape that would be visible to roadway travelers on SR 12. This would constitute a high visual contrast in the agrarian landscape and the existing visual character and quality would be affected by this visual change. From I-5, any potential views would be fleeting at highway speeds and would not stand out in middleground views seen from I-5. Given this and the site's moderately high visual quality, the construction, operation, and maintenance of the Terminous Tract reception shaft site in this location would provide a strong visual contrast over existing conditions and reduce the visual quality in this AVE. Therefore, the visual quality would be reduced from moderately high to moderate.

Rio Vista Park-and-Ride

Alternatives 1, 2a, 2b, and 2c

The Rio Vista Park-and-Ride lot would be located along the south side of SR 12 immediately east of the Sacramento River bridge and SR 160 on fallow land. The site is adjacent to highway commercial uses to the west and surrounded by agricultural land. This 2.45-acre park-and-ride lot would be paved with striped parking spaces and include lights and electric vehicle charging stations. These features would be visible in the landscape for approximately 12 years under Alternatives 1, 2b, and 2c and 13 years under Alternative 2a. Given its fallow state and proximity to highway commercial uses and the SR 12 corridor, the visual quality at this site is rated as moderate.

The park-and-ride lot, and its construction, would be visible to roadway travelers in this AVE on SR 12 and SR 160. However, the visual character of the lot would not produce a strong visual contrast with that of the SR 12 corridor and adjacent highway commercial uses, or its previous state as a fallow site. Therefore, the Rio Vista Park-and-Ride lot would not change the visual character and quality in this AVE; the visual quality would remain moderate.

Bouldin Island Launch and Reception Shaft

Alternatives 1, 2a, 2b, and 2c

The Bouldin Island launch and reception shaft would be located approximately 0.5 to 0.75 mile south of SR 12 as it traverses Bouldin Island in an east–west direction, putting the site in the foreground viewshed in this AVE. There are no existing structures in the shaft site, although there are a few homes and agricultural buildings at the north and east levee on the perimeter of the island. A levee rings the island. The area around the site is in agricultural production. There are points (i.e., turn-offs) along SR 12 to that provide access to these structures, fields, and levees. Given its location

along SR 12 and the site's exposure to roadway and recreational travelers[4] along this major east–west highway route, as well as its agrarian nature, the visual quality of the Bouldin Island launch and reception shaft site is rated moderately high.

With the flat terrain and relatively short straight-line distance, this launch and reception shaft site would be visible from SR 12. In addition to the development of the shaft site, an interchange would be constructed on SR 12 to accommodate and access road to the shaft site and levees. In many locations on the levee ringing the island, improvements would be made to increase the levee's integrity.

The spread diamond interchange would be a concrete bridge with 16 feet of vertical clearance constructed over SR 12 and would be 40 feet wide (two 12-foot lanes with 8-foot shoulders). Auxiliary lanes would also be added in both directions for merging traffic. The structure on this flat terrain would limit views beyond when traveling in either direction; it would obscure views of Mount Diablo from the east on approach to the bridge when traveling west. As roadway travelers would be in motion, views along this stretch of SR 12 would be temporary and fleeting, but the mass of the interchange structure would constitute a substantial change in views. In addition, an 8-mile stretch of SR 12 would be improved and widened from the new interchange east to I-5. This would include the widening of the existing bridges over Farm Road and Little Potato Slough.

Levee improvements on Bouldin Island would be to perform targeted repairs to existing levees to address geometry and historic performance issues during a potential high-water event. Levee improvements would slightly increase the height and width of existing levees and would require vegetation removal and heavy earthwork construction activity to construct the levees. Levee slopes would be hydroseeded for erosion control following construction. Natural vegetation would recolonize the levee slopes over time so that the levees would not stand out or detract from the existing visual environment. Several private structures would be removed and affected. However, these localized changes alone would not create a substantial change to the visual quality and character of the visual landscape on Bouldin Island as the views experienced by roadway travelers and recreational travelers driving to other destinations would be fleeting at highway speeds.

As seen from RKOP 4 and in the construction and post-construction renderings in Figure 18-13, construction of the Bouldin Island Tunnel launch and reception shaft would convert agricultural lands. It would introduce the raised pad, raised shaft, construction buildings, gantry cranes, and fencing into the viewshed, as illustrated in "Rendered View during Construction." After construction, the 13-foot-high raised pad would be left in place, as would the shaft rising 21 feet above the pad. The construction buildings and gantry cranes would be removed at the completion of construction, while the fencing would remain. No existing structures would be affected by this shaft site. The shaft pad would introduce a new elevated constructed landform into a flat agricultural landscape that would be visible from SR 12. The 6- to 9-foot-high RTM area would be located immediately adjacent to the shaft pad and, although lower, would appear to be a visual continuation of the raised landform. The fencing is not visually apparent in this view. Roadway and recreational travelers on SR 12 would not be greatly affected by the shaft site because travelers pass by the site at highway speeds and views would be fleeting. A strong visual contrast with the island's visual character and quality would not be evident.

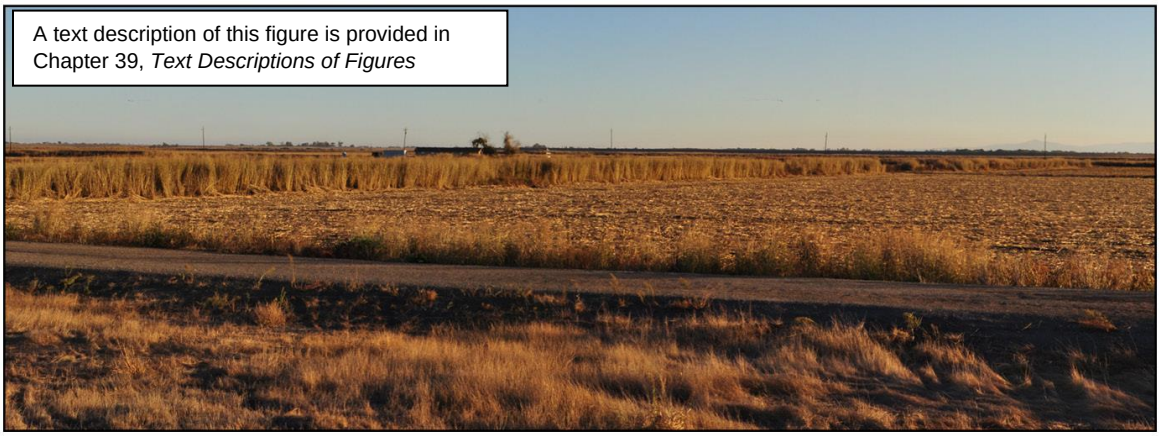
[4] While there are no recreational facilities on Bouldin Island, it is assumed that SR 12 is used by these travelers to access recreational destinations.

However, with the remaining project components potentially visible, the rendered post-construction view of RKOP 4 shows the site with representative landscaping to provide a conceptual view of how Mitigation Measure AES-1c: *Implement Best Management Practices to Implement Project Landscaping Plan* could affect post-construction views from this view point. While the landscape plantings would be species native to the Delta, the visual spacing and pattern would be somewhat uniform, as opposed to the varied placement found in natural settings. While there are currently no trees at this location in an agricultural field, this conceptual view shows that the landscaping would not provide a substantial amount of additional massing at the complex in this rendered view. The distance between the view point and the site is great enough that the visual massing and contrast would be less apparent.

In addition, the raised shaft and shaft pad would potentially be visible in the middleground to recreational viewers on the Tower Park Marina Resort levees while accessing the moors. Much like roadway travelers, viewers on this levee would only observe momentary views, as they would be accessing the marina docks. Additionally, the landscaping shown conceptually in the rendered post-construction view from SR 12 would also likely soften the industrial and massive visual character of the constructed site when seen from the marina and waterways.

While many of the Bouldin Island tunnel launch and reception shaft facilities to be located on Bouldin Island would not be visible in sustained views from SR 12 (RKOP 4), the new interchange would constitute a strong visual contrast to the existing visual character and quality along the SR 12 corridor on Bouldin Island. Therefore, the visual quality in this AVE would be reduced from moderately high to moderate.

A text description of this figure is provided in Chapter 39, *Text Descriptions of Figures*



Existing View: looking south-southeast from RKOP 4 on SR 12

Rendered View During Construction

Rendered View After Construction

Figure 18-13. Existing and Rendered (Construction and Post-Construction) Views of Bouldin Island Reception and Launch Shaft, Including Reusable Tunnel Material Area (Alternatives 1, 2a, 2b, 2c)

King Island Maintenance Shaft

Alternatives 3, 4a, 4b, 4c, and 5

King Island maintenance shaft would be along Eight Mile Road (KOP 26) in the central portion of King Island approximately 3.5 miles west of I-5. At this distance, this maintenance shaft site would not be visible from I-5. The area around the site is in agricultural production, with one agricultural structure (i.e., not residential), immediately to the south across Eight Mile Road. A marina facility along Disappointment Slough fronts on Eight Mile Road approximately 1.0 mile to the west. While there are residential structures on the marina ground, intervening vegetation and distance would preclude clear views to the maintenance shaft site. Additionally, views of the site from Disappointment Slough would be blocked by levees. Therefore, affected viewer groups would be limited to roadway and recreational travelers passing by the maintenance shaft site accessing the marina from I-5. While the views at this site would be fleeting, it is representative of the agricultural landscape that help visually define the Delta. Therefore, the visual quality of the King Island maintenance shaft site is rated moderate.

The King Island maintenance shaft would be clearly visible in foreground views on approaching the shaft site from either direction. This shaft site would introduce a new elevated landform into flat agricultural landscape that would constitute a strong visual contrast in the agrarian landscape and the existing visual character and quality would be affected by this visual change in this AVE. Given this and the site's moderate visual quality, the construction, operation, and maintenance of the King Island maintenance shaft site in this location would reduce visual quality from moderate to moderately low.

Mandeville Island Maintenance Shaft

Alternatives 1, 2a, 2b, and 2c

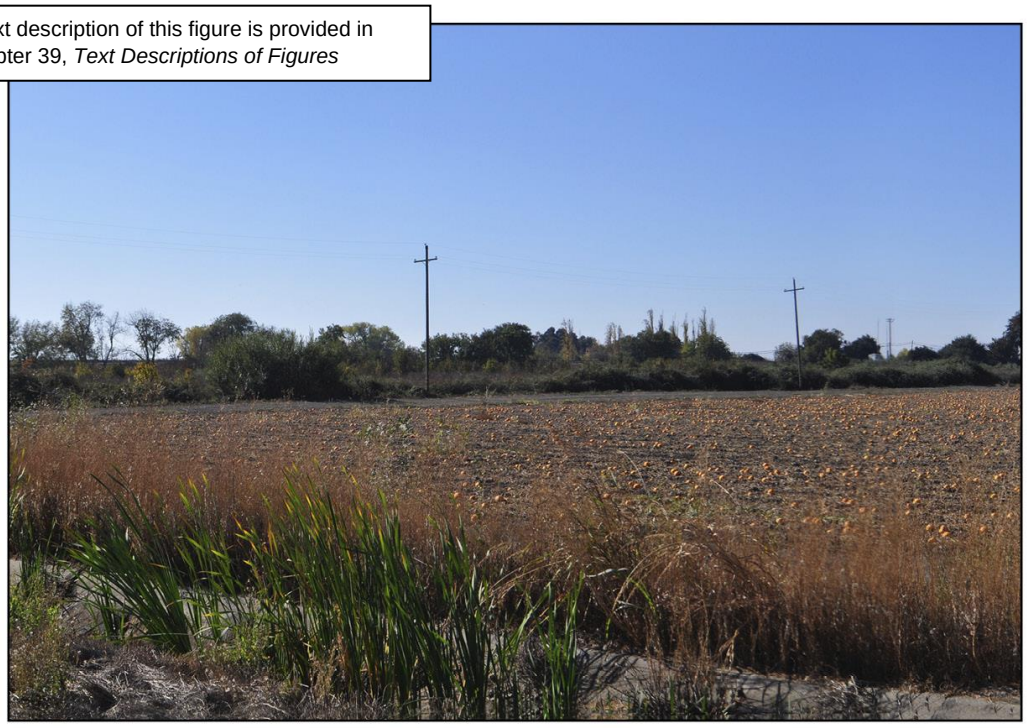
The Mandeville Island maintenance shaft site is centrally located on the island and would be approximately midway between SR 12 6 miles to the north and SR 4 almost 10 miles to the south, putting the shaft site in the background views from both roadways. Access to the site would be from the community of Holt to the southeast via Lower Jones and South Bacon Island roads traveling west, then north across an existing iron bridge over Middle River. General public access is not permitted beyond the bridge; therefore, this would be the closest view point of the shaft site, a straight-line distance of almost 2 miles. There are no through roads for potential sensitive viewing groups, making it a remote destination, with the exception of agricultural activities. Given this relatively isolated nature, the visual quality of the Mandeville Island maintenance shaft site is rated moderately low.

The Mandeville Island maintenance shaft would not be close to sensitive vantage points or highly sensitive viewers with extended viewing times. While the bridge over Middle River would be demolished and replaced by a new bridge slightly to the east, the volume of sensitive viewers would remain very low, limiting the sensitivity to the existing visual character and quality of the site. Given its remoteness and lack of sensitive viewers, the effect of the project on Mandeville Island would not be substantial. Therefore, visual quality in Mandeville Island resulting from construction, operations, and maintenance of the project would remain moderately low.

At the community of Holt, South Holt Road (RKOP 6), which would provide access to the Mandeville Island maintenance shaft and the Bacon Island reception shaft site, currently travels under the Burlington Northern Santa Fe (BNSF) tracks with a narrow travel way that cannot accommodate construction traffic and equipment. It is constructed mostly of wood with concrete road barriers and short concrete retaining walls. The area is sparsely developed with agricultural buildings and structures, plus a few residences. This site is also clearly visible to roadway travelers on SR 4. The surrounding area is the agricultural landscape indicative of the Delta. The visual quality at this site is moderately high.

The South Holt Road overpass would provide improved access over the railroad tracks and include construction of a bridge over the BNSF tracks and East Bay Municipal Utility District Mokelumne Aqueducts. The BNSF tracks are built on a vegetated embankment. As seen in the post-construction Figure 18-14, construction of the overpass would remove some of the existing trees and shrubs growing along the rail corridor and would expose more of the embankment and trains into this view. The bridge would alter the appearance of the surrounding agricultural landscape, introduce prominent angled road embankment slopes and bridge decking that would provide a strong visual contrast with the horizontal plane of the agricultural field, and make the BNSF track embankment more visible. The overpass would also introduce a new transportation structure that is seen briefly in passing by rail travelers. This would be a new visual feature in this AVE and the bridge and approaches would have a more visually prominent form compared to the existing roadway underpass structure and would change the visual character and quality of this location compared to the existing, two-lane rural roadway. Existing views from RKOP 6 on South Holt Road toward the overpass would be affected by the removal of vegetation and introduction of an elevated bridge structure into the landscape. The visual quality would be reduced from moderately high to moderately low.

A text description of this figure is provided in Chapter 39, *Text Descriptions of Figures*



Existing View: looking southwest from RKOP 6 on South Holt Road

Rendered View

Figure 18-14. Existing and Rendered (Post-Construction) Views of South Holt Road Overpass (Alternatives 1, 2a, 2b, 2c)

Lower Roberts Island Launch and Reception Shaft and RTM Storage

Alternatives 3, 4a, 4b, 4c, and 5

The Lower Roberts Island launch and reception shaft and RTM storage sites are located on the northern part of the island south of the San Joaquin River.[5] Access to the site would be from the east and the Port of Stockton. There are no existing structures within the shaft or RTM sites. The area is sparsely developed, although there are a number of farmsteads and agricultural structures scattered across the island. The surrounding area is the agricultural landscape indicative of the Delta. The visual quality at this site is moderately high.

Lower Roberts Island reception and launch shaft and the RTM area would be visible from portions of South Inland Drive, West McDonald Road, Neugebauer Road, and North Holt Road, all of which are designated scenic roadways in San Joaquin County. The sites would be visible in middleground views to roadway travelers. These features would create a strong visual contrast to the agrarian landscape due to the landform alteration and inclusion of a raised shaft pad, RTM area, and associated features visible to roadway travelers. The construction, operation, and maintenance of project facilities would be an effect on the visual quality of the island, reducing the visual quality to moderate.

Rail access would be needed to transport construction materials and equipment to Lower Roberts Island launch and reception shaft. The rail depot at Lower Roberts Island would connect the RTM area to the Port of Stockton and would require a new railroad bridge to cross Burns Cut. A parallel bridge would also be constructed to accommodate vehicle access to the project sites. The bridge site is undeveloped, with the Port of Stockton facility to the east and agricultural land to the west. Given the industrial nature of the port facilities, the visual quality at this location would be moderately low. The tracks would be visible to local roadway users driving near the RTM area. The bridges would be visible to water-based viewers using the San Joaquin River and Burns Cut and to residents located in the Brookside development on the eastern bank of the San Joaquin River. Although the industrial appearance of the port facility is evident at the bridge site, the elevated bridge structure would produce a strong visual contrast to the existing visual character of the area. This would affect views along Burns Cut and the San Joaquin River and the visual quality would remain moderately low.

Levee improvements would be implemented on the west side of Lower Roberts Island. The area surrounding the levee improvement locations is primarily agricultural, although the Turner Cut Resort is located at the southern extent of the improvement. The visual quality at this location would be moderately high. Targeted repairs to existing levees would be performed to address geometry and historic performance issues during high-water events. Levee improvements would slightly increase the height and width of existing levees and would require vegetation removal and heavy earthwork construction activity to construct the levees. Levee slopes would be hydroseeded for erosion control following construction. Natural vegetation would recolonize the levee slopes over time so that the levees would not stand out or detract from the existing visual environment. A building at the Turner Cut Resort and private structures located north of the resort would be removed. These localized changes would create a change to the visual character of these sites,

[5] While Alternatives 5 would have a double launch site, this analysis assumes that the affect to visual quality at this site would not be appreciably altered between one or two launches at this location.

although most of the levee work would not change the visual character substantially. The visual quality would be reduced to moderate for the removal of multiple structures.

As seen in Figure 18-15, construction of the shaft site would convert agricultural fields and introduce the raised pad, raised shaft, construction buildings, and fencing into the viewshed around RKOP 5, creating a strong visual contrast, as illustrated in "Rendered View during Construction." After construction, the 13-foot-high raised pad would be left in place, as would the shaft rising just over 17 feet above the pad. The construction buildings and gantry crane would be removed, although the fencing would remain. No existing structures would be affected by this shaft site.

With the remaining project components potentially visible, the rendered post-construction view of RKOP 5 shows the site with representative landscaping to provide a conceptual view of how Mitigation Measure AES-1c: *Implement Best Management Practices to Implement Project Landscaping Plan* could affect post-construction views from this view point. While the landscape plantings would be species native to the Delta, the visual spacing and pattern would be somewhat uniform, as opposed to the varied placement found in natural settings. While there are currently no trees at this location in an agricultural field, this conceptual view shows that the landscaping would not provide a substantial amount of additional massing at the complex in this rendered view. Additionally, the treed landscaping would visually blend with the existing tree line to the right and beyond the site. The distance between the view point and the site is great enough that the visual massing and contrast of the installed landscaping would be less apparent. Still, the existing visual quality at this site would be affected by the conversion of the agricultural landscape during the construction period, reducing the visual quality from moderately high to moderately low.

Although not visible in the rendering, the 5- to 15-foot-high RTM area would be approximately 1.5 miles west of the shaft pad. Although lower, the RTM area would appear to be a visual continuation of the shaft pad and would be graded and seeded with native grasses, introducing another raised landform into local views. Alternative 5 would be a double launch shaft at Lower Roberts Island. The shaft pad would be shaped slightly different than Alternatives 3, 4a, 4b and 4c, and there would be two shafts. However, from this vantage, the difference in shaft pad shape would not be visually apparent and the second shaft would be largely hidden behind the shaft that is closer to the RKOP. Therefore, the rendering of Alternative 4a is representative of the visual changes that would be experienced under Alternative 5 from this vantage. Changes associated with this shaft site and RTM area would resulting in a reduction of visual quality in the viewshed.

A text description of this figure is provided in Chapter 39, *Text Descriptions of Figures*

Existing View: looking west-southwest from RKOP 5 on North Holt Road

Rendered View During Construction

Rendered View After Construction
(Note: Assumes removal of construction-related buildings and gantry crane in work area.)

Figure 18-15. Existing and Rendered (Construction and Post-Construction) Views of Lower Roberts Island Reception and Launch Shaft (Alternatives 3, 4a, 4b, 4c, 5)

Bacon Island Reception Shaft

Alternatives 1, 2a, 2b, and 2c

The Bacon Island reception shaft site is located in the south-central portion of the island and would be located approximately 4.5 miles to the north of SR 12, putting the shaft site in the background views from this roadway. Access to the site would be from the community of Holt to the east via Lower Jones and South Bacon Island roads traveling west. There are no existing structures within the shaft site. Although Bacon Island is accessible, there are no known destinations for potential sensitive viewing groups, making it a remote destination, with the exception of agricultural activities. Given this relatively isolated nature, the visual quality of the Bacon Island Reception Shaft site is rated moderately low.

At the community of Holt, South Holt Road (RKOP 6), which would provide access to the Mandeville Island maintenance shaft and the Bacon Island reception shaft site, currently travels under the BNSF tracks with a narrow travel way that cannot accommodate construction traffic and equipment. It is constructed mostly of wood with concrete road barriers and short concrete retaining walls. The area is sparsely developed with agricultural buildings and structures, plus a few residences. This site is also clearly visible to roadway travelers on SR 4. The surrounding area is the agricultural landscape indicative of the Delta. The visual quality at this site is moderately high. The potential effects of project alterations to this crossing are discussed above under the Mandeville Island maintenance shaft and not repeated here.

The Bacon Island reception shaft sites would be located near the BNSF railroad track and would be visible to rail passengers on the Amtrak San Joaquin Oakland to Bakersfield route. Train passengers would have the most direct views of the shaft sites. However, trains would pass by at a high rate of speed, making views the shaft sites fleeting.

The Bacon Island reception shaft would not be within sensitive views or visible to sensitive viewer groups with extended viewing times. The volume of viewers would be low, limiting the sensitivity to the existing visual character and quality of the site. Given its remoteness and lack of sensitive viewers, the effect of project construction, operations, and maintenance of the reception shaft on Bacon Island would not be substantial. Therefore, visual quality on Bacon Island during and after construction of the project would be reduced to moderately low.

Charter Way Park-and-Ride

All Alternatives

The 2.28-acre Charter Way park-and-ride lot is located along the south side of Charter Way (SR 4) at the southwest corner of the I-5 overpass on land is currently being developed with a Starbucks and other commercial uses in an area visually dominated by an urban visual landscape and highway commercial uses. Viewer groups would be those availing themselves of the retail, business, and employment opportunities in the area, such as retail, commercial, and industrial viewers. Given this site's location relative to the I-5/SR 4 interchange, providing access to Delta recreational opportunities to the west, recreational viewers would also experience views at and around this site. The balance of the site is either paved or otherwise of disturbed surfaces. Based on the highly urbanized area and presence of highway-oriented services, the visual quality of this site would be low.

The park-and-ride lots would include asphalt paved parking areas with striped parking spaces and include lights and electric vehicle charging stations. These features would be visible in the landscape for approximately 12 years under Alternatives 1, 2b, and 2c; 13 years under Alternatives 2a, 3, 4b, 4c, and 5; and 14 years under Alternative 4a. The lot would be dismantled at the end of construction.

With the development of a park-and-ride lot at this site, which would be visually consistent with its location along two heavily traveled surface transportation routes, the project would not substantially affect the visual character or quality of the site. Therefore, the site's visual quality would remain low.

Upper Jones Tract Maintenance Shaft

Alternatives 3, 4a, 4b, 4c, and 5

The Upper Jones Tract maintenance shaft site is located in the northwest corner of the tract and access to the site would be from the east via Bacon Island Road traveling west. Although the Upper Jones Tract maintenance shaft location varies between Alternatives 3, 4a, 4b, and 4c (collectively) and Alternative 5, the distance is less than 1.0 mile within the same viewshed. Either site is north of Bacon Island Road and south of the BNSF railroad tracks (KOP 39). There are no existing structures in the shaft site under Alternatives 3, 4a, 4b, and 4c. Under Alternative 5, there are a few agricultural structures immediately to the east. Although the Upper Jones Tract is accessible, there are no known destinations for potential sensitive viewing groups, making it a remote destination, with the exception of agricultural activities. Given this relatively isolated nature, the visual quality of the Upper Jones Tract maintenance shaft site is rated moderately low.

The Upper Jones Tract maintenance shaft site would be located near the BNSF railroad track and would be visible to rail passengers on the Amtrak San Joaquin Oakland to Bakersfield route. The shaft site under Alternatives 3, 4a, 4b, and 4c would be approximately 0.3 mile south of the tracks (foreground view) and the Alternative 5 site would be 1.0 mile south of the tracks (middleground view). Train passengers would have the most direct views of the shaft sites. However, trains would pass by at a high rate of speed, making views the shaft sites fleeting.

The Upper Jones Tract maintenance shaft would not be within sensitive views or visible to sensitive viewer groups with extended viewing times. The volume of viewers would be low, limiting the sensitivity to the existing visual character and quality of either shaft site. Given its remoteness and lack of sensitive viewers, the effect of project construction, operation, and maintenance on the Upper Jones Tract would not be substantial. Therefore, visual quality on the Upper Jones Tract during and after construction of the project would remain moderately low.

Byron Park-and-Ride

Alternatives 1, 2a, 2b, 2c, 3, 4a, 4b, and 4c

The Byron Park-and-Ride Lot (2.1 acres) would be located on the north side of Main Street in Byron between Camino Diablo Road and Holway Drive on disturbed land along the existing railroad tracks. This site is in the town of Byron and immediately surrounded by warehouse and commercial uses. Based on this location, the existing visual quality would be low.

This park-and-ride lot would include asphalt paved parking areas with striped parking spaces. The park-and-ride lot would include lights and electric vehicle charging stations. These features would

be visible in the landscape for approximately 12 years under Alternatives 1, 2b, and 2c; 13 years under Alternatives 2a, 3, 4b, and 4c; and 14 years under Alternative 4a. The lot would be dismantled at the end of construction.

Public views of the Byron Park-and-Ride Lot would not be greatly altered because the site is already graveled and would not result in a substantial change when seen from adjacent roadways by roadway travelers on Main Street. Adjacent viewers may view the change positively or negatively depending on their perceptions of the commercial land uses and whether or not they prefer the commercial land uses. However, paving the lot and installation of accessories would not substantially change the visual character of the park-and-ride lot site. Therefore, the visual quality of the site would remain low.

Southern Complex on Byron Tract

Alternatives 1, 2a, 2b, 2c, 3, 4a, 4b, and 4c

The Southern Complex on Byron Tract site is bounded on the north by SR 4, on the east by the Clifton Court Forebay and Old River, and on the west and south by the community of Bryon and Byron Highway. SR 4 and Byron Highway are designated Contra Coast County scenic roadways, and the sensitive viewer community would be roadway travelers. The site is comprised of agricultural fields and there are mature trees growing individually or in small clusters. However, a dual transmission line corridor crosses the site. While the site is undeveloped, it is adjacent to Clifton Court Forebay, a large water impoundment that feeds to the California Aqueduct. The coastal hills start to rise up to the west. The town of Byron is in the foreground view between the site and coastal hills. The visual quality at this site is moderate.

Construction of the Southern Complex would take approximately 11 years. The Southern Complex would consist of a 750-acre forebay, South Delta Pumping Plant, forebay inlet and outlet structures, Byron Tract launch shaft, emergency response facilities, RTM handling facilities, peat and excess soil storage area, concrete batch plants, rail-served materials depot along the UPRR Lathrop-Byron rail line, and site fencing. Although individual features would be discernable in the landscape, all of these features would be seen together as a complete viewscape. The most prominent features in the landscape would be the forebay embankments and the associated pumping plant, constructed northwest of the Clifton Court Forebay. Construction activities would be visible to roadway travelers in the Discovery Bay area and SR 4, as well as Byron Highway.

Earthmoving activities would result in the removal of mature vegetation and topographical changes to areas that are presently flat. Because the area of agricultural land is large and the trees are sparse, the trees are not a dominant feature in the visual landscape associated with the site. Earthmoving activities and associated heavy equipment and vehicles would be visible throughout construction of this conveyance feature and would have the potential to create dust clouds that would attract attention from roadway travelers and temporarily reduce the availability of views. The effect of dust creation on the visual quality and character of the area would be controlled by environmental commitments for basic and enhanced fugitive dust control measures and measures for entrained road dust (Environmental Commitment EC-11: *Fugitive Dust Control*). This would ensure that dust does not exceed levels that are common in the agricultural landscape through plowing and crop conversion.

Construction would be in the vicinity of residences to the west and ground-level construction activities would be visible from this area. Ground-level construction activities likely would be visible

from SR 4 near Discovery Bay, Byron Highway, residences and businesses located along and near Byron Highway that are in the middleground view within 1 mile of construction activities, and from local roadways that connect to or are located near Byron Highway and are within 1 mile of construction activities. In addition, views from the Lazy M Marina would be the most directly affected because recreational viewers would be within 0.5 mile of construction activities. In addition, the rail spur would cross Clifton Court Road and occasionally be visible to marina traffic. Viewers in the foothills to the southwest may have distant views of construction activities where views are elevated.

Rail access would transport construction materials and equipment to the Southern Complex and to transport the RTM needed to construct the forebay embankments from the Twin Cities Complex launch shaft site to the Southern Complex. Material depots would be created at the Southern Complex. Rail access at the Southern Complex would be provided via spurs from the UPRR Lathrop-Byron rail line that parallel Byron Highway. Rail access would affect views from portions of Byron Highway that are Alameda and Contra Costa County scenic routes.

New, aboveground, 230 kilovolt (kV) transmission lines and lattice steel towers to power the Southern Complex would be installed connecting to the Tracy Substation (Figure 3-13). The alignments are sited to minimize impacts on private properties by traveling east and then paralleling an existing lattice steel transmission corridor around the eastern side of the Clifton Court Forebay to the Tracy Substation, avoiding residential structures and dense vegetation. This "soldiering" would assist in visually blending the two lines together.

The new steel lattice towers would be similar in appearance to existing towers in the area. The transmission lines would be constructed within a linear right-of-way corridor that would be 150 feet wide to accommodate staging, installation, stringing, and conductor-pulling. Construction would require clearing of vegetation at the tower staging area, erecting the towers, and 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 single location for an extended period of time. Towers, cranes, and helicopters would be used to string the 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 affect the visual quality of the AVE. Given that, plus the presence of electrical transmission infrastructure within this AVE already, the visual quality would remain moderate.

The existing ground surface elevation at this location is -8 to 3 feet, which would be regraded to -10 feet in certain locations, and embankments surrounding the forebay would be built to elevation 28 feet. Therefore, the proposed forebay embankments would be approximately 25 to 36 feet above the proposed ground surface. Once construction of the forebay is complete, it would be immediately and prominently visible in the foreground from vantage points surrounding it. While the water surface of the 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, landscaping would be installed to improve project aesthetics and to help screen views of the pumping plant, associated features, and parking lots. In addition, the landscaping would account for sight lines at corners and intersections based on mature sizes of plantings.

As seen in the view from RKOP 7 and seen in Figure 18-16, which is representative of views from residential areas of Discovery Bay, the existing scenic view across agricultural fields from SR 4 near Discovery Bay is open but contains existing small, vegetated, linear mounds along the irrigation canal in the right side of the view and transmission lines in the distant middleground and background. Although not visible in the post-construction rendering, the RTM and soil stockpile north of the pumping plant at the Southern Complex would remain after construction is completed. The forebay embankments would be tall enough to limit views of the existing tree line and lower foothills on the horizon. The forebay embankments would add a human-made visual massing and would have a visible geometric shape that would be visible from the roadway. As seen in the rendered view on Figure 18-16, the pumping plant and equipment storage buildings would introduce large-scale structures in a landscape where no such features currently exist and affect views seen by roadway travelers, recreationists, and residences in Discovery Bay with second-story views over the AVE. Most of the Discovery Bay residential areas would be blocked by a wall and trees lining the north side of SR 4; however, views from the second-story of the residences would not be fully blocked. Overall, the existing visual quality of the view from RKOP 7 on SR 4 near Discovery Bay toward the Southern Complex would be reduced from moderate to moderately low.

The Southern Forebay Inlet Structure would not be visible in this rendered view showing this facility after construction because it would be located within the South Delta Pumping Plant (Figure 18-16), but it would be visible during construction to the west of this location on SR 4. The Byron Tract Working Shaft, located between SR 4 and the South Delta Pumping Plant, and the South Delta Pumping Plant would be visible from SR 4 and Byron Highway. The shaft sites 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. The gantry cranes would be approximately 90 feet in height. In addition, the shaft site would be built on a 28- to 29-foot-high raised earthen pad to elevate it above the flood level and there would be construction office and storage buildings located at the base of the raised pad. The working shaft would rise approximately another 8 feet above the grade of the raised pad to protect the top of the operating tunnel from the 200-year flood event and sea level rise for year 2100, once construction is complete. The shaft site would be surrounded by fencing. Construction activities associated with the shaft sites would reduce the visual quality of this AVE due to the physical introduction of these features and the duration of time that they would be visible in the landscape.

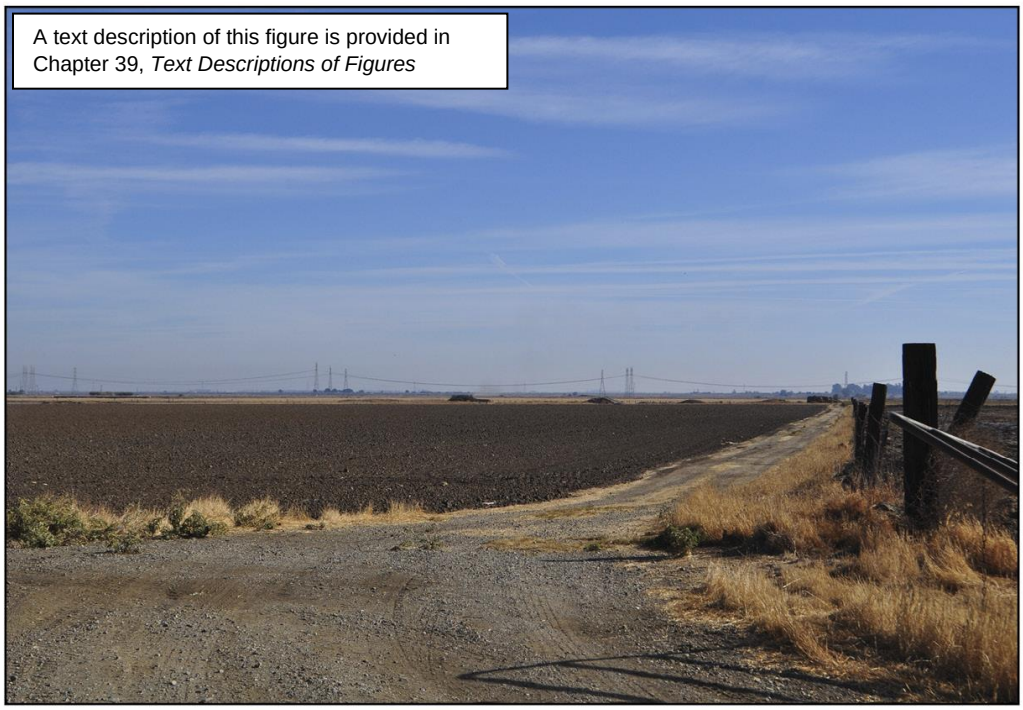
In the rendered post-construction view of RKOP 7, representative landscaping has been added around the perimeter of the complex to provide a conceptual view of how Mitigation Measure AES-1c: *Implement Best Management Practices to Implement Project Landscaping Plan* could affect post-construction views from this view point. While the landscape plantings would be species native to the Delta, the visual spacing and pattern would be somewhat uniform, as opposed to the varied placement found in natural settings. Additionally, there are currently no trees at this location in an agricultural field. As can be seen in the rendered view, the landscaping would only provide additional massing at the complex, as opposed to visually blending into the visual landscape.

Figure 18-16. Existing and Rendered (Post-Construction) Views of Southern Complex on Byron Tract from Discovery Bay (Alternatives 1, 2a, 2b, 2c, 3, 4a, 4b, 4c)

Once construction of the forebay is complete, it would also be immediately and prominently visible in the foreground from vantages from west of Clifton Court Forebay (RKOP 8). The water surface of the forebay would not be visible from these locations, as well. While the conversion of agricultural lands to a large, geometrically shaped levee embankment system might conflict with the existing forms, patterns, colors, and textures associated with agricultural lands, it would be consistent with the adjacent Clifton Court Forebay facility. As seen in the existing view in Figure 18-17, the scenic view across agricultural fields from Byron Highway is fairly open but contains transmission lines in the middleground. The rendered post-construction view shows forebay embankments would be tall enough to limit views of the existing tree line on the horizon and would obscure the lower portions of the transmission lines. The forebay embankments would add a human-made visual massing and would have a visible geometric shape that would be visible temporarily from Byron Highway as the roadway traveler passes by the forebay and pumping plant. The view of these components would be fleeting. The rail spur providing access to the materials depot would be removed once construction is complete, so would not be present in views. The pumping plant building, electrical building, batch plant silos, and gantry crane would introduce large-scale structures in a landscape where no such features currently exist and, along with the forebay embankments, would affect views seen by roadway travelers and recreationists on other nearby local roadways, and residents on the eastern edge of Byron with views over the AVE. As noted above for RKOP 7, the representative landscaping would add trees to an existing agricultural field. However, due to project design requirements the landscaping would not be planted in such a way as to completely block the views of the buildings from RKOP 8. Landscaping would also not temper views of the embankments and silos. The overall mass of the complex would still be visually apparent. Overall, the existing visual quality experienced from RKOP 8 on Byron Highway toward the Southern Complex would be reduced from moderate to moderately low.

Construction would also be required to construct the emergency spillway into Italian Slough, which is used for boating and fishing. However, construction would be completed from the land and water-based recreation would be largely unaffected by construction except during a few weeks when the spillway channel is tied into Italian Slough. Water-based recreational viewers would have the most direct views toward construction occurring along the slough, which would require one short-term partial channel closures to remove the existing levee at the spillway channel outlet and place erosion protection once the water is equalized between the spillway channel and the slough. This is not expected to result in substantial effects on visual quality due to the short-term and temporary nature of the partial channel closure.

A text description of this figure is provided in Chapter 39, *Text Descriptions of Figures*



Existing View: looking east from RKOP 8 on Byron Highway

Rendered View

Figure 18-17. Existing and Rendered (Post-Construction) Views of Southern Complex on Byron Tract from Byron Highway (Alternatives 1, 2a, 2b, 2c, 3, 4a, 4b, 4c)

Maintenance of the conveyance facilities at the Southern Complex on Byron Tract and Southern Complex West of Byron Highway (i.e., pumping plant, forebay, substation, conveyance structures, and tunnels) would be required periodically and would involve, but not be limited to, cleaning and repairing structures, vegetation removal and care along embankments, placement of stop logs (requiring cranes), and tunnel inspection. For the most part, these activities would be visible within the facility and not visible to viewers from outside the facility. The maintenance activities would maintain the visual character of the facilities, once built, and would not further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the pumping plants and associated site features and cleaning the facilities and keeping forebay embankments and transmission line rights-of-way cleared of woody vegetation. 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 and not have an effect on the visual quality and character of the affected areas during operation. Maintenance and operation of the Southern Complex on Byron Tract and Southern Complex West of Byron Highway, 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.

Southern Complex West of Byron Highway

Alternatives 1, 2a, 2b, 2c, 3, 4a, 4b, and 4c

The sensitive viewer community in the vicinity of the Southern Complex west of Byron Highway would be roadway travelers. The visual character is influenced by the existing SWP Harvey O. Banks (Banks) Pumping Plant and CVP C. W. "Bill" Jones Pumping Plant (Jones Pumping Plant) and their associated infrastructure. The site's visual quality is rated as moderate, as the agricultural lands and coastal hills also contribute to the area's visual quality.

Construction of features at the Southern Complex west of Byron Highway would take place simultaneously with the Southern Complex on the Byron Tract. The Southern Complex west of Byron Highway would consist of the South Delta Outlet and Control Structure and California Aqueduct Control Structure, both on the California Aqueduct; the realigned Byron Highway; and a proposed substation at the intersection of Mountain House Road, an Alameda County scenic route, and Kelso Road. Construction activities would be visible to sensitive viewers (i.e., roadway travelers) because they would be visible from Byron Highway, an Alameda and Contra Costa County scenic route.

The South Delta Outlet and Control Structure and California Aqueduct Control Structure would be visually similar to existing outlet and control structures at Clifton Court Forebay close to the site and would affect lands currently occupied by water conveyance features. Therefore, it is not anticipated that these features would greatly alter views or degrade the existing visual quality associated with the site and its surroundings, including views associated with scenic routes. Under Alternatives 2a and 4a, additional structures would be constructed along the Delta-Mendota Canal and adjacent to the Jones Pumping Plant. These structures and the associated berms and embankments would be significantly higher than the existing surroundings and immediately visible from Byron Highway, but consistent in appearance to the Jones Pumping Plant. Therefore, it is assumed the project would compound the existing industrial and views with additional conveyance infrastructure. The visual quality associated with these structures would remain moderate.

Byron Highway would be realigned, and a roundabout would be constructed west of the current Byron Highway alignment to create an intersection with Armstrong Road and Clifton Court Road for construction site access. The Byron Highway roadway corridor would be located within 0.25 mile of the existing roadway corridor and would remain the same width. In addition, views from the corridor would be retained. A roadway bridge would be constructed on Byron Highway for the Byron Highway Truck Bypass and North Bruns Way access road. This bridge would add a strong visual contrast to the immediate visual surroundings and reduce the existing visual quality. The bridge would not alter the current roadway traveler views substantially, as travelers would be moving at highway speeds and the view would be fleeting. The realignment and bridge would not substantially alter views or degrade the existing visual quality associated with the site and its surroundings or negatively affect the scenic route (remain moderate).

The proposed substation would be east of and across the street from the Tracy Substation. The proposed substation would be immediately north of an existing residence/farm and detract from views associated with this residence. The proposed substation would appear to be a visual continuation of the existing substation for roadway and residential viewers, including views from scenic routes, it would not substantially degrade the existing visual character and quality of available views for the adjacent rural residence.

Upon completion of construction, the operations and maintenance activities at the conveyance facilities at the Southern Complex west of Byron Highway are assumed to be the same and occur simultaneously with those activities at the Southern Complex on Byron Tract. The visual characteristics and effects of these facilities are discussed above under *Southern Complex west of Byron Highway*.

Bethany Road Park-and-Ride

Alternatives 1, 2a, 2b, 2c, 3, 4a, 4b, and 4c

The Bethany Road Park-and-Ride Lot, 2.6 acres in size, would be located along the north side of Bethany Road, east of the intersection of Henderson Road on agricultural land adjacent to two homes and a farmstead. The landscape around the site is predominantly agricultural, although other residential farmsteads are present within view of the site, as well as other water conveyance infrastructure. Additionally, the community of Mountain House is approximately 1.0 mile to the west across Byron Road. Given the amount of development in the vicinity providing visual contrast to the agricultural landscape, the visual quality at the Bethany Road Park-and-Ride Lot would be moderately low.

The park-and-ride lots would include asphalt paved parking areas with striped parking spaces. The park-and-ride lots would include lights and electric vehicle charging stations. These features would be visible in the landscape for approximately 12 years under Alternatives 1, 2b, and 2c; 13 years under Alternatives 2a, 3, 4b, and 4c; and 14 years under Alternative 4a. The lot would be dismantled at the end of construction.

The park-and-ride lots would result in large, paved surfaces that would stand out in the agricultural landscape for the Hood-Franklin, Bethany Road, and Rio Vista Park-and-Ride Lots for their duration of use.

With the development of the Bethany Road Park-and-Ride Lot at this site would provide a strong visual contrast to the immediate views. However, when taken in with the viewshed of the

surrounding area, the lot would be visually consistent with its location along well-traveled surface transportation routes. The project would not substantially affect the visual character or quality of the site. Therefore, the site's visual quality would remain moderately low.

Union Island Maintenance Shaft

Alternative 5

Alternative 5 would locate the Union Island maintenance shaft south of Victoria Canal and west of Bonetti Road, putting the shaft site in the middleground views from this roadway. There are no existing structures within the shaft site. Although Union Island is accessible, there are no known destinations for potential sensitive viewing groups, making it a remote destination, with the exception of agricultural activities. Given this relatively isolated nature, the visual quality of the Union Island maintenance shaft site is rated moderately low.

The Union Island maintenance shaft would not be within sensitive views or visible to sensitive viewer groups. The number of viewers would be low, limiting the sensitivity to the existing visual character and quality of the site. Views from SR 4 would be diminished by distance and fleeting at highway speeds. Given its remoteness and lack of sensitive viewers, the effect of the construction and operation/maintenance of the maintenance shaft on Union Island would not be substantial. Therefore, visual quality on Union Island during and after construction of the project would remain moderately low.

Bethany Complex

Alternative 5

The Bethany Complex site is bounded on the north by Byron Highway, on the east and south by agricultural lands, and on the west by the Western Area Power Administration substation and Jones Pumping Plant. Byron Highway is designated as a scenic roadway by Alameda and Contra Costa Counties. Mountain House Road is a scenic roadway designated by Alameda County. The sensitive viewer community would be roadway travelers. The site is comprised of agricultural fields and there is a residential farmstead on the southwest corner of the site at Mountain House and Kelso Roads. The portion of the site south of Kelso Road and west of Mountain House Road is also agricultural with a residence on Mountain House Road. The Mountain House School is also located nearby. Sensitive viewer groups in this area would be roadway travelers, residences, and at the school.

At the Bethany Reservoir State Recreation Area, the Discharge Structure site is primarily undeveloped grassland along the reservoir. Sensitive viewer groups at the reservoir site would be recreationists using the reservoir and bike trail. The reservoir is a part of the larger state water conveyance system. The inlet from the Banks Pumping Station, another pumping plant, an outlet structure, and several dams are located around the periphery of the reservoir. These elements are permanent visual features of the reservoir and surrounding recreation area.

The surrounding area is the agricultural landscape indicative of the visual transition from the Delta to the coastal hills. the coastal hills rise up to the west. With the substation and Jones Pumping Plant dominating the visual character of the site south of Byron Highway and along Mountain House and Kelso Roads, the visual quality is moderate. The visual quality at the Bethany Reservoir is rated as moderately high.

Bethany Complex Features along Byron Highway

Construction of features at the Bethany Complex would take 12 years to construct. Visible features at the Bethany Complex would consist of the Bethany Reservoir Pumping Plant and Surge Basin (including tunnel shaft), concrete and controlled low strength backfill material (CLSM) batch plants, and a proposed substation and switchyard. Construction activities would be visible to roadway travelers from Byron Highway, Mountain House Road, Christenson Road, and Kelso Road as well as from existing rural residences/farms and a school adjacent to the site.

The site is dominated by existing views of transmission and water conveyance facilities. Earthmoving activities would result in the removal of the residence, associated farm structures, and mature vegetation. Topographical changes would also occur in areas that are presently flat to gently sloping. The batch plants would have visible features that are likely to include storage silos, 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. The batch plants would be removed after construction and the lands restored. Earthmoving activities and associated heavy equipment, activities occurring at the batch plants, and vehicles would be visible throughout construction, and would have the potential to create dust clouds that would attract attention from visual receptors and temporarily reduce the availability of views. The effect of dust creation on the visual quality and character of the area would be controlled by environmental commitments for basic and enhanced fugitive dust control measures and measures for entrained road dust (Environmental Commitment EC-11: *Fugitive Dust Control*). This would ensure that dust does not exceed levels that are common in the agricultural landscape through plowing and crop conversion.

The pumping plant maintenance building would be visually similar to structures associated with the Jones Pumping Plant and substation that are close to the site. The proposed substation and switchyard would have similar features as the existing substation, but on a smaller scale. Built features that remain once construction is completed would be concrete and a masonry building and concrete surge tanks. Therefore, it is not anticipated that these features would greatly alter views or degrade the existing visual quality associated with the site and its surroundings the individual appearance of features. Although this facility would compound views with additional conveyance infrastructure within view of sensitive residential and school receptors in the immediate vicinity, it would not substantially degrade the existing visual quality at the site.

Power to the Bethany Complex would be provided by first expanding the existing Tracy Substation by adding new switchgear on the existing substation site, then a new 230 kV permanent substation would be built on the east side of Mountain House Road. They would be connected by a new 230 kV line. One new tower would be added to the existing Tracy Substation site, and one new tower would be added within the new switchyard across Mountain House Road. There would not be any intermediate towers.

In addition to the substations, the following transmission lines would be installed.

- Temporary overhead 14 kV distribution lines and poles to power the Bethany Reservoir Discharge Structure (discussed below), the concrete and CLSM batch plants, the Bethany Reservoir Surge Basin, and the contractor's staging area.
- New permanent overhead 230 kV transmission lines and lattice towers to power Bethany Reservoir Pumping Plant during construction and operations.

The new steel lattice towers would be similar in appearance to existing towers in those existing in the area. The 1,400-foot-long transmission lines would be constructed within a short linear right-of-way corridor that would be 150 feet wide to accommodate staging, installation, stringing, and conductor-pulling. Construction would require erecting the towers and 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 single location for an extended period of time. Towers, cranes, and helicopters would be used to string the 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 affect the visual quality of the AVE. This installation activity, as well as that for the 14 kV lines, would be temporary but also concurrent with other project-related construction. Given that, plus the presence of electrical transmission infrastructure within this AVE already, the visual quality would remain moderate.

Installation of the 2.5-mile aqueducts linking the Bethany Reservoir Pumping Plant with the Bethany Reservoir Discharge Structure would be done primarily by open trench methods. Two reaches, under the Jones Pumping Plant discharge and the Bethany Reservoir Conservation Easement, would be tunneled. During the open trench process, excavation and pipe installation equipment would be present along this corridor, with spoils stored along the trench to be used as backfill. Upon completion, the aqueduct corridor would appear as a linear mound approximately 200 feet in width with an access road. Although the area traversed by the aqueduct is undeveloped grassland, there are other below-ground water conveyance structures that create a similar visual pattern. Therefore, the aqueducts connecting the Bethany Complex and the Bethany Reservoir Discharge Structure would not change the existing visual character of the AVE.

As seen in Figure 18-18, the view from RKOP 9 across agricultural fields from Byron Highway near Mountain House Road, which are both Alameda County scenic routes, is open but transmission lines and infrastructure associated with the substation dominate foreground and middleground views. In addition, wind turbines are located in the foothills to the right of this vantage, southwest of the pumping plant. However, background views of the foothills contribute to the visual quality associated with RKOP 9. As seen in the post-construction rendering, the surge basin would be below finished grade, there would be no embankments surrounding the surge basin, and it would not be visible in this view. In addition, the pumping plant would be underground and only canopy structures, surge tanks, gantry cranes, and office and maintenance buildings would be seen above ground. The pumping plant and equipment storage buildings, as well as the gantry crane, would introduce prominent canopy structures and large-scale structures in a landscape where no such features currently exist. The substation would not be visible behind the electrical building in this view. This would affect views seen by roadway travelers, recreationists, and residences with views of the AVE.

In the rendered post-construction view of RKOP 9, representative landscaping has been added around the perimeter of the complex outside the security fence to provide a conceptual view of how Mitigation Measure AES-1c: *Implement Best Management Practices to Implement Project Landscaping Plan* could affect post-construction views from this view point. While the landscape plantings would be species native to the Delta, the visual spacing and pattern would be somewhat uniform, as opposed to the varied placement found in natural settings. Additionally, there are currently no trees at this location in an agricultural field. As seen in the rendered view, the landscaping would only provide additional massing at the complex, as opposed to visually blending into the visual landscape.

A text description of this figure is provided in Chapter 39, *Text Descriptions of Figures*

Existing View: looking southeast from RKOP 9 on Byron Highway

Rendered View

Figure 18-18. Existing and Rendered (Post-Construction) Views of Bethany Complex from Byron Highway (Alternative 5)

Overall, the existing views from RKOP 9 on Byron Highway toward the Bethany Complex would alter views of the agricultural landscape, increase the amount of conveyance-related infrastructure in the landscape, place these features within view of sensitive visual receptors, and affect views from scenic routes. These features would be more directly visible and prominent in views from Mountain House Road, also reducing the visual quality associated with the scenic route. The project in this location would reduce the visual quality rating from moderate to moderately low.

In addition, Byron Highway would be slightly realigned and a bridge interchange would be constructed to create a connection between the project site, Byron Highway, and Lindemann Road for construction site access. The realigned roadway would be within 100 feet of the existing roadway corridor and would remain the same width. Existing views from the corridor would be retained. This bridge would add a strong visual contrast to the immediate visual surroundings and reduce the existing visual quality. The bridge would not alter the current roadway traveler views substantially, as travelers would be moving at highway speeds and the view would be fleeting. It is not anticipated that the realignment would substantially alter views or degrade the existing visual quality associated with the site and its surroundings or negatively affect the scenic route. The roadway bridge, when considered with the rest of the Bethany Complex would not appreciably change visual quality at the site (remain moderate).

Bethany Reservoir Discharge Structure

Construction of features at the Bethany Reservoir would take place at the same time that the Bethany Complex features along Byron Highway are being constructed. Included in the construction of the Bethany Complex is the installation of a tunnel aqueduct between the site along Mountain House Road to the Discharge Structure. Project features at the Bethany Reservoir State Recreation Area would consist of the Bethany Reservoir Discharge Structure, support facilities, fencing, and staging area. The electric transmission and distribution lines serving the Discharge Structure site are discussed above within the context of the Bethany Complex. A small portion of the recreation area (approximately 1,000 feet of shoreline) would be closed during the 6-year construction period, and construction activities would be visible to recreational viewers using the state recreation area. As noted in Chapter 16, *Recreation*, the California Aqueduct Bikeway would be closed during construction, limiting access for recreational viewers using the bikeway.

This project site is dominated by existing views of the reservoir, rolling terrain, transmission lines, and wind turbines. Although not within view from the Bethany Reservoir Discharge Structure site, the inlet from the Banks Pumping Station, another pumping plant, an outlet structure, and several dams are located around the periphery of the reservoir, as the reservoir was created to move water through the larger state conveyance system. These elements are permanent visual features of the reservoir and surrounding recreation area.

Earthmoving activities would result in the removal of mature trees scattered along the reservoir and topographical changes in a hilly area. Earthmoving activities and associated heavy equipment and vehicles would be readily visible throughout operation of this site and would have the potential to create dust clouds that would attract attention from visual receptors and temporarily reduce the availability of views. California Department of Water Resources (DWR) has identified several environmental commitments (Environmental Commitment EC-11: *Fugitive Dust Control*) to reduce emissions of construction-related criteria pollutants, including basic and enhanced fugitive dust control measures and measures for entrained road dust that would greatly reduce the creation of

dust clouds that would negatively affect views. However, dust clouds are a common part of the nearby agricultural landscape because annual row crops require plowing, which creates dust.

The Bethany Reservoir Discharge Structure would consist of a large concrete structure with four radial gates and outlet bays that would be visible above the water surface. The Discharge Structure would accommodate the slightly realigned California Aqueduct Bikeway over the top of the structure. As seen from RKOP 10 in Figure 18-19, existing views from the banks of the reservoir lack prominent anthropogenic features and the paved bikeway and riprapped and graveled banks are the most notable human-made features in this view. Views of the foothills in the foreground and mature oak trees are the most prominent natural features within existing views associated with RKOP 10. As seen in the post-construction rendering, the Discharge Structure would introduce a large-scale industrial-looking water outlet on the banks of the reservoir. The mature trees would be removed, and the hillsides would be graded with a uniform slope to the left of the Discharge Structure and a geometric landform with a wide, gently-sloped terrace behind the structure. Fencing would surround the Bethany Reservoir Discharge Structure, with the exception of the bikeway crossing over the structure, but the fencing is not prominent in this view when seen in relation with the concrete structure. The existing views from RKOP 10 would be notably altered because the project would introduce large-scale conveyance-related infrastructure into the landscape, placing these features directly adjacent to recreational viewers.

In the rendered post-construction view of RKOP 10, representative landscaping has been added in the area of the discharge structure to provide a conceptual view of how Mitigation Measure AES-1c: *Implement Best Management Practices to Implement Project Landscaping Plan* could affect post-construction views from this view point. The landscape plantings would be species native to the Delta and would effectively replace the existing trees at this site once they reach maturity. The visual spacing shown in the post-construction rendering is somewhat uniform; however, the physical arrangement could be altered to present a more naturalistic appearance.

Based on the reservoir's primary role as part of a larger water conveyance system with other infrastructure elements situated around its perimeter, the Bethany Reservoir Discharge Structure would be consistent with the existing visual character of the site and, therefore, would not constitute a substantial change in visual quality. Therefore, the visual quality would remain moderately high.

A text description of this figure is provided in Chapter 39, *Text Descriptions of Figures*

Existing View: looking south from RKOP 10 on the California Aqueduct Bikeway within the Bethany Reservoir State Recreation Area

Rendered View

Figure 18-19. Existing and Rendered (Post-Construction) Views of Bethany Reservoir Discharge Structure from Bethany Reservoir State Recreation Area (Alternative 5)

Maintenance of the conveyance facilities associated with the Bethany Complex west of Byron Highway and the Bethany Reservoir Discharge Structure would be required periodically and would potentially involve inspecting, painting, cleaning, and repairing structures; vegetation removal and care, as needed; and tunnel and pipeline inspections. 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 further change the visual quality or character of the facilities or surrounding visual landscape during operation. This includes maintaining the colors of the pumping plant structures, fencing, and associated site features, and cleaning the facilities. Therefore, maintenance activities at the facilities would be the primary visible element during operation. These visible maintenance activities would result in temporary, intermittent, and short-term impacts on the existing visual quality and character of the affected areas during operation and would not constitute a substantial change in the site's visual character or quality. In terms of operations, the Bethany Reservoir Discharge Structure would have radial gates that would open vertically. These would be temporarily visible when in operation but would not constitute a lasting degradation in visual quality at the site.

Maintenance and operation of the whole Bethany Complex, 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, the Bethany Complex would not have an effect on existing visual quality and character in the study area.

Field Investigations

As discussed in detail in Chapter 3, Section 3.15, *Field Investigations*, field investigations would be conducted during preconstruction and construction periods related to geotechnical, hydrogeologic, agronomic testing, and construction test projects (geotechnical investigations) following adoption of the EIR. These investigations would be used to more specifically identify appropriate construction methods addressed in the final design documents and help to establish geological and groundwater monitoring programs for the design and construction phases of the adopted project. These investigations may require the use of heavy equipment, such as excavators and boring drills; work vehicles; and staff to perform the investigations. These elements would be visible in the viewshed of all affected viewers wherever such investigations would occur. The investigations would take a short period of time and holes would be backfilled and large-scale excavations would be seeded so that disturbed areas would be restored to existing conditions.

CEQA Conclusions

Based on the evaluation presented above, Table 18-14 presents the impact findings for each project site. These impact summaries and findings take into consideration both construction and operations/maintenance activities, as well as site restoration to the extent it would occur. The impact findings are expressed per project component, not per alternative. The post-mitigation impact finding each project alternative is significant and unavoidable, as each project alternative includes at least one component with a significant impact after mitigation. As shown in Table 18-14, examples of this situation include, but are not limited to, Intakes A, B, C, the Twin Cities Complex, and the New Hope Tract maintenance shaft.

Table 18-14. Aesthetics Impact Findings

Project Site	Alternative(s)	Impact Summary	Impact Prior to Mitigation	Mitigation Measure(s) Applied	Impact Post Mitigation
Intakes A, B, C	1, 2a, 2b, 2c, 3, 4a, 4b, 4c, 5	Visual quality would be reduced from very high to moderate for the placement of massive water conveyance structures along scenic roadways and Sacramento River corridor frequented by roadway and recreational travels, including the realignment of a scenic roadway and presence of coffer dam in the river.	Significant	MM AES-1b MM AES-1c	Significant
Hood-Franklin Park-and-Ride	1, 2a, 2c, 3, 4a, 4b, 4c, 5	Visual quality would remain moderately low due to its use as a construction staging area for other projects and its locations at an I-5 interchange.	Less than Significant	N/A	Less than Significant
Lambert Road concrete batch plant	1, 2a, 2b, 2c, 3, 4a, 4b, 4c, 5	Visual quality would be reduced from moderate to moderately low for the conversion of the agricultural land to an industrial site for an extended period of time (i.e., construction period). Site would be restored after construction.	Significant	MM AES-1a MM AES-1b MM AES-1c	Less than Significant
Twin Cities Complex	1, 2a, 2b, 2c, 3, 4a, 4b, 4c, 5	Visual quality would be reduced from moderately high to moderate for the removal of structures and conversion of agricultural lands to water infrastructure, as well as visibility to roadway viewers in the AVE.	Significant	MM AES-1a MM AES-1b MM AES-1c	Significant
New Hope Tract maintenance shaft	1, 2a, 2b, 2c, 3, 4a, 4b, 4c, 5	Visual quality would be reduced from high to moderate for the volume of residential and roadway viewers in the AVE.	Significant	MM AES-1a MM AES-1b MM AES-1c	Significant
Canal Ranch Tract maintenance shaft	3, 4a, 4b, 4c, 5	Visual quality would remain moderately low due to the lack of viewers and vantage points.	Less than Significant	N/A	Less than Significant
Staten Island maintenance shaft	1, 2a, 2b, 2c	Visual quality would remain moderate due to its remote location and lack of viewers and vantage points.	Less than Significant	N/A	Less than Significant
Terminous Tract reception shaft	3, 4a, 4b, 4c, 5	Visual quality would be reduced from moderately high to moderate for the location visible to roadway travelers on SR 12 in the Delta landscape.	Significant	MM AES-1b MM AES-1c	Less than Significant
Rio Vista Park-and-Ride	1, 2a, 2b, 2c	Visual quality would remain moderate due to its location in the highway commercial corridor and the existing visual character of the site.	Less than Significant	N/A	Less than Significant
Bouldin Island launch and reception shaft	1, 2a, 2b, 2c	Visual quality would be reduced from moderately high to moderate for the broad extent of project components on the undeveloped island visible to roadway travelers on SR 12, including shafts, an overpass, and levee repair.	Significant	MM AES-1a MM AES-1b MM AES-1c	Significant

Project Site	Alternative(s)	Impact Summary	Impact Prior to Mitigation	Mitigation Measure(s) Applied	Impact Post Mitigation
King Island maintenance shaft	3, 4a, 4b, 4c, 5	Visual quality would be reduced from moderate to moderately low as the facility would be a new constructed feature in the Delta landscape for recreational travelers accessing the nearby marina.	Significant	MM AES-1b MM AES-1c	Less than Significant
Mandeville Island maintenance shaft	1, 2a, 2b, 2c	Visual quality would be reduced from moderately high to moderately low. While the shaft site is remote, construction of an overpass over railroad tracks would add roadway infrastructure into an agricultural landscape.	Significant	MM AES-1b MM AES-1c	Less than Significant
Lower Roberts Island launch and reception shaft and RTM storage	3, 4a, 4b, 4c, 5	Visual quality would be reduced from moderately high to moderately low for the appearance of the facility on the agricultural landscape. Associated levee work would affect views from water craft. The rail bridge into the Port of Stockton would introduce an elevated structure into the Delta landscape.	Significant	MM AES-1a MM AES-1b MM AES-1c	Significant
Bacon Island reception shaft	1, 2a, 2b, 2c	Visual quality would be reduced from moderately high to moderately low. While the shaft site is remote, construction of an overpass over railroad tracks would add roadway infrastructure into an agricultural landscape.	Significant	MM AES-1b MM AES-1c	Less than Significant
Charter Way Park-and-Ride	1, 2a, 2b, 2c, 3, 4a, 4b, 4c, 5	Visual quality would remain low due to the developed nature of the site and its location in a highway commercial area in the City of Stockton.	No Impact	N/A	No Impact
Upper Jones Tract maintenance shaft	3, 4a, 4b, 4c, 5	Visual quality would remain moderately low due to lack of viewers and vantage points.	Less than Significant	N/A	Less than Significant
Byron Park-and-Ride	1, 2a, 2b, 2c, 3, 4a, 4b, 4c	Visual quality would remain low due to the developed nature of the site and its location in a commercial area of Byron.	No Impact	N/A	No Impact
Southern Complex on Byron Tract	1, 2a, 2b, 2c, 3, 4a, 4b, 4c	Visual quality would be reduced from moderate to moderately low for the appearance of the facility on the landscape. Although water conveyance infrastructure exists, the site is visually consistent with the Delta landscape and can be viewed from designated scenic roadways. The addition of structures would reduce the site's visual quality	Significant	MM AES-1a MM AES-1b MM AES-1c	Significant
Southern Complex west of Byron Highway	1, 2a, 2b, 2c, 3, 4a, 4b, 4c	Visual quality would remain unchanged at moderate. This is a visual continuation from the Byron Tract converting agricultural land to water infrastructure and adding a roadway overpass	Less than Significant	MM AES-1a MM AES-1b MM AES-1c	Significant

Project Site	Alternative(s)	Impact Summary	Impact Prior to Mitigation	Mitigation Measure(s) Applied	Impact Post Mitigation
Bethany Road Park-and-Ride	1, 2a, 2b, 2c, 3, 4a, 4b, 4c	Visual quality would remain moderately low as, while the landscape is primarily agricultural, there are also existing visual components in the AVE that reduce the visual quality. The project would not contribute to reducing the visual quality any further.	Less than Significant	N/A	Less than Significant
Union Island maintenance shaft	5	Visual quality would remain moderately low due to lack of viewers and vantage points.	Less than Significant	N/A	Less than Significant
Bethany Complex	5	Bryon Road: Visual quality would be reduced from moderate to moderately low as the existing views already encompass water and electric infrastructure. Project would add additional infrastructure and an elevated roadway overpass.	Significant	MM AES-1a MM AES-1b MM AES-1c	Significant
Bethany Complex	5	Bethany Reservoir: Visual quality would remain moderately high, as the reservoir is a part of an active water conveyance system and similar infrastructure exists.	Less than Significant	N/A	Less than Significant

1

Construction of the project alternatives would substantially affect the existing visual quality and character present in the study area from public roads, residences, and AVEs in the vicinity of project sites. Contributing to this impact would include the long-term nature of facility construction at all of the major project sites and visibility of heavy construction equipment in the proximity to sensitive vantage points; removal 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, as well as dust generation; addition of large-scale industrial-looking structures (intakes, pumping plants, discharge structures and related facilities); remaining presence of large-scale RTM area landscape effects; and introduction of tall lattice steel transmission towers.[6] Because of the combined effect of multiple and concurrent construction sites on localized views, the length of time construction would occur, and the changes permanent facilities would have on multiple short- and long-range views in the study area and high viewer sensitivity, this impact is considered to be significant at a number of sites, as shown in Table 18-14. This conclusion also takes into consideration project alternatives' visual effects in a large Delta landscape. Although in a regional context the project alternatives would affect a relatively small portion of the Delta limited to the distinct and discrete project sites, construction and permanent facility changes in visual quality and character would be substantially reduced in a number of locations in the study area.

Landscaping implemented as a part of the project andf Environmental Commitment EC-4a: *Develop and Implement Erosion and Sediment Control Plans* (Appendix 3B) would improve project aesthetics once construction is completed. However, 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.

Mitigation Measures AES-1a through AES-1c would reduce impacts by installing visual barriers between construction work areas and sensitive receptors, applying aesthetic design treatments to all structures (e.g., buildings, bridges) to the extent feasible, and using best management practices to implement a project landscaping plan. Upon completion of construction, construction equipment and facilities would be removed from those areas not part of the permanent project facilities and reclaimed in some manner (e.g., agriculture or natural habitat). Overall, not all impacts would be reduced to a less-than-significant level because, although environmental commitments and mitigation measures would reduce some aspects of the impact on visual quality and character, these measures would only partially reduce effects on visual quality associated with construction and the size of some the conveyance facilities, as noted in Table 18-14. These remaining significant impacts would result in permanent changes within the regional landscape at distinct project sites (e.g., intake facilities, pumping plants, control structures, fish screens, and bridges) such that there would be noticeable to very noticeable changes at those sites that do not blend or are not in keeping with the existing visual environment based on the viewer's location in the landscape relative to the change. Thus, all project alternatives would include some facilities or components that would result in significant and unavoidable impacts on the existing visual quality and character within the study area.

[6] These project elements would contribute to the overall visual impact at each project site to varying degrees. For instance, the lattice steel transmission towers could contribute to a significant visual impact at one site, but not another due to the visual character and components at that site.

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

All Project Alternatives

1. To reduce the impact on sensitive receptors from the change in existing visual quality, DWR will require installation of 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 to be applied to the extent feasible and practicable.

    a. Visual barriers will be installed to minimize sensitive viewers (i.e., residents and recreational areas) views of construction work areas.

    b. The visual barriers will be placed to protect residents and recreational areas that are located within 0.25 mile of a project construction site and where views to the work areas represent a significant visual impact.

    c. The visual barrier may include chain link fencing with privacy slats, fencing with windscreen material, silt fence, wood or concrete barrier, or other similar barrier.

    d. The visual barrier will be a minimum of 6 feet high to help 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 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-1b: Apply Aesthetic Design Treatments to Project Structures

All Project Alternatives

1. DWR will require 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.

    a. DWR will require evaluation of 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, and bridges so that the resultant design will complement the natural landscape, be aesthetically pleasing, and minimize the effects of visual intrusion of the Delta Conveyance Project facilities on the landscape, to the extent feasible.

    The following minimum performance standards will apply.

        i. 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.

        ii. New structures that warrant painting 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 Bureau of Land Management Standard Environmental Colors Chart CC-001: April 2014. Because color selection will vary by location, DWR, 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. DWR will select colors for the coloring of the most prevalent season. Panels will be a minimum of 3 feet 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 https://blmwyomingvisual.anl.gov/mitigation/federal/index.cfm for more information on this technique and other best management practices and techniques for visual screening.

a) 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.

b) 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.

c) DWR will maintain the paint color over time.

iii. In consultation with Pacific Gas and Electric Company (PG&E), SMUD, and other power utility providers on the study area, DWR will require the design of the project's permanent transmission poles to incorporate the following measures to be consistent with equipment and structures used by these utilities.

a) Transmission poles will be power providers standard lattice towers and will be galvanized steel or other required treatment to make the structures visually consistent with other similar towers in the visual landscape.

b) Finishes will be selected for their ability to achieve the correct color selection, durability, and environmental safety.

iv. DWR will require aesthetic design features where they can be accommodated at concrete or shotcrete structures that are highly visible to the public. These features may include, but not be limited to, 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.

v. DWR will require evaluation of bridge crossing designs using lattice steel, consistent with other bridges in the Delta and implement where site conditions can accommodate a lattice steel structure. 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.

vi. DWR will require that visible pipelines, guardrails, and non-safety 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 nonreflective surface

materials to reduce potential for glare, and the use of glossy paints or surfaces would be avoided.

This measure and the aesthetic design treatments for alternative structures would help minimize the impact on visual quality from the development of the water conveyance structures in the study area, using techniques that make the structures blend into the surrounding environment.

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

All Project Alternatives

1. DWR will require application of additional landscape treatments and use best management practices as part of the post-project landscaping plan (as indicated by Environmental Commitment EC-4a: *Post-Construction Site Reclamation* in Appendix 3B) to restore and maintain local character, improve aesthetics, and reduce the visual scale of the proposed water conveyance elements in the study area.

    a. In addition to the guidance set forth in the environmental commitments, in areas significantly affected by the project, DWR will require utilization of landscaping to minimize such impacts including, but not limited to, native vegetation and trees. 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.

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

        i. 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, DWR 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.

        ii. 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 species native to the Delta and based on the plants' abilities to screen built features and provide aesthetic accents.

        iii. Vegetative accents and screening will be used to aid in screening substations located next to residences. Plant selection will be species native to the Delta and based on the plants' abilities to screen features and provide aesthetic accents.

        iv. Vegetative accents and screening will be used to aid in screening and shading park-and-ride lots. Plant selection will be species native to the Delta and based on the plants' abilities to screen features and provide aesthetic accents.

        v. Landscape berms, combined with tree and shrub plantings, will be used to help screen built features from existing view points 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.

a) 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 the California Department of Fish and Wildlife to use a mutually acceptable plant mix palette.

b) 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.

vi. Revegetation in areas affected by bridge construction will incorporate native trees and shrubs to replace trees and shrubs that were removed due to bridge construction.

vii. The use of native grass and wildflower seed in erosion-control measures will be required where such a measure would improve aesthetics.

a) Wildflowers will provide seasonal interest to areas where trees and shrubs are removed, or grading has occurred.

b) 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.

c) If not appropriate to the surrounding habitat, wildflowers will not be included in the seed mix.

d) Under no circumstances will invasive plant species be used in any erosion-control measures.

viii. Under no circumstances will any invasive plant species be used at any location.

ix. Vegetation will be planted within immediately following project completion.

x. 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.

xi. 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 to 2 days, or the zone or system will be shut down until it can be repaired.

xii. All measures prescribed above to screen facilities will not degrade or eliminate scenic vistas or be designed in a manner that negatively affects views from scenic roadways.

xiii. These measures will not be implemented in sensitive habitats or locations with sensitive species. Each area where mitigation would be implemented will be surveyed prior to installation of mitigation to ensure that no sensitive habitats or sensitive species are present.

This measure will reduce the impacts on local visual quality and the overall visual quality of the study area from the presence of project water conveyance facilities by introducing a more natural visual appearance around these facilities akin to the natural surroundings in the Delta.

Mitigation Impacts

Compensatory Mitigation

Although the CMP described in Appendix 3F, *Compensatory Mitigation Plan for Special-Status Species and Aquatic Resources*, does not act as mitigation for impacts on aesthetics and visual resources from project construction or operations, its implementation could degrade the existing visual character and quality from publicly accessible view points.

Compensatory mitigation occurring on Bouldin Island and I-5 ponds would result in the conversion of primarily agricultural lands to restored or enhanced habitat across all locations, as well as the alteration of levees on Bouldin Island. The compensatory mitigation sites proposed for Bouldin Island would be visible from SR 12 and County scenic routes on the island. All three I-5 ponds would be visible from I-5. Pond 6 would be in middleground views, and Ponds 7 and 8 would be in foreground views. Ponds 7 and 8 would be visible from SR 12 in foreground views. Pond 6 would be visible in foreground views from West Woodbridge Road.

Alterations such as channel and levee modifications, landform alteration from dredge spoil placement, and floodplain lowering could change the visual landscape from these view points. The 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, 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 and increase visual access to Delta islands and natural habitat areas within the Delta by providing additional wildlife habitat, visual diversity, and an increase in positive visual experiences. Development of the I-5 ponds would effectively be an enhancement of the existing properties. Therefore, restoring areas and views to natural, native habitat likely would be beneficial and would increase visual diversity and provide wildlife viewing opportunities. Access improvements, such as construction of gravel roads and vehicle crossings, could affect the landscape character and visual quality of Bouldin Island and the areas associated with the I-5 ponds. Changes occurring on Bouldin Island would be visible from levee roads along Delta sloughs that are considered to be Sacramento County scenic routes. To account for ongoing work by levee maintenance agencies, the extent of levee repairs would be reevaluated during the design phase and coordinated with the local levee maintenance agency. Changes occurring at the I-5 Pond locations would be visible from I-5.

Other compensatory mitigation actions could also degrade the existing visual character and quality from publicly accessible view points. The activities would include development of species-specific nesting and foraging habitats, waters and wetlands enhancement and creation, aquatic habitat development and restoration, tidal wetland restoration, and channel margin restoration. While designs for these have not been progressed to the extent of that for the Bouldin Island mitigations or I-5 ponds, it can be reasonably assumed that the construction of these additional mitigations would entail very similar construction activities to those occurring on Bouldin Island and at the I-5 ponds. Development of these mitigations would involve topographic grading, exposure of bare soil, and change in vegetation that could be visually adverse, although temporary. Like the mitigations on Bouldin Island and the I-5 ponds, once constructed these compensatory mitigations would visually complement the visual character and quality of the study area.

Although some effect on visual quality and character of the restoration sites would occur during construction of these compensatory mitigation features, once constructed these features would be consistent with the existing visual character and quality of localized views in the study area. When considered with the visual quality and character effects of the construction and operation of the project alternative, the visual changes from compensatory mitigation, although beneficial, would not change the project alternative's conclusions. Impacts would remain significant and for some facility construction significant and unavoidable.

Other Mitigation Measures

Some mitigation measures, which are not associated with the CMP, would involve placement and construction of new or additional electric transmission infrastructure and replacement or relocation of agricultural infrastructure. (e.g., Mitigation Measure BIO-2c: *Electrical Power Line Support Placement).* Temporary impacts on the study area's visual character and quality resulting from these *other* mitigation measures addressing impacts related to electric transmission and agricultural infrastructure would be similar to the construction and operations/maintenance effects of the project alternatives in certain construction areas and would contribute to visual impacts of the project alternatives.

The project would require the construction of power lines to serve maintenance shafts, intakes, and pumping and discharge complexes. Mitigation Measure BIO-2c: *Electrical Power Line Support Placement* would require transmission lines be placed on existing infrastructure and underground conduit to the maximum extent possible. However, where that is not possible, new aboveground infrastructure would be needed. The placement of this new aboveground infrastructure constructed consistent with Mitigation Measure BIO-2c would have the same type and level of visual impact of electric transmission infrastructure constructed outside the guidance of Mitigation Measure BIO-2c, as that infrastructure would still need to be at the project site it would serve. The effect of electric transmission infrastructure placed and constructed pursuant to Mitigation Measure BIO-2c on visual character and quality would not be substantially different from that needed for the project in any case with Mitigation Measures AES-1a: *Install Visual Barriers between Construction Work Areas and Sensitive Receptors*; AES-1b: *Apply Aesthetic Design Treatments to Project Structures*; and AES-1c: *Implement Best Management Practices to Implement Project Landscaping Plan*.

Under Mitigation Measure AG-3: *Replacement or Relocation of Affected Infrastructure Supporting Agricultural Properties*, DWR would construct new water, power, drainage, and other infrastructure needed to support ongoing agricultural uses on existing agricultural land. While the construction of the facilities would create some visual contrast, the completed facilities would be in keeping with

the existing visual character of the agricultural lands. Should construction of these facilities involve ground disturbance that could generate fugitive dust, dust control measures incorporated into the project alternatives through Environmental Commitment EC-11: *Fugitive Dust Control* (Appendix 3B) would control and reduce the effect of dust on the visual quality and character of the area. Also, if any of these new or replaced facilities are visible from the viewing points of sensitive visual receptors, Mitigation Measures AES-1a: *Install Visual Barriers between Construction Work Areas and Sensitive Receptors* would reduce the visual disruption of construction activities. Therefore, the effect on visual character and quality would not be substantially different from that evaluated for the project alternatives.

Based on this evaluation of Mitigation Measures BIO-2c: *Electrical Power Line Support Placement* and AG-3: *Replacement or Relocation of Affected Infrastructure Supporting Agricultural Properties*, these mitigation measures are unlikely to impact the study area's visual character and quality to any greater degree than the project alternatives and the impact on visual character and quality would not be substantial.

Overall, the impacts on visual character and quality from construction of compensatory mitigation and implementation of other mitigation measures, combined with project alternatives, would not change the significant and unavoidable impact conclusion.

Impact AES-2: Substantially Damage Scenic Resources including, but Not Limited to, Trees, Rock Outcroppings, and Historic Buildings Visible from a State Scenic Highway

SR 160 traverses Contra Costa and Sacramento Counties and can be divided into a southern and northern section. The southern stretch of SR 160 begins in eastern Antioch and extends approximately 50 miles north to the southern city limit of Sacramento at Freeport Boulevard. The northern stretch of SR 160 extends from the southern end of 16th Street Bridge to I-80 Business in Sacramento. In its entirety, SR 160 contains three major junctions located at SR 12 near Rio Vista, County Road (CR) J11 in Walnut Grove, and CR E9 near Paintersville, all in Sacramento County. In 1963, the southern stretch of SR 160 was designated as a scenic highway in the State Scenic Highway System.

All Project Alternatives

As described under Impact AES-1, SR 160 in Sacramento County is the only officially designated State Scenic Highway in the study area. The only project sites that would affect SR 160 are Intakes A, B, and C. Project features (i.e., construction and operation of the intakes and aboveground SCADA lines) could cause temporary and permanent changes in local visual conditions associated with views from SR 160. Impacts on views from state scenic highways result when there are changes to the existing visual character and quality of views associated with these resources. Impact AES-1 discusses in detail impacts on visual character and quality and Impact AES-2 summarizes how these impacts would affect views from SR 160. For this reason, this section focuses on potential impacts that could affect scenic resources from a State Scenic Highway (i.e., SR 160).

Intakes A, B, and C

All Alternatives

Construction of each intake would take up to 10 years. Under all alternatives, the intakes would require that SR 160 be realigned within the intake impact area to accommodate construction of the

intake structure. These activities would be visible from SR 160 and would affect scenic resources from SR 160.

As described in Impact AES-1, construction activities associated with the intake structures would introduce considerable heavy equipment into the viewshed of travelers on SR 160 and construction sites used for construction activities and associated equipment would be readily visible from SR 160. While farm equipment is common in this area, the presence of long-term and large-scale construction is not common and would negatively affect viewers who would see work areas over an extended period of time where they once saw agricultural lands.

Once the site is cleared of built features, construction activities and associated equipment would be readily visible throughout operation of these sites, and they could temporarily reduce the availability of views through the potential creation of dust clouds. Similar to Impact AES-1, Environmental Commitment EC-11: *Fugitive Dust Control* would greatly reduce the creation of dust clouds that would negatively affect views. Additionally, revegetation of disturbed areas would occur as part of the project and would help lessen visual impacts from SR 160. However, impacts on local scenic resources from SR 160 would still be substantial.

As described in Impact AES-1, Intakes A, B, and C would introduce concrete and steel intake structures into views available from SR 160 and in an area with an existing rural visual character and a riparian, riverine, and agricultural nature. As a result, the project would still be visible from SR 160 and therefore, would result in substantial temporary and long-term or permanent changes to scenic resources.

SR 160 would be relocated roughly to its original location once construction is complete. Levee improvements associated with the intake would slightly elevate the roadway profile and would offer roadway viewers with increased vista views as they travel past the intakes; however, as discussed under Impact AES-1, the intake facilities would substantially alter and degrade scenic resources along SR 160 and therefore, result in negative visual impacts to the rural Delta landscape. In addition, construction activities discussed in Impact AES-1 would create a visual barrier and segment views which would result in permanent changes to local visual conditions.

SCADA Lines

As described under Impact AES-1, the majority of utilities used to power the project would be achieved by undergrounding power cables. However, aboveground SCADA lines would be installed for all project alternatives near post mile 31.37 along SR 160 to Scribner Road. The aboveground SCADA lines would use existing poles and would not look different than existing conditions. Therefore, construction activities associated with installation of SCADA lines would not result in substantial temporary and long-term or permanent changes to scenic resources from SR 160.

Field Investigations

Field investigations would be conducted during preconstruction and construction periods related to geotechnical, hydrogeologic, agronomic testing, and construction test projects (geotechnical investigations). These activities may require the use of heavy equipment, such as excavators and boring drills; work vehicles; and staff to perform the investigations, which would be visible from SR 160. However, these activities would be temporary and would not result in any long-term or permanent changes to scenic resources from SR 160.

Operations and Maintenance

Maintenance of the conveyance facilities (i.e., intakes and SCADA lines) would be required periodically and would involve painting (if needed), cleaning, and repairing structures; annual dredging at sedimentation basin and drying lagoons; vegetation removal and care along embankments; facility inspections; and vegetation removal within SCADA line rights-of-way. These activities could require the use of heavy construction equipment and could be visible to viewers on SR 160. However, these activities would be temporary and would be similar to existing agricultural production and levee maintenance equipment that are common in the area. Therefore, no substantial long-term or permanent changes to scenic resources from SR 160 would result from operations and maintenance activities associated with the construction and installation of all three intakes and SCADA lines.

CEQA Conclusion—All Project Alternatives

Because visual elements associated with all project alternatives would conflict with the existing forms, patterns, colors, and textures along 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 a State Scenic Highway), these impacts are considered significant. Mitigation Measures AES-1b: *Apply Aesthetic Design Treatments to Project Structures* and AES-1c: *Implement Best Management Practices to Implement Project Landscaping Plan* 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 with Mitigation Measures AES-1b and AES-1c the overall view from SR 160 to the location of intakes would change from open agricultural land to a large industrial-type facility. 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-1b: Apply Aesthetic Design Treatments to Project Structures

See description of Mitigation Measure AES-1b under Impact AES-1.

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

See description of Mitigation Measure AES-1c under Impact AES-1.

Mitigation Impacts

Compensatory Mitigation

Although the CMP described in Appendix 3F does not act as mitigation for impacts on aesthetics and visual resources from project construction or operations, its implementation could result in impacts on aesthetics and visual resources

None of the compensatory mitigation sites would be located in proximity to SR 160. The closest compensatory mitigation sites to SR 160 would be on the northwest portion of Bouldin Island,

almost 3 miles distant. The I-5 Ponds sites are 8 to 10 miles distant to the east. The distance coupled with intervening vegetation along SR 160 prohibit views from this State Scenic Highway. It is noted that the compensatory mitigation sites for the tidal wetland or channel margins have not been determined. It cannot be known at this time whether any of these compensatory mitigation sites would be in view of SR 160. Although construction of the tidal wetland or channel margins would create a visual contrast if located in view of SR 160, this contrast would be temporary. After completion of construction, it is assumed these sites would visually meld into the surrounding visual character of the area and not create a lasting impact to visual quality. Therefore, restoration occurring at the mitigation sites would not permanently damage existing visual resources visible from SR 160, the only State Scenic Highway in the study area. There would be no impact.

Other Mitigation Measures

As noted under the evaluation of Impact AES-2, SR 160 in Sacramento County is the only designated or eligible State Scenic Highway in the study area, based on its rural visual character and a riparian, riverine, and agricultural nature. The only project sites that would affect SR 160 are Intakes A, B, and C and related project features (i.e., construction and operation of the intakes, aboveground SCADA lines). The mitigation measure with potential to result in impacts on visual character or quality of scenic resources along a State Scenic Highway is Mitigation Measure AG-3: *Replacement or Relocation of Affected Infrastructure Supporting Agricultural Properties*. Temporary impacts on any scenic resources viewed from SR 160 would be similar to construction and operations/maintenance effects of the project alternatives in certain construction areas and would contribute to visual impacts of the project alternatives.

Under Mitigation Measure AG-3: *Replacement or Relocation of Affected Infrastructure Supporting Agricultural Properties*, DWR would construct new water wells and relocate or replace wells, pipelines, power lines, drainage systems, and other infrastructure that are needed to support ongoing agricultural uses. Activities associated with this mitigation measure would take place on existing agricultural land. While the construction of the facilities would create some visual contrast during construction, the completed facilities would be in keeping with the existing visual character of the agricultural lands visible from SR 160. Should construction of the agricultural infrastructure involve ground disturbance that could generate fugitive dust, fugitive dust control and entrained dust control measures incorporated into the project alternatives through Environmental Commitment EC-11: *Fugitive Dust Control* (Appendix 3B) would control and reduce the effect of dust on the visual quality and character of the area. Therefore, the effect on visual character and quality of the visual resources viewed from SR 160 would not be substantially different from that evaluated for the project alternatives.

Based on this evaluation of Mitigation Measure AG-3: *Replacement or Relocation of Affected Infrastructure Supporting Agricultural Properties*, this mitigation measure is unlikely to impact the visual character and quality of scenic resources visible from SR 160 to any greater degree than the project alternatives and the impact on visual character and quality would not be substantial.

Overall, the impacts on designated State Scenic Highway SR 160 from construction of compensatory mitigation and implementation of other mitigation measures, combined with project alternatives, would not change the significant and unavoidable impact conclusion.

Impact AES-3: Have Substantial Significant Impacts on Scenic Vistas

As defined in Section 18.1.2, *Concepts and Terminology,* scenic vistas generally encompass a wide area with long-range views to surrounding elements in the landscape. Such vistas are often available to viewers because of open, flat agricultural lands with few obstructions and from elevated vantages with views over the landscape. In addition, vistas have a directional range. Some areas have scenic vistas with a 360-degree view in all directions, while others may be limited in a manner that reduces the line-of-sight angle and amount of vista that is visible, resulting in a narrower vista view.

For this project, the analysis of impacts on scenic vistas began with the review of local and county jurisdictional planning documents, such as open space, circulation, and natural resource elements of general plans within the AVEs. Ten local and county jurisdictional planning documents consulted were reviewed: the *East Bay Regional Park District Master Plan* (East Bay Regional Park District 2013:20)*, Alameda County General Plan*, Scenic Route Element (County of Alameda 1966:1,4,7), Alameda *East County Area Plan* (County of Alameda 2000:30–33)*, Contra Costa County General Plan 2005–2020* (County of Contra Costa 2005:5–25)*, Sacramento County General Plan of 2005–2030* (County of Sacramento 2011:33-42)*, 2035 San Joaquin County General Plan* (County of San Joaquin 2016: 3.1-3,3.4-13)*, 2030 Countywide General Plan* (County of Yolo 2009:LU-23–LU-24, LU-26, CC-1.2, CC-1.3, CC-1.12, CC-1.15, and CC-1.17), *City of Brentwood General Plan* (City of Brentwood 2014:4-5, 9-25)*, Envision Stockton 2040 General Plan* (City of Stockton 2018:1-2, 1-3)*,* and *City of Rio Vista General Plan* (City of Rio Vista 2002: Goal 10.11, Policy 10.11.A, and 10.11.B)*.*

This review of planning documentation revealed there are no scenic vistas designated or otherwise identified in the AVEs. In the absence of designated vistas within local and county jurisdictional planning documents, potential vista view points were identified through field reconnaissance.

Views from the identified vista view points were found not to substantially differ from those experienced at the RKOPs identified and analyzed under Impact AES-1, because the visual environment in the Delta is typically level and long-range (i.e., background) views observed from the view points would be similar to the landscape and visual features described in Impact AES-1. Therefore, with the absence of designated vista view points and the similarity of long-range views (i.e., RKOPs) considered in Impact AES-1, the project alternatives' effects on scenic vistas would be the same as the visual effects discussed in Impact AES-1 and are not discussed further in this analysis of Impact AES-3.

CEQA Conclusion—All Project Alternatives

As noted above, the project alternatives' effects on scenic vistas would be the same as the visual effects discussed in Impact AES-1. Please refer to the discussion of CEQA Conclusions under Impact AES-1. All project alternatives would include some facilities or components that would result in significant and unavoidable impacts on existing visual quality and character within the study area including scenic vistas. Mitigation Measures AES-1a through AES-1c identified for Impact AES-1 would reduce scenic vista impacts in the same way described for effects on visual quality and character. Please refer to Impact AES- 1 for additional description of identified mitigation measures. Overall, not all impacts would be reduced to a less-than-significant level because, although environmental commitments and mitigation measures would reduce some aspects of the impact on scenic vistas, these measures would only partially reduce effects for the same reasons described for Impact AES-1.

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

See description of Mitigation Measure AES-1a under Impact AES-1.

Mitigation Measure AES-1b: Apply Aesthetic Design Treatments to Project Structures

See description of Mitigation Measure AES-1b under Impact AES-1.

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

See description of Mitigation Measure AES-1c under Impact AES-1.

Mitigation Impacts

Compensatory Mitigation

Although the CMP described in Appendix 3F does not act as mitigation for impacts on aesthetics and visual resources from project construction or operations, its implementation could result in impacts on aesthetics and visual resources. As noted above, the project alternatives' effects on scenic vistas would be the same as the visual effects discussed in Impact AES-1. Please refer to the discussion of Compensatory Mitigation under Impact AES-1.

Other Mitigation Measures

Although the mitigation measures described in other chapters to address the impacts on other resources (e.g., biology, soils) do not act as mitigation for impacts on aesthetics and visual resources from project construction or operations, their implementation could result in impacts on aesthetics and visual resources. As noted above, the project alternatives' effects on scenic vistas would be the same as the visual effects discussed in Impact AES-1. Please refer to the discussion of Other Mitigation Measures under Impact AES-1. Overall, the impacts on scenic vistas from construction of compensatory mitigation and implementation of other mitigation measures, combined with project alternatives, would not change the significant and unavoidable impact conclusion.

Impact AES-4: Create New Sources of Substantial Light or Glare That Would Adversely Affect Daytime or Nighttime Views of the Construction Areas or Permanent Facilities

The following analysis considers the project alternatives' potential to create a substantial effect on the environment through the addition of sources of lighting and glare in the study area. As noted in Chapter 3, Section 3.4.12, *Fencing and Lighting*, permanent lighting would be downcast, cut-off type fixtures with nonglare finishes and controlled by photocells and motion sensors, depending on the location. Although temporary, the park-and-ride lots would also be lighted and equipped with nighttime lighting for security purposes. This lighting would be of similar design as the permanent lighting to control light trespass and glare. Construction lighting would be similar except for a few necessary nighttime work activities that would require higher-illumination safety lighting of the work sites. Lights would provide color with natural light qualities and minimum intensity with adequate strength for security, safety, and personnel access. The lights would comply with the Illuminating Engineering Society industry standards for light source and luminaire measurements and testing methods. During operations, the lights at the intakes, tunnel shafts, Southern Complex, and Bethany Complex would be motion activated to minimize light and glare to adjacent properties.

Like other aesthetic effects, the intensity of the effect of light and glare is dependent on the presence of sensitive receptors (i.e., viewers) and their location relative to, or distance of the sensitive receptor from, the light or glare source. The noticeable effect of light or glare decreases with distance. While the source may still be seen in the distance, its intensity and resulting effect are reduced. Also, if the light or glare source is in an area that is already subjected to light or experiences glare, the additive intensity of a project's light or glare contribution may be minimal.

In taking into account the presence/absence of sensitive receptors, location/distance of sensitive receptors, and existing light/glare conditions, the following project facilities are found not to have a substantial effect on the environment and are not considered further in this analysis (brief explanation provided in parentheticals).

- Hood-Franklin Park-and-Ride (existing light/glare sources associated with the I-5 interchange, location relative to receptors)
- New Hope Tract maintenance shaft (distance/location relative to receptors)
- Canal Ranch Tract maintenance shaft (distance/location relative to receptors)
- Staten Island maintenance shaft (distance/location relative to receptors)
- Terminous tract reception shaft (location relative to receptors)
- Rio Vista Park-and-Ride (existing light/glare sources associated with adjacent land uses, location relative to receptors)
- Bouldin Island launch and reception shaft (distance/location relative to receptors)
- King Island maintenance shaft (distance/location relative to receptors)
- Mandeville Island maintenance shaft (distance/location relative to receptors)
- Bacon Island reception shaft (distance/location relative to receptors)
- Charter Way Park-and-Ride (existing light/glare sources associated with adjacent land uses)
- Upper Jones Tract maintenance shaft (distance/location relative to receptors)
- Byron Park-and-Ride (existing light/glare sources associated with adjacent land uses)
- Union Island maintenance shaft (distance/location relative to receptors)

All Project Alternatives

Project Construction

Lighting

Construction of the project facilities would occur over a period of 12 to 14 years. Specific activities would vary over time, dependent on the activities and equipment needed at any given time. The majority of activities needed for construction of project facilities are assumed to occur 5 days a week for up to an average of 10 hours per day, from sunrise to sunset, during the entire construction period. This would limit the need for construction lighting and equipment use during nighttime hours. However, there are limited exceptions for specific construction activities needed at certain project facilities, which would require nighttime construction lighting and equipment use. The lighting impacts of these activities are discussed below.

Intakes A, B, and C

Continuous concrete pours would occur for 24 hours per day for construction of all intakes (Intakes A, B, and C) and would require nighttime lighting, as described above. These concrete pours are required to ensure the structural integrity of the intake structures. Although the structures would be large, this activity would occur on a short-term basis, limiting the need and use of construction lighting at each site. Likewise, nighttime lighting would be needed at the tunnel shaft site for continuous tunnel construction. Again, tunnel construction would be short-term with limited use of construction lighting. Each site either has no sensitive receptors to experience the light or a small number of such receptors. This would not be a substantial change at these sites. Concrete delivery trucks would be a consistent presence access roads during the continuous concrete pour process. This would increase the presence of headlights along these roadways and would be visible to adjacent receptors. However, some nighttime traffic already exists on SR 160, and this analysis assumes that the delivery truck traffic would not create a steady or consistent source of nighttime light during the overall period of construction at the intake sites. This would not constitute a substantial effect attributable to lighting.

Lambert Road Concrete Batch Plant

To accommodate the continuous pours needed for the construction of the intakes and tunnel shafts, the Lambert Road Concrete Batch Plant would operate periodically for 24 hours per day during project construction. Hours of operation of the batch plant would be contingent on the activity occurring at a given time (e.g., intakes, tunnel shafts). Given its proximity to rural residences, nighttime construction lighting would be an impact. For those residences closer to I-5, which is a source of nighttime light, the light from the batch plant would not be as noticeable. However, the residences closer to the batch plant along CR J8/Hein Road would be exposed to the nighttime lighting when used. This would constitute a substantial effect attributable to lighting.

Twin Cities Complex, Lower Roberts Island Launch and Reception Shaft and RTM Storage, Southern Complex, and Bethany Complex

Like the intakes, for a short period of time all shaft sites would require continuous concrete pours 24 hours per day, which would require nighttime lighting (the majority of shaft sites, except for Twin Cities Complex, Lower Roberts Island launch and reception shaft[7] and RTM storage, Southern Complex, and Bethany Complex, are located far enough from sensitive receptors that lighting impacts would not be generated). Further, RTM excavation, testing, drying, and movement from the launch shaft sites would occur 20 hours per day Monday through Friday and 10 hours on Saturdays, allowing time for equipment maintenance. RTM would be removed from the tunnel through the shafts and transported by conveyor to handling and storage facilities near launch shaft sites (the transport of RTM from these temporary storage areas to dry stockpile areas would occur only from sunrise to sunset, however). RTM movement at the Southern Complex from temporary storage to dry stockpile areas would occur 5 days per week from sunrise to sunset. In addition, at the Twin Cities Complex, Lower Roberts Island launch and reception shaft and RTM storage, and Southern Complex (under all alternatives except Alternative 5), RTM could be moved by railroad at any time of day and on any day, depending on the railroad schedules.

[7] The Lower Roberts Island launch shaft is a double launch shaft site under Alternative 5.

Therefore, bright lights may be needed to illuminate loading and offloading of RTM and concrete pouring at the shaft sites and temporary storage areas. These light impacts would not be substantial and would not be noticeable in the context of each of the project complex facilities. The Twin Cities Complex is very close to I-5, which creates nighttime lighting of its own. Although the shaft site is distant enough not to create a lighting impact, the RTM site at Lower Roberts Island launch and reception shaft and RTM storage is closer to the Brookside community of Stockton and would potentially be apparent on the horizon. Lighting from the Southern Complex may be vaguely visible to residences in Discovery Bay or Byron, but these developments also generate nighttime lighting, and the distance and the wall and vegetation screening along the Discovery Bay community would mask lighting effects such that they would be minimal. Similarly, the minimal lighting generated at the Bethany Complex would blend in with the lighting created by the adjacent existing pumping plant and the intervening orchards would screen the lighting impacts from other relatively nearby residences.

Bethany Park-and-Ride Lot

The park-and-ride lots would be equipped with nighttime lighting for security purposes for the duration of their use; however, most of the park-and-ride lots are near developments that would already be illuminated, or are in developed areas where nighttime lighting would not noticeably change the existing degree of lighting from nearby residences, street lighting, commercial businesses, etc. The Bethany Road Park-and-Ride Lot, however, would be on an agricultural parcel, adjacent to a residence, with no significant existing sources of nighttime lighting nearby. The nighttime lighting proposed for security purposes at the Bethany Road Park-and-Ride Lot would therefore create a noticeable new source of light and would have an effect on nighttime views of the vicinity.

Field Investigations

Field investigations would be conducted during preconstruction and construction periods related to geotechnical, hydrogeologic, agronomic testing, and construction test projects (geotechnical investigations) following adoption of the EIR. These investigations would take place during the day and would not require the use of bright lights, which would negatively affect nighttime views of and from the field investigation area. Sources of glare could include vehicle or equipment windshields and reflective surfaces. It is anticipated that glare reflecting from vehicles and equipment would be minimal when taken in the broader field of view. Therefore, field investigations would not result in a temporary or permanent increase in glare.

Glare

As with impacts from lighting, the intensity of effects of glare created by project construction can vary depending on the context within which glare is created. The noticeable effects of glare decrease with distance and can also be masked if other sources of glare already exist nearby. During project construction, glare would be created by the reflection of headlights or sunlight off of windshields of parked employee vehicles or construction equipment, but these instances would be limited to a fleeting moment as roadway travelers pass by a park-and-ride lot or an active construction site, and would not vary greatly from the intermittent glare created under existing conditions due to reflections off agricultural equipment or passing vehicles.

Another potential source of glare would be the installation of electric transmission lines to serve the construction of some of the shaft sites, as well as the Southern Complex and Bethany Complex. To the extent feasible, any new transmission lines would be buried and not strung on new utility poles. In instances where the new transmission lines would need to be aboveground, conductors (i.e., the lines) can be sources of glare. However, typical conductors weather over time to a dull matte surface producing minimal glare. The study area, especially the southern portion, is crossed by a number of transmission lines. The addition of such lines to serve project construction would not add substantially to the number of lines already present in the area and would not be a new source of glare. Any glare would be limited to project construction sites and only temporary or fleeting. DWR would coordinate electric power transmission modifications per industry standards with these electricity providers: SMUD, Western Area Power Administration, and PG&E. Therefore, project construction would not create a substantial new source of glare that would affect views of the study area.

Operations and Maintenance

Lighting

Security lighting proposed for the project facilities would be activated by motion-detectors, meaning the lighting would only be on when personnel are on-site (e.g., to respond to a maintenance need). While activated on an as-needed basis, the security lighting would have the potential to create noticeable effects related to increased nighttime light at those locations. As described in Chapter 3, lights would be downcast, cut-off-type fixtures with nonglare finishes that would be controlled by photocells. Lights would provide good color with natural light qualities and minimum intensity with adequate strength for security, safety, and personnel access. Along the river, lighting would be minimal, so as not to disturb fisheries, etc., in the river. The lights would comply with the Illuminating Engineering Society industry standards for light source and luminaire measurements and testing methods.

Project operations and maintenance would introduce new sources of light at the permanent project locations. Although the lighting would be designed to be shielded and oriented in such a manner so as not to subject the immediate surroundings to extremes in the levels of light, these types of lights generate an ambient nighttime luminescence that is visible from a distance. This glow contrasts with the existing immediate rural, dark character of the surrounding landscape. Lighting impacts would be minimized by the use of motion-activated switches and with the design features described above. While these new sources of light would be visible to nearby residences and vehicles passing by, the lighting would not be on for extended periods of time and only when necessary. This would not be an effect related to lighting and nighttime views.

Glare

The main potential sources of glare from project operation would occur at the intakes and the Southern Complex forebay. Intakes A, B, and C and their associated large sediment basins, sediment drying lagoons, and support structures would create glare due to created water surfaces and their potential to be made of materials or be colored in a manner that easily reflects light, which creates glare. Alternatives 1, 2b, 2c, 3, 4b, 4c, and 5 would result in a reduced number of new sources of glare relative to Alternatives 2a and 4a because there would be only one or two intakes instead of three.

The intake screens and panels above them would be made of stainless steel with a matte finish that would reduce the reflection of light. The intake screens would normally be submerged, but would be raised for cleaning once or twice per year. The panels above the intake screens and the screens themselves would reflect minimal, if any, light and create glare because of the matte finish. With the panels' close proximity to the water surface of the Sacramento River, any glare created would not outweigh or significantly change the amount of glare that exists from the water surface. In addition, the amount of glare associated with surfaces and structures at the intakes would be increased if highly glossy or reflective paints or surface treatments are used, as opposed to satin or flat paints or surface treatments that are less reflective; however, surfaces at the intakes would consist of compacted soil or concrete that would be matte and would not be painted, which would not create glare.

In addition, sunlight would reflect off the new water surfaces of the large-scale sedimentation basins. The visible water surface area of the basins would create a new source of glare. Glare on the sedimentation basins would be minimal, as the only sources of light at the site would be motion-sensor lighting and moonlight. The basins would be surrounded by a levee that would impede views from surrounding lands, but would remain visible from SR 160, as shown in Figure 3-3. As these new sources of glare would only be visible from SR 160, effects would be fleeting as drivers pass by with a focus on the road, and they would not be noticeably different from the glare effects off the Sacramento River, along which SR 160 travels in the area of the intakes.

It is not anticipated that sunlight reflecting off of the water surfaces of the Southern Complex forebay would create new sources of nuisance glare because the water surface would not be visible from ground-level views. While glare would be an issue for air travelers using Byron Airport, this issue is already managed as it exists with the presence of the Clifton Court Forebay. Although the forebay would be visible from Bethany Reservoir State Recreation Area, glare would not be an issue because the proposed forebay would be approximately 4.5 miles away, in the background, and would appear to be a dark-colored, muted surface in the distance so that glare would not be perceptible. Structure surfaces at the Southern Complex or Bethany Complex, which would be located in the same general area, would mainly be constructed of materials such as concrete with matte finishes and are not anticipated to create glare effects.

Any new electric transmission lines would serve the Southern Complex and Bethany Complex. To the extent feasible, any new transmission lines would be buried and not strung on new utility poles. In instances where the new transmission lines would need to be aboveground, conductors (i.e., the lines) could be sources of glare. However, typical conductors weather over time to a dull matte surface producing minimal glare. The study area, especially the southern portion, is crossed by a number of transmission lines. The addition of such lines to serve the project would not add substantially to the number of lines already present in the area and would not be a new source of glare. Any glare would be limited to the Southern Complex and Bethany Complex and would be only temporary or fleeting. DWR would coordinate electric power transmission modifications per industry standards with these electricity providers: SMUD, Western Area Power Administration, and PG&E. Therefore, the project would not create a substantial new permanent source of glare that would affect views of the study area.

As with glare effects from construction, the operation and maintenance of the project may result in glare from the reflection of headlights or sunlight off of windshields of parked employee or maintenance vehicles, but these instances would be limited to a fleeting moment as drivers pass by

the individual project facilities and would not vary greatly from the intermittent glare created under existing conditions due to reflections off agricultural equipment or passing vehicles.

Due to the minimal amount of glare that would be created during the operation of project facilities, and the existing glare effects from the Sacramento River where glare-inducing features of the project are visible, project operations would not substantially change the amount or intensity of glare effects in the project vicinity.

CEQA Conclusion—All Project Alternatives

The impacts associated with construction light and glare under all project alternatives would be significant because there would be new sources of light at the project facilities, including in and around the waterways, intake structures, and Southern Complex or Bethany Complex. Construction of the Delta Conveyance Project facilities would increase the amount of nighttime lighting, although limited to the project facility sites in the Delta. As the study area currently experiences low levels of light because there are fewer existing sources of light/glare than are typical in urban areas, the light and glare potentially attributable to the project facilities would be significant. Mitigation Measures AES-1b: *Apply Aesthetic Design Treatments to Project Structures* and AES-1c: *Implement Best Management Practices to Implement Project Landscaping Plan* would reduce these potential impacts by ensuring that reflective surfaces are minimized and that vegetative screening is planted to filter nighttime lighting seen by sensitive receptors. Mitigation Measures AES-4a: *Limit Construction Outside of Daylight Hours within 0.25 Mile of Residents at the Intakes*, AES-4b: *Minimize Fugitive Light from Portable Sources Used for Construction,* and AES-4c: *Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences* would reduce construction lighting impacts by limiting construction to daylight hours within 0.25 mile of residents; minimizing light trespass from portable sources used for construction; and installing visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences. The impacts due to lighting and glare during the construction phase would be less than significant with mitigation.

As discussed above, once construction is completed and the project is in operation, the project facilities would use limited nighttime lighting. Sources of glare would be blocked by levees, reduced by distance, or fleeting to motorists. Any building materials that would have potential to reflect glare would have a matte or nonreflective finish that would reduce or inhibit glare. Therefore, permanent, post-construction impacts of light and glare attributable to the Delta Conveyance Project would be less than significant.

Mitigation Measure AES-1b: Apply Aesthetic Design Treatments to Project Structures

See description of Mitigation Measure AES-1b under Impact AES-1.

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

See description of Mitigation Measure AES-1c under Impact AES-1.

Mitigation Measure AES-4a: Limit Construction Outside of Daylight Hours within 0.25 Mile of Residents at the Intakes

All Project Alternatives

1. Within occupational safety standards, DWR will minimize the impact of nighttime construction light and glare on residences within 0.25 mile of the intake construction sites by limiting non-tunnel-related surface construction, except for periodic continuous concrete pours at the intakes and tunnel shafts, 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.
    a. DWR will establish a construction hotline, which will enable residents to report any construction violation including construction activities outside of daylight hours.

Implementation of this measure, while taking into account occupational safety requirements, will reduce the use of nighttime lighting and provide residents the means to report any observed deviation from the mitigation requirements.

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

All Project Alternatives

1. DWR will minimize fugitive light, or light trespass, from portable lighting sources used during construction by adhering to the following practices, at a minimum.
    a. Project-related light and glare will be minimized to the maximum extent feasible, given safety considerations.
    b. Color-corrected lights will be used.
    c. Portable lights will be operated at the lowest feasible wattage and height.
    d. 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.
    e. The number of nighttime lights used will be minimized to the greatest extent feasible.

Implementation of this measure will reduce—to the extent as governed by site-specific safety and fisheries protection 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

All Project Alternatives

1. DWR 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. Access routes could include SR 160, Hood-Franklin Road, West Walnut Grove Road, Mountain House Road, South Holt Road, Byron Highway, West Bethany Road, and various levee roads.

a. DWR 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. DWR will also coordinate with local recreational interested parties 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.

    i. 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.

    ii. 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.

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

Mitigation Impacts

Compensatory Mitigation

Although the CMP described in Appendix 3F does not act as mitigation for impacts on light and glare from project construction or operations, its implementation could result in impacts on aesthetics and visual resources due to light and glare.

Restoration occurring on Bouldin Island and I-5 ponds as a result of compensatory mitigation would result in the conversion of primarily agricultural lands to restored or enhanced habitat across all locations, as well as the alteration of levees on Bouldin Island. The compensatory mitigation sites proposed for Bouldin Island would be visible from SR 12 and County scenic routes on the island. All three I-5 ponds would be visible from I-5. Pond 6 would be in middleground views, and Ponds 7 and 8 would be in foreground views; Ponds 7 and 8 would be visible from SR 12 in foreground views. Pond 6 would be visible in foreground views from West Woodbridge Road.

As with construction of the project alternatives, construction activities would occur over a period of years (i.e., 2 to 4 years) from the initial grading of the mitigation sites and levee augmentation to completion of the mitigation planting process. Specific activities would vary over time, dependent on the activities and equipment needed at any given time. The majority of activities needed for construction of the compensatory mitigation sites and levee improvements are assumed to occur 5 days a week for up to an average of 10 hours per day, from sunrise to sunset, during the entire construction period. This would limit the need for construction lighting and equipment used to daytime hours. Given the nature of the compensatory mitigation sites and levee improvements, the need for around-the-clock construction, or nighttime, work is not anticipated. Therefore, nighttime construction lighting is not anticipated. Also, none of the restoration sites or improved levees are anticipated to have permanent sources of light once construction is completed. These features would be few, if any, structures or other constructed features that would require lighting.

There are few if any elements of the Bouldin Island or I-5 ponds restoration sites that would produce glare. The same would be true for the Bouldin Island levee improvements. As with construction of the project alternatives, potential sources of glare would be reflection from construction equipment and vehicles and water surfaces. However, the instances of sensitive viewers encountering glare would be limited to a fleeting moment roadway travelers pass by and would not be appreciably different from the intermittent glare created under existing conditions by other vehicles and agricultural equipment. Restored areas may increase glare reflecting off water surfaces for a short period of time until vegetation becomes established.

It is noted that the compensatory mitigation sites for the tidal wetland or channel margins have not been determined. It cannot be known at this time whether any of these compensatory mitigation sites would be in view of receptors sensitive to light and glare. However, it can be assumed that the construction activities involved with constructing the tidal wetland or channel margin compensatory mitigation sites would be similar to those of the I-5 Ponds and Bouldin Island sites.

Based on the nature of the construction of the elements of the compensatory mitigation elements (i.e., daytime work), as well as the elements themselves (i.e., restorations, levees, unoccupied spaces), the impacts attributable to lighting from construction of compensatory mitigation, combined with project alternatives, would not change the less-than-significant impact conclusion.

Other Mitigation Measures

Mitigation Measures BIO-2c: *Electrical Power Line Support Placement* is the only mitigation measure that would potentially introduce a new source of glare into the study area. None of the mitigation measures would introduce new sources of light into the study area. This mitigation measure would involve the construction and placement of electrical power line supports. Temporary impacts on the study area's lighting environment resulting from implementation of Mitigation Measure BIO-2c would be similar to construction and operations/maintenance effects of the project alternatives in certain construction areas and would contribute to glare impacts of the project alternatives.

The project alternatives would require the construction of power lines to serve maintenance shafts, intakes, and pumping and discharge complexes. Mitigation Measure BIO-2c: *Electrical Power Line Support Placement* would require the new transmission lines be placed on existing infrastructure. However, where that is not possible, under Mitigation Measure BIO-2c the new transmission lines and support structures would be required to avoid sensitive terrestrial and aquatic habitats, as well as be in underground conduit to the maximum extent possible. In instances where the new transmission lines would need to be constructed, the conductors would weather over time to a dull matte surface producing less glare. This would also be true for any electric transmission lines replaced or installed under this mitigation measure. Therefore, the placement and construction of any aboveground electric transmission infrastructure associated with the project alternatives would have the same type and level of visual impact attributable to glare whether it is or is not addressed by Mitigation Measure BIO-2c, as the infrastructure would still need to be at the project site it would serve. The effect of glare on the visual environment would not be substantially different from that with the implementation of the project alternatives.

Overall, the impacts attributable to glare from construction and implementation of other mitigation measures, combined with project alternatives, would not change the less-than-significant impact conclusion.

18.3.6 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 aesthetics and visual environment are expected to change as a result of past, present, and reasonably foreseeable future projects related to changes in land use (Chapter 14, *Land Use*). It is expected that changes to the existing visual environment will take place, even though reasonably foreseeable future projects likely would include typical design and construction practices to avoid or minimize potential impacts.

When the effects of any of the project alternatives are considered in combination with the effects of projects listed in Table 18-15, the cumulative impacts on aesthetics and visual resources are potentially significant. The specific plans, policies, programs, and projects are identified below for each impact category based on the potential to contribute to an impact due to the Delta Conveyance Project that could be deemed cumulatively considerable. The potential for cumulative impacts on aesthetics and visual resources is described for potential effects related to the construction and operation of the water conveyance facilities and compensatory mitigation under the project alternatives.

Table 18-15. Cumulative Impacts on Aesthetics and Visual Resources from Plans, Policies, and Programs

Program/ Project	Agency	Status	Description of Program/Project	Impacts on Aesthetic and Visual Resources
Fremont Landing Conservation Bank	CDFW	Ongoing	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 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 impacts 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. This would not be an incremental contribution to aesthetic impacts in the study area.
Staten Island Wildlife-Friendly Farming Demonstration	CDFW	Ongoing	This project involves the acquisition and restoration of Staten Island (9,269 acres) by The Nature Conservancy to protect critical agricultural wetlands used by waterfowl and sandhill cranes. The project practices increased habitat availability by flooding 2,500–5,000 acres of corn for a longer	The farming demonstration would increase length of times flooding is seen on the island. Beneficial visual impacts could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Would increase sandhill crane viewing opportunities. This would not

Program/ Project	Agency	Status	Description of Program/Project	Impacts on Aesthetic and Visual Resources
			duration than previously possible.	be an incremental contribution to aesthetic impacts in the study area.
Central Valley Flood Protection Plan	DWR	Ongoing	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, CVFPP will also identify the mutual goals, objectives, and constraints important in the planning process; distinguish plan elements that address mutual flood risks; and recommend improvements to the state-federal flood protection system.	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 significant visual impacts through vegetation removal and increased levee heights. This would be an incremental contribution to aesthetic impacts in the study area.
Delta Levees Flood Protection Program	DWR	Ongoing	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 significant visual impacts through vegetation removal and increased levee heights. This would be an incremental contribution to aesthetic impacts in the study area.
Delta Risk Management Strategy (DRMS)	DWR	Completed	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	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

Program/ Project	Agency	Status	Description of Program/Project	Impacts on Aesthetic and Visual Resources
			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.	private lands that would result in significant visual impacts through vegetation removal and increased levee heights. This would be an incremental contribution to aesthetic impacts in the study area.
FloodSAFE California	DWR	Ongoing	FloodSAFE promotes public safety through integrated flood management while protecting environmental resources and emphasizes action in the Delta. This program is very broad, but it 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 significant visual impacts through vegetation removal and increased levee heights. Beneficial indirect impacts would come from reducing the potential for catastrophic flooding. This would be an incremental contribution to aesthetic impacts in the study area.
Levee Repairs Program	DWR	Ongoing	This is a program to repair state and federal project levees. To date, hundreds of levee repair sites have been identified. The most critical sites have already been improved. Repairs to other sites 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 significant visual impacts through vegetation removal and increased levee heights. This would be an incremental contribution to aesthetic impacts in the study area.

Program/ Project	Agency	Status	Description of Program/Project	Impacts on Aesthetic and Visual Resources
Lower Yolo Restoration Project	State and Federal Contractors Water Agency, DWR and MOA Partners	Completed	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 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.	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 impacts 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. This would not be an incremental contribution to aesthetic impacts in the study area.
Mayberry Farms Subsidence Reversal and Carbon Sequestration Project	DWR	Completed	The project would restore approximately 192 acres of emergent wetlands and enhance approximately 115 acres of seasonally flooded wetlands. It 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 impacts 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. This would not be an incremental contribution to aesthetic impacts in the study area.
North Delta Flood Control and Ecosystem Restoration Project	DWR	Ongoing	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	The project would result in conversion of existing land uses to restored habitat and enhancement of marginal habitats to increase habitat value. This project would result in beneficial impacts through reintroduction of habitats that had been lost through the original conversion of natural lands to agriculture and could increase biodiversity that would result

Program/ Project	Agency	Status	Description of Program/Project	Impacts on Aesthetic and Visual Resources
			habitats, species, and ecological processes. Flood-control improvements are needed to reduce damage to land uses, infrastructure, and the Bay-Delta ecosystem resulting from overflows caused by insufficient channel capacities and catastrophic levee failures in the project study area.	in benefits to wildlife and scenery viewing. Flood-control improvements may result in significant visual impacts where new or taller levees are introduced or rock slope protection replaces vegetation on levee slopes. This would be an incremental contribution to aesthetic impacts in the study area.
Cache Slough Area Restoration	DWR and CDFW	Ongoing	Restoration efforts would support native fish species by creating or enhancing natural habitats and improving the food web that 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 impacts could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Significant visual impacts could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape. This would be an incremental contribution to aesthetic impacts in the study area.
Dutch Slough Tidal Marsh Restoration Project	DWR and California State Coastal Conservancy	Ongoing	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 4 miles of levee trails, and the Ironhouse Sanitary District's West Marsh Creek Delta Restoration Project, a restoration of a portion of 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 impacts 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. This would not be an incremental contribution to aesthetic impacts in the study area.

Program/ Project	Agency	Status	Description of Program/Project	Impacts on Aesthetic and Visual Resources
			Marsh Creek delta on an adjacent 100-acre parcel.	
Franks Tract Futures	DWR and Reclamation	Planning Phase	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. The project would 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 significant impacts on nearby viewer groups through construction and operation. This would be an incremental contribution to aesthetic impacts in the study area.
Sacramento–San Joaquin Delta Estuary TMDL for Methylmercury	Central Valley Regional Water Quality Control Board	Ongoing	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 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.	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 significant visual impacts if they introduce discordant visual features into the landscape or they could result in beneficial impacts if they restore the visual environment by recontouring 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. This would be an incremental contribution to aesthetic impacts in the study area.
Liberty Island Conservation Bank	Reclamation District 2093	Ongoing	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	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 impacts through the reintroduction of habitats that had been lost

Program/ Project	Agency	Status	Description of Program/Project	Impacts on Aesthetic and Visual Resources
			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.	through the original conversion of natural lands to agriculture and could increase biodiversity that would result in benefits to wildlife and scenery viewing. This would not be an incremental contribution to aesthetic impacts in the study area.
Flood Management Program	SAFCA, CVFPB, and USACE	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 revegetation.	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 significant visual impacts through vegetation removal and increased levee heights. This would be an incremental contribution to aesthetic impacts in the study area.
SRWTP Facility Upgrade Project (EchoWater)	Sacramento Regional County Sanitation District	Ongoing	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. This would not be an incremental contribution to aesthetic impacts in the study area.
Delta Water Supply Project	Stockton	Completed	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-looking 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 significant impacts on nearby viewer groups through construction and operation. This would be an incremental contribution to aesthetic impacts in the study area.

Program/ Project	Agency	Status	Description of Program/Project	Impacts on Aesthetic and Visual Resources
Sacramento River Bank Protection Project	USACE	Planned	The project 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 significant visual impacts through vegetation removal and increased levee heights. This would be an incremental contribution to aesthetic impacts in the study area.
San Francisco Bay to Stockton Deep Water Ship Channel Project	USACE, Port of Stockton, and Contra Costa County Water Agency	Planning phase	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 project 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 significant visual impacts. Dredge material placement also poses the potential to significantly 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 impacts is used for restoration purposes. This would be an incremental contribution to aesthetic impacts in the study area.
Sacramento Deep Water Ship Channel Project	USACE and Port of Sacramento	Ongoing	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	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

Program/ Project	Agency	Status	Description of Program/Project	Impacts on Aesthetic and Visual Resources
			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-foot-deep channel at New York Slough, thereby affording the Port of Sacramento access to San Francisco Bay Area harbors and the Pacific Ocean.	such features could result in significant visual impacts. Dredge material placement also poses the potential to significantly 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 impacts is used for restoration purposes. This would be an incremental contribution to aesthetic impacts in the study area.
Anadromous Fish Screen Program (AFSP)	Reclamation and USFWS	Complete	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 waterbodies and waterways in the study area. This could result in significant impacts on nearby viewer groups through construction and operation. This would be an incremental contribution to aesthetic impacts in the study area.
Delta Fish Species Conservation Hatchery	USFWS, Reclamation, DWR, and CDFW	Planning	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.	The project would repurpose the Rio Vista Army base and improve the existing visual character at the project location, which is currently blighted. This would not be an incremental contribution to aesthetic impacts in the study area.
West Sacramento Levee Improvements Program	WSAFCA and USACE	Planned	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, 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.	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 significant visual impacts through vegetation removal and increased levee

Program/ Project	Agency	Status	Description of Program/Project	Impacts on Aesthetic and Visual Resources
				heights. This would be an incremental contribution to aesthetic impacts in the study area.
Franklin Bulk Substation	SMUD	Planned	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 significant impacts on nearby viewer groups through construction and operation. This would be an incremental contribution to aesthetic impacts in the study area.
Twitchell Island Levee Habitat Restoration Project	CDFW	Planned	This project has been identified as one of the projects that will be implemented under California EcoRestore.	Beneficial visual impacts could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Significant visual impacts could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape. This would be an incremental contribution to aesthetic impacts in the study area.
Grizzly Slough Floodplain Project	DWR	Planned	The project will reduce flooding and provide contiguous aquatic and floodplain habitat along the downstream portion of the Cosumnes Preserve by modifying levees on Grizzly Slough. Benefits to ecosystem processes, fish and wildlife, will be achieved by recreating floodplain seasonal wetlands and riparian habitat on the Grizzly Slough proper.	Beneficial visual impacts could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Significant visual impacts could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape. This would be an incremental contribution to aesthetic impacts in the study area.

Program/ Project	Agency	Status	Description of Program/Project	Impacts on Aesthetic and Visual Resources
Lower Putah Creek Realignment	CDFW	Implemented	The project will restore 300–700 acres of tidal freshwater wetlands, creating 5 miles of a new fish channel, improving anadromous fish access to 25 miles of stream, and restoring at least 5,000 square feet of salmon spawning habitat.	Beneficial visual impacts could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Significant visual impacts could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape. This would be an incremental contribution to aesthetic impacts in the study area.
Wallace Weir Improvements and Tule Canal Agricultural Crossings	Reclamation District 108 and DWR	Ongoing	The project replaced the seasonal earthen dam at Wallace Weir with a permanent, operable structure that would provide year-round operational control. The project also included a fish rescue facility that returns fish back to the Sacramento River.	Beneficial visual impacts could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Significant visual impacts could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape. This would be an incremental contribution to aesthetic impacts in the study area.
Prospect Island Tidal Habitat Restoration Project	DWR and CDFW	Planned	The intent of the project is to restore freshwater tidal marshes and associated aquatic habitat. However, funding for the wildlife refuge and the restoration project was never authorized. This project has been identified as one of the projects that will be implemented under California EcoRestore. The Final EIR was certified in 2019.	Beneficial visual impacts could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Significant visual impacts could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape. This would be an incremental contribution to aesthetic impacts in the study area.
Southport Early Implementation Project	WSAFCA	Planned	The WSAFCA is proposing the flood risk–reduction measures that will be implemented along 6 miles of the levee that runs along the west bank of the	Beneficial visual impacts could result where restoration and enhancement activities improve existing visual conditions and increase visual

Program/ Project	Agency	Status	Description of Program/Project	Impacts on Aesthetic and Visual Resources
			Sacramento River from the Barge Canal to the South Cross Levee.	diversity. Significant visual impacts could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape. This would be an incremental contribution to aesthetic impacts in the study area.
McCormack-Williamson Tract Flood Control and Ecosystem Restoration Project	DWR	Planned	This project is a part of the North Delta Flood Control and Ecosystem Restoration Project and will implement flood-control improvements principally on and around McCormack-Williamson Tract 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 caused by catastrophic levee failures in the project study area.	Beneficial visual impacts could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Significant visual impacts could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape. This would be an incremental contribution to aesthetic impacts in the study area.
Hill Slough Restoration Project	CDFW	Planned	The purpose of the project is to restore brackish tidal marsh and associated upland ecotone at the northern Suisun Marsh near the corner of Highway 12 and Grizzly Island Road to benefit endangered as well as migratory and resident species.	Beneficial visual impacts could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Significant visual impacts could result where restoration, enhancement, and management measures require built elements that detract from, instead of compliment or improve, the visual landscape. This would be an incremental contribution to aesthetic impacts in the study area.
Goat Island at Rush Ranch Tidal Marsh Restoration	Solano Land Trust	Planning	This project aims to restore tidal marsh habitat by reconnecting and reestablishing tidal marsh hydrology and related physical and ecological processes within and around Goat Island Marsh. This project will be implemented in conjunction with construction	Beneficial visual impacts could result where restoration and enhancement activities improve existing visual conditions and increase visual diversity. Significant visual impacts could result where restoration, enhancement, and management measures

Program/ Project	Agency	Status	Description of Program/Project	Impacts on Aesthetic and Visual Resources
			of an Interpretive Nature Trail to Goat Island Marsh to offset public access impacts resulting from closure of the levee trail.	require built elements that detract from, instead of compliment or improve, the visual landscape. This would be an incremental contribution to aesthetic impacts in the study area.
Knights Landing Outfall Gates Fish Barrier Project	CNRA	Complete	The project will rehabilitate the outfall gates by repairing known structural deficiencies (including scouring found at the inlet and outlet gates), replacing worn out appurtenances, construct a trash barrier system to protect the gates and ease debris collection, and upgrading the electrical and communication system to include backup capability to meet current USACE operations and maintenance standards	Visual impacts are likely to be minimal because changes would be consistent with existing visual conditions. This would not be an incremental contribution to aesthetic impacts in the study area.

AFSP = Anadromous Fish Screen Program; BCDC = Bay Conservation and Development Commission; BDCP = Bay Delta Conservation Plan; BLM = U.S. Bureau of Land Management; CALFED = California Federal Bank; CCWD = Contra Costa Water District; CDFW = California Department of Fish and Wildlife; CNRA = California Natural Resources Agency; CVFPP = Central Valley Flood Protection Plan; CVJV = Central Valley Joint Venture; CVP = Centra Valley Project; DMC = Delta-Mendota Canal; DRMS = Delta Risk Management Strategy; DWR = California Department of Water Resources; EACCS = East Alameda County Conservation Strategy; EIR = environmental impact report; EIS = environmental impact statement; HCP = Habitat Conservation Plan; I- = Interstate; LMP Land Management Plan; LSIWA = Lower Sherman Island Wildlife Area; Management Plan = Land Use and Resource Management Plan; MOA = Memorandum of Agreement; NCCP = Natural Community Conservation Plan; NMFS = National Marine Fisheries Service; NSJCGBA = Northeastern San Joaquin County Groundwater Banking Authority; Reclamation = U.S. Bureau of Reclamation; RHJV = Riparian Habitat Joint Venture; RPA = Reasonable and Prudent Alternative; SAFCA = Sacramento Area Flood Control Agency; SFPUC = San Francisco Public Utilities Commission; SMUD = Sacramento Municipal Utility District; SR= State Route; SRWRS = Sacramento River Water Reliability Study; SRWTP = Sacramento Regional Water Treatment Plant; SWP = State Water Project; TCD = Temperature Control Device; TMDL = Total Maximum Daily Load; USACE = U.S. Army Corps of Engineers; USFWS = U.S. Fish and Wildlife Service; WSAFCA = West Sacramento Area Flood Control Agency.

18.3.6.1 Cumulative Impacts of the No Project Alternative

The cumulative impacts of the No Project Alternative (including climate change that would occur with or without the project alternatives) would result in an array of impacts 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 substantial impacts 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 of these, should they occur, could be expected to 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 project alternatives, these risks may be reduced by project-related levee improvements along with those projects identified for the purposes of flood protection in Table 18-15. Recently completed, ongoing, or planned restoration and enhancement projects within the Delta may benefit visual resources within it. Overall, implementation of ongoing programs and projects under the No Project Alternative combined with cumulative projects, including changes in farmland, are not expected to result in substantial 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.

18.3.6.2 Cumulative Impacts of the Project Alternatives

Impact Visual Environment Due to Temporary and Permanent Conversion of Agricultural Land

The projects in Table 18-15 and all Delta Conveyance Project alternatives involve construction that 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 through linear rail transportation projects, urban development expansion, restoration and enhancement projects, aqueduct expansion, new parks, levee improvements, and flood-control projects. The actual amount of agricultural and open space lands that may be converted by all cumulative projects is not known. As noted in Table 18-14, significant and unavoidable impacts would occur at a number of individual project sites associated with each alternative or multiple alternatives.

Mitigation Measures AES-1a: *Install Visual Barriers between Construction Work Areas and Sensitive Receptors*, AES-1b: *Apply Aesthetic Design Treatments to Project Structures*, and AES-1c: *Implement Best Management Practices to Implement Project Landscaping Plan* would reduce visual impacts of the individual project facilities by installing visual barriers between construction work areas and sensitive receptors, applying aesthetic design treatments to all structures to the extent feasible, and using best management practices to implement a project landscaping plan. In addition, compensatory mitigation would aid in improving views associated with restored lands. However, in some localized cases, impacts would not be reduced to a less-than-significant level even though environmental commitments and mitigation measures would reduce some aspects of the impact on visual quality and character, scenic vistas, and scenic highways at the project sites. While the size of the study area and the nature of changes introduced by all project alternatives would result in permanent changes to the landscape at the project sites, they would not be noticeable changes as they would visually blend with other structures throughout the Delta landscape (i.e., agricultural facilities). Thus, the incremental contribution of the Delta Conveyance Project's alternatives to significant cumulative impacts would not be cumulatively considerable and unavoidable because the contribution to the substantial alteration of the existing visual quality and character, scenic vistas, and the State Scenic Highway in the study area would be visually dispersed.

Impact Aesthetics or Visual Resources Due to Light or Glare

Many of the cumulative projects also have the potential to contribute to a cumulative increase of light and glare in the study area due to increased rural and suburban development (i.e., via general plan objectives), lighting of facilities and buildings, removal of vegetation, and increased water surfaces. However, the restoration and enhancement projects have the potential to reduce glare by introducing trees and shrubs into a landscape that was in agricultural production and 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 via the cumulative projects presented in Table 18-15 is considered significant. Mitigation Measures AES-1b: *Apply Aesthetic Design Treatments to Project Structures*, and AES-1c: *Implement Best Management Practices to Implement Project Landscaping Plan* would help reduce the impacts attributable to project facilities by ensuring that reflective surfaces are minimized and that vegetative screening is planted to filter nighttime lighting seen by sensitive receptors. Mitigation Measures AES-1b and AES-1c would reduce the lighting and glare impacts of the anthropogenic features to less than significant.

Mitigation Measures AES-4a: *Limit Construction Outside of Daylight Hours within 0.25 Mile of Residents at the Intakes*, AES-4b: *Minimize Fugitive Light from Portable Sources Used for Construction,* and AES-4c: *Install Visual Barriers along Access Routes, Where Necessary, to Prevent Light Spill from Truck Headlights toward Residences* would help reduce these impacts attributable to project facilities by limiting construction to daylight hours within 0.25 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 some localized cases, these mitigation measures would not reduce impacts to a less-than-significant level (e.g., episodic headlight glare); however, these instances would occur randomly with very brief duration and would not be cumulatively considerable. While there would be permanent visual changes to the regional landscape due to the addition of light and glare sources, given the broad expanse of the of the study area balanced by the nature of changes limited to discreet project facilities spaced miles apart throughout the Delta, there would not be noticeable changes to visual character relative to lighting and glare that do not blend or are not in keeping with the existing visual environment. Thus, the incremental contributions of Delta Conveyance Project's alternatives to significant cumulative impacts would not be significant and unavoidable because they would not contribute in a cumulative way to an increase of daytime and nighttime light and glare in the study area.

Adversely Affect Visual Landscape of the Delta

The project facilities that comprise the Delta Conveyance Project, while numerous and large-scale at a local viewing level, would be dispersed through the Delta. They would not appear as a single visual monolithic mass that would draw a viewer's attention away from the broader, more expansive visual landscape of the Delta. The project's contribution to this cumulative conversion of the existing visual landscape would not be considered a significant impact because of the overall viewer sensitivity and visual dominance of project features would not result in considerable reduced scenic quality within the region as a whole. Locally, the visual changes attributable to the project facilities would affect the existing visual character and visual quality associated with rural views and these changes would alter scenic vista views and views from scenic highways. However, when viewed across the Delta environs as defined in Section 18.1.1, *Study Area*, the project facilities contribution to a reduction in visual quality throughout the Delta would not be cumulatively considerable.